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ENVIRONMENTAL

Environmental Impact Assessment for Sibanye Gold Limited's West Rand Tailings Retreatment Project

Topography and Visual Impact Assessment

Project Number:

GOL2376

Prepared for:

Sibanye Gold Limited

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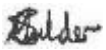
Stephanie Mulder	Report Writer		September 2015
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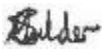

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EXECUTIVE SUMMARY

Digby Wells Environmental (Digby Wells) has been appointed by Sibanye Gold Limited (SGL) as the independent Environmental Assessment Practitioner (EAP) to conduct the Environmental Impact Assessment (EIA) for the proposed West Rand Tailings Retreatment Project (WRTRP). This includes the associated specialist studies and the required Public Participation Process (PPP). The environmental considerations for the impact assessment phase of the EIA included a T&VIA for the proposed WRTRP.

The proposed WRTRP is located in the Western Basin of the Witwatersrand in Gauteng Province, South Africa. The project area and surrounds are characterised by residential settlements, small holdings, agriculture and open land interspersed with areas disturbed by mining activities. The proposed WRTRP consists of four (4) Mining Right Areas (MRAs) namely:

- Kloof Mining Right Area;
- Driefontein Mining Right Area;
- Cooke Mining Right Area; and
- Ezulwini Mining Right Area.

Kloof Mining Right Area

The proposed activities associated with the WRTRP within the Kloof MRA fall within the Merafong City and Westonaria Local Municipalities and the West Rand District Municipality. The nearest settlement is Hermina (a small group of farmhouses) situated approximately 750 m north-east of the proposed CPP. The nearest major town is Westonaria situated approximately 12.3 km north-north-east of the proposed CPP.

The topography of the Kloof MRA is undulating with ridges and river valleys. The topographical model indicates that the elevation of the Kloof MRA increases from 1456 metres above mean sea level (m.a.m.s.l.) in the Loopspruit River valley in the southern part of the MRA to 1791 m.a.m.s.l. on the ridge running east-west through the centre of the MRA. In the northern part of the Kloof MRA, the elevation decreases from this central ridge to approximately 1540 m.a.m.s.l. in the Wonderfonteinspruit River valley. The majority of the project area has gentle slopes of less than 7°. Steeper slopes of between 7.1° and 11.6° occur on the slopes of the ridges and river valleys. The steepest slopes occur on the ridges and sides of the TSFs and range between 11.7° and 44.7°. Due to the undulating topography, the slope aspect / direction of the Kloof MRA is not in any specific direction.

The elevation of the proposed CPP area decreases from 1609 m.a.m.s.l. in the north to 1589 m.a.m.s.l. in the west. The slope of the proposed CPP area is undulating and ranges from 0° to 6.2°. The proposed CPP is surrounded on the north, east and south by ridges. These ridges are expected to provide some screening of the proposed CPP.

The elevation of the proposed RTSF area decreases from 1541 m.a.m.s.l. in the north-west to 1498 m.a.m.s.l. in the south-east. The slope of the proposed RTSF area is gently undulating and ranges from 0° to 2.8°. The proposed RTSF is situated on a spur between the Leeuspruit River and one of its tributaries. The relatively flat topography is expected to only provide minimal screening of the proposed RTSF.

The receiving environment is characterised by residential areas, small holdings, agriculture and mining with little of the natural vegetation (Rand Highveld Grassland and Soweto Highveld Grassland) remaining. The agricultural and remaining natural Grassland vegetation will only provide minimal screening of the proposed activities associated with the WRTRP within the Kloof MRA.

A viewshed is a geographical area, defined by the topography, within which a particular feature will be visible (Oberholzer, 2005). The theoretical viewshed model for the proposed CPP was refined to a practical viewshed model with a buffer of 4 km around the proposed infrastructure and divided into areas that are likely to experience different categories of visual exposure. Due to the nature of the receiving environment it is unlikely that the proposed CPP will be visible beyond this 4 km buffer. The practical viewshed model depicts the area from which the proposed CPP is likely to be visible. This practical viewshed covers an area of approximately 37.83 km².

The theoretical viewshed model for the proposed RTSF was refined to a practical viewshed model with a buffer of 12 km around the proposed infrastructure and divided into areas that are likely to experience different categories of visual exposure. Due to the nature of the receiving environment it is unlikely that the proposed RTSF will be visible beyond this 12 km buffer. The practical viewshed model depicts the area from which the proposed RTSF is likely to be visible. This practical viewshed covers an area of approximately 644.48 km².

The combined practical viewshed model for the proposed CPP and RTSF depicts the area from which both the proposed CPP and RTSF are likely to be visible. The combined practical viewshed covers an area of approximately 644.48 km².

The receiving environment of the proposed activities associated with the WRTRP within the Kloof MRA has a moderate visual sensitivity as there are moderately visible areas in the landscape. The proposed activities associated with the WRTRP within the Kloof MRA have a high visibility and a high visual exposure as they will be visible from a large area and will be dominant in the landscape and clearly noticeable to the viewer. The proposed activities associated with the WRTRP within the Kloof MRA have a high visual intrusion as they result in a noticeable change and are discordant with the surroundings. The receiving environment and receptors of the proposed activities associated with the WRTRP within the Kloof MRA have a moderate sensitivity. The receiving environment has a low VAC because there is little screening by the topography and vegetation. According to Oberholzer (2005) the proposed activities associated with the WRTRP within the Kloof MRA are expected to have a high visual impact on the receiving environment. The findings of this T&VIA concur that the proposed activities associated with the WRTRP within the Kloof MRA will have a high visual impact on the receiving environment.

Driefontein Mining Right Area

The proposed activities associated with the WRTRP within the Driefontein MRA fall within the Merafong City local Municipality and the West Rand District Municipality. The nearest major town is Carletonville situated approximately 3.8 km north-north-west of the Driefontein 5 TSF.

The topography of the Driefontein MRA is undulating with ridges and valleys. The topographical model indicates that the elevation of the Driefontein MRA increases from 1529 m.a.m.s.l. on the upper slopes of the Mooirivierloop and Wonderfonteinspruit Rivers in the northern part of the MRA to 1765 m.a.m.s.l. on the ridge running east-west through the centre of the MRA. In the southern part of the MRA, the elevation decrease from this central ridge to approximately 1539 m.a.m.s.l. in the Loopspruit River valley. The majority of the project area has gentle slopes of less than 5.6°. Steeper slopes of between 5.7° and 17.2° occur in isolated areas on the slopes of the ridges and river valleys. The steepest slopes occur on the ridges, river valleys and sides of the TSFs and range between 17.3° and 75.4°. The slope aspect / direction of the Driefontein MRA is not in any specific direction. The undulating topography is expected to provide some screening of the proposed activities associated with the WRTRP within the Driefontein MRA.

The receiving environment is characterised by residential areas, small holdings, agriculture and mining with little of the natural vegetation (Carletonville Dolomite Grassland and Gauteng Shale Mountain Bushveld) remaining. The agricultural and remaining natural Grassland and Bushveld vegetation will only provide minimal screening of the proposed activities associated with the WRTRP within the Driefontein MRA.

The receiving environment of the proposed activities associated with the WRTRP within the Driefontein MRA has a moderate visual sensitivity as there are moderately visible areas in the landscape. The proposed activities associated with the WRTRP within the Driefontein MRA have a high visibility and a moderate visual exposure as they will be visible from a large area and will be recognisable to the viewer. The proposed activities associated with the WRTRP within the Driefontein MRA have a moderate visual intrusion as they partially fit into the surroundings but are clearly noticeable. The receiving environment and receptors of the proposed activities associated with the WRTRP within the Driefontein MRA have a moderate sensitivity. The receiving environment has a moderate VAC because there is partial screening by the topography and vegetation. According to Oberholzer (2005) the proposed activities associated with the WRTRP within the Driefontein MRA are expected to have a high visual impact on the receiving environment. The findings of this T&VIA concur that the proposed activities associated with the WRTRP within the Driefontein MRA will have a high visual impact on the receiving environment.

Cooke Mining Right Area

The proposed activities associated with the WRTRP within the Cooke MRA fall within the City of Johannesburg Metropolitan Municipality. The nearest settlement is Jagfontein situated 1.2 km south-east of the Cooke 4 South TSF. The nearest other town is Mohlakeng situated 4.6 km west-north-west of the Cooke TSF. The nearest major towns are Westonaria

situated 8.6 km north-west of the Cooke 4 South TSF and Randfontein situated 8.7 km north-west of Cooke TSF.

The topography of the Cooke MRA is undulating with ridges and valleys. The topographical model indicates that the elevation of the Cooke MRA increases from 1579 m.a.m.s.l. in the Wonderfonteinspruit River valley which runs through the MRA from north to south to 1726 m.a.m.s.l. on the ridge running east-west along the northern part of the MRA. The majority of the project area has gentle slopes of less than 4.3°. Steeper slopes of between 4.4° and 14.1° occur in isolated areas of the Wonderfontein River valley. The steepest slopes occur on the sides of the Cooke TSF and range between 14.2° and 33.4°. The slope aspect / direction of the Cooke MRA is not in any specific direction. The Cooke TSF is situated on a relatively flat area and the topography is expected to only provide minimal screening of the proposed activities associated with the WRTRP within the Cooke MRA.

The receiving environment is characterised by residential areas, small holdings, agriculture and mining with little of the natural vegetation (Carletonville Dolomite Grassland and Gauteng Shale Mountain Bushveld) remaining. The agricultural and remaining natural Grassland and Bushveld vegetation will only provide minimal screening of the proposed activities associated with the WRTRP within the Cooke MRA.

The receiving environment of the proposed activities associated with the WRTRP within the Cooke MRA has a moderate visual sensitivity as there are moderately visible areas in the landscape. The proposed activities associated with the WRTRP within the Cooke MRA have a high visibility and a high visual exposure as they will be visible from a large area and will be dominant in the landscape and clearly noticeable to the viewer. The proposed activities associated with the WRTRP within the Cooke MRA have a high visual intrusion as they result in a noticeable change and are discordant with the surroundings. The receiving environment and receptors of the proposed activities associated with the WRTRP within the Cooke MRA have a moderate sensitivity. The receiving environment has a low VAC because there is little screening by the topography and vegetation. According to Oberholzer (2005) the proposed activities associated with the WRTRP within the Cooke MRA are expected to have a high visual impact on the receiving environment. The findings of this T&VIA concur that the proposed activities associated with the WRTRP within the Cooke MRA will have a high visual impact on the receiving environment.

Ezulwini Mining Right Area

The proposed activities associated with the WRTRP within the Ezulwini MRA fall within the Westonaria Local Municipality and the West Rand District Municipality.

The Ezulwini MRA has an undulating topography. The topographical model indicates that the elevation of the Ezulwini MRA decreases from 1804 m.a.m.s.l. on the ridge running east-west through the centre of the MRA to 1628 m.a.m.s.l. both on the upper slopes of the Wonderfonteinspruit River valley in the north-western part of the MRA and in the river valley of a tributary of the Rietspruit River in the south-eastern part of the MRA. The proposed activities associated with the WRTRP within the Ezulwini MRA are situated on a saddle at the top of the central ridge. The majority of the project area has gentle slopes of less than

7.3°. Steeper slopes of between 7.4° and 18.2° occur in isolated areas on the slopes of the ridges and river valleys. The steepest slopes occur on the ridges, river valleys and sides of the TSFs and range between 18.3° and 40.4°. The slope aspect / direction of the Ezulwini MRA is not in any specific direction. The undulating topography is expected to provide some screening of the proposed activities associated with the WRTRP within the Ezulwini MRA.

The receiving environment is characterised by residential areas, small holdings, agriculture and mining with little of the natural vegetation (Carletonville Dolomite Grassland and Gauteng Shale Mountain Bushveld) remaining. The agricultural and remaining natural Grassland and Bushveld vegetation will only provide minimal screening of the proposed activities associated with the WRTRP within the Ezulwini MRA.

The receiving environment of the proposed activities associated with the WRTRP within the Ezulwini MRA has a moderate visual sensitivity as there are moderately visible areas in the landscape. The proposed activities associated with the WRTRP within the Ezulwini MRA have a low visibility and a low visual exposure as they will be visible from a small area around the project site and will not be particularly noticeable to the viewer. The proposed activities associated with the WRTRP within the Ezulwini MRA have a moderate visual intrusion as they partially fit into the surroundings but are clearly noticeable. The receiving environment and receptors of the proposed activities associated with the WRTRP within the Ezulwini MRA have a moderate sensitivity. The receiving environment has a moderate VAC because there is partial screening by the topography and vegetation. According to Oberholzer (2005) the proposed activities associated with the WRTRP within the Ezulwini MRA are expected to have a high visual impact on the receiving environment. The findings of this T&VIA do not concur with this. The only planned infrastructure for the WRTRP within the Ezulwini MRA are the pipeline routes. Therefore the proposed activities associated with the WRTRP within the Ezulwini MRA are expected to only have a moderate visual impact on the receiving environment.

Conclusion

The proposed WRTRP will have negative topographic and visual impacts on the receiving environment. The RTSF will remain indefinitely resulting in a permanent and irreversible negative impact on the topography and visual aesthetics.

During the closure phase, the negative impacts can be reduced by implementing mitigation measures; the most important of these is rehabilitation with the emphasis being on re-contouring the site and reconstructing the surface water and drainage lines. The success of this rehabilitation will influence the overall long term impact of the proposed project on the topography and visual / aesthetic character of the receiving environment.

Based on the findings of this T&VIA only (not taking into account the findings of any other studies), from a topography and visual perspective it is recommended that the proposed WRTRP proceed.

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Abbreviations and Acronyms

AWTF	Advanced Water Treatment Facility
BWSF	Bulk Water Storage Facility
C4S	Cooke 4 South
CD: NGI	Chief Directorate: National Geospatial Information
CPP	Central Processing Plant
CUP	Cooke Uranium Project
CV	Curriculum Vitae
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
ELC	European Landscape Convention
GHG	Greenhouse Gas
GIS	Geographic Information System
ha	Hectares
IFC	International Finance Corporation
km	Kilometres
kt/m	Kilo tonnes per month
m.a.m.s.l.	Metres above mean sea level
MPRDA	Mineral and Petroleum Resources Development Act No. 28 of 2002
MRA	Mining Right Area
Mt/m	Million tonnes per month
NBT	North Block Thickener
NEMA	National Environmental Management Act No. 107 of 1998
NEM: PAA	National Environmental Management: Protected Areas Act No. 57 of 2003

NHRA	National Heritage Resources Act No. 25 of 1999
PFS	Pre-Feasibility Study
PPP	Public Participation Process
RTSF	Regional Tailings Storage Facility
RWD	Return Water Dam
SBT	South Block Thickener
SGL	Sibanye Gold Limited
TSF	Tailings Storage Facility
T&VIA	Topography and Visual Impact Assessment
VAC	Visual Absorption Capacity
VIA	Visual Impact Assessment
WBT	West Block Thickener
WRTRP	West Rand Tailings Retreatment Project
WWP	West Wits Project

1 Introduction

Topography is the study of the earth's surface. It includes both natural and man-made features. The Collins English Dictionary (2003) describes topography as:

- The study or detailed description of the surface features of a region (Earth Sciences / Physical Geography);
- The detailed mapping of the configuration of a region (Earth Sciences / Physical Geography);
- The landforms or surface configuration of a region (Earth Sciences / Physical Geography);
- The surveying of a region's surface features (Mathematics & Measurements / Surveying); and
- The study or description of any object.

For the purpose of this study, the topography will be conceptualised as the landforms and surface configuration of the landscape.

"Visual, scenic and cultural components of the environment can be seen as a resource, much like any other resource, which has a value to individuals, to society and to the economy of the region" (Oberholzer, 2005). A Topography and Visual Impact Assessment (T&VIA) is a combined specialist study performed to identify the topographical and visual impacts of the proposed project on the receiving environment.

This report describes the current topography and visual / aesthetic character of the receiving environment and the expected visual impacts of the proposed West Rand Tailings Retreatment Project (WRTRP). The impacts are described and rated, and mitigation measures presented to reduce the negative impacts and enhance the benefits of the proposed project.

A study was conducted to identify and evaluate the surface features using ArcGIS 3D Analyst Extension to create a topographical model, and the resultant slope intensity, slope aspect and viewshed models.

2 Project Description

There is a long history of gold and uranium mining in the broader West Rand area with an estimated 1.3 billion tonnes of surface tailings, containing in excess of 170 million pounds of uranium and 11 million ounces of gold. Sibanye Gold Limited (SGL) currently owns the majority of the tonnage and its gold and uranium content. SGL plans to ultimately exploit all these resources to develop a strong, long life and high yield surface business. Key to the successful execution of this development strategy is the West Rand Tailings Retreatment Project (WRTRP). The concept of the WRTRP is well understood with a 7 year history of extensive metallurgical test work, feasibility studies and design by a number of major mining

houses. A pre-feasibility study (PFS) completed during 2013 for the WRTRP has confirmed that there is a significant opportunity to extract value from the SGL surface resources in a cost effective sequence.

The ultimate WRTRP involves the construction of a large-scale Central Processing Plant (CPP) for the recovery of gold, uranium and sulfur from the available resources. The CPP, centrally located to the West Rand resources, will be developed in phases to eventually treat up to 4mt/month of tailings inclusive of current arisings. The resultant tailings will be deposited on a modern tailings storage facility (TSF) called the regional TSF (RTSF).

2.1 Project Background

Simplistically, Sibanye Gold's surface historical TSF holdings in the West Rand can be divided into three blocks; the Northern, Southern and Western Blocks. Each of these blocks contains a number of historical TSFs. Each of the blocks will be reclaimed in a phased approach with the Driefontein 3 and 5 TSFs the first TSFs to be sequentially reclaimed as part of the Western block, the Cooke 4 South (C4S) TSF sequential to the Driefontein 5 TSF, all of which will be in parallel with the Cooke TSF of the Northern cluster.

- Western Block comprises: Driefontein 1, 2, 3, 4 and 5 TSF, and Libanon TSF;
- Northern Block comprises: Cooke TSF, Venterspost North TSF, Venterspost South TSF and Millsite Complex (38, 39 and 40/41 and Valley); and
- Southern Block comprises: Kloof No.1 TSF, Kloof No.2 TSF, South Shaft TSF (future), Twin Shaft TSF (future), Leeudoorn TSF and C4S TSF.

Once commissioned the project will initially reclaim and treat the TSFs at a rate of 1.5 Mt/m (1Mt/m from Driefontein 3 (followed sequentially by Driefontein 5 and C4S) and 0.5 Mt/m from Cooke TSF). Reclamation and processing capacity will ultimately ramp up to 4 Mt/m over an anticipated period of 8 years. At the 4Mt/m tailings retreatment capacity, each of the clusters will be reclaimed and processed simultaneously.

The tailings material will be centrally treated in a CPP. In addition to gold and uranium extraction, sulfur will be extracted to produce sulphuric acid. In order to minimise the upfront capital required for the development of the CPP and to launch a viable economic start to the larger project, only the necessary flotation cells, gold processing units, uranium plant and roaster/acid plant will be developed during the initial implementation phase. Use of existing and available infrastructure may be used to process the uranium until the volumetric increase in tonnage necessitates the need to expand the CPP for additional uranium treatment. The CPP will be modular with flotation, gold, uranium and acid plant modules from the original 1.5 Mt/m to the ultimate 4 Mt/m.

The authorisation, construction and operation of a new deposition site for the residue from the CPP will be located in an area that has been extensively studied as part of the original West Wits Project (WWP) and Cooke Uranium Project (CUP). The "deposition area" on

which the project is focussing, has been termed the RTSF and is anticipated to accommodate the entire tonnage from the district. The RTSF, if proved viable, will be one large facility as opposed to the two independent deposition facilities proposed by the WWP and CUP respectively.

2.2 Terms of Reference

Digby Wells Environmental (Digby Wells) has been appointed by Sibanye Gold Limited (SGL) as the independent Environmental Assessment Practitioner (EAP) to conduct the Environmental Impact Assessment (EIA) for the proposed West Rand Tailings Retreatment Project (WRTRP). This includes the associated specialist studies and the required Public Participation Process (PPP). The environmental considerations for the impact assessment phase of the EIA included a T&VIA for the proposed WRTRP.

3 Expertise of the Specialist

A Curriculum Vitae (CV) is attached in Appendix B.

4 Relevant Legislation

The following international, national and regional documents form part of the legislative and policy framework of the visual assessment.

4.1 International Conventions

The European Landscape Convention (ELC) created by the Council of Europe, was the first international convention to focus exclusively on landscapes. The purpose of this convention is to promote effective management and planning of landscapes. It was signed by the United Kingdom government in 2006 and became binding from 2007. Public documents that explore the impacts of large scale developments, as defined in the ELC, on any landscape should take into account the effects of these developments. A landscape means “an area, as perceived by people, whose character is the result of the action and interaction of natural and / or human factors” i.e. the natural, visual and subjectively perceived landscape, (Contesse, 2011; European Landscape Convention, 2007).

4.2 National Legislation and Policy

At a national level, the following legislative documents potentially apply to the topography and visual assessment:

- Regulations in Chapter 5 (Integrated Environmental Management) of the NEMA and the Act in its entirety. The Act states that “the State must respect, protect, promote and fulfil the social, economic and environmental right of everyone…” Landscape is both moulded by, and moulds, social and environmental features;

- Section 23(1)(d) of the MPRDA, where it is mentioned that a mining right will be granted if “the mining will not result in unacceptable pollution, ecological degradation or damage to the environment”. Visual pollution is a form of environmental pollution and therefore needs to be considered under this section. Holders of rights granted in terms of the MPRDA must at all times give effect to the general objectives of integrated environmental management laid down in Chapter 5 of the NEMA. The Regulations promulgated in terms of the NEMA, with which holders of rights must comply, provide for the assessment and evaluation of potential impacts, and the setting of management plans to mitigate such impacts.
- The National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA) and related provincial regulations – in some instances there are policies or legislative documents that give rise to the protection of listed sites. The NHRA states that it aims to promote “good management of the national estate, and to enable and encourage communities to nurture and conserve their legacy so that it may be bequeathed for future generations”. A holistic landscape whose character is a result of the action and interaction and / or human factors has strong cultural associations as societies and the landscape in which they live are affected by one another in many ways; and
- Section 17 of the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) (NEM: PAA) sets out the purposes of the declaration of areas as protected areas which includes the protection of natural landscapes. Landscapes are defined by the natural, visual and subjectively perceived landscape; these aspects of a landscape are intertwined to form a holistic landscape context.

5 Aims and Objectives

The aim of this T&VIA is to determine the nature of the project area and the impact of the proposed WRTRP on the topography and visual / aesthetic character of the surrounding landscape. The following objectives have been identified to achieve this aim:

- Examine aerial photography available for the project area (CD: NGI, 2010);
- Create and examine topographical, slope intensity, slope aspect and viewshed models in ArcGIS;
- Describe the topography and visual / aesthetic character of the receiving environment;
- Determine the size of the viewshed area;
- Identify potential receptors within the viewshed area;
- Determine the potential topographical and visual impacts; and
- Recommend measures to mitigate impacts and enhance benefits.

6 Assumptions and Limitations

A VIA is open to subjectivity. This subjectivity is due to the different opinions receptors may have of a proposed project. A receptor may be partial to the fact that the proposed project is occurring in an area, which becomes a source of economic upliftment for a community, whereas another receptor may view a proposed project as a negative factor which could hamper tourism or recreational activities.

Many factors can enhance or reduce the visual impact of the proposed project. Vegetation near a receptor's viewpoint can greatly reduce that receptor's view of the proposed project. Other factors such as weather / climatic conditions and seasonal change can also affect a receptor's view of the proposed project. It is, therefore, difficult to determine the visual impact of the proposed project from the viewpoint of each individual receptor. Consequently, this report focuses on the size of the viewshed area. Several key viewpoints were selected for the photomontages to provide an example of the expected views of the proposed project (refer to Section 9.4 below).

Some infrastructure heights were not available for this study and assumptions were made. These assumptions were based on the heights of infrastructure from similar projects.

The 5 metre contour relief data from CD: NGI did not include contours for any of the mining activities (dumps and TSFs) for the project area and surrounds. These dumps and TSFs could potentially provide some screening of the proposed project. Lidar data (0.5 metre contours) from SGL was used where available to add the dumps and TSFs. For other areas, the contour data was edited and contours were added for these mining activities to produce a more representative topographical model.

7 Project Area

The proposed WRTRP consists of four (4) Mining Right Areas (MRAs) namely:

- Kloof Mining Right Area;
- Driefontein Mining Right Area;
- Cooke Mining Right Area; and
- Ezulwini Mining Right Area.

The proposed activities associated with the WRTRP within each of these MRAs are detailed in Table 1 below. The areas affected by these proposed activities associated with the WRTRP within each MRA will form the project area for this T&VIA.

Table 1: Proposed Activities Associated with the WRTRP within each Mining Right Area

Category	Activity
Kloof Mining Right Area	
Infrastructure	Pipeline routes (residual tailings).
	Central Processing plant (CPP) incorporating Module 1 float and gold plants and uranium, roaster and acid plants.
	The Regional Tailings Storage Facility (RTSF), RTSF Return Water Dam (RWD) and the Advanced Water Treatment Facility (AWTF). Collectively known as the RTSF complex.
Processes	Abstraction of water from K10 shaft.
	Disposal of residue from the AWTF.
	Gold, uranium and sulfur extraction at the CPP (tailings to RTSF).
	Water distribution at the AWTF for discharge.
Pumping	Pumping up to 1.5 Mt/m of tailings to the RTSF.
	Pumping water from the RTSF Return Water Dam to the AWTF.
	Discharging treated water to the Leeuspruit.
Electricity supply	Power supply from Kloof 1 substation to the CPP.
	Power supply from Kloof 4 substation to the RTSF and AWTF.
Driefontein Mining Right Area	
Infrastructure	Pipeline routes (water, slurry and thickened tailings).
	West Block Thickener (WBT) and Bulk Water Storage Facility (BWSF) complex.
	Collection sumps and pump stations at Driefontein 3 TSF and Driefontein 5 TSF.
Processes	Hydraulic reclamation of Driefontein 3 TSF and Driefontein 5 TSF.
Pumping	Pumping water from K10 to the BWSF located next to the WBT.

Category	Activity
	Pumping water from the BWSF to the Driefontein TSFs that will be reclaimed (Driefontein 3 TSF and Driefontein 5 TSF).
	Pumping slurry from the TSF sump to the WBT (for Driefontein 3 TSF and Driefontein 5 TSF).
	Pumping the thickened slurry from the WBT to the CPP.
Electricity supply	Power supply from West Driefontein 6 substation to Driefontein 3 TSF.
	Power supply from West Driefontein Gold substation to Driefontein 5 TSF.
	Power supply from East Driefontein Shaft substation to WBT and BWSF.
Cooke Mining Right Area	
Infrastructure	Pipeline routes (water, slurry and thickened tailings).
	Cooke thickener and BWSF.
	Collection sumps and pump stations at Cooke TSF and Cooke 4 South TSF.
Processes	Abstraction of water from Cooke 1 shaft.
	Hydraulic reclamation of Cooke TSF and Cooke 4 South TSF.
Pumping	Pumping 500 kt/m of tailings from Cooke TSF to the Cooke thickener
	Pumping from the Cooke thickener to the CPP via Ezulwini.
Electricity Supply	Power supply from the Cooke substation to the Cooke thickener.
	Power supply from the Cooke plant to Cooke TSF.
Ezulwini Mining Right Area	
Infrastructure	Pipeline routes (water, slurry and thickened tailings).
Processes	Uranium extraction at Ezulwini (tailings to Ezulwini North Dump).
	Abstraction of water from Cooke shaft.
Pumping	Pumping water from Cooke 4 shaft to the Cooke 4 South TSF for reclamation.
	Pumping slurry from the TSF sump to the CPP.

Category	Activity
Electricity supply	Power supply from Ezulwini plant to the Cooke 4 South TSF.

The proposed WRTRP is located in the Western Basin of the Witwatersrand in Gauteng Province, South Africa. The project area and surrounds are characterised by residential settlements, small holdings, agriculture and open land interspersed with areas disturbed by mining activities. Plan 1 (Appendix A) illustrates the regional setting of the proposed WRTRP.

7.1 Kloof Mining Right Area

The proposed activities associated with the WRTRP within the Kloof MRA fall within the Merafong City and Westonaria Local Municipalities and the West Rand District Municipality. The nearest settlement is Hermina situated (a small group of farmhouses) approximately 750 m north-east of the proposed CPP. The nearest major town is Westonaria situated approximately 12.3 km north-north-east of the proposed CPP.

The residential areas and road users near the proposed activities associated with the WRTRP within the Kloof MRA are all potential visual receptors of the proposed project. The closest towns and settlements, as well as their direct distance and direction from the proposed activities associated with the WRTRP within the Kloof MRA are summarised in Table 2. All distances are straight line distances measured from the edge of the proposed activities associated with the WRTRP within the Kloof MRA to the centre of the towns / settlements unless otherwise stated.

Table 2: Closest Towns and Settlements (Kloof MRA)

Name	Type	Direct Distance	Direction	Proposed Activity
Hermina	Settlement	0.75 km	NE	CPP
Glenharvie	Settlement	3.5 km	N	CPP
Leeudrif	Settlement	6.6 km	SW	RTSF
Libanon	Settlement	7.1 km	N	CPP
Hillshaven	Settlement	7.5 km	NE	CPP
East Driefontein	Other Town	10.2 km	WNW	CPP
Fochville	Other Town	10.2 km	W	RTSF

Name	Type	Direct Distance	Direction	Proposed Activity
Westonaria	Major Town	12.3 km	NNE	CPP
Vlakplaas	Settlement	12.7 km	SSE	RTSF
Jagfontein	Settlement	12.8 km	NE	CPP
Losberg	Settlement	13 km	SW	RTSF
Patriotsfontein	Settlement	14.9 km	SSW	RTSF
Bank	Settlement	16 km	NW	CPP
Venterspos	Other Town	17.1 km	N	CPP
Bekkersdal	Other Town	17.8 km	NE	CPP
Lawley Estate	Other Town	19.9 km	ENE	CPP

The N12 national route is situated 5.1 km north of the proposed CPP. The R501 and R28 regional roads are situated 6.2 km north and 8.2 km north-east of the proposed CPP respectively. The R500 regional road is situated 8.5 km west of the proposed RTSF. Plan 2 (Appendix A) illustrates the local setting of the Kloof MRA.

The proposed CPP covers an area of 41.6 ha and has centre coordinates of 26° 25’ 37.290” S and 27° 36’ 48.681” E. The proposed RTSF covers an area of area of 1337.2 ha and has centre coordinates of 26° 29’ 52.097” S and 27° 37’ 14.416” E.

The proposed activities associated with the WRTRP within the Kloof MRA fall within the Upper Vaal River catchment. The Leeuspruit River runs just east of the proposed RTSF. The tributaries of this river run near both the proposed CPP and RTSF. The proposed CPP is surrounded on the north, east and south by ridges. The proposed RTSF is situated on a spur between the Leeuspruit River and one of its tributaries.

There are no Important Bird Areas (IBAs) or protected areas within 20km of the proposed activities associated with the WRTRP within the Kloof MRA. Protected areas such as nature reserves, and recreational and tourism areas are considered sensitive visual receptors.

7.2 Driefontein Mining Right Area

The proposed activities associated with the WRTRP within the Driefontein MRA fall within the Merafong City local Municipality and the West Rand District Municipality. The nearest major town is Carletonville situated approximately 3.8 km north-north-west of the Driefontein 5 TSF.

The residential areas and road users near the proposed activities associated with the WRTRP within the Driefontein MRA are all potential visual receptors of the proposed project. The closest towns and settlements, as well as their direct distance and direction from the proposed activities associated with the WRTRP within the Driefontein MRA are summarised inTable 3. All distances are straight line distances measured from the edge of the proposed activities associated with the WRTRP within the Driefontein MRA to the centre of the towns / settlements unless otherwise stated.

Table 3: Closest Towns and Settlements (Driefontein MRA)

Name	Type	Direct Distance	Direction	Proposed Activity
Carletonville	Major Town	3.8 km	NNW	Driefontein 5 TSF
Oberholzer	Other Town	5.5 km	NW	Driefontein 5 TSF
East Driefontein	Other Town	6 km	SE	Driefontein 3 TSF
Bank	Settlement	7.9 km	NE	Driefontein 3 TSF
Leeudrif	Settlement	12.1 km	SE	Driefontein 3 TSF
Fochville	Other Town	12.4 km	SE	Driefontein 5 TSF
Welverdiend	Settlement	12.7 km	WNW	Driefontein 5 TSF
Libanon	Settlement	15.2 km	E	Driefontein 3 TSF
Glenharvie	Settlement	15.5 km	ESE	Driefontein 3 TSF
Hermina	Settlement	17 km	SE	Driefontein 3 TSF
Venterspos	Other Town	19.3 km	NE	Driefontein 3 TSF
Hillshaven	Settlement	19.4 km	E	Driefontein 3 TSF
Westonaria	Major Town	19.7 km	ENE	Driefontein 3 TSF

The N12 national route is situated 5.7 km south and 7.8 km south of the Driefontein 5 TSF and the Driefontein 3 TSF respectively. The R500 regional road runs just east of the Driefontein 5 TSF and the R501 regional road runs just north of the Driefontein 5 TSF. Plan 3 (Appendix A) illustrates the local setting of the Driefontein MRA.

The Driefontein 3 TSF covers an area of 125.7 ha and has centre coordinates of 26° 22’ 11.589” S and 27° 27’ 02.983” E. The Driefontein 5 TSF covers an area of area of 101.2 ha and has centre coordinates of 26° 23’ 53.780” S and 27° 24’ 47.394” E.

The proposed activities associated with the WRTRP within the Driefontein MRA fall within the Upper Vaal River catchment. There are only a few non-perennial streams near the Driefontein 3 TSF and the Driefontein 5 TSF. The Driefontein 3 TSF is situated on a relatively flat area with a ridge just south of the TSF. The Driefontein 5 TSF is almost completely surrounded by ridges with the exception of a small area on the north-western side.

There are no IBAs within 20 km of the proposed activities associated with the WRTRP within the Driefontein MRA. The Abe Bailey Provincial Nature Reserve is situated 7.7 km north-west of the Driefontein 3 TSF. Protected areas such as nature reserves, and recreational and tourism areas are considered sensitive visual receptors.

7.3 Cooke Mining Right Area

The proposed activities associated with the WRTRP within the Cooke MRA fall within the City of Johannesburg Metropolitan Municipality. The nearest settlement is Jagfontein situated 1.2 km south-east of the Cooke 4 South TSF. The nearest other town is Mohlakeng situated 4.6 km west-north-west of the Cooke TSF. The nearest major towns are Westonaria situated 8.6 km north-west of the Cooke 4 South TSF and Randfontein situated 8.7 km north-west of Cooke TSF.

The residential areas and road users near the proposed activities associated with the WRTRP within the Cooke MRA are all potential visual receptors of the proposed project. The closest towns and settlements, as well as their direct distance and direction from the proposed activities associated with the WRTRP within the Cooke MRA are summarised in Table 4. All distances are straight line distances measured from the edge of the proposed activities associated with the WRTRP within the Cooke MRA to the centre of the towns / settlements unless otherwise stated.

Table 4: Closest Towns and Settlements (Cooke MRA)

Name	Type	Direct Distance	Direction	Proposed Activity
Jagfontein	Settlement	1.2 km	SE	Cooke 4 South TSF
Mohlakeng	Other Town	4.6 km	WNW	Cooke TSF
Toekomsrus	Other Town	4.8 km	NW	Cooke TSF
Hillshaven	Settlement	5.4 km	WNW	Cooke 4 South TSF
Bekkersdal	Other Town	5.8 km	SW	Cooke TSF
Lawley Estate	Other Town	8.5 km	ESE	Cooke 4 South TSF
Westonaria	Major Town	8.6 km	NW	Cooke 4 South TSF

Name	Type	Direct Distance	Direction	Proposed Activity
Randfontein	Major Town	8.7 km	NW	Cooke TSF
Finsbury	Other Town	9.6 km	WNW	Cooke TSF
Glenharvie	Settlement	9.6 km	WSW	Cooke 4 South TSF
Libanon	Settlement	9.8 km	WNW	Cooke 4 South TSF
Kocksoord	Other Town	9.9 km	WNW	Cooke TSF
Hermina	Settlement	10 km	SW	Cooke 4 South TSF
Soweto	Major Town	10.7 km	E	Cooke TSF
Lenasia	Secondary Town	12 km	SE	Cooke TSF
Ennerdale	Other Town	12 km	ESE	Cooke 4 South TSF
Venterspos	Other Town	12.2 km	WSW	Cooke TSF
Grasmere	Other Town	14.5 km	SE	Cooke 4 South TSF
Battery	Settlement	14.5 km	NNW	Cooke TSF
Luipaardsvlei	Settlement	14.6 km	NNE	Cooke TSF
Eldorado Park	Other Town	15.4 km	SE	Cooke TSF
Roodepoort	Major Town	16 km	NE	Cooke TSF
Krugersdorp	Major Town	16.7 km	N	Cooke TSF
Florida	Other Town	17.8 km	NE	Cooke TSF
Van Wyksrust	Settlement	19.2 km	SE	Cooke TSF
East Driefontein	Other Town	19.4 km	WSW	Cooke 4 South TSF

The N12 national route is situated 4.2 km north of the Cooke 4 South TSF and 6.7 km south of the Cooke TSF. The R559, R558, R28 and R41 regional roads are situated 0.65 km south-west, 4.4km east, 5.7 km west and 6 km north of the Cooke TSF respectively. The R28 regional road is situated 2.1 km south-west of the Cooke 4 South TSF. Plan 4 (Appendix A) illustrates the local setting of the Cooke MRA.

The Cooke TSF covers an area of 179.5 ha and has centre coordinates of 26° 14’ 37.780” S and 27° 45’ 01.066” E. The Cooke 4 South TSF covers an area of 197.3 ha and has centre coordinates of 26° 22’ 23.442” S and 27° 43’ 09.183” E.

The proposed activities associated with the WRTRP within the Cooke MRA fall within the Upper Vaal River catchment. The Wonderspruit River runs 0.8 km west of the Cooke TSF. The Cooke TSF is situated on a relatively flat area with a ridge to the north. The Cooke 4 South TSF is situated on a high-lying area on top of a ridge near the headwaters of tributaries of the Leeuspruit and Rietspruit Rivers.

The nearest IBA is the Magaliesberg IBA situated 17.2 km north of the Cooke TSF. The Krugersdorp Municipal Nature Reserve is situated 14.4 km north, the Blougat Municipal Nature Reserve is situated 16.6 km north, the Kloofendal Municipal Nature Reserve is situated 16.3 km north-east, the Walter Sisulu National Botanical Garden is situated 17.3 km north-east and the Cradle of Humankind World Heritage Site is situated 19.4 km north of the Cooke TSF respectively. Protected areas such as nature reserves, and recreational and tourism areas are considered sensitive visual receptors.

7.4 Ezulwini Mining Right Area

The proposed activities associated with the WRTRP within the Ezulwini MRA fall within the Westonaria Local Municipality and the West Rand District Municipality. The residential areas and road users near the proposed activities associated with the WRTRP within the Ezulwini MRA are all potential visual receptors of the proposed project. Plan 5 (Appendix A) illustrates the local setting of the Ezulwini MRA.

The proposed activities associated with the WRTRP within the Ezulwini MRA fall within the Upper Vaal River catchment. There are no Important Bird Areas (IBAs) or protected areas within 20km of the proposed activities associated with the WRTRP within the Ezulwini MRA. Protected areas such as nature reserves, and recreational and tourism areas are considered sensitive visual receptors.

8 Methodology

The T&VIA was performed using surveyed geographically referenced information and aerial photography, together with the professional opinion of an experienced topography and visual impact assessor.

8.1 Characterisation of Visual Impacts

The expected visual impact for each component of the proposed WRTRP was categorised based on the type of receiving environment and the type of development as detailed in Table 6, Table 7, Table 8 and Table 9 (Oberholzer, 2005). These tables provide an indication of the visual impacts that can be expected for different types of developments in relation to the nature of the receiving environment. According to Oberholzer (2005), the proposed WRTRP is classified as a **Category 5 development** (Table 5).

Table 5: Key to Categories of Development

Type of Development	Examples of Development
Category 1	Nature reserves, nature related recreation, camping, picnicking, trails and minimal visitor facilities.
Category 2	Low-key recreation / resort / residential type development, small-scale agriculture / nurseries, narrow roads and small-scale infrastructure.
Category 3	Low density resort / residential type development, golf or polo estates, low to medium-scale infrastructure.
Category 4	Medium density residential development, sports facilities, small-scale commercial facilities / office parks, one-stop petrol stations, light industry, medium-scale infrastructure.
Category 5	High density township / residential development, retail and office complexes, industrial facilities, refineries, treatment plants, power stations, wind energy farms, power lines, freeways, toll roads, large-scale infrastructure generally. Large-scale development of agricultural land and commercial tree plantations. **Quarrying and mining activities with related processing plants.**

8.1.1 Kloof Mining Right Area

The receiving environment of the proposed activities associated with the WRTRP within the Kloof MRA can be described as having **medium scenic, cultural or historical significance**. The receiving environment consists mainly of small holdings, agriculture and open land with some small residential areas. Only a small percentage of the receiving environment has been disturbed by mining and prior to the construction of the new Gold Fields Doornpoort TSF there was no mining activity within 3.5 km of the proposed RTSF site. It is therefore expected that the proposed activities associated with the WRTRP within the Kloof MRA will have a **high visual impact** on the receiving environment (Table 6). This will be verified in the investigation to follow.

Table 6: Categorisation of Expected Visual Impact (Kloof MRA)

Type of Environment	Type of Development (Low to High Intensity)				
	Category 1 Development	**Category 2 Development**	**Category 3 Development**	**Category 4 Development**	**Category 5 Development**
Protected / wild areas of international, national or regional significance	Moderate visual impact expected	High visual impact expected	High visual impact expected	Very high visual impact expected	Very high visual impact expected
Areas or routes of high, scenic, cultural or historical significance	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected	High visual impact expected	Very high visual impact expected
Areas or routes of medium scenic, cultural or historical significance	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected	**High visual impact expected**
Areas or routes of low scenic, cultural or historical significance	Little or no visual impact expected. Possible benefits	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected
Disturbed or degraded sites / run down urban areas / wasteland	Little or no visual impact expected. Possible benefits	Little or no visual impact expected. Possible benefits	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected

8.1.2 Driefontein Mining Right Area

The receiving environment of the proposed activities associated with the WRTRP within the Driefontein MRA can be described as having **low scenic, cultural or historical significance**. The receiving environment is characterised by a mixture of residential areas, small holdings, agriculture and open land interspersed with large areas disturbed by mining.

It is therefore expected that the proposed activities associated with the WRTRP within the Driefontein MRA will have a **high visual impact** on the receiving environment (Table 7). This will be verified in the investigation to follow.

Table 7: Categorisation of Expected Visual Impact (Driefontein MRA)

Type of Environment	Type of Development (Low to High Intensity)				
	Category 1 Development	**Category 2 Development**	**Category 3 Development**	**Category 4 Development**	**Category 5 Development**
Protected / wild areas of international, national or regional significance	Moderate visual impact expected	High visual impact expected	High visual impact expected	Very high visual impact expected	Very high visual impact expected
Areas or routes of high, scenic, cultural or historical significance	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected	High visual impact expected	Very high visual impact expected
Areas or routes of medium scenic, cultural or historical significance	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected	High visual impact expected
Areas or routes of low scenic, cultural or historical significance	Little or no visual impact expected. Possible benefits	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected	**High visual impact expected**
Disturbed or degraded sites / run down urban areas / wasteland	Little or no visual impact expected. Possible benefits	Little or no visual impact expected. Possible benefits	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected

8.1.3 Cooke Mining Right Area

The receiving environment of the proposed activities associated with the WRTRP within the Cooke MRA can be described as having **medium scenic, cultural or historical significance**. The receiving environment is characterised by a mixture of residential areas, small holdings, agriculture and open land interspersed with some areas disturbed by mining. It is therefore expected that the proposed activities associated with the WRTRP within the Cooke MRA will have a **high visual impact** on the receiving environment (Table 8). This will be verified in the investigation to follow.

Table 8: Categorisation of Expected Visual Impact (Cooke MRA)

Type of Environment	Type of Development (Low to High Intensity)				
	Category 1 Development	**Category 2 Development**	**Category 3 Development**	**Category 4 Development**	**Category 5 Development**
Protected / wild areas of international, national or regional significance	Moderate visual impact expected	High visual impact expected	High visual impact expected	Very high visual impact expected	Very high visual impact expected
Areas or routes of high, scenic, cultural or historical significance	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected	High visual impact expected	Very high visual impact expected
Areas or routes of medium scenic, cultural or historical significance	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected	**High visual impact expected**
Areas or routes of low scenic, cultural or historical significance	Little or no visual impact expected. Possible benefits	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected

Type of Environment	Type of Development (Low to High Intensity)				
	Category 1 Development	Category 2 Development	Category 3 Development	Category 4 Development	Category 5 Development
Disturbed or degraded sites / run down urban areas / wasteland	Little or no visual impact expected. Possible benefits	Little or no visual impact expected. Possible benefits	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected

8.1.4 Ezulwini Mining Right Area

The receiving environment of the proposed activities associated with the WRTRP within the Ezulwini MRA can be described as having **medium scenic, cultural or historical significance**. The receiving environment is characterised by a mixture of residential areas, small holdings, agriculture and open land interspersed with some areas disturbed by mining. It is therefore expected that the proposed activities associated with the WRTRP within the Ezulwini MRA will have a **high visual impact** on the receiving environment (Table 9). This will be verified in the investigation to follow.

Table 9: Categorisation of Expected Visual Impact (Ezulwini MRA)

Type of Environment	Type of Development (Low to High Intensity)				
	Category 1 Development	Category 2 Development	Category 3 Development	Category 4 Development	Category 5 Development
Protected / wild areas of international, national or regional significance	Moderate visual impact expected	High visual impact expected	High visual impact expected	Very high visual impact expected	Very high visual impact expected
Areas or routes of high, scenic, cultural or historical significance	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected	High visual impact expected	Very high visual impact expected

Type of Environment	Type of Development (Low to High Intensity)				
	Category 1 Development	**Category 2 Development**	**Category 3 Development**	**Category 4 Development**	**Category 5 Development**
Areas or routes of medium scenic, cultural or historical significance	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected	**High visual impact expected**
Areas or routes of low scenic, cultural or historical significance	Little or no visual impact expected. Possible benefits	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected
Disturbed or degraded sites / run down urban areas / wasteland	Little or no visual impact expected. Possible benefits	Little or no visual impact expected. Possible benefits	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected

8.2 Visual / Aesthetic Character and Topography

A desktop study was conducted to evaluate the topography of the receiving environment and CD: NGI aerial photography flown in 2010 and 2012 of the area was examined to determine the surface features. The available vector GIS data was used to determine the relative location of the features surrounding the project area.

A topographical model was created using ArcGIS 3D Analyst Extension. The model was created using the 5 metre contour relief data available from CD: NGI. The 5 metre contour relief data did not include contours for any of the mining activities (dumps and TSFs) for the project area and surrounds. These dumps and TSFs could potentially provide some screening of the proposed project. Lidar data (0.5 metre contours) from SGL was used where available to add the dumps and TSFs. For other areas, the contour data was edited and contours were added for these mining activities to produce a more representative topographical model.

The resultant topographical model was then used to create slope intensity and slope aspect models using the Slope and Aspect tools of ArcGIS 3D Analyst Extension. The slope model indicates the slope degree and was classified using the Jenks Natural Breaks method.

The information gathered from the above desktop study was verified with a site visit. The combined information from the desktop study and the site visit forms the basis of this report.

8.3 Viewshed Analysis

The proposed activities associated with the WRTRP within the Kloof MRA include construction and operation of the CPP and RTSF. These activities are expected to have significant visual impacts. The proposed activities associated with the WRTRP within the Driefontein, Cooke and Ezulwini MRAs include the reclamation of the Driefontein 3, Driefontein 5, Cooke and Cooke 4 South TSFs. The reclamation activities will have minor negative visual impacts but after these activities are completed, the visual aesthetics of the receiving environment will be greatly improved resulting in a positive visual impact.

The pipeline routes were excluded from the viewshed modelling as they will be constructed close to the ground and are only expected to have a minimal visual impact on the immediately adjacent area (Figure 1). Detailed viewshed modelling was only conducted for the proposed activities associated with the WRTRP within the Kloof MRA due to the expected negative visual impact of these activities. Basic viewshed modelling was conducted for the Driefontein, Cooke and Ezulwini MRAs to identify the potential visual receptors (refer to Section 9.3 below). It was assumed that current visual receptors of the Driefontein 3, Driefontein 5, Cooke and Cooke 4 South TSFs would be potential visual receptors of the proposed reclamation activities on these TSFs.

Figure 1: View of Pipeline in the Driefontein MRA from 20 m

8.3.1 Kloof Mining Right Area

The resultant topographical model was used to create a viewshed model for the proposed activities associated with the WRTRP within the Kloof MRA using the Viewshed Tool of the ArcGIS 3D Analyst Extension. The viewshed model illustrates the areas from which the proposed activities associated with the WRTRP within the Kloof MRA will potentially be visible taking into account the estimated height of the proposed infrastructure (Table 10). Plan 6 (Appendix A) illustrates the Kloof MRA infrastructure.

Table 10: Infrastructure Heights for Viewshed Modelling

Component	Infrastructure	Height
CPP	Uranium Processing Plant	36 m (provided)
CPP	Gold Processing Plant	25 m (provided)
CPP	Acid Plant	25 m (provided)
RTSF	RTSF	100 m (provided)
RTSF	Advanced Water Treatment Facility (AWTF)	5 m (assumed)
RTSF	Return Water Dam (RWD)	2 m (assumed)

The concept of viewshed modelling is depicted in Figure 2. The topography denotes whether or not a development will be visible from a receptor. In Figure 2 below the development is only visible from the receptors within the valley and on the slopes of the hills facing it. The development will be hidden from all receptors beyond the first hills.

Figure 2: Theoretical Background of Viewshed Modelling

A theoretical viewshed model and a practical viewshed model were created for the proposed activities associated with the WRTRP within the Kloof MRA. These viewshed models are

based on the topography only and do not take the screening effect of vegetation into account. The natural Grassland and Bushveld vegetation has been transformed by agricultural activities and little natural vegetation remains. The vegetation of the project area and surrounds is not expected to provide noticeable screening of the proposed project activities.

The theoretical viewshed model was then refined to a practical viewshed model by dividing the viewshed area into areas that are likely to experience different categories of visual exposure. Visual exposure and visual impact of a development diminishes exponentially with distance (Oberholzer, 2005).

The findings of the site visit were used to determine these categories. The photographs were taken during the daytime in winter with clear conditions.

Figure 3 illustrates that and area of the plant infrastructure in the Driefontein MRA is clearly visible from a distance of approximately 0.8 km. In Figure 4 an area of plant and shaft infrastructure in the Kloof MRA is visible from a distance of approximately 2.4 km. In both these photographs, the shaft infrastructure visible above the horizon makes the infrastructure more noticeable. The following categories were used for the practical viewshed model of the CPP:

- 0 – 1.5 km: Potentially high visual exposure;
- 1.5 – 3 km: Potentially moderate visual exposure; and
- 3 – 4 km: Potentially low visual exposure.

Figure 3: View of Plant Infrastructure in the Driefontein MRA from 0.8 km

Figure 4: View of Plant and Shaft Infrastructure in the Kloof MRA from 2.4 km

Figure 5 illustrates that the Driefontein 1 and Driefontein 2 TSFs are clearly visible from a distance of approximately 5.6 km and 5.2 km respectively. In Figure 6 the Driefontein 1, Driefontein 2 and Driefontein 4 TSFs are just noticeable from a distance of approximately 11.4 km, 10.8 km and 12.2 km respectively. The golden white colour of the TSFs makes them stand out against the largely brown landscape. The following categories were used for the practical viewshed model of the RTSF:

- 0 – 5 km: Potentially high visual exposure;
- 5 – 9 km: Potentially moderate visual exposure; and
- 9 – 12 km: Potentially low visual exposure.

Figure 5: View of Driefontein 1 TSF from 5.6 km and Driefontein 2 TSF from 5.2 km

Figure 6: View of Driefontein 1 TSF from 11.4 km, Driefontein 2 TSF from 10.8 km and Driefontein 4 TSF from 12.2 km

9 Findings

9.1 Visual / Aesthetic Character and Topography

This section provides the results obtained from the analysis of the topographical, slope intensity and slope aspect models created in ArcGIS.

9.1.1 Kloof Mining Right Area

The topography of the Kloof MRA is undulating with ridges and river valleys. The topographical model indicates that the elevation of the Kloof MRA increases from 1456 metres above mean sea level (m.a.m.s.l.) in the Loopspruit River valley in the southern part of the MRA to 1791 m.a.m.s.l. on the ridge running east-west through the centre of the MRA. In the northern part of the Kloof MRA, the elevation decreases from this central ridge to approximately 1540 m.a.m.s.l. in the Wonderfonteinspruit River valley. Plan 10 (Appendix A) illustrates the topographical model and features of the WRTRP.

The majority of the project area has gentle slopes of less than 7°. Steeper slopes of between 7.1° and 11.6° occur on the slopes of the ridges and river valleys. The steepest slopes occur on the ridges and sides of the TSFs and range between 11.7° and 44.7°. Plan 11 (Appendix

A) illustrates the slope model of the WRTRP. The slope aspect / direction of the Kloof MRA is not in any specific direction.

The elevation of the proposed CPP decreases from 1609 m.a.m.s.l. in the north to 1589 m.a.m.s.l. in the west. The slope of the proposed CPP is undulating and ranges from 0° to 6.2°. The proposed CPP is surrounded on the north, east and south by ridges. These ridges are expected to provide some screening of the proposed CPP.

The elevation of the proposed RTSF decreases from 1541 m.a.m.s.l. in the north-west to 1498 m.a.m.s.l. in the south-east. The slope of the proposed RTSF is gently undulating and ranges from 0° to 2.8°. The proposed RTSF is situated on a spur between the Leeuspruit River and one of its tributaries. The relatively flat topography is expected to only provide minimal screening of the proposed RTSF (Figure 7).

Figure 7: Topography of the Proposed RTSF Site

According to Mucina and Rutherford (2006) the dominant vegetation types in the area of the proposed CPP and RTSF Rand Highveld Grassland and Soweto Highveld Grassland. Much of the area has been transformed by residential areas, small holdings, agriculture and mining and little natural vegetation remains. The agricultural and remaining natural vegetation will only provide minimal screening of the proposed activities associated with the WRTRP within the Kloof MRA.

9.1.2 Driefontein Mining Right Area

The topography of the Driefontein MRA is undulating with ridges and valleys. The topographical model indicates that the elevation of the Driefontein MRA increases from 1529 m.a.m.s.l. on the upper slopes of the Mooirivierloop and Wonderfonteinspruit Rivers in the northern part of the MRA to 1765 m.a.m.s.l. on the ridge running east-west through the centre of the MRA. In the southern part of the MRA, the elevation decrease from this central ridge to approximately 1539 m.a.m.s.l. in the Loopspruit River valley. Plan 10 (Appendix A) illustrates the topographical model and features of the WRTRP.

The majority of the project area has gentle slopes of less than 5.6°. Steeper slopes of between 5.7° and 17.2° occur in isolated areas on the slopes of the ridges and river valleys. The steepest slopes occur on the ridges, river valleys and sides of the TSFs and range between 17.3° and 75.4°. Plan 11 (Appendix A) illustrates the slope model of the WRTRP.

The slope aspect / direction of the Driefontein MRA is not in any specific direction. The undulating topography is expected to provide some screening of the proposed activities associated with the WRTRP within the Driefontein MRA.

According to Mucina and Rutherford (2006) the dominant vegetation types in the area of the Driefontein 3 and Driefontein 5 TSFs are Carletonville Dolomite Grassland and Gauteng Shale Mountain Bushveld. Much of the area has been transformed by residential areas, small holdings, agriculture and mining and little natural vegetation remains. The agricultural and remaining natural vegetation will only provide minimal screening of the proposed activities associated with the WRTRP within the Driefontein MRA.

9.1.3 Cooke Mining Right Area

The topography of the Cooke MRA is undulating with ridges and valleys. The topographical model indicates that the elevation of the Cooke MRA increases from 1579 m.a.m.s.l. in the Wonderfonteinspruit River valley which runs through the MRA from north to south to 1726 m.a.m.s.l. on the ridge running east-west along the northern part of the MRA. Plan 10 (Appendix A) illustrates the topographical model and features of the WRTRP.

The majority of the project area has gentle slopes of less than 4.3°. Steeper slopes of between 4.4° and 14.1° occur in isolated areas of the Wonderfontein River valley. The steepest slopes occur on the sides of the Cooke TSF and range between 14.2° and 33.4°. Plan 11 (Appendix A) illustrates the slope model of the WRTRP.

The slope aspect / direction of the Cooke MRA is not in any specific direction. The Cooke TSF is situated on a relatively flat area and the topography is expected to only provide minimal screening of the proposed activities associated with the WRTRP within the Cooke MRA.

According to Mucina and Rutherford (2006) the dominant vegetation type in the area of the Cooke TSF is Carletonville Dolomite Grassland interspersed with Eastern Temperate Freshwater Wetlands while the dominant vegetation type in the area of the Cooke 4 South

TSF is Gauteng Shale Mountain Bushveld. Much of the area has been transformed by residential areas, small holdings, agriculture and mining and little natural vegetation remains. The agricultural and remaining natural vegetation will only provide minimal screening of the proposed activities associated with the WRTRP within the Cooke MRA.

9.1.4 Ezulwini Mining Right Area

The Ezulwini MRA has an undulating topography. The topographical model indicates that the elevation of the Ezulwini MRA decreases from 1804 m.a.m.s.l. on the ridge running east-west through the centre of the MRA to 1628 m.a.m.s.l. both on the upper slopes of the Wonderfonteinspruit River valley in the north-western part of the MRA and in the river valley of a tributary of the Rietspruit River in the south-eastern part of the MRA. The proposed activities associated with the WRTRP within the Ezulwini MRA are situated on a saddle at the top of the central ridge. Plan 10 (Appendix A) illustrates the topographical model and features of the WRTRP.

The majority of the project area has gentle slopes of less than 7.3°. Steeper slopes of between 7.4° and 18.2° occur in isolated areas on the slopes of the ridges and river valleys. The steepest slopes occur on the ridges, river valleys and sides of the TSFs and range between 18.3° and 40.4°. Plan 11 (Appendix A) illustrates the slope model of the WRTRP.

The slope aspect / direction of the Ezulwini MRA is not in any specific direction. The undulating topography is expected to provide some screening of the proposed activities associated with the WRTRP within the Ezulwini MRA.

According to Mucina and Rutherford (2006) the dominant vegetation type within the Ezulwini MRA are Carletonville Dolomite Grassland and Gauteng Shale Mountain Bushveld. Much of the area has been transformed by residential areas, small holdings, agriculture and mining and little natural vegetation remains. The agricultural and remaining natural vegetation will only provide minimal screening of the proposed activities associated with the WRTRP within the Ezulwini MRA.

9.2 Viewshed Model

9.2.1 Kloof Mining Right Area

A viewshed is a geographical area, defined by the topography, within which a particular feature will be visible (Oberholzer, 2005). The theoretical viewshed model for the proposed CPP is illustrated in Plan 12 (Appendix A). This model was refined to a practical viewshed model (Plan 13, Appendix A) with a buffer of 4 km around the proposed CPP infrastructure and divided into areas that are likely to experience different categories of visual exposure. Due to the nature of the receiving environment it is unlikely that the proposed CPP infrastructure will be noticeable beyond this 4 km buffer. The practical viewshed model depicts the area from which the proposed CPP infrastructure is likely to be visible. This

practical viewshed covers an area of approximately 37.83 km². The viewshed areas for the categories are listed in Table 11 below.

Table 11: Viewshed Area per Category (CPP)

Category	Impact	Viewshed Area
0 – 1.5 km	Potentially High Visual Exposure	11.13 km²
1.5 – 3 km	Potentially Moderate Visual Exposure	15.48 km²
3 – 4 km	Potentially Low Visual Exposure	11.22 km²

The theoretical viewshed model for the proposed RTSF is illustrated in Plan 14 (Appendix A). This model was refined to a practical viewshed model (Plan 15, Appendix A) with a buffer of 12 km around the proposed RTSF infrastructure and divided into areas that are likely to experience different categories of visual exposure. Due to the nature of the receiving environment it is unlikely that the proposed RTSF infrastructure will be noticeable beyond this 12 km buffer. The practical viewshed model depicts the area from which the proposed RTSF infrastructure is likely to be visible. This practical viewshed covers an area of approximately 644.48 km². The viewshed areas for the categories are listed in Table 12 below.

Table 12: Viewshed Area per Category (RTSF)

Category	Impact	Viewshed Area
0 – 5 km	Potentially High Visual Exposure	172.20 km²
5 – 9 km	Potentially Moderate Visual Exposure	239.09 km²
9 – 12 km	Potentially Low Visual Exposure	233.19 km²

The combined practical viewshed model for the proposed CPP and RTSF infrastructure is illustrated in Plan 16 (Appendix A). This model depicts the area from which both the proposed CPP and RTSF infrastructure is likely to be visible. The combined practical viewshed covers an area of approximately 644.48 km². The viewshed areas for the categories are listed in Table 13 below.

Table 13: Viewshed Area per Category (Kloof MRA)

Category / Impact	Viewshed Area
Potentially High Visual Exposure	180.18 km²
Potentially Moderate Visual Exposure	233.18 km²
Potentially Low Visual Exposure	231.12 km²

9.3 Sensitive Receptors

9.3.1 Kloof Mining Right Area

The potential visual receptors identified within the practical viewshed of the proposed CPP include residents of Glenharvie and Hermina as well as the residences on the farms and small holdings within the viewshed area. Road users on the secondary roads and farm roads within the viewshed area will also have views of the proposed CPP. The mine villages of the Kloof Gold Mine and Leeudoorn Mine are also potential visual receptors of the proposed CPP.

The potential visual receptors identified within the practical viewshed of the proposed RTSF include residents of Etlebeni, Fochville, Glenharvie, Green Park, Hermina, Kokosi, Leeudrif and Seberuberung as well as the residences on the farms and small holdings within the viewshed area. Road users of the N12 national road, the R28, R54 and R500 regional roads, secondary roads and farm roads within the viewshed area will also have views of the proposed RTSF. The mine villages of the Kloof Gold Mine, Leeudoorn Mine, and South Deep Gold Mine are also potential visual receptors of the proposed RTSF.

Existing mines and associated mining infrastructure have not been considered as visual receptors.

9.3.2 Driefontein Mining Right Area

The proposed activities associated with the WRTRP within the Driefontein MRA include the reclamation of Driefontein 3 TSF and Driefontein 5 TSF. Current visual receptors of these TSFs will potentially be visual receptors of the reclamation process. The Driefontein 3 TSF is potentially visible from sections of the R500 and R501 regional roads (Figure 8). The potential visual receptors of the Driefontein 3 TSF include residents of Blybank, Carletonville, Letsatsing, Oberholzer, Waters' Edge and West Driefontein as well as the residences on the nearby farms and small holdings. The mine village of the Western Deep Levels Mine is also a potential visual receptor of the Driefontein 3 TSF.

Figure 8: View of Driefontein 3 TSF from the R501 Regional Road

The Driefontein 5 TSF is potentially visible from sections of the R501 regional road (Figure 9). The potential visual receptors of the Driefontein 5 TSF include residents of Blyvooruit, Northdene, Southdene, The Hill, The Village and West Driefontein as well as the residences on the nearby farms and small holdings. The Driefontein 5 TSF is currently not visible from Carletonville. The mine village of the Western Deep Levels Mine is also a potential visual receptor of the Driefontein 5 TSF. Vegetation may screen the Driefontein 5 TSF from some of these receptors (Figure 10).

Figure 9: View of Driefontein 5 TSF from the R500 Regional Road

Figure 10: Driefontein 5 TSF Screened by Vegetation

9.3.3 Cooke Mining Right Area

The proposed activities associated with the WRTRP within the Cooke MRA include the reclamation of Cooke TSF and Cooke 4 South TSF. Current visual receptors of these TSFs will potentially be visual receptors of the reclamation process. The Cooke TSF is potentially visible from sections of the N12 national road and the R28, R41, R558 and R559 regional roads (Figure 11). The potential visual receptors of the Cooke TSF include residents of Bekkersdal, Doornkop, Mohlakeng, Pelzvale, Randfontein, Rietvallei, Slovoville, Soweto, Tshepisong, West Rand Garden, Westonaria, Zenzele and Zwaneville as well as the residences on the nearby farms and small holdings. The mine villages of the Cooke Mine, Durban Roodepoort Deep Mine, Randfontein Estate Gold Mine, South Roodepoort Main Reef Areas Gold Mine and Venterspost Gold Mine are also potential visual receptors of the Cooke TSF.

Figure 11: View of Cooke TSF from the R41 Road near Randfontein

The Cooke 4 South TSF is not visible from any main roads. It is only visible from the secondary road running along the eastern boundary of the TSF (Figure 12). The potential visual receptors of the Cooke 4 South TSF include residents of Jagfontein and Thabony as well as the residences on the nearby farms and small holdings. The mine village of the Randfontein Mine is also a potential visual receptor of the Cooke 4 South TSF.

Figure 12: View of Cooke 4 South TSF from Secondary Road

9.3.4 Ezulwini Mining Right Area

The only planned infrastructure for the WRTRP within the Ezulwini MRA are the pipeline routes. These pipelines will be constructed just above the ground and will only be visible from the immediate vicinity. The proposed activities associated with the WRTRP within the Ezulwini MRA are therefore not expected to have a significant visual impact on the receiving environment.

9.4 Photomontages

This section presents the photomontages created from photographs taken during a site visit on 17 July 2015. Plan 17 (Appendix A) indicates the viewpoint (position) and view direction in which the photographs were taken. The photomontages were created using GIMP version 2 software.

For the proposed activities associated with the WRTRP within the Kloof MRA where infrastructure will be developed, the photomontages were created by adding the proposed infrastructure to photographs of the current views. The scale of the images was measured by comparing the length of an object in the photograph to the length of the object in reality. This scale was then used to calculate the size of the proposed infrastructure based on the estimated heights of the proposed infrastructure (Table 10).

The infrastructure is then overlaid onto the original photograph in their respective locations (based on the line of sight from the point the photograph was taken) to give an approximation of what the view will look like before and during the operation of the mine. The foreground of the photograph was extracted from the original photograph and replaced on top of the infrastructure to give a realistic representation of the view from the viewpoint.

The infrastructure overlaid on the photographs is an example and does not reflect accurate depictions of the proposed infrastructure, i.e. the plant depicted on Figure 14 is not the actual proposed CPP but an example of a similar plant and the proposed CPP will be of equivalent height and footprint area.

For the proposed activities associated with the WRTRP within the Driefontein, Cooke and Ezulwini MRAs where the TSFs will be reclaimed / removed, the photomontages were created by removing the relevant TSFs from photographs of the current view. The photomontages provide an indication of what the landscape might potentially look like in the future.

9.4.1 Viewpoint 1

Viewpoint 1 is located on a secondary road near the proposed CPP. The photograph was taken looking in an easterly direction towards the proposed CPP. Figure 13 illustrates the current view from Viewpoint 1. Figure 14 illustrates the potential future view from Viewpoint 1. The proposed CPP is approximately 1.3 km from Viewpoint 1 on the left side of the road. There is already an existing waste rock dump, shaft and associated infrastructure visible in approximately half of the view from Viewpoint 1. The proposed CPP will dominate the view from Viewpoint 1. The sense of place has already been altered by the existing mining infrastructure and the construction of the proposed CPP will continue to alter the sense of place to a mining / industrial sense of place. The proposed CPP is surrounded by ridges on the north, east and south so it will be most visible from the west side looking eastwards. The proposed CPP will be visible from the secondary road as one drives past the proposed site.

Figure 13: Current View from Viewpoint 1

Figure 14: Potential Future View from Viewpoint 1

9.4.2 Viewpoint 2

Viewpoint 2 is located on a secondary road north of the proposed CPP. The photograph was taken looking in a southerly direction towards the proposed CPP and RTSF. Figure 15 illustrates the current view from Viewpoint 2. Figure 15 illustrates the potential future view from Viewpoint 2. The proposed CPP is approximately 2.6 km from Viewpoint 2 but it will be hidden from view by the trees and ridge. The proposed RTSF is approximately 8.6 km from Viewpoint 2 and will be noticeable on the horizon. The proposed RTSF is expected to have a negative visual impact on the surrounding area.

Figure 15: Current View from Viewpoint 2

Figure 16: Potential Future View from Viewpoint 2

9.4.3 Viewpoint 3

Viewpoint 3 is located on a secondary road east of the proposed RTSF. The photograph was taken looking west-north-west towards the proposed RTSF. Figure 17 illustrates the current view from Viewpoint 3. Figure 18 illustrates the potential future view from Viewpoint 3. The proposed RTSF is approximately 3.8 km from Viewpoint 3. Although only a section of the proposed RTSF is visible from Viewpoint 3, it is evident that the proposed RTSF will dominate the landscape and block the horizon from this distance. The proposed RTSF will be visible from the surrounding roads and small holdings.

Figure 17: Current View from Viewpoint 3

Figure 18: Potential Future View from Viewpoint 3

9.4.4 Viewpoint 4

Viewpoint 4 is located on the outskirts of Carletonville. The photograph was taken looking in an east-south-easterly direction towards the Driefontein 3 TSF. Figure 19 illustrates the current view from Viewpoint 4. Figure 20 illustrates the potential future view from Viewpoint 4. The Driefontein 3 TSF is approximately 3 km from Viewpoint 4. Currently the Driefontein 3 TSF is visible on the horizon. The potential future view (Figure 20) shows the expected view from Viewpoint 4 after reclamation of the Driefontein 3 TSF.

Figure 19: Current View from Viewpoint 4

Figure 20: Potential Future View from Viewpoint 4

9.4.5 Viewpoint 5

Viewpoint 5 is located on the R559 regional road on the outskirts of Soweto. The photograph was taken looking in a north-westerly direction towards the Cooke TSF. Figure 21 illustrates the current view from Viewpoint 5. Figure 22 illustrates the potentially future view from Viewpoint 5. The Cooke TSF is approximately 2.2 km from Viewpoint 5. Currently the Cooke TSF is a prominent feature in the landscape for Viewpoint 5. The potential future view (Figure 22) shows the expected view from Viewpoint 5 after reclamation of the Cooke TSF.

Figure 21: Current View from Viewpoint 5

Figure 22: Potential Future View from Viewpoint 5

10 Discussion

10.1 Topography

The proposed WRTRP will have a negative impact on the topography. The most significant topographical impact will be from the proposed activities associated with the WRTRP within the Kloof MRA including the construction and operation of the proposed CPP and RTSF. This is due to the large area covered by the proposed infrastructure. The proposed activities associated with the WRTRP within the Driefontein, Cooke and Ezulwini MRAs including the reclamation of the Driefontein 3, Driefontein 5, Cooke and Cooke 4 South TSFs will have a lesser topographical impact. These activities will assist to return the topography to a free-draining topography similar to the pre-mining topography.

10.1.1 Kloof Mining Right Area

The proposed activities associated with the WRTRP within the Kloof MRA will have a negative impact on the topography. A change in the land use from agricultural activities and natural vegetation to mining will change the topography. The proposed activities associated with the WRTRP within the Kloof MRA involve changing the natural features and adding man-made features to the topography and will therefore have a negative impact on the topography of the project area. Changing the topography of an area will cause negative impacts on the other environmental, social and cultural aspects of the receiving environment. The removal of topsoil and vegetation will change the topography / surface. This will affect surface water flow and if not managed correctly could result in soil erosion. Vegetation removal will result in biodiversity and habitat loss. The greatest impact on the topography will be from the proposed RTSF. This covers a large area and will dramatically change the slope of the topography. Topography change as a result of mining will degrade the visual aesthetic of the area.

10.1.2 Driefontein Mining Right Area

The proposed activities associated with the WRTRP within the Driefontein MRA will have a neutral impact on the topography. The reclamation of Driefontein 3 TSF and Driefontein 5 TSF will assist to return the topography to a free-draining topography similar to the pre-mining topography.

10.1.3 Cooke Mining Right Area

The proposed activities associated with the WRTRP within the Cooke MRA will have a neutral impact on the topography. The reclamation of Cooke TSF and Cooke 4 South TSF will assist to return the topography to a free-draining topography similar to the pre-mining topography.

10.1.4 Ezulwini Mining Right Area

The proposed activities associated with the WRTRP within the Ezulwini MRA are expected to have a negligible impact on the topography.

10.2 Visual

The proposed WRTRP will have a negative visual impact on the receiving environment. The most significant visual impact will be from the proposed activities associated with the WRTRP within the Kloof MRA including the construction and operation of the proposed CPP and RTSF. This is due to the large area covered by the proposed infrastructure and the height of the proposed RTSF. The proposed activities associated with the WRTRP within the Driefontein, Cooke and Ezulwini MRAs including the reclamation of the Driefontein 3, Driefontein 5, Cooke and Cooke 4 South TSFs will have a lesser visual impact. These activities will have a negative visual impact during the reclamation phase but ultimately after the rehabilitation phase they will have a neutral visual impact because they will remove the negative visual impact of mining created by the TSFs.

10.2.1 Kloof Mining Right Area

10.2.1.1 Visibility of the Project

The visibility of the project refers to the viewshed area. Oberholzer (2005) describes this as “the geographic area from which the project will be visible”. The visibility of the project is also related to the number of receptors affected. The proposed activities associated with the WRTRP within the Kloof MRA have a **high visibility** as they are visible from a large area (practical viewshed of approximately 644.48 km²) with numerous visual receptors.

10.2.1.2 Visual Exposure

Visual exposure is “based on the distance from the project area to selected viewpoints” and “tends to diminish exponentially with distance” (Oberholzer, 2005). The proposed activities associated with the WRTRP within the Kloof MRA have a **high exposure** as they will be dominant in the landscape and clearly noticeable to the viewer. This is due to the large area covered by the proposed activities associated with the WRTRP within the Kloof MRA and the height of the RTSF.

10.2.1.3 Visual Sensitivity of the Area

The visual sensitivity of the area refers to “the inherent visibility of the landscape, usually determined by a combination of topography, landform, vegetation cover and settlement pattern” (Oberholzer, 2005). The receiving environment of the proposed activities associated with the WRTRP within the Kloof MRA has a **moderate visual sensitivity** as there are moderately visible areas in the landscape.

10.2.1.4 Visual Sensitivity of the Receptors

The visual sensitivity of receptors is dependent on the nature of the receptors. Receptors in residential areas or nature reserves have a high sensitivity while receptors in industrial or mining areas have a low sensitivity. The identified receptors (residents of Etlebeni, Fochville, Glenharvie, Green Park, Hermina, Kokosi, Leeudrif and Seberuberung, farm residents, mine village residents and road users) of the proposed activities associated with the WRTRP within the Kloof MRA have a **moderate sensitivity** as there is a combination of residential, agricultural, natural, industrial and mining areas situated in moderately scenic areas.

10.2.1.5 Visual Absorption Capacity (VAC)

The visual absorption capacity (VAC) refers to “the potential of the landscape to conceal the proposed project” (Oberholzer, 2005). The receiving environment of the proposed activities associated with the WRTRP within the Kloof MRA has a **low VAC** because there is little screening by the topography or vegetation.

10.2.1.6 Visual Intrusion

The visual intrusion of the project refers to “the level of compatibility or congruence of the project with the particular qualities of the area, or its sense of place”. Visual intrusion is “related to the idea of context and maintaining the integrity of the landscape or townscape” (Oberholzer, 2005). The proposed activities associated with the WRTRP within the Kloof MRA have a **high visual intrusion** as they result in a noticeable change and are discordant with the surroundings.

10.2.2 Driefontein Mining Right Area

10.2.2.1 Visibility of the Project

The visibility of the project refers to the viewshed area. Oberholzer (2005) describes this as “the geographic area from which the project will be visible”. The visibility of the project is also related to the number of receptors affected. The proposed activities associated with the WRTRP within the Driefontein MRA have a **high visibility** as they are visible from a large area with numerous visual receptors.

10.2.2.2 Visual Exposure

Visual exposure is “based on the distance from the project area to selected viewpoints” and “tends to diminish exponentially with distance” (Oberholzer, 2005). The proposed activities associated with the WRTRP within the Driefontein MRA have a **moderate exposure** as they will be recognisable to the viewer.

10.2.2.3 Visual Sensitivity of the Area

The visual sensitivity of the area refers to “the inherent visibility of the landscape, usually determined by a combination of topography, landform, vegetation cover and settlement

pattern" (Oberholzer, 2005). The receiving environment of the proposed activities associated with the WRTRP within the Driefontein MRA has a **moderate visual sensitivity** as there are moderately visible areas in the landscape.

10.2.2.4 Visual Sensitivity of the Receptors

The visual sensitivity of receptors is dependent on the nature of the receptors. Receptors in residential areas or nature reserves have a high sensitivity while receptors in industrial or mining areas have a low sensitivity. The identified receptors (residents of Blybank, Blyvooruit, Carletonville, Letsatsing, Northdene, Oberholzer, Southdene, The Hill, The Village, Waters' Edge and West Driefontein, farm residents, mine village residents and road users) of the proposed activities associated with the WRTRP within the Driefontein MRA have a **moderate sensitivity** as there is a combination of residential, agricultural, natural, industrial and mining areas situated in moderately scenic areas.

10.2.2.5 Visual Absorption Capacity (VAC)

The visual absorption capacity (VAC) refers to "the potential of the landscape to conceal the proposed project" (Oberholzer, 2005). The receiving environment of the proposed activities associated with the WRTRP within the Driefontein MRA has a **moderate VAC** because there is partial screening by the topography and vegetation.

10.2.2.6 Visual Intrusion

The visual intrusion of the project refers to "the level of compatibility or congruence of the project with the particular qualities of the area, or its sense of place". Visual intrusion is "related to the idea of context and maintaining the integrity of the landscape or townscape" (Oberholzer, 2005). The proposed activities associated with the WRTRP within the Driefontein MRA have a **moderate visual intrusion** as they partially fit into the surroundings but are clearly noticeable.

10.2.3 Cooke Mining Right Area

10.2.3.1 Visibility of the Project

The visibility of the project refers to the viewshed area. Oberholzer (2005) describes this as "the geographic area from which the project will be visible". The visibility of the project is also related to the number of receptors affected. The proposed activities associated with the WRTRP within the Cooke MRA have a **high visibility** as they are visible from a large area with numerous visual receptors.

10.2.3.2 Visual Exposure

Visual exposure is "based on the distance from the project area to selected viewpoints" and "tends to diminish exponentially with distance" (Oberholzer, 2005). The proposed activities

associated with the WRTRP within the Cooke MRA have a **high exposure** as they will be dominant in the landscape and clearly noticeable to the viewer.

10.2.3.3 Visual Sensitivity of the Area

The visual sensitivity of the area refers to "the inherent visibility of the landscape, usually determined by a combination of topography, landform, vegetation cover and settlement pattern" (Oberholzer, 2005). The receiving environment of the proposed activities associated with the WRTRP within the Cooke MRA has a **moderate visual sensitivity** as there are moderately visible areas in the landscape.

10.2.3.4 Visual Sensitivity of the Receptors

The visual sensitivity of receptors is dependent on the nature of the receptors. Receptors in residential areas or nature reserves have a high sensitivity while receptors in industrial or mining areas have a low sensitivity. The identified receptors (residents of Bekkersdal, Doornkop, Mohlakeng, Pelzvale, Randfontein, Rietvallei, Slovoville, Soweto, Tshepisong, West Rand Garden, Westonaria, Zenzele and Zwaneville, farm residents, mine village residents and road users) of the proposed activities associated with the WRTRP within the Cooke MRA have a **moderate sensitivity** as there is a combination of residential, agricultural, natural, industrial and mining areas situated in moderately scenic areas.

10.2.3.5 Visual Absorption Capacity (VAC)

The visual absorption capacity (VAC) refers to "the potential of the landscape to conceal the proposed project" (Oberholzer, 2005). The receiving environment of the proposed activities associated with the WRTRP within the Cooke MRA has a **low VAC** because there is little screening by the topography or vegetation.

10.2.3.6 Visual Intrusion

The visual intrusion of the project refers to "the level of compatibility or congruence of the project with the particular qualities of the area, or its sense of place". Visual intrusion is "related to the idea of context and maintaining the integrity of the landscape or townscape" (Oberholzer, 2005). The proposed activities associated with the WRTRP within the Cooke MRA have a **high visual intrusion** as they result in a noticeable change and are discordant with the surroundings.

10.2.4 Ezulwini Mining Right Area

10.2.4.1 Visibility of the Project

The visibility of the project refers to the viewshed area. Oberholzer (2005) describes this as "the geographic area from which the project will be visible". The visibility of the project is also related to the number of receptors affected. The proposed activities associated with the

WRTRP within the Ezulwini MRA have a **low visibility** as they are visible from a small area around the project site.

10.2.4.2 Visual Exposure

Visual exposure is “based on the distance from the project area to selected viewpoints” and “tends to diminish exponentially with distance” (Oberholzer, 2005). The proposed activities associated with the WRTRP within the Ezulwini MRA have a **low exposure** as they will not be particularly noticeable to the viewer.

10.2.4.3 Visual Sensitivity of the Area

The visual sensitivity of the area refers to “the inherent visibility of the landscape, usually determined by a combination of topography, landform, vegetation cover and settlement pattern” (Oberholzer, 2005). The receiving environment of the proposed activities associated with the WRTRP within the Ezulwini MRA has a **moderate visual sensitivity** as there are moderately visible areas in the landscape.

10.2.4.4 Visual Sensitivity of the Receptors

The visual sensitivity of receptors is dependent on the nature of the receptors. Receptors in residential areas or nature reserves have a high sensitivity while receptors in industrial or mining areas have a low sensitivity. The identified receptors (residents of Jagfontein and Thabony, farm residents, mine village residents and road users) of the proposed activities associated with the WRTRP within the Ezulwini MRA have a **moderate sensitivity** as there is a combination of residential, agricultural, natural, industrial and mining areas situated in moderately scenic areas.

10.2.4.5 Visual Absorption Capacity (VAC)

The visual absorption capacity (VAC) refers to “the potential of the landscape to conceal the proposed project” (Oberholzer, 2005). The receiving environment of the proposed activities associated with the WRTRP within the Ezulwini MRA has a **moderate VAC** because there is partial screening by the topography and vegetation.

10.2.4.6 Visual Intrusion

The visual intrusion of the project refers to “the level of compatibility or congruence of the project with the particular qualities of the area, or its sense of place”. Visual intrusion is “related to the idea of context and maintaining the integrity of the landscape or townscape” (Oberholzer, 2005). The proposed activities associated with the WRTRP within the Ezulwini MRA have a **moderate visual intrusion** as they partially fit into the surroundings but are clearly noticeable.

11 Impact Assessment

11.1 Assessment Methodology

Details of the impact assessment methodology used to determine the significance of physical, bio-physical and socio-economic impacts are provided below.

The significance rating process follows the established impact/risk assessment formula:

Significance = CONSEQUENCE X PROBABILITY X NATURE

Where

Consequence = intensity + extent + duration

And

Probability = likelihood of an impact occurring

And

Nature = positive (+1) or negative (-1) impact

The matrix calculates the rating out of 147, whereby intensity, extent, duration and probability are each rated out of seven as indicated in Table 14. The weight assigned to the various parameters is then multiplied by +1 for positive and -1 for negative impacts.

Impacts are rated prior to mitigation and again after consideration of the mitigation has been applied; post-mitigation is referred to as the residual impact. The significance of an impact is determined and categorised into one of seven categories, as indicated in Table 15 (The descriptions of the significance ratings are presented in Table 16).

It is important to note that the pre-mitigation rating takes into consideration the activity as proposed, (i.e., there may already be some mitigation included in the engineering design). If the specialist determines the potential impact is still too high, additional mitigation measures are proposed.

Table 14: Impact Assessment Parameter Ratings

Rating	Intensity		Extent	Duration	Probability
	Negative Impacts (Nature = -1)	***Positive Impacts (Nature = +1)***			
7	Irreplaceable loss or damage to biological or physical resources or **highly** sensitive environments. Irreplaceable damage to **highly** sensitive cultural / social resources.	Noticeable, on-going natural and / or social benefits which have improved the overall conditions of the baseline.	International The effect will occur across international borders.	Permanent The impact is irreversible, even with management, and will remain after the life of the project.	Definite There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability
6	Irreplaceable loss or damage to biological or physical resources or **moderate to highly** sensitive environments. Irreplaceable damage to **moderate to highly** sensitive cultural / social resources.	Great improvement to the overall conditions of a large percentage of the baseline.	National Will affect the entire country.	Beyond Project Life The impact will remain for some time after the life of the project and is potentially irreversible even with management.	Almost Certain / Highly Probable It is most likely that the impact will occur. < 80% probability

Rating	Intensity		Extent	Duration	Probability
	Negative Impacts (Nature = -1)	***Positive Impacts (Nature = +1)***			
5	Serious loss and / or damage to biological or physical resources or **highly** sensitive environments, limiting ecosystem function. Very serious widespread social impacts. Irreparable damage to highly valued items.	On-going and widespread benefits to local communities and natural features of the landscape.	Province / Region Will affect the entire province or region.	Project Life (> 15 years) The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Likely The impact may occur. < 65% probability
4	Serious loss and / or damage to biological or physical resources or **moderately** sensitive environments, limiting ecosystem function. On-going serious social issues. Significant damage to structures / items of cultural significance.	Average to intense natural and / or social benefits to some elements of the baseline.	Municipal Area Will affect the whole municipal area.	Long Term 6-15 years and the impact can be reversed with management.	Probable Has occurred here or elsewhere and could therefore occur. < 50% probability

Rating	Intensity		Extent	Duration	Probability
	Negative Impacts (Nature = -1)	***Positive Impacts (Nature = +1)***			
3	Moderate loss and / or damage to biological or physical resources or **low to moderately** sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	Average, on-going positive benefits, not widespread but felt by some elements of the baseline.	Local Extending only as far as the development site area.	Medium Term 1-5 years and the impact can be reversed with minimal management.	Unlikely Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur. < 25% probability
2	**Minor loss and / or effects** to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	Low impacts experienced by a small percentage of the baseline.	Limited Limited to the site and its immediate surroundings.	Short Term Less than 1 year and is reversible.	Rare / Improbable Conceivable, but only in extreme circumstances. The possibility of the impact materialising is very low as a result of design, historic experience or implementation of adequate mitigation measures. < 10% probability

Rating	Intensity		Extent	Duration	Probability
	Negative Impacts (Nature = -1)	***Positive Impacts (Nature = +1)***			
1	**Minimal to no loss** and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	Some low-level natural and / or social benefits felt by a very small percentage of the baseline.	Very Limited / Isolated Limited to specific isolated parts of the site.	Immediate Less than 1 month and is completely reversible without management.	Highly Unlikely / None Expected never to happen. < 1% probability

Table 15: Probability / Consequence Matrix for Impacts

Probability \ Significance	-21	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
7	-147	-140	-133	-126	-119	-112	-105	-98	-91	-84	-77	-70	-63	-56	-49	-42	-35	-28	-21	21	28	35	42	49	56	63	70	77	84	91	98	105	112	119	126	133	140	147
6	-126	-120	-114	-108	-102	-96	-90	-84	-78	-72	-66	-60	-54	-48	-42	-36	-30	-24	-18	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	126
5	-105	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105
4	-84	-80	-76	-72	-68	-64	-60	-56	-52	-48	-44	-40	-36	-32	-28	-24	-20	-16	-12	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80	84
3	-63	-60	-57	-54	-51	-48	-45	-42	-39	-36	-33	-30	-27	-24	-21	-18	-15	-12	-9	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60	63
2	-42	-40	-38	-36	-34	-32	-30	-28	-26	-24	-22	-20	-18	-16	-14	-12	-10	-8	-6	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42
1	-21	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

Consequence

Table 16: Significance Threshold Limits

Score	Description	Rating
109 to 147	A very beneficial impact which may be sufficient by itself to justify implementation of the project. The impact may result in permanent positive change.	**Major (positive)**
73 to 108	A beneficial impact which may help to justify the implementation of the project. These impacts would be considered by society as constituting a major and usually a long-term positive change to the (natural and / or social) environment.	Moderate (positive)
36 to 72	A positive impact. The impacts will usually result in positive medium to long-term effect on the natural and / or social environment.	Minor (positive)
3 to 35	A small positive impact. The impact will result in medium to short-term effects on the natural and / or social environment.	Negligible (positive)
-3 to -35	An acceptable negative impact for which mitigation is desirable. The impact by itself is insufficient even in combination with other low impacts to prevent the development being approved. These impacts will result in negative medium to short-term effects on the natural and / or social environment.	Negligible (negative)
-36 to -72	A minor negative impact which requires mitigation. The impact is insufficient by itself to prevent the implementation of the project but which in conjunction with other impacts may prevent its implementation. These impacts will usually result in negative medium to long-term effects on the natural and / or social environment.	Minor (negative)
-73 to -108	A moderate negative impact which may prevent the implementation of the project. These impacts would be considered by as constituting a major and usually a long-term change to the (natural and / or social) environment and result in severe changes.	Moderate (negative)

Score	Description	Rating
-109 to -147	A major negative impact which may be sufficient by itself to prevent implementation of the project. The impact may result in permanent change. Very often these impacts are immitigable and usually result in very severe effects. The impacts are likely to be irreversible and / or irreplaceable.	Major (negative)

11.2 Identification of Project Activities

The primary activities associated with the proposed WRTRP are listed in Table 17 below. The activities highlighted in red are applicable to this T&VIA.

Table 17: Primary Project Activities

Category	Activity
Kloof Mining Right Area	
Infrastructure	Pipeline routes (residual tailings).
	Central Processing plant (CPP) incorporating Module 1 float and gold plants and uranium, roaster and acid plants.
	The Regional Tailings Storage Facility (RTSF), RTSF Return Water Dam (RWD) and the Advanced Water Treatment Facility (AWTF). Collectively known as the RTSF complex.
Processes	Abstraction of water from K10 shaft.
	Disposal of residue from the AWTF.
	Gold, uranium and sulfur extraction at the CPP (tailings to RTSF).
	Water distribution at the AWTF for discharge.
Pumping	Pumping up to 1.5 Mt/m of tailings to the RTSF.
	Pumping water from the RTSF Return Water Dam to the AWTF.
	Discharging treated water to the Leeuspruit.
Electricity supply	Power supply from Kloof 1 substation to the CPP.
	Power supply from Kloof 4 substation to the RTSF and AWTF.
Driefontein Mining Right Area	

Category	Activity
Infrastructure	Pipeline routes (water, slurry and thickened tailings).
	West Block Thickener (WBT) and Bulk Water Storage Facility (BWSF) complex.
	Collection sumps and pump stations at Driefontein 3 TSF and Driefontein 5 TSF.
Processes	Hydraulic reclamation of Driefontein 3 TSF and Driefontein 5 TSF.
Pumping	Pumping water from K10 to the BWSF located next to the WBT.
	Pumping water from the BWSF to the Driefontein TSFs that will be reclaimed (Driefontein 3 TSF and Driefontein 5 TSF).
	Pumping slurry from the TSF sump to the WBT (for Driefontein 3 TSF and Driefontein 5 TSF).
	Pumping the thickened slurry from the WBT to the CPP.
Electricity supply	Power supply from West Driefontein 6 substation to Driefontein 3 TSF.
	Power supply from West Driefontein Gold substation to Driefontein 5 TSF.
	Power supply from East Driefontein Shaft substation to WBT and BWSF.
Cooke Mining Right Area	
Infrastructure	Pipeline routes (water, slurry and thickened tailings).
	Cooke thickener and BWSF.
	Collection sumps and pump stations at Cooke TSF and Cooke 4 South TSF.
Processes	Abstraction of water from Cooke 1 shaft.
	Hydraulic reclamation of Cooke TSF and Cooke 4 South TSF.
Pumping	Pumping 500 kt/m of tailings from Cooke TSF to the Cooke thickener
	Pumping from the Cooke thickener to the CPP via Ezulwini.
Electricity Supply	Power supply from the Cooke substation to the Cooke thickener.
	Power supply from the Cooke plant to Cooke TSF.
Ezulwini Mining Right Area	

Category	Activity
Infrastructure	Pipeline routes (water, slurry and thickened tailings).
Processes	Uranium extraction at Ezulwini (tailings to Ezulwini North Dump).
	Abstraction of water from Cooke shaft.
Pumping	Pumping water from Cooke 4 shaft to the Cooke 4 South TSF for reclamation.
	Pumping slurry from the TSF sump to the CPP.
Electricity supply	Power supply from Ezulwini plant to the Cooke 4 South TSF.

11.3 Topography Impact Assessment

The project activities listed in Table 17 will be rated according to the impact they will have on the receiving environment, i.e. the environment before development. Negative impacts change the topography from the pre-development topography to the post-development topography. Neutral impacts assist to minimise the long term effects of the negative impacts on the topography. Positive impacts rarely occur as they require that the topography be returned to a state better than the pre-development topography.

11.3.1 Kloof Mining Right Area

The project activities of the Kloof MRA are listed in Table 18 below. The activities highlighted in red are applicable to the topography impact assessment for the Kloof MRA. Plan 6 (Appendix A) illustrates the Kloof MRA infrastructure.

Table 18: Kloof MRA Project Activities Applicable to Topography

Category	Activity
Infrastructure	Pipeline routes (residual tailings).
	Central Processing plant (CPP) incorporating Module 1 float and gold plants and uranium, roaster and acid plants.
	The Regional Tailings Storage Facility (RTSF), RTSF Return Water Dam (RWD) and the Advanced Water Treatment Facility (AWTF). Collectively known as the RTSF complex.
Processes	Abstraction of water from K10 shaft.

Category	Activity
	Disposal of residue from the AWTF.
	Gold, uranium and sulfur extraction at the CPP (tailings to RTSF).
	Water distribution at the AWTF for discharge.
Pumping	Pumping up to 1.5 Mt/m of tailings to the RTSF.
	Pumping water from the RTSF Return Water Dam to the AWTF.
	Discharging treated water to the Leeuspruit.
Electricity supply	Power supply from Kloof 1 substation to the CPP.
	Power supply from Kloof 4 substation to the RTSF and AWTF.

The Kloof MRA consists of the following infrastructure activities:

- Pipeline routes (residual tailings);
- CPP; and
- RTSF, Return Water Dam (RWD) and Advanced Water Treatment Facility (AWTF).

11.3.1.1 Construction Phase

The construction phase is characterised by site development and infrastructure construction. This includes site clearance and vegetation removal, topsoil removal and stockpiling and surface infrastructure development. The construction phase will have negative impacts on the topography.

11.3.1.1.1 Pipeline Routes

Pipeline routes will be constructed within the Kloof MRA to transport residual tailings. These pipeline routes are expected to have a negative impact on the topography of the Kloof MRA. The interactions and resultant impacts of the pipeline routes are indicated in Table 19.

Table 19: Interactions and Impacts of the Pipeline Routes on the Topography of the Kloof MRA (Construction Phase)

Interaction	Impact
Site clearance and vegetation removal	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.

Interaction	Impact
Topsoil removal and stockpiling	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.
Infrastructure development	Construction of the pipeline infrastructure will add features to the topography thereby changing it.

Impact Description

Site clearance and vegetation removal, and topsoil removal and stockpiling prior to the development of the pipeline infrastructure will have a minor negative impact on the topography. Construction of the pipeline infrastructure will add features to the surface and is expected to have a moderate negative impact on the topography. These impacts will only occur within the pipeline servitudes.

Management Objectives

The management objectives are to minimise the topography change as a result of site clearance and vegetation removal; topsoil removal and stockpiling, and pipeline infrastructure development.

Management Actions

The following management actions are required for the pipeline routes in the Kloof MRA:

- Vegetation should only be removed when and where necessary;
- Topsoil should only be removed when and where necessary;
- Topsoil stockpiles should be vegetated where possible;
- Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure;
- Limit the footprint area of pipeline infrastructure where possible; and
- Where possible spread topsoil and re-vegetate the pipeline servitude areas when construction is complete.

Impact Ratings

The impact ratings and mitigation / management measures for the pipeline routes are summarised in Table 20.

Table 20: Potential Impacts of the Pipeline Routes on the Topography of the Kloof MRA (Construction Phase)

Activity and Interaction (Pipeline routes require site clearance and vegetation removal)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Site clearance and vegetation removal will change the surface of the project area and therefore the topography. Vegetation should only be removed when and where necessary to prevent unnecessary soil erosion.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Vegetation should only be removed when and where necessary; and ■ Where possible re-vegetate the pipeline servitude areas when construction is complete.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-35)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	

Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (Pipeline routes require topsoil removal and stockpiling)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Topsoil removal will change the surface of the project area and therefore the topography. Topsoil stockpiles will add features to the surface thereby changing the topography. Topsoil should only be removed when and where necessary to prevent unnecessary soil erosion.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			

- Topsoil should only be removed when and where necessary;
- Topsoil stockpiles should be vegetated where possible;
- Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure; and
- Where possible spread topsoil in the pipeline servitude areas when construction is complete.

Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-35)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (Pipeline routes require infrastructure development)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Construction of the pipeline infrastructure will add features to the topography thereby changing.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-70)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Moderate (3)	Moderate loss and / or damage to biological or	

		physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Limit the footprint area of pipeline infrastructure where possible.			
Post-Mitigation			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-63)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

11.3.1.1.2 CPP

The CPP will be constructed within the Kloof MRA. This infrastructure is expected to have a negative impact on the topography of the Kloof MRA. The interactions and resultant impacts of the CPP are indicated in Table 21.

Table 21: Interactions and Impacts of the CPP on the Topography of the Kloof MRA (Construction Phase)

Interaction	Impact
Site clearance and vegetation removal	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.
Topsoil removal and stockpiling	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.
Infrastructure development	Construction of the CPP will add features to the topography thereby changing it.

Impact Description

Site clearance and vegetation removal, and topsoil removal and stockpiling prior to the development of the CPP infrastructure will have a minor negative impact on the topography. Construction of the CPP infrastructure will add features to the surface and is expected to have a moderate negative impact on the topography.

Management Objectives

The management objectives are to minimise the topography change as a result of site clearance and vegetation removal; topsoil removal and stockpiling, and CPP infrastructure development.

Management Actions

The following management actions are required for the CPP area in the Kloof MRA:

- Vegetation should only be removed when and where necessary;
- Topsoil should only be removed when and where necessary;
- Topsoil stockpiles should be vegetated where possible;
- Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure; and
- Limit the footprint area of CPP infrastructure where possible.

Impact Ratings

The impact ratings and mitigation / management measures for the CPP are summarised in Table 22.

Table 22: Potential Impacts of the CPP on the Topography of the Kloof MRA (Construction Phase)

Activity and Interaction (CPP requires site clearance and vegetation removal)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Site clearance and vegetation removal will change the surface of the project area and therefore the topography. Vegetation should only be removed when and where necessary to prevent unnecessary soil erosion.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-70)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Moderate (3)	Moderate loss and / or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Vegetation should only be removed when and where necessary.			
Post-Mitigation			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-63)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not	

		affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (CPP requires topsoil removal and stockpiling)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Topsoil removal will change the surface of the project area and therefore the topography. Topsoil stockpiles will add features to the surface thereby changing the topography. Topsoil should only be removed when and where necessary to prevent unnecessary soil erosion.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-70)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Moderate (3)	Moderate loss and / or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; and ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope			

failure.			
Post-Mitigation			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-63)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (CPP requires infrastructure development)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Construction of the CPP infrastructure will add features to the topography thereby changing.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Moderate negative (-77)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Serious (4)	Serious loss and / or damage to biological or physical resources or moderately sensitive environments, limiting ecosystem function. On-going serious social issues. Significant damage to structures / items of cultural significance.	

Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Limit the footprint area of CPP infrastructure where possible.			
Post-Mitigation			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-70)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Moderate (3)	Moderate loss and / or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

11.3.1.1.3 RTSF and Associated Infrastructure

The RTSF and associated infrastructure will be constructed within the Kloof MRA. This infrastructure is expected to have a negative impact on the topography of the Kloof MRA. The interactions and resultant impacts of the RTSF and associated infrastructure are indicated in Table 23.

Table 23: Interactions and Impacts of the RTSF and Associated Infrastructure on the Topography of the Kloof MRA (Construction Phase)

Interaction	Impact
Site clearance and vegetation removal	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.
Topsoil removal and stockpiling	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.
Infrastructure development	Construction of the RTSF and associated infrastructure will add features to the topography thereby changing it.

Impact Description

Site clearance and vegetation removal, and topsoil removal and stockpiling prior to the development of the RTSF and associated infrastructure will have a moderate negative impact on the topography. Construction of the RTSF and associated infrastructure will add features to the surface and is expected to have a moderate negative impact on the topography.

Management Objectives

The management objectives are to minimise the topography change as a result of site clearance and vegetation removal; topsoil removal and stockpiling, and RTSF and associated infrastructure development.

Management Actions

The following management actions are required for the RTSF area in the Kloof MRA:

- Vegetation should only be removed when and where necessary;
- Topsoil should only be removed when and where necessary;
- Topsoil stockpiles should be vegetated where possible;
- Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure; and
- Limit the footprint area of RTSF and associated infrastructure where possible.

Impact Ratings

The impact ratings and mitigation / management measures for the RTSF and associated infrastructure are summarised in Table 24.

Table 24: Potential Impacts of the RTSF and Associated Infrastructure on the Topography of the Kloof MRA (Construction Phase)

Activity and Interaction (RTSF and associated infrastructure requires site clearance and vegetation removal)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Site clearance and vegetation removal will change the surface of the project area and therefore the topography. Vegetation should only be removed when and where necessary to prevent unnecessary soil erosion.			
Prior to Mitigation / Management			
Duration	Permanent (7)	The impact is irreversible, even with management, and will remain after the life of the project.	Moderate negative (-91)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Moderate (3)	Moderate loss and / or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Vegetation should only be removed when and where necessary.			
Post-Mitigation			
Duration	Permanent (7)	The impact is irreversible, even with management, and will remain after the life of the project.	Moderate negative (-84)
Extent	Local (3)	The impact will extend only as far as the development site area.	

Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (RTSF and associated infrastructure requires topsoil removal and stockpiling)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Topsoil removal will change the surface of the project area and therefore the topography. Topsoil stockpiles will add features to the surface thereby changing the topography. Topsoil should only be removed when and where necessary to prevent unnecessary soil erosion.			
Prior to Mitigation / Management			
Duration	Permanent (7)	The impact is irreversible, even with management, and will remain after the life of the project.	Moderate negative (-91)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Moderate (3)	Moderate loss and / or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Topsoil should only be removed when and where necessary;			

■ Topsoil stockpiles should be vegetated where possible; and ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure.			
Post-Mitigation			
Duration	Permanent (7)	The impact is irreversible, even with management, and will remain after the life of the project.	Moderate negative (-84)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (RTSF and associated infrastructure requires infrastructure development)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Construction of the RTSF and associated infrastructure will add features to the topography thereby changing.			
Prior to Mitigation / Management			
Duration	Permanent (7)	The impact is irreversible, even with management, and will remain after the life of the project.	Moderate negative (-105)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Very Serious (5)	Serious loss and / or damage to biological or physical resources or highly sensitive environments, limiting ecosystem function.	

		Very serious widespread social impacts. Irreparable damage to highly valued items.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Limit the footprint area of RTSF and associated infrastructure where possible.			
Post-Mitigation			
Duration	Permanent (7)	The impact is irreversible, even with management, and will remain after the life of the project.	Moderate negative (-98)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Serious (4)	Serious loss and / or damage to biological or physical resources or moderately sensitive environments, limiting ecosystem function. On-going serious social issues. Significant damage to structures / items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

11.3.1.2 Operational Phase

The operational phase is characterised by operation of the pipelines, CPP and RTSF. Only the operation of the RTSF will impact on the topography. The operational phase is expected to have negative impacts on the topography.

11.3.1.2.1 RTSF

The RTSF will be operated within the Kloof MRA. The RTSF is expected to have a negative impact on the topography of the Kloof MRA. The interactions and resultant impacts of the RTSF are indicated in Table 25.

Table 25: Interactions and Impacts of the RTSF on the Topography of the Kloof MRA (Operational Phase)

Interaction	Impact
Operation of the RTSF	Operation of the RTSF involves adding to the surface and will thereby change the topography.

Impact Description

Continuous operation of the RTSF will result in the RTSF increasing in height. This is expected to have a moderate negative impact on the topography.

Management Objectives

The management objectives are to minimise the topography change as a result of operation of the RTSF.

Management Actions

The following management actions are required for the RTSF in the Kloof MRA:

- Ensure the RTSF is contoured and not too steep (18° or less) to prevent slope failure.

Impact Ratings

The impact ratings and mitigation / management measures for the RTSF are summarised in Table 26.

Table 26: Potential Impacts of the RTSF on the Topography of the Kloof MRA (Operational Phase)

Activity and Interaction (Operation of the RTSF)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Operation of the RTSF will add to the surface thereby changing the topography.			
Prior to Mitigation / Management			
Duration	Permanent (7)	The impact is irreversible, even with management, and will remain after the life of the project.	Moderate negative (-105)

Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Very Serious (5)	Serious loss and / or damage to biological or physical resources or highly sensitive environments, limiting ecosystem function. Very serious widespread social impacts. Irreparable damage to highly valued items.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Ensure the RTSF is contoured and not too steep (18° or less) to prevent slope failure.			
Post-Mitigation			
Duration	Permanent (7)	The impact is irreversible, even with management, and will remain after the life of the project.	Moderate negative (-98)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Serious (4)	Serious loss and / or damage to biological or physical resources or moderately sensitive environments, limiting ecosystem function. On-going serious social issues. Significant damage to structures / items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

11.3.1.3 Decommissioning Phase

The decommissioning phase is characterised by the demolition and removal of infrastructure and rehabilitation of disturbed areas. This phase will have a negative impact on the

topography; however, once rehabilitation is complete, there will be an overall neutral impact on the topography.

11.3.1.3.1 Pipeline Routes

The pipeline routes will be decommissioned within the Kloof MRA. This is expected to have a negative impact on the topography of the Kloof MRA. The interactions and resultant impacts of the pipeline routes are indicated in Table 27.

Table 27: Interactions and Impacts of the Pipeline Routes on the Topography of the Kloof MRA (Decommissioning Phase)

Interaction	Impact
Demolition and removal of infrastructure	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.
Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will change the topography.

Impact Description

Demolition and removal of infrastructure will have a minor negative impact on the topography. Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation is expected to have a minor negative impact on the topography. Once the infrastructure is removed and the rehabilitation is complete, there will be a neutral impact on the topography and it will be returned to a state similar to the pre-development state.

Management Objectives

The management objectives are to rehabilitate the topography by demolition and removal of infrastructure and rehabilitation of disturbed areas.

Management Actions

The following management actions are required for the pipeline routes in the Kloof MRA:

- Ensure that all unnecessary infrastructure is demolished;
- Ensure that all demolished infrastructure is removed from the project area;
- Rehabilitate all areas where infrastructure has been removed;
- Rehabilitate all disturbed areas;
- Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography;
- Spread topsoil over the rehabilitated area;

- Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography;
- Re-vegetate the rehabilitated areas; and
- Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.

Impact Ratings

The impact ratings and mitigation / management measures for the pipeline routes are summarised in Table 28.

Table 28: Potential Impacts of the Pipeline Routes on the Topography of the Kloof MRA (Decommissioning Phase)

Activity and Interaction (Pipeline routes require demolition and removal of infrastructure)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Demolition and removal of infrastructure will remove features from the surface and thereby change the topography. Once the infrastructure is removed, there will be an overall neutral impact on the topography. This will help to reverse some of the changes that occurred when the infrastructure was constructed.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			

- Ensure that all unnecessary infrastructure is demolished;
- Ensure that all demolished infrastructure is removed from the project area; and
- Rehabilitate all areas where infrastructure has been removed.

Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-35)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (Pipeline routes require rehabilitation of disturbed areas)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Rehabilitation of disturbed areas will change the topography. Once the rehabilitation is complete, there will be an overall neutral impact on the topography. The aim of rehabilitation is to create a free-draining topography. Spreading topsoil, and profiling and contouring will change the topography and assist to restore surface water flow and drainage lines to create a free-draining topography and assist to prevent soil erosion.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-56)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Moderate (3)	Moderate loss and / or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function.	

		On-going social issues. Damage to items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-49)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

11.3.1.3.2 CPP

The CPP will be decommissioned within the Kloof MRA. This is expected to have a negative impact on the topography of the Kloof MRA. The interactions and resultant impacts of the CPP are indicated in Table 29.

Table 29: Interactions and Impacts of the CPP on the Topography of the Kloof MRA (Decommissioning Phase)

Interaction	Impact
Demolition and removal of infrastructure	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.
Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will change the topography.

Impact Description

Demolition and removal of infrastructure will have a minor negative impact on the topography. Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation is expected to have a minor negative impact on the topography. Once the infrastructure is removed and the rehabilitation is complete, there will be a neutral impact on the topography and it will be returned to a state similar to the pre-development state.

Management Objectives

The management objectives are to rehabilitate the topography by demolition and removal of infrastructure and rehabilitation of disturbed areas.

Management Actions

The following management actions are required for the CPP in the Kloof MRA:

- Ensure that all unnecessary infrastructure is demolished;
- Ensure that all demolished infrastructure is removed from the project area;
- Rehabilitate all areas where infrastructure has been removed;
- Rehabilitate all disturbed areas;
- Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography;
- Spread topsoil over the rehabilitated area;
- Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography;

- Re-vegetate the rehabilitated areas; and
- Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.

Impact Ratings

The impact ratings and mitigation / management measures for the CPP are summarised in Table 30.

Table 30: Potential Impacts of the CPP on the Topography of the Kloof MRA (Decommissioning Phase)

Activity and Interaction (CPP requires demolition and removal of infrastructure)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Demolition and removal of infrastructure will remove features from the surface and thereby change the topography. Once the infrastructure is removed, there will be an overall neutral impact on the topography. This will help to reverse some of the changes that occurred when the infrastructure was constructed.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-49)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; and			

■ Rehabilitate all areas where infrastructure has been removed.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (CPP requires rehabilitation of disturbed areas)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Rehabilitation of disturbed areas will change the topography. Once the rehabilitation is complete, there will be an overall neutral impact on the topography. The aim of rehabilitation is to create a free-draining topography. Spreading topsoil, and profiling and contouring will change the topography and assist to restore surface water flow and drainage lines to create a free-draining topography and assist to prevent soil erosion.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-63)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Moderate (3)	Moderate loss and / or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	

Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-56)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

11.3.1.3.3 RTSF and Associated Infrastructure

The RTSF and associated infrastructure will be decommissioned within the Kloof MRA. This is expected to have a negative impact on the topography of the Kloof MRA. The interactions and resultant impacts of the RTSF and associated infrastructure are indicated in Table 31.

Table 31: Interactions and Impacts of the RTSF and Associated Infrastructure on the Topography of the Kloof MRA (Decommissioning Phase)

Interaction	Impact
Rehabilitation of RTSF by reshaping, spreading topsoil, and re-vegetation	Rehabilitation of disturbed areas will change the topography.

Impact Description

Rehabilitation of the RTSF by reshaping, spreading topsoil, and re-vegetation is expected to have a minor negative impact on the topography. The RTSF will remain on the surface and will result in a permanent and irreversible negative impact on the topography.

Management Objectives

The management objectives are to rehabilitate the topography by rehabilitation of the RTSF.

Management Actions

The following management actions are required for the RTSF and associated infrastructure in the Kloof MRA:

- Reshape the sides of the RTSF so that they are not too steep (18° or less) to prevent slope failure;
- Rehabilitate all disturbed areas;
- Spread topsoil over the rehabilitated area;
- Re-vegetate the rehabilitated areas; and
- Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.

Impact Ratings

The impact ratings and mitigation / management measures for the RTSF and associated infrastructure are summarised in Table 32.

Table 32: Potential Impacts of the RTSF and Associated Infrastructure on the Topography of the Kloof MRA (Decommissioning Phase)

Activity and Interaction (RTSF requires rehabilitation)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Rehabilitation of the RTSF will change the topography. Reshaping, spreading topsoil, and re-vegetating will change the topography and assist to prevent soil erosion. The RTSF will remain on the surface and will result in a permanent and irreversible negative impact on the topography.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-63)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Moderate (3)	Moderate loss and / or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Reshape the sides of the RTSF so that they are not too steep (18° or less) to prevent slope failure; ■ Rehabilitate all disturbed areas; ■ Spread topsoil over the rehabilitated area; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			

Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-56)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

11.3.2 Driefontein Mining Right Area

The project activities of the Driefontein MRA are listed in Table 33 below. The activities highlighted in red are applicable to the topography impact assessment for the Driefontein MRA. Plan 7 (Appendix A) illustrates the Driefontein MRA infrastructure.

Table 33: Driefontein MRA Project Activities Applicable to Topography

Category	Activity
Infrastructure	Pipeline routes (water, slurry and thickened tailings).
	West Block Thickener (WBT) and Bulk Water Storage Facility (BWSF) complex.
	Collection sumps and pump stations at Driefontein 3 TSF and Driefontein 5 TSF.
Processes	Hydraulic reclamation of Driefontein 3 TSF and Driefontein 5 TSF.
Pumping	Pumping water from K10 to the BWSF located next to the WBT.
	Pumping water from the BWSF to the Driefontein TSFs that will be reclaimed (Driefontein 3 TSF and Driefontein 5 TSF).
	Pumping slurry from the TSF sump to the WBT (for Driefontein 3 TSF and Driefontein 5 TSF).

Category	Activity
	Pumping the thickened slurry from the WBT to the CPP.
Electricity supply	Power supply from West Driefontein 6 substation to Driefontein 3 TSF.
	Power supply from West Driefontein Gold substation to Driefontein 5 TSF.
	Power supply from East Driefontein Shaft substation to WBT and BWSF.

The Driefontein MRA consists of the following infrastructure activities:

- Pipeline routes (water, slurry and thickened tailings);
- West Block Thickener (WBT) and West Bulk Water Storage Facility (BWSF) complex; and
- Collection sumps and pump stations at Driefontein 3 TSF and Driefontein 5 TSF.

The Driefontein MRA consists of the following process activities:

- Hydraulic reclamation of Driefontein 3 TSF and Driefontein 5 TSF.

11.3.2.1 Construction Phase

The construction phase is characterised by site development and infrastructure construction. This includes site clearance and vegetation removal, topsoil removal and stockpiling and surface infrastructure development. The construction phase will have negative impacts on the topography.

11.3.2.1.1 Pipeline Routes

Pipeline routes will be constructed within the Driefontein MRA to transport water, slurry and tailings. These pipeline routes are expected to have a negative impact on the topography of the Driefontein MRA. The interactions and resultant impacts of the pipeline routes are indicated in Table 34.

Table 34: Interactions and Impacts of the Pipeline Routes on the Topography of the Driefontein MRA (Construction Phase)

Interaction	Impact
Site clearance and vegetation removal	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.

Interaction	Impact
Topsoil removal and stockpiling	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.
Infrastructure development	Construction of the pipeline infrastructure will add features to the topography thereby changing it.

Impact Description

Site clearance and vegetation removal, and topsoil removal and stockpiling prior to the development of the pipeline infrastructure will have a minor negative impact on the topography. Construction of the pipeline infrastructure will add features to the surface and is expected to have a moderate negative impact on the topography. These impacts will only occur within the pipeline servitudes.

Management Objectives

The management objectives are to minimise the topography change as a result of site clearance and vegetation removal; topsoil removal and stockpiling, and pipeline infrastructure development.

Management Actions

The following management actions are required for the pipeline routes in the Driefontein MRA:

- Vegetation should only be removed when and where necessary;
- Topsoil should only be removed when and where necessary;
- Topsoil stockpiles should be vegetated where possible;
- Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure;
- Limit the footprint area of pipeline infrastructure where possible; and
- Where possible spread topsoil and re-vegetate the pipeline servitude areas when construction is complete.

Impact Ratings

The impact ratings and mitigation / management measures for the pipeline routes are summarised in Table 35.

Table 35: Potential Impacts of the Pipeline Routes on the Topography of the Driefontein MRA (Construction Phase)

Activity and Interaction (Pipeline routes require site clearance and vegetation removal)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Site clearance and vegetation removal will change the surface of the project area and therefore the topography. Vegetation should only be removed when and where necessary to prevent unnecessary soil erosion.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Vegetation should only be removed when and where necessary; and ■ Where possible re-vegetate the pipeline servitude areas when construction is complete.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-35)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	

Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (Pipeline routes require topsoil removal and stockpiling)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Topsoil removal will change the surface of the project area and therefore the topography. Topsoil stockpiles will add features to the surface thereby changing the topography. Topsoil should only be removed when and where necessary to prevent unnecessary soil erosion.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			

- Topsoil should only be removed when and where necessary;
- Topsoil stockpiles should be vegetated where possible;
- Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure; and
- Where possible spread topsoil in the pipeline servitude areas when construction is complete.

Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-35)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (Pipeline routes require infrastructure development)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Construction of the pipeline infrastructure will add features to the topography thereby changing.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-70)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Moderate (3)	Moderate loss and / or damage to biological or	

		physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Limit the footprint area of pipeline infrastructure where possible.			
Post-Mitigation			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-63)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

11.3.2.1.2 WBT and West BWSF Complex

The WBT and west BWSF complex will be constructed within the Driefontein MRA. This infrastructure is expected to have a negative impact on the topography of the Driefontein MRA. The interactions and resultant impacts of the WBT and west BWSF complex are indicated in Table 36.

Table 36: Interactions and Impacts of the WBT and West BWSF Complex on the Topography of the Driefontein MRA (Construction Phase)

Interaction	Impact
Site clearance and vegetation removal	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.
Topsoil removal and stockpiling	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.
Infrastructure development	Construction of the WBT and west BWSF complex infrastructure will add features to the topography thereby changing it.

Impact Description

Site clearance and vegetation removal, and topsoil removal and stockpiling prior to the development of the WBT and west BWSF complex will have a minor negative impact on the topography. Construction of the WBT and west BWSF complex infrastructure will add features to the surface and is expected to have a moderate negative impact on the topography.

Management Objectives

The management objectives are to minimise the topography change as a result of site clearance and vegetation removal; topsoil removal and stockpiling, and infrastructure development.

Management Actions

The following management actions are required for the WBT and west BWSF complex in the Driefontein MRA:

- Vegetation should only be removed when and where necessary;
- Topsoil should only be removed when and where necessary;
- Topsoil stockpiles should be vegetated where possible;
- Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure; and
- Limit the footprint area of WBT and west BWSF complex infrastructure where possible.

Impact Ratings

The impact ratings and mitigation / management measures for the WBT and west BWSF complex are summarised in Table 37.

Table 37: Potential Impacts of the WBT and West BWSF Complex on the Topography of the Driefontein MRA (Construction Phase)

Activity and Interaction (WBT and west BWSF complex requires site clearance and vegetation removal)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Site clearance and vegetation removal will change the surface of the project area and therefore the topography. Vegetation should only be removed when and where necessary to prevent unnecessary soil erosion.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-56)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Vegetation should only be removed when and where necessary.			
Post-Mitigation			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-49)

Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (WBT and west BWSF complex requires topsoil removal and stockpiling)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Topsoil removal will change the surface of the project area and therefore the topography. Topsoil stockpiles will add features to the surface thereby changing the topography. Topsoil should only be removed when and where necessary to prevent unnecessary soil erosion.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-56)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			

- Topsoil should only be removed when and where necessary;
- Topsoil stockpiles should be vegetated where possible; and
- Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure.

Post-Mitigation			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-49)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (WBT and west BWSF complex requires infrastructure development)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Construction of the WBT and west BWSF complex infrastructure will add features to the topography thereby changing.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-56)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning.	

		Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Limit the footprint area of WBT and west BWSF complex infrastructure where possible.			
Post-Mitigation			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-49)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

11.3.2.1.3 Collection Sumps and Pump Stations

The collection sumps and pump stations at Driefontein 3 TSF and Driefontein 5 TSF will be constructed within the Driefontein MRA. This infrastructure is expected to have a negative impact on the topography of the Driefontein MRA. The interactions and resultant impacts of the collection sumps and pump stations are indicated in Table 38.

Table 38: Interactions and Impacts of the Collection Sumps and Pump Stations on the Topography of the Driefontein MRA (Construction Phase)

Interaction	Impact
Site clearance and vegetation removal	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.
Topsoil removal and stockpiling	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.
Infrastructure development	Construction of the collection sump and pump station infrastructure will add features to the topography thereby changing it.

Impact Description

Site clearance and vegetation removal, and topsoil removal and stockpiling prior to the development of the collection sumps and pump stations will have a minor negative impact on the topography. Construction of the collection sumps and pump stations will add features to the surface and is expected to have a moderate negative impact on the topography.

Management Objectives

The management objectives are to minimise the topography change as a result of site clearance and vegetation removal; topsoil removal and stockpiling, and infrastructure development.

Management Actions

The following management actions are required for the collection sumps and pump stations in the Driefontein MRA:

- Vegetation should only be removed when and where necessary;
- Topsoil should only be removed when and where necessary;
- Topsoil stockpiles should be vegetated where possible;
- Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure; and
- Limit the footprint area of collection sump and pump station infrastructure where possible.

Impact Ratings

The impact ratings and mitigation / management measures for the collection sumps and pump stations are summarised in Table 39.

Table 39: Potential Impacts of the Collection Sumps and Pump Stations on the Topography of the Driefontein MRA (Construction Phase)

Activity and Interaction (Collection sumps and pump stations require site clearance and vegetation removal)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Site clearance and vegetation removal will change the surface of the project area and therefore the topography. Vegetation should only be removed when and where necessary to prevent unnecessary soil erosion.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Vegetation should only be removed when and where necessary.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Negligible negative (-35)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological	

		or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (Collection sumps and pump stations require topsoil removal and stockpiling)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Topsoil removal will change the surface of the project area and therefore the topography. Topsoil stockpiles will add features to the surface thereby changing the topography. Topsoil should only be removed when and where necessary to prevent unnecessary soil erosion.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; and ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope			

failure.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Negligible negative (-35)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (Collection sumps and pump stations require infrastructure development)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Construction of the collection sump and pump station infrastructure will add features to the topography thereby changing.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect	

		that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Limit the footprint area of collection sump and pump station infrastructure where possible.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Negligible negative (-35)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

11.3.2.2 Operational Phase

The operational phase is characterised by operation of the pipelines, WBT and west BWSF complex, and collection sumps and pump stations. It is also characterised by the hydraulic reclamation of Driefontein 3 TSF and Driefontein 5 TSF. Only the hydraulic reclamation will impact on the topography. This phase will have a negative impact on the topography; however, once hydraulic reclamation is complete; there will be an overall neutral impact on the topography.

11.3.2.2.1 Hydraulic Reclamation

Hydraulic reclamation of Driefontein 3 TSF and Driefontein 5 TSF will occur within the Driefontein MRA. This is expected to have a negative impact on the topography of the Driefontein MRA. The interactions and resultant impacts of the hydraulic reclamation are indicated in Table 40.

Table 40: Interactions and Impacts of the Hydraulic Reclamation on the Topography of the Driefontein MRA (Operational Phase)

Interaction	Impact
Hydraulic reclamation	Hydraulic reclamation involves removing features from the surface and will thereby change the topography.

Impact Description

Hydraulic reclamation of Driefontein 3 TSF and Driefontein 5 TSF will have a moderate negative impact on the topography. Once the hydraulic reclamation is complete, there will be a neutral impact on the topography and it will be returned to a state similar to the pre-mining state.

Management Objectives

The management objectives are to return the topography to a state similar to the pre-mining state by means of hydraulic reclamation.

Management Actions

The following management actions are required for the hydraulic reclamation in the Driefontein MRA:

- Ensure the slopes of the TSFs are not too steep (18° or less) during reclamation to prevent slope failure.

Impact Ratings

The impact ratings and mitigation / management measures for the hydraulic reclamation are summarised in Table 41.

Table 41: Potential Impacts of the Hydraulic Reclamation on the Topography of the Driefontein MRA (Operational Phase)

Activity and Interaction (Hydraulic Reclamation of Driefontein 3 TSF and Driefontein 5 TSF)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Hydraulic reclamation involves removing features from the surface and will thereby change the topography. Once the hydraulic reclamation is complete, there will be an overall neutral impact on the topography. This will help to reverse some of the changes that occurred as a result of previous mining.			
Prior to Mitigation / Management			
Duration	Long Term	The impact will occur for 6-15 years and the	Moderate

	(4)	impact can be reversed with management.	negative (-84)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Very Serious (5)	Serious loss and / or damage to biological or physical resources or highly sensitive environments, limiting ecosystem function. Very serious widespread social impacts. Irreparable damage to highly valued items.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Ensure the slopes of the TSFs are not too steep (18° or less) during reclamation to prevent slope failure.			
Post-Mitigation			
Duration	Long Term (4)	The impact will occur for 6-15 years and the impact can be reversed with management.	Moderate negative (-77)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Serious (4)	Serious loss and / or damage to biological or physical resources or moderately sensitive environments, limiting ecosystem function. On-going serious social issues. Significant damage to structures / items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

11.3.2.3 Decommissioning Phase

The decommissioning phase is characterised by the demolition and removal of infrastructure and rehabilitation of disturbed areas. This phase will have a negative impact on the topography; however, once rehabilitation is complete, there will be an overall neutral impact on the topography.

11.3.2.3.1 Pipeline Routes

The pipeline routes will be decommissioned within the Driefontein MRA. This is expected to have a negative impact on the topography of the Driefontein MRA. The interactions and resultant impacts of the pipeline routes are indicated in Table 42.

Table 42: Interactions and Impacts of the Pipeline Routes on the Topography of the Driefontein MRA (Decommissioning Phase)

Interaction	Impact
Demolition and removal of infrastructure	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.
Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will change the topography.

Impact Description

Demolition and removal of infrastructure will have a minor negative impact on the topography. Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation is expected to have a minor negative impact on the topography. Once the infrastructure is removed and the rehabilitation is complete, there will be a neutral impact on the topography and it will be returned to a state similar to the pre-development state.

Management Objectives

The management objectives are to rehabilitate the topography by demolition and removal of infrastructure and rehabilitation of disturbed areas.

Management Actions

The following management actions are required for the pipeline routes in the Driefontein MRA:

- Ensure that all unnecessary infrastructure is demolished;
- Ensure that all demolished infrastructure is removed from the project area;
- Rehabilitate all areas where infrastructure has been removed;

- Rehabilitate all disturbed areas;
- Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography;
- Spread topsoil over the rehabilitated area;
- Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography;
- Re-vegetate the rehabilitated areas; and
- Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.

Impact Ratings

The impact ratings and mitigation / management measures for the pipeline routes are summarised in Table 43.

Table 43: Potential Impacts of the Pipeline Routes on the Topography of the Driefontein MRA (Decommissioning Phase)

Activity and Interaction (Pipeline routes require demolition and removal of infrastructure)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Demolition and removal of infrastructure will remove features from the surface and thereby change the topography. Once the infrastructure is removed, there will be an overall neutral impact on the topography. This will help to reverse some of the changes that occurred when the infrastructure was constructed.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur.	

		> 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; and ■ Rehabilitate all areas where infrastructure has been removed.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-35)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (Pipeline routes require rehabilitation of disturbed areas)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Rehabilitation of disturbed areas will change the topography. Once the rehabilitation is complete, there will be an overall neutral impact on the topography. The aim of rehabilitation is to create a free-draining topography. Spreading topsoil, and profiling and contouring will change the topography and assist to restore surface water flow and drainage lines to create a free-draining topography and assist to prevent soil erosion.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-56)
Extent	Limited (2)	The impact is limited to the site and its immediate	

		surroundings.	
Intensity	Moderate (3)	Moderate loss and / or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-49)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur.	

		> 80% probability	
Nature	Negative		

11.3.2.3.2 WBT and West BWSF Complex

The WBT and west BWSF complex will be decommissioned within the Driefontein MRA. This is expected to have a negative impact on the topography of the Driefontein MRA. The interactions and resultant impacts of the WBT and west BWSF complex are indicated in Table 44.

Table 44: Interactions and Impacts of the WBT and West BWSF Complex on the Topography of the Driefontein MRA (Decommissioning Phase)

Interaction	Impact
Demolition and removal of infrastructure	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.
Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will change the topography.

Impact Description

Demolition and removal of infrastructure will have a minor negative impact on the topography. Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation is expected to have a minor negative impact on the topography. Once the infrastructure is removed and the rehabilitation is complete, there will be a neutral impact on the topography and it will be returned to a state similar to the pre-development state.

Management Objectives

The management objectives are to rehabilitate the topography by demolition and removal of infrastructure and rehabilitation of disturbed areas.

Management Actions

The following management actions are required for the WBT and west BWSF complex in the Driefontein MRA:

- Ensure that all unnecessary infrastructure is demolished;
- Ensure that all demolished infrastructure is removed from the project area;
- Rehabilitate all areas where infrastructure has been removed;

- Rehabilitate all disturbed areas;
- Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography;
- Spread topsoil over the rehabilitated area;
- Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography;
- Re-vegetate the rehabilitated areas; and
- Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.

Impact Ratings

The impact ratings and mitigation / management measures for the WBT and west BWSF complex are summarised in Table 45.

Table 45: Potential Impacts of the WBT and West BWSF Complex on the Topography of the Driefontein MRA (Decommissioning Phase)

Activity and Interaction (WBT and west BWSF complex requires demolition and removal of infrastructure)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Demolition and removal of infrastructure will remove features from the surface and thereby change the topography. Once the infrastructure is removed, there will be an overall neutral impact on the topography. This will help to reverse some of the changes that occurred when the infrastructure was constructed.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-35)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur.	

		> 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; and ■ Rehabilitate all areas where infrastructure has been removed.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-28)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (WBT and west BWSF complex requires rehabilitation of disturbed areas)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Rehabilitation of disturbed areas will change the topography. Once the rehabilitation is complete, there will be an overall neutral impact on the topography. The aim of rehabilitation is to create a free-draining topography. Spreading topsoil, and profiling and contouring will change the topography and assist to restore surface water flow and drainage lines to create a free-draining topography and assist to prevent soil erosion.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Minor negative (-42)

Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-35)
Extent	Very Limited / Isolated (1)	The impact will occur for less than 1 year and is reversible.	
Intensity	Minor (2)	The impact is limited to specific isolated parts of the site.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	

Nature	Negative		

11.3.2.3.3 Collection Sumps and Pump Stations

The collection sumps and pump stations will be decommissioned within the Driefontein MRA. This is expected to have a negative impact on the topography of the Driefontein MRA. The interactions and resultant impacts of the collection sumps and pump stations are indicated in Table 46.

Table 46: Interactions and Impacts of the Collection Sumps and Pump Stations on the Topography of the Driefontein MRA (Decommissioning Phase)

Interaction	Impact
Demolition and removal of infrastructure	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.
Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will change the topography.

Impact Description

Demolition and removal of infrastructure will have a minor negative impact on the topography. Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation is expected to have a minor negative impact on the topography. Once the infrastructure is removed and the rehabilitation is complete, there will be a neutral impact on the topography and it will be returned to a state similar to the pre-development state.

Management Objectives

The management objectives are to rehabilitate the topography by demolition and removal of infrastructure and rehabilitation of disturbed areas.

Management Actions

The following management actions are required for the collection sumps and pump stations in the Driefontein MRA:

- Ensure that all unnecessary infrastructure is demolished;
- Ensure that all demolished infrastructure is removed from the project area;
- Rehabilitate all areas where infrastructure has been removed;
- Rehabilitate all disturbed areas;

- Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography;
- Spread topsoil over the rehabilitated area;
- Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography;
- Re-vegetate the rehabilitated areas; and
- Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.

Impact Ratings

The impact ratings and mitigation / management measures for the collection sumps and pump stations are summarised in Table 47.

Table 47: Potential Impacts of the Collection Sumps and Pump Stations on the Topography of the Driefontein MRA (Decommissioning Phase)

Activity and Interaction (Collection sumps and pump stations require demolition and removal of infrastructure)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Demolition and removal of infrastructure will remove features from the surface and thereby change the topography. Once the infrastructure is removed, there will be an overall neutral impact on the topography. This will help to reverse some of the changes that occurred when the infrastructure was constructed.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-35)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	

Nature	Negative		
Mitigation / Management Actions			
■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; and ■ Rehabilitate all areas where infrastructure has been removed.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-28)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (Collection sumps and pump stations require rehabilitation of disturbed areas)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Rehabilitation of disturbed areas will change the topography. Once the rehabilitation is complete, there will be an overall neutral impact on the topography. The aim of rehabilitation is to create a free-draining topography. Spreading topsoil, and profiling and contouring will change the topography and assist to restore surface water flow and drainage lines to create a free-draining topography and assist to prevent soil erosion.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its	

		immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-35)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	

Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

11.3.2.3.4 Driefontein 3 TSF and Driefontein 5 TSF

The footprints of Driefontein 3 TSF and Driefontein 5 TSF will be rehabilitated within the Driefontein MRA. This is expected to have a negative impact on the topography of the Driefontein MRA. The interactions and resultant impacts of Driefontein 3 TSF and Driefontein 5 TSF are indicated in Table 48.

Table 48: Interactions and Impacts of Driefontein 3 TSF and Driefontein 5 TSF on the Topography of the Driefontein MRA (Decommissioning Phase)

Interaction	Impact
Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will change the topography.

Impact Description

Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation is expected to have a minor negative impact on the topography. Once the infrastructure is removed and the rehabilitation is complete, there will be a neutral impact on the topography and it will be returned to a state similar to the pre-mining state.

Management Objectives

The management objectives are to rehabilitate the topography by rehabilitation of disturbed areas.

Management Actions

The following management actions are required for Driefontein 3 TSF and Driefontein 5 TSF in the Driefontein MRA:

- Rehabilitate all disturbed areas;
- Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography;
- Spread topsoil over the rehabilitated area;
- Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography;

- Re-vegetate the rehabilitated areas; and
- Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.

Impact Ratings

The impact ratings and mitigation / management measures for Driefontein 3 TSF and Driefontein 5 TSF are summarised in Table 49.

Table 49: Potential Impacts of Driefontein 3 TSF and Driefontein 5 TSF on the Topography of the Driefontein MRA (Decommissioning Phase)

Activity and Interaction (Driefontein 3 TSF and Driefontein 5 TSF require rehabilitation of disturbed areas)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Rehabilitation of disturbed areas will change the topography. Once the rehabilitation is complete, there will be an overall neutral impact on the topography. The aim of rehabilitation is to create a free-draining topography. Spreading topsoil, and profiling and contouring will change the topography and assist to restore surface water flow and drainage lines to create a free-draining topography and assist to prevent soil erosion.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-63)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Moderate (3)	Moderate loss and / or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining			

topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-56)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

11.3.3 Cooke Mining Right Area

The project activities of the Cooke MRA are listed in Table 50 below. The activities highlighted in red are applicable to the topography impact assessment for the Cooke MRA. Plan 8 (Appendix A) illustrates the Cooke MRA infrastructure.

Table 50: Cooke MRA Project Activities Applicable to Topography

Category	Activity
Infrastructure	Pipeline routes (water, slurry and thickened tailings).
	Cooke thickener and BWSF.

Category	Activity
	Collection sumps and pump stations at Cooke TSF and Cooke 4 South TSF.
Processes	Abstraction of water from Cooke 1 shaft.
	Hydraulic reclamation of Cooke TSF and Cooke 4 South TSF.
Pumping	Pumping 500 kt/m of tailings from Cooke TSF to the Cooke thickener
	Pumping from the Cooke thickener to the CPP via Ezulwini.
Electricity Supply	Power supply from the Cooke substation to the Cooke thickener.
	Power supply from the Cooke plant to Cooke TSF.

The Cooke MRA consists of the following infrastructure activities:

- Pipeline routes (water, slurry and thickened tailings);
- Cooke thickener; and
- Collection sumps and pump stations at Cooke TSF and Cooke 4 South TSF.

The Cooke MRA consists of the following process activities:

- Hydraulic reclamation of Cooke TSF and Cooke 4 South TSF.

11.3.3.1 Construction Phase

The construction phase is characterised by site development and infrastructure construction. This includes site clearance and vegetation removal, topsoil removal and stockpiling and surface infrastructure development. The construction phase will have negative impacts on the topography.

11.3.3.1.1 Pipeline Routes

Pipeline routes will be constructed within the Cooke MRA to transport water, slurry and tailings. These pipeline routes are expected to have a negative impact on the topography of the Cooke MRA. The interactions and resultant impacts of the pipeline routes are indicated in Table 51.

Table 51: Interactions and Impacts of the Pipeline Routes on the Topography of the Cooke MRA (Construction Phase)

Interaction	Impact
Site clearance and vegetation removal	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.
Topsoil removal and stockpiling	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.
Infrastructure development	Construction of the pipeline infrastructure will add features to the topography thereby changing it.

Impact Description

Site clearance and vegetation removal, and topsoil removal and stockpiling prior to the development of the pipeline infrastructure will have a minor negative impact on the topography. Construction of the pipeline infrastructure will add features to the surface and is expected to have a moderate negative impact on the topography. These impacts will only occur within the pipeline servitudes.

Management Objectives

The management objectives are to minimise the topography change as a result of site clearance and vegetation removal; topsoil removal and stockpiling, and pipeline infrastructure development.

Management Actions

The following management actions are required for the pipeline routes in the Cooke MRA:

- Vegetation should only be removed when and where necessary;
- Topsoil should only be removed when and where necessary;
- Topsoil stockpiles should be vegetated where possible;
- Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure;
- Limit the footprint area of pipeline infrastructure where possible; and
- Where possible spread topsoil and re-vegetate the pipeline servitude areas when construction is complete.

Impact Ratings

The impact ratings and mitigation / management measures for the pipeline routes are summarised in Table 52.

Table 52: Potential Impacts of the Pipeline Routes on the Topography of the Cooke MRA (Construction Phase)

Activity and Interaction (Pipeline routes require site clearance and vegetation removal)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Site clearance and vegetation removal will change the surface of the project area and therefore the topography. Vegetation should only be removed when and where necessary to prevent unnecessary soil erosion.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Vegetation should only be removed when and where necessary; and ■ Where possible re-vegetate the pipeline servitude areas when construction is complete.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-35)

Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (Pipeline routes require topsoil removal and stockpiling)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Topsoil removal will change the surface of the project area and therefore the topography. Topsoil stockpiles will add features to the surface thereby changing the topography. Topsoil should only be removed when and where necessary to prevent unnecessary soil erosion.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

Mitigation / Management Actions			
■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure; and ■ Where possible spread topsoil in the pipeline servitude areas when construction is complete.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-35)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (Pipeline routes require infrastructure development)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Construction of the pipeline infrastructure will add features to the topography thereby changing.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-70)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	

Intensity	Moderate (3)	Moderate loss and / or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Limit the footprint area of pipeline infrastructure where possible.			
Post-Mitigation			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-63)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

11.3.3.1.2 Cooke Thickener

The Cooke thickener will be constructed within the Cooke MRA. This infrastructure is expected to have a negative impact on the topography of the Cooke MRA. The interactions and resultant impacts of the Cooke thickener are indicated in Table 53.

Table 53: Interactions and Impacts of the Cooke Thickener on the Topography of the Cooke MRA (Construction Phase)

Interaction	Impact
Site clearance and vegetation removal	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.
Topsoil removal and stockpiling	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.
Infrastructure development	Construction of the Cooke thickener infrastructure will add features to the topography thereby changing it.

Impact Description

Site clearance and vegetation removal, and topsoil removal and stockpiling prior to the development of the Cooke thickener will have a minor negative impact on the topography. Construction of the Cooke thickener infrastructure will add features to the surface and is expected to have a moderate negative impact on the topography.

Management Objectives

The management objectives are to minimise the topography change as a result of site clearance and vegetation removal; topsoil removal and stockpiling, and infrastructure development.

Management Actions

The following management actions are required for the Cooke thickener in the Cooke MRA:

- Vegetation should only be removed when and where necessary;
- Topsoil should only be removed when and where necessary;
- Topsoil stockpiles should be vegetated where possible;
- Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure; and
- Limit the footprint area of Cooke thickener infrastructure where possible.

Impact Ratings

The impact ratings and mitigation / management measures for the Cooke thickener are summarised in Table 54.

Table 54: Potential Impacts of the Cooke Thickener on the Topography of the Cooke MRA (Construction Phase)

Activity and Interaction (Cooke thickener requires site clearance and vegetation removal)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Site clearance and vegetation removal will change the surface of the project area and therefore the topography. Vegetation should only be removed when and where necessary to prevent unnecessary soil erosion.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-56)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Vegetation should only be removed when and where necessary.			
Post-Mitigation			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-49)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem	

		functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (Cooke thickener requires topsoil removal and stockpiling)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Topsoil removal will change the surface of the project area and therefore the topography. Topsoil stockpiles will add features to the surface thereby changing the topography. Topsoil should only be removed when and where necessary to prevent unnecessary soil erosion.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-56)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; and ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure.			

Post-Mitigation			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-49)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (Cooke thickener requires infrastructure development)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Construction of the Cooke thickener infrastructure will add features to the topography thereby changing.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-56)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	

Nature	Negative		
Mitigation / Management Actions			
■ Limit the footprint area of Cooke thickener infrastructure where possible.			
Post-Mitigation			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-49)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

11.3.3.1.3 Collection Sumps and Pump Stations

The collection sumps and pump stations at Cooke TSF will be constructed within the Cooke MRA. This infrastructure is expected to have a negative impact on the topography of the Cooke MRA. The interactions and resultant impacts of the collection sumps and pump stations are indicated in Table 55.

Table 55: Interactions and Impacts of the Collection Sumps and Pump Stations on the Topography of the Cooke MRA (Construction Phase)

Interaction	Impact
Site clearance and vegetation removal	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.

Interaction	Impact
Topsoil removal and stockpiling	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.
Infrastructure development	Construction of the collection sump and pump station infrastructure will add features to the topography thereby changing it.

Impact Description

Site clearance and vegetation removal, and topsoil removal and stockpiling prior to the development of the collection sumps and pump stations will have a minor negative impact on the topography. Construction of the collection sumps and pump stations will add features to the surface and is expected to have a moderate negative impact on the topography.

Management Objectives

The management objectives are to minimise the topography change as a result of site clearance and vegetation removal; topsoil removal and stockpiling, and infrastructure development.

Management Actions

The following management actions are required for the collection sumps and pump stations in the Cooke MRA:

- Vegetation should only be removed when and where necessary;
- Topsoil should only be removed when and where necessary;
- Topsoil stockpiles should be vegetated where possible;
- Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure; and
- Limit the footprint area of collection sump and pump station infrastructure where possible.

Impact Ratings

The impact ratings and mitigation / management measures for the collection sumps and pump stations are summarised in Table 56.

Table 56: Potential Impacts of the Collection Sumps and Pump Stations on the Topography of the Cooke MRA (Construction Phase)

Activity and Interaction (Collection sumps and pump stations require site clearance and vegetation removal)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Site clearance and vegetation removal will change the surface of the project area and therefore the topography. Vegetation should only be removed when and where necessary to prevent unnecessary soil erosion.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Vegetation should only be removed when and where necessary.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Negligible negative (-35)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological	

		or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (Collection sumps and pump stations require topsoil removal and stockpiling)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Topsoil removal will change the surface of the project area and therefore the topography. Topsoil stockpiles will add features to the surface thereby changing the topography. Topsoil should only be removed when and where necessary to prevent unnecessary soil erosion.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; and ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope			

failure.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Negligible negative (-35)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (Collection sumps and pump stations require infrastructure development)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Construction of the collection sump and pump station infrastructure will add features to the topography thereby changing.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect	

		that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Limit the footprint area of collection sump and pump station infrastructure where possible.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Negligible negative (-35)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

11.3.3.2 Operational Phase

The operational phase is characterised by operation of the pipelines, Cooke thickener, and collection sumps and pump stations. It is also characterised by the hydraulic reclamation of Cooke TSF and Cooke 4 South TSF. Only the hydraulic reclamation will impact on the topography. This phase will have a negative impact on the topography; however, once hydraulic reclamation is complete; there will be an overall neutral impact on the topography.

11.3.3.2.1 Hydraulic Reclamation

Hydraulic reclamation of Cooke TSF and Cooke 4 South TSF will occur within the Cooke MRA. This is expected to have a negative impact on the topography of the Cooke MRA. The interactions and resultant impacts of the hydraulic reclamation are indicated in Table 57.

Table 57: Interactions and Impacts of the Hydraulic Reclamation on the Topography of the Cooke MRA (Operational Phase)

Interaction	Impact
Hydraulic reclamation	Hydraulic reclamation involves removing features from the surface and will thereby change the topography.

Impact Description

Hydraulic reclamation of Cooke TSF will have a moderate negative impact on the topography. Once the hydraulic reclamation is complete, there will be a neutral impact on the topography and it will be returned to a state similar to the pre-mining state.

Management Objectives

The management objectives are to return the topography to a state similar to the pre-mining state by means of hydraulic reclamation.

Management Actions

The following management actions are required for the hydraulic reclamation in the Cooke MRA:

- Ensure the slopes of the TSF are not too steep (18° or less) during reclamation to prevent slope failure.

Impact Ratings

The impact ratings and mitigation / management measures for the hydraulic reclamation are summarised in Table 58.

Table 58: Potential Impacts of the Hydraulic Reclamation on the Topography of the Cooke MRA (Operational Phase)

Activity and Interaction (Hydraulic Reclamation of Cooke TSF)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Hydraulic reclamation involves removing features from the surface and will thereby change the topography. Once the hydraulic reclamation is complete, there will be an overall neutral impact on the topography. This will help to reverse some of the changes that occurred as a result of previous mining.			
Prior to Mitigation / Management			
Duration	Long Term (4)	The impact will occur for 6-15 years and the impact can be reversed with management.	Moderate negative (-84)

Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Very Serious (5)	Serious loss and / or damage to biological or physical resources or highly sensitive environments, limiting ecosystem function. Very serious widespread social impacts. Irreparable damage to highly valued items.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Ensure the slopes of the TSF are not too steep (18° or less) during reclamation to prevent slope failure.			
Post-Mitigation			
Duration	Long Term (4)	The impact will occur for 6-15 years and the impact can be reversed with management.	Moderate negative (-77)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Serious (4)	Serious loss and / or damage to biological or physical resources or moderately sensitive environments, limiting ecosystem function. On-going serious social issues. Significant damage to structures / items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

11.3.3.3 Decommissioning Phase

The decommissioning phase is characterised by the demolition and removal of infrastructure and rehabilitation of disturbed areas. This phase will have a negative impact on the topography; however, once rehabilitation is complete, there will be an overall neutral impact on the topography.

11.3.3.3.1 Pipeline Routes

The pipeline routes will be decommissioned within the Cooke MRA. This is expected to have a negative impact on the topography of the Cooke MRA. The interactions and resultant impacts of the pipeline routes are indicated in Table 59.

Table 59: Interactions and Impacts of the Pipeline Routes on the Topography of the Cooke MRA (Decommissioning Phase)

Interaction	Impact
Demolition and removal of infrastructure	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.
Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will change the topography.

Impact Description

Demolition and removal of infrastructure will have a minor negative impact on the topography. Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation is expected to have a minor negative impact on the topography. Once the infrastructure is removed and the rehabilitation is complete, there will be a neutral impact on the topography and it will be returned to a state similar to the pre-development state.

Management Objectives

The management objectives are to rehabilitate the topography by demolition and removal of infrastructure and rehabilitation of disturbed areas.

Management Actions

The following management actions are required for the pipeline routes in the Cooke MRA:

- Ensure that all unnecessary infrastructure is demolished;
- Ensure that all demolished infrastructure is removed from the project area;
- Rehabilitate all areas where infrastructure has been removed;
- Rehabilitate all disturbed areas;

- Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography;
- Spread topsoil over the rehabilitated area;
- Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography;
- Re-vegetate the rehabilitated areas; and
- Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.

Impact Ratings

The impact ratings and mitigation / management measures for the pipeline routes are summarised in Table 60.

Table 60: Potential Impacts of the Pipeline Routes on the Topography of the Cooke MRA (Decommissioning Phase)

Activity and Interaction (Pipeline routes require demolition and removal of infrastructure)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Demolition and removal of infrastructure will remove features from the surface and thereby change the topography. Once the infrastructure is removed, there will be an overall neutral impact on the topography. This will help to reverse some of the changes that occurred when the infrastructure was constructed.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	

Nature	Negative		
Mitigation / Management Actions			
■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; and ■ Rehabilitate all areas where infrastructure has been removed.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-35)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (Pipeline routes require rehabilitation of disturbed areas)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Rehabilitation of disturbed areas will change the topography. Once the rehabilitation is complete, there will be an overall neutral impact on the topography. The aim of rehabilitation is to create a free-draining topography. Spreading topsoil, and profiling and contouring will change the topography and assist to restore surface water flow and drainage lines to create a free-draining topography and assist to prevent soil erosion.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-56)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	

Intensity	Moderate (3)	Moderate loss and / or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-49)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	

Nature	Negative		

11.3.3.3.2 Cooke Thickener

The Cooke thickener will be decommissioned within the Cooke MRA. This is expected to have a negative impact on the topography of the Cooke MRA. The interactions and resultant impacts of the Cooke thickener are indicated in Table 61.

Table 61: Interactions and Impacts of the Cooke Thickener on the Topography of the Cooke MRA (Decommissioning Phase)

Interaction	Impact
Demolition and removal of infrastructure	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.
Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will change the topography.

Impact Description

Demolition and removal of infrastructure will have a minor negative impact on the topography. Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation is expected to have a minor negative impact on the topography. Once the infrastructure is removed and the rehabilitation is complete, there will be a neutral impact on the topography and it will be returned to a state similar to the pre-development state.

Management Objectives

The management objectives are to rehabilitate the topography by demolition and removal of infrastructure and rehabilitation of disturbed areas.

Management Actions

The following management actions are required for the Cooke thickener in the Cooke MRA:

- Ensure that all unnecessary infrastructure is demolished;
- Ensure that all demolished infrastructure is removed from the project area;
- Rehabilitate all areas where infrastructure has been removed;
- Rehabilitate all disturbed areas;
- Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography;

- Spread topsoil over the rehabilitated area;
- Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography;
- Re-vegetate the rehabilitated areas; and
- Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.

Impact Ratings

The impact ratings and mitigation / management measures for the Cooke thickener are summarised in Table 62.

Table 62: Potential Impacts of the Cooke Thickener on the Topography of the Cooke MRA (Decommissioning Phase)

Activity and Interaction (Cooke thickener requires demolition and removal of infrastructure)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Demolition and removal of infrastructure will remove features from the surface and thereby change the topography. Once the infrastructure is removed, there will be an overall neutral impact on the topography. This will help to reverse some of the changes that occurred when the infrastructure was constructed.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-35)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			

■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; and ■ Rehabilitate all areas where infrastructure has been removed.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-28)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (Cooke thickener requires rehabilitation of disturbed areas)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Rehabilitation of disturbed areas will change the topography. Once the rehabilitation is complete, there will be an overall neutral impact on the topography. The aim of rehabilitation is to create a free-draining topography. Spreading topsoil, and profiling and contouring will change the topography and assist to restore surface water flow and drainage lines to create a free-draining topography and assist to prevent soil erosion.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning.	

		Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-35)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

11.3.3.3.3 Collection Sumps and Pump Stations

The collection sumps and pump stations will be decommissioned within the Cooke MRA. This is expected to have a negative impact on the topography of the Cooke MRA. The interactions and resultant impacts of the collection sumps and pump stations are indicated in Table 63.

Table 63: Interactions and Impacts of the Collection Sumps and Pump Stations on the Topography of the Cooke MRA (Decommissioning Phase)

Interaction	Impact
Demolition and removal of infrastructure	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.
Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will change the topography.

Impact Description

Demolition and removal of infrastructure will have a minor negative impact on the topography. Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation is expected to have a minor negative impact on the topography. Once the infrastructure is removed and the rehabilitation is complete, there will be a neutral impact on the topography and it will be returned to a state similar to the pre-development state.

Management Objectives

The management objectives are to rehabilitate the topography by demolition and removal of infrastructure and rehabilitation of disturbed areas.

Management Actions

The following management actions are required for the collection sumps and pump stations in the Cooke MRA:

- Ensure that all unnecessary infrastructure is demolished;
- Ensure that all demolished infrastructure is removed from the project area;
- Rehabilitate all areas where infrastructure has been removed;
- Rehabilitate all disturbed areas;
- Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography;

- Spread topsoil over the rehabilitated area;
- Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography;
- Re-vegetate the rehabilitated areas; and
- Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.

Impact Ratings

The impact ratings and mitigation / management measures for the collection sumps and pump stations are summarised in Table 64.

Table 64: Potential Impacts of the Collection Sumps and Pump Stations on the Topography of the Cooke MRA (Decommissioning Phase)

Activity and Interaction (Collection sumps and pump stations require demolition and removal of infrastructure)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Demolition and removal of infrastructure will remove features from the surface and thereby change the topography. Once the infrastructure is removed, there will be an overall neutral impact on the topography. This will help to reverse some of the changes that occurred when the infrastructure was constructed.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-35)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			

■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; and ■ Rehabilitate all areas where infrastructure has been removed.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-28)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (Collection sumps and pump stations require rehabilitation of disturbed areas)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Rehabilitation of disturbed areas will change the topography. Once the rehabilitation is complete, there will be an overall neutral impact on the topography. The aim of rehabilitation is to create a free-draining topography. Spreading topsoil, and profiling and contouring will change the topography and assist to restore surface water flow and drainage lines to create a free-draining topography and assist to prevent soil erosion.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem	

		functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-35)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	

Nature	Negative		

11.3.3.3.4 Cooke TSF and Cooke 4 South TSF

The footprint of Cooke TSF will be rehabilitated within the Cooke MRA. This is expected to have a negative impact on the topography of the Cooke MRA. The interactions and resultant impacts of Cooke TSF and Cooke 4 South TSF are indicated in Table 65.

Table 65: Interactions and Impacts of Cooke TSF and Cooke 4 South TSF on the Topography of the Cooke MRA (Decommissioning Phase)

Interaction	Impact
Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will change the topography.

Impact Description

Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation is expected to have a minor negative impact on the topography. Once the infrastructure is removed and the rehabilitation is complete, there will be a neutral impact on the topography and it will be returned to a state similar to the pre-mining state.

Management Objectives

The management objectives are to rehabilitate the topography by rehabilitation of disturbed areas.

Management Actions

The following management actions are required for Cooke TSF and Cooke 4 South TSF in the Cooke MRA:

- Rehabilitate all disturbed areas;
- Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography;
- Spread topsoil over the rehabilitated area;
- Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography;
- Re-vegetate the rehabilitated areas; and
- Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.

Impact Ratings

The impact ratings and mitigation / management measures for Cooke TSF and Cooke 4 South TSF are summarised in Table 66.

Table 66: Potential Impacts of Cooke TSF and Cooke 4 South TSF on the Topography of the Cooke MRA (Decommissioning Phase)

Activity and Interaction (Cooke TSF requires rehabilitation of disturbed areas)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Rehabilitation of disturbed areas will change the topography. Once the rehabilitation is complete, there will be an overall neutral impact on the topography. The aim of rehabilitation is to create a free-draining topography. Spreading topsoil, and profiling and contouring will change the topography and assist to restore surface water flow and drainage lines to create a free-draining topography and assist to prevent soil erosion.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-63)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Moderate (3)	Moderate loss and / or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography;			

■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-56)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

11.3.4 Ezulwini Mining Right Area

The project activities of the Ezulwini MRA are listed in Table 67 below. The activities highlighted in red are applicable to the topography impact assessment for the Ezulwini MRA. Plan 9 (Appendix A) illustrates the Ezulwini MRA infrastructure.

Table 67: Ezulwini Project Activities Applicable to Topography

Category	Activity
Infrastructure	Pipeline routes (water, slurry and thickened tailings).
Processes	Uranium extraction at Ezulwini (tailings to Ezulwini North Dump).
	Abstraction of water from Cooke shaft.
Pumping	Pumping water from Cooke 4 shaft to the Cooke 4 South TSF for reclamation.
	Pumping slurry from the TSF sump to the CPP.

Category	Activity
Electricity supply	Power supply from Ezulwini plant to the Cooke 4 South TSF.

The Ezulwini MRA consists of the following infrastructure activities:

- Pipeline routes (water, slurry and thickened tailings).

11.3.4.1 Construction Phase

The construction phase is characterised by site development and infrastructure construction. This includes site clearance and vegetation removal, topsoil removal and stockpiling and surface infrastructure development. The construction phase will have negative impacts on the topography.

11.3.4.1.1 Pipeline Routes

Pipeline routes will be constructed within the Ezulwini MRA to transport water, slurry and thickened tailings. These pipeline routes are expected to have a negative impact on the topography of the Ezulwini MRA. The interactions and resultant impacts of the pipeline routes are indicated in Table 68.

Table 68: Interactions and Impacts of the Pipeline Routes on the Topography of the Ezulwini MRA (Construction Phase)

Interaction	Impact
Site clearance and vegetation removal	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.
Topsoil removal and stockpiling	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.
Infrastructure development	Construction of the pipeline infrastructure will add features to the topography thereby changing it.

Impact Description

Site clearance and vegetation removal, and topsoil removal and stockpiling prior to the development of the pipeline infrastructure will have a minor negative impact on the topography. Construction of the pipeline infrastructure will add features to the surface and is expected to have a moderate negative impact on the topography. These impacts will only occur within the pipeline servitudes.

Management Objectives

The management objectives are to minimise the topography change as a result of site clearance and vegetation removal; topsoil removal and stockpiling, and pipeline infrastructure development.

Management Actions

The following management actions are required for the pipeline routes in the Ezulwini MRA:

- Vegetation should only be removed when and where necessary;
- Topsoil should only be removed when and where necessary;
- Topsoil stockpiles should be vegetated where possible;
- Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure;
- Limit the footprint area of pipeline infrastructure where possible; and
- Where possible spread topsoil and re-vegetate the pipeline servitude areas when construction is complete.

Impact Ratings

The impact ratings and mitigation / management measures for the pipeline routes are summarised in Table 69.

Table 69: Potential Impacts of the Pipeline Routes on the Topography of the Ezulwini MRA (Construction Phase)

Activity and Interaction (Pipeline routes require site clearance and vegetation removal)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Site clearance and vegetation removal will change the surface of the project area and therefore the topography. Vegetation should only be removed when and where necessary to prevent unnecessary soil erosion.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning.	

		Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Vegetation should only be removed when and where necessary; and ■ Where possible re-vegetate the pipeline servitude areas when construction is complete.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-35)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (Pipeline routes require topsoil removal and stockpiling)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Topsoil removal will change the surface of the project area and therefore the topography. Topsoil stockpiles will add features to the surface thereby changing the topography. Topsoil should only be removed when and where necessary to prevent unnecessary soil erosion.			
Prior to Mitigation / Management			

Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure; and ■ Where possible spread topsoil in the pipeline servitude areas when construction is complete.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-35)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	

Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (Pipeline routes require infrastructure development)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Construction of the pipeline infrastructure will add features to the topography thereby changing.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-70)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Moderate (3)	Moderate loss and / or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Limit the footprint area of pipeline infrastructure where possible.			
Post-Mitigation			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-63)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	

Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

11.3.4.2 Decommissioning Phase

The decommissioning phase is characterised by the demolition and removal of infrastructure and rehabilitation of disturbed areas. This phase will have a negative impact on the topography; however, once rehabilitation is complete, there will be an overall neutral impact on the topography.

11.3.4.2.1 Pipeline Routes

The pipeline routes will be decommissioned within the Ezulwini MRA. This is expected to have a negative impact on the topography of the Ezulwini MRA. The interactions and resultant impacts of the pipeline routes are indicated in Table 70.

Table 70: Interactions and Impacts of the Pipeline Routes on the Topography of the Ezulwini MRA (Decommissioning Phase)

Interaction	Impact
Demolition and removal of infrastructure	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.
Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will change the topography.

Impact Description

Demolition and removal of infrastructure will have a minor negative impact on the topography. Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring,

and re-vegetation is expected to have a minor negative impact on the topography. Once the infrastructure is removed and the rehabilitation is complete, there will be a neutral impact on the topography and it will be returned to a state similar to the pre-development state.

Management Objectives

The management objectives are to rehabilitate the topography by demolition and removal of infrastructure and rehabilitation of disturbed areas.

Management Actions

The following management actions are required for the pipeline routes in the Ezulwini MRA:

- Ensure that all unnecessary infrastructure is demolished;
- Ensure that all demolished infrastructure is removed from the project area;
- Rehabilitate all areas where infrastructure has been removed;
- Rehabilitate all disturbed areas;
- Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography;
- Spread topsoil over the rehabilitated area;
- Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography;
- Re-vegetate the rehabilitated areas; and
- Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.

Impact Ratings

The impact ratings and mitigation / management measures for the pipeline routes are summarised in Table 71.

Table 71: Potential Impacts of the Pipeline Routes on the Topography of the Ezulwini MRA (Decommissioning Phase)

Activity and Interaction (Pipeline routes require demolition and removal of infrastructure)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Demolition and removal of infrastructure will remove features from the surface and thereby change the topography. Once the infrastructure is removed, there will be an overall neutral impact on the topography. This will help to reverse some of the changes that occurred when the infrastructure was constructed.			
Prior to Mitigation / Management			

Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; and ■ Rehabilitate all areas where infrastructure has been removed.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-35)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

Activity and Interaction (Pipeline routes require rehabilitation of disturbed areas)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Rehabilitation of disturbed areas will change the topography. Once the rehabilitation is complete, there will be an overall neutral impact on the topography. The aim of rehabilitation is to create a free-draining topography. Spreading topsoil, and profiling and contouring will change the topography and assist to restore surface water flow and drainage lines to create a free-draining topography and assist to prevent soil erosion.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-56)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Moderate (3)	Moderate loss and / or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			

Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-49)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

11.4 Visual Impact Assessment

The project activities listed in Table 17 will be rated according to the impact they will have on the receiving environment, i.e. the environment before development. Negative visual impacts decrease the visual character of the pre-development environment while positive visual impacts increase the visual character of the pre-development environment. Neutral visual impacts assist to minimise the negative visual impacts of a development but don't result in a positive visual impact. A positive visual impact only occurs when an area is rehabilitated to a state that is better than the state of the pre-development environment, e.g. a mining area on previously agricultural land is rehabilitated to an area of natural vegetation and all visible signs of the agriculture and mining area are removed. Positive visual impacts rarely occur.

11.4.1 Kloof Mining Right Area

The project activities of the Kloof MRA are listed in Table 72 below. The activities highlighted in red are applicable to the visual impact assessment for the Kloof MRA. Plan 6 (Appendix A) illustrates the Kloof MRA infrastructure.

Table 72: Kloof MRA Project Activities Applicable to Visual

Category	Activity
Infrastructure	Pipeline routes (residual tailings).

Category	Activity
	Central Processing plant (CPP) incorporating Module 1 float and gold plants and uranium, roaster and acid plants.
	The Regional Tailings Storage Facility (RTSF), RTSF Return Water Dam (RWD) and the Advanced Water Treatment Facility (AWTF). Collectively known as the RTSF complex.
Processes	Abstraction of water from K10 shaft.
	Disposal of residue from the AWTF.
	Gold, uranium and sulfur extraction at the CPP (tailings to RTSF).
	Water distribution at the AWTF for discharge.
Pumping	Pumping up to 1.5 Mt/m of tailings to the RTSF.
	Pumping water from the RTSF Return Water Dam to the AWTF.
	Discharging treated water to the Leeuspruit.
Electricity supply	Power supply from Kloof 1 substation to the CPP.
	Power supply from Kloof 4 substation to the RTSF and AWTF.

The Kloof MRA consists of the following infrastructure activities:

- Pipeline routes (residual tailings);
- CPP; and
- RTSF, Return Water Dams (RWDs) and Advanced Water Treatment Facility (AWTF).

11.4.1.1 Construction Phase

The construction phase is characterised by site development and infrastructure construction. This includes site clearance and vegetation removal, topsoil removal and stockpiling and surface infrastructure development. The establishment of infrastructure and related construction activities will draw attention to the project area making receptors aware of the development. The construction phase will have negative visual impacts on the receiving environment.

11.4.1.1.1 Pipeline Routes

Pipeline routes will be constructed within the Kloof MRA to transport residual tailings. These pipeline routes are expected to have a negative visual impact on the receiving environment

of the Kloof MRA. The interactions and resultant impacts of the pipeline routes are indicated in Table 73.

Table 73: Interactions and Impacts of the Pipeline Routes on the Visual Aspects of the Kloof MRA (Construction Phase)

Interaction	Impact
Change of land use from agriculture to industry / mining	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.
Site clearance and vegetation removal	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.
Topsoil removal and stockpiling	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.
Infrastructure development	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.

Impact Description

The pipelines will be constructed close to ground level and are only expected to be visible from the immediate vicinity. Change of land use from agriculture to industry / mining as a result of the pipeline routes will have a minor negative visual impact on the receiving environment. Site clearance and vegetation removal, and topsoil removal and stockpiling prior to the development of the pipeline infrastructure will have a minor negative visual impact on the receiving environment. Construction of the pipeline infrastructure will have a minor negative visual impact on the receiving environment.

Management Objectives

The management objectives are to minimise the negative visual impact caused by the change of land use from agriculture to industry / mining. The management objectives also aim to minimise the negative visual impact caused by site clearance and vegetation removal, topsoil removal and stockpiling and infrastructure development.

Management Actions

The following management actions are required for the pipeline routes in the Kloof MRA:

- Vegetation should only be removed when and where necessary;
- Topsoil should only be removed when and where necessary;
- Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape;
- Apply dust suppression techniques to limit the dust dispersion from stockpiles;
- Limit the height and footprint area of pipeline infrastructure where possible;
- Use shade cloth / netting to screen the construction site;
- Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible;
- Metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the metal structures are painted, it is recommended that a neutral matt finish be used;
- If construction activities take place at night, down lighting must be implemented to minimise light pollution; and
- Where possible spread topsoil and re-vegetate the pipeline servitude areas when construction is complete.

Impact Ratings

The impact ratings and mitigation / management measures for the pipeline routes are summarised in Table 74.

Table 74: Potential Impacts of the Pipeline Routes on the Visual Aspects of the Kloof MRA (Construction Phase)

Activity and Interaction (Pipeline routes result in change of land use from agriculture to industry / mining)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: The change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance. This impact can potentially be reversed during the decommissioning phase if all the infrastructure is removed and the area is rehabilitated.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and	Minor negative (-

		is reversible.	49)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Moderate (3)	Moderate loss and / or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Where possible spread topsoil and re-vegetate the pipeline servitude areas when construction is complete; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-35)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	

Nature	Negative		
Activity and Interaction (Pipeline routes require site clearance and vegetation removal)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: The removal of vegetation for site clearing will have a negative visual impact on the receiving environment. The project area will become noticeable to the nearby receptors as it will contrast the surrounding areas.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Vegetation should only be removed when and where necessary; and ■ Where possible re-vegetate the pipeline servitude areas when construction is complete.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-30)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive	

		environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		
Activity and Interaction (Pipeline routes require topsoil removal and stockpiling)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-63)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape;			

■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles; and ■ Where possible spread topsoil in the pipeline servitude areas when construction is complete.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		
Activity and Interaction (Pipeline routes require infrastructure development)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-63)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	

Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Limit the height and footprint area of pipeline infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the metal structures are painted, it is recommended that a neutral matt finish be used; and ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.			
Post-Mitigation			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-54)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Almost Certain /	It is most likely that the impact will occur.	

	Highly Probable (6)	< 80% probability	
Nature	Negative		

11.4.1.1.2 CPP

The CPP will be constructed within the Kloof MRA. This infrastructure is expected to have a negative visual impact on the receiving environment of the Kloof MRA. The interactions and resultant impacts of the CPP are indicated in Table 75.

Table 75: Interactions and Impacts of CPP on the Visual Aspects of the Kloof MRA (Construction Phase)

Interaction	Impact
Change of land use from agriculture to industry / mining	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance. The change in land-use will contribute to the cumulative impacts of mining on the regional environment.
Site clearance and vegetation removal	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.
Topsoil removal and stockpiling	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.
Infrastructure development	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.

Impact Description

The CPP is expected to be visible from a maximum distance of 4 km. Change of land use from agriculture to industry / mining as a result of the CPP will have a moderate negative visual impact on the receiving environment. Site clearance and vegetation removal, and

topsoil removal and stockpiling prior to the development of the CPP infrastructure will have a minor negative visual impact on the receiving environment. Construction of the CPP infrastructure will have a moderate negative visual impact on the receiving environment.

Management Objectives

The management objectives are to minimise the negative visual impact caused by the change of land use from agriculture to industry / mining. The management objectives also aim to minimise the negative visual impact caused by site clearance and vegetation removal, topsoil removal and stockpiling and infrastructure development.

Management Actions

The following management actions are required for the CPP area in the Kloof MRA:

- Vegetation should only be removed when and where necessary;
- Topsoil should only be removed when and where necessary;
- Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape;
- Limit footprint area of topsoil stockpiles where possible;
- Limit the height of topsoil stockpiles to 3 metres;
- Apply dust suppression techniques to limit the dust dispersion from stockpiles;
- Plant fast-growing indigenous vegetation in areas where it can conceal the stockpiles and reduce dust generation;
- Ensure vegetation screens of indigenous trees (are built close to receptors (residential areas and roads) and maintained;
- Limit the height and footprint area of CPP infrastructure where possible;
- Use shade cloth / netting to screen the construction site;
- Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible;
- Pylons and metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the pylons and metal structures are painted, it is recommended that a neutral matt finish be used;
- Construction of vegetation berms must be implemented close to surface infrastructure so that vegetation can be established;
- If construction activities take place at night, down lighting must be implemented to minimise light pollution; and
- Where possible spread topsoil and re-vegetate the pipeline servitude areas when construction is complete.

Impact Ratings

The impact ratings and mitigation / management measures for the CPP are summarised in Table 76.

Table 76: Potential Impacts of the CPP on the Visual Aspects of the Kloof MRA (Construction Phase)

Activity and Interaction (CPP results in change of land use from agriculture to industry / mining)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: The change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance. The change in land-use will contribute to the cumulative impacts of mining on the regional environment. This impact can potentially be reversed during the decommissioning phase if all the infrastructure is removed and the area is rehabilitated.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Moderate negative (-84)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Serious (4)	Serious loss and / or damage to biological or physical resources or moderately sensitive environments, limiting ecosystem function. On-going serious social issues. Significant damage to structures / items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			

Post-Mitigation			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Moderate negative (-77)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Moderate (3)	Moderate loss and / or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (CPP requires site clearance and vegetation removal)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: The removal of vegetation for site clearing will have a negative visual impact on the receiving environment. The project area will become noticeable to the nearby receptors as it will contrast the surrounding areas.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-70)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	

Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Vegetation should only be removed when and where necessary.			
Post-Mitigation			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-60)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		
Activity and Interaction (CPP requires topsoil removal and stockpiling)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-70)
Extent	Local (3)	The impact will extend only as far as the	

		development site area.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit footprint area of topsoil stockpiles where possible; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles; and ■ Plant fast-growing indigenous vegetation in areas where it can conceal the stockpiles and reduce dust generation.			
Post-Mitigation			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-60)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	

Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		
Activity and Interaction (CPP requires infrastructure development)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Moderate negative (-77)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Moderate (3)	Moderate loss and / or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Ensure vegetation screens of indigenous trees (are built close to receptors (residential areas and roads) and maintained; ■ Limit the height and footprint area of CPP infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding			

landscape where possible; ■ Pylons and metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the pylons and metal structures are painted, it is recommended that a neutral matt finish be used; ■ Construction of vegetation berms must be implemented close to surface infrastructure so that vegetation can be established; and ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.			
Post-Mitigation			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-66)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Moderate (3)	Moderate loss and / or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		

11.4.1.1.3 RTSF and Associated Infrastructure

The RTSF and associated infrastructure will be constructed within the Kloof MRA. This infrastructure is expected to have a negative visual impact on the receiving environment of the Kloof MRA. The interactions and resultant impacts of the RTSF and associated infrastructure are indicated in Table 77.

Table 77: Interactions and Impacts of RTSF and Associated Infrastructure on the Visual Aspects of the Kloof MRA (Construction Phase)

Interaction	Impact
Change of land use from agriculture to industry / mining	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance. This impact will be permanent and irreversible as the RTSF will remain indefinitely. The change in land-use will contribute to the cumulative impacts of mining on the regional environment.
Site clearance and vegetation removal	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.
Topsoil removal and stockpiling	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.
Infrastructure development	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.

Impact Description

The RTSF and associated infrastructure is expected to be visible from a maximum distance of 12 km. Change of land use from agriculture to industry / mining as a result of the RTSF and associated infrastructure will have a major negative visual impact on the receiving environment. Site clearance and vegetation removal, and topsoil removal and stockpiling prior to the development of the RTSF and associated infrastructure will have a moderate negative visual impact on the receiving environment. Construction of the RTSF and associated infrastructure will have a major negative visual impact on the receiving environment.

Management Objectives

The management objectives are to minimise the negative visual impact caused by the change of land use from agriculture to industry / mining. The management objectives also

aim to minimise the negative visual impact caused by site clearance and vegetation removal, topsoil removal and stockpiling and infrastructure development.

Management Actions

The following management actions are required for the RTSF area in the Kloof MRA:

- Vegetation should only be removed when and where necessary;
- Topsoil should only be removed when and where necessary;
- Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape;
- Limit footprint area of topsoil stockpiles where possible;
- Limit the height of topsoil stockpiles to 3 metres to prevent the soil from becoming compacted;
- Apply dust suppression techniques to limit the dust dispersion from stockpiles;
- Plant fast-growing indigenous vegetation in areas where it can conceal the stockpiles and reduce dust generation;
- Ensure vegetation screens of indigenous trees (are built close to receptors (residential areas and roads) and maintained;
- Limit the height and footprint area of RTSF and associated infrastructure where possible;
- Use shade cloth / netting to screen the construction site;
- Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible;
- Pylons and metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the pylons and metal structures are painted, it is recommended that a neutral matt finish be used;
- Construction of vegetation berms must be implemented close to surface infrastructure so that vegetation can be established;
- If construction activities take place at night, down lighting must be implemented to minimise light pollution; and
- Where possible spread topsoil and re-vegetate the pipeline servitude areas when construction is complete.

Impact Ratings

The impact ratings and mitigation / management measures for the RTSF and associated infrastructure are summarised in Table 78.

Table 78: Potential Impacts of the RTSF and Associated Infrastructure on the Visual Aspects of the Kloof MRA (Construction Phase)

Activity and Interaction (RTSF and associated infrastructure results in change of land use from agriculture to industry / mining)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: The change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance. This impact will be permanent and irreversible as the RTSF will remain indefinitely. The change in land-use will contribute to the cumulative impacts of mining on the regional environment.			
Prior to Mitigation / Management			
Duration	Permanent (7)	The impact is irreversible, even with management, and will remain after the life of the project.	Major negative (-119)
Extent	Municipal Area (4)	Will affect the whole municipal area.	
Intensity	Moderate Irreplaceable Loss (6)	Irreplaceable loss or damage to biological or physical resources or moderate to highly sensitive environments. Irreplaceable damage to moderate to highly sensitive cultural / social resources.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			
Duration	Permanent (7)	The impact is irreversible, even with management, and will remain after the life of the project.	Major negative (-112)

Extent	Municipal Area (4)	Will affect the whole municipal area.	
Intensity	Very Serious (5)	Serious loss and / or damage to biological or physical resources or highly sensitive environments, limiting ecosystem function. Very serious widespread social impacts. Irreparable damage to highly valued items.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (RTSF and associated infrastructure requires site clearance and vegetation removal)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: The removal of vegetation for site clearing will have a negative visual impact on the receiving environment. The project area will become noticeable to the nearby receptors as it will contrast the surrounding areas.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Moderate negative (-84)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Serious (4)	Serious loss and / or damage to biological or physical resources or moderately sensitive environments, limiting ecosystem function. On-going serious social issues. Significant damage to structures / items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			

■ Vegetation should only be removed when and where necessary.			
Post-Mitigation			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Moderate negative (-77)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Moderate (3)	Moderate loss and / or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (RTSF and associated infrastructure requires topsoil removal and stockpiling)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Moderate negative (-84)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Serious (4)	Serious loss and / or damage to biological or physical resources or moderately sensitive environments, limiting ecosystem function. On-going serious social issues. Significant damage to structures / items of	

		cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit footprint area of topsoil stockpiles where possible; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles; and ■ Plant fast-growing indigenous vegetation in areas where it can conceal the stockpiles and reduce dust generation.			
Post-Mitigation			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Moderate negative (-77)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Moderate (3)	Moderate loss and / or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (RTSF and associated infrastructure requires infrastructure development)			

Dimension	Rating	Motivation	Significance
Impact Description: The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. This impact will be permanent and irreversible as the RTSF will remain indefinitely. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.			
Prior to Mitigation / Management			
Duration	Permanent (7)	The impact is irreversible, even with management, and will remain after the life of the project.	Major negative (-112)
Extent	Municipal Area (4)	Will affect the whole municipal area.	
Intensity	Very Serious (5)	Serious loss and / or damage to biological or physical resources or highly sensitive environments, limiting ecosystem function. Very serious widespread social impacts. Irreparable damage to highly valued items.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Ensure vegetation screens of indigenous trees (are built close to receptors (residential areas and roads) and maintained; ■ Limit the height and footprint area of RTSF and associated infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Pylons and metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the pylons and metal structures are painted, it is recommended that a neutral matt finish be used; ■ Construction of vegetation berms must be implemented close to surface infrastructure so that vegetation can be established; and ■ If construction activities take place at night, down lighting must be implemented to minimise			

light pollution.			
Post-Mitigation			
Duration	Permanent (7)	The impact is irreversible, even with management, and will remain after the life of the project.	Moderate negative (-105)
Extent	Municipal Area (4)	Will affect the whole municipal area.	
Intensity	Serious (4)	Serious loss and / or damage to biological or physical resources or moderately sensitive environments, limiting ecosystem function. On-going serious social issues. Significant damage to structures / items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

11.4.1.2 Operational Phase

The operational phase is characterised by operation of the pipelines, CPP and RTSF. Only the operation of the RTSF will have a visual impact. The operational phase is expected to have negative visual impacts on the receiving environment.

11.4.1.2.1 RTSF

The RTSF will be operated within the Kloof MRA. The RTSF is expected to have a negative visual impact on the receiving of the Kloof MRA. The interactions and resultant impacts of the RTSF are indicated in Table 79.

Table 79: Interactions and Impacts of the RTSF on the Visual Aspects of the Kloof MRA (Operational Phase)

Interaction	Impact
Operation of the RTSF	Operation of the RTSF will have a negative visual impact on the receiving environment. This impact will be permanent and irreversible as the RTSF will remain indefinitely. Infrastructure lighting will be visible at night resulting in a negative visual impact on the receiving environment.

Impact Description

Continuous operation of the RTSF will result in the RTSF increasing in height. The RTSF will become noticeable from further as it increases in height and will begin to dominate the landscape for nearby receptors. This impact will be permanent and irreversible as the RTSF will remain indefinitely.

Management Objectives

The management objectives are to minimise the negative visual impact caused by the operation of the tailings storage facility and infrastructure lighting at night.

Management Actions

The following management actions are required for the RTSF in the Kloof MRA:

- Plant fast-growing indigenous vegetation in areas where it can conceal the RTSF;
- Ensure RTSF does not exceed the proposed height of 30 m
- Ensure vegetation screens of indigenous trees are built close to receptors (residential areas and roads) and maintained; and
- Down lighting must be implemented to minimise light pollution around the mine infrastructure area at night.

Impact Ratings

The impact ratings and mitigation / management measures for the RTSF are summarised in Table 80.

Table 80: Potential Impacts of the RTSF on the Visual Aspects of the Kloof MRA (Operational Phase)

Activity and Interaction (Operation of the RTSF)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Operation of the RTSF will have a negative visual impact on the receiving environment. This impact will be permanent and irreversible as the RTSF will remain indefinitely. Infrastructure lighting will be visible at night resulting in a negative visual impact on the receiving environment.			
Prior to Mitigation / Management			
Duration	Permanent (7)	The impact is irreversible, even with management, and will remain after the life of the project.	Major negative (-119)
Extent	Municipal Area (4)	Will affect the whole municipal area.	
Intensity	Moderate Irreplaceable Loss (6)	Irreplaceable loss or damage to biological or physical resources or moderate to highly sensitive environments. Irreplaceable damage to moderate to highly sensitive cultural / social resources.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Plant fast-growing indigenous vegetation in areas where it can conceal the RTSF; ■ Ensure RTSF does not exceed the proposed height of 30 m ■ Ensure vegetation screens of indigenous trees are built close to receptors (residential areas and roads) and maintained; and ■ Down lighting must be implemented to minimise light pollution around the mine infrastructure area at night.			
Post-Mitigation			
Duration	Permanent (7)	The impact is irreversible, even with	Major negative

		management, and will remain after the life of the project.	(-112)
Extent	Municipal Area (4)	Will affect the whole municipal area.	
Intensity	Very Serious (5)	Serious loss and / or damage to biological or physical resources or highly sensitive environments, limiting ecosystem function. Very serious widespread social impacts. Irreparable damage to highly valued items.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

11.4.1.3 Decommissioning Phase

The decommissioning phase is characterised by the demolition and removal of infrastructure and rehabilitation of disturbed areas. This phase will have a negative visual impact on the receiving environment; however, once rehabilitation is complete, there will be an overall neutral visual impact on receiving environment.

11.4.1.3.1 Pipeline Routes

The pipeline routes will be decommissioned within the Kloof MRA. This is expected to have a negative visual impact on the receiving environment of the Kloof MRA. The interactions and resultant impacts of the pipeline routes are indicated in Table 81.

Table 81: Interactions and Impacts of the Pipeline Routes on the Visual Aspects of the Kloof MRA (Decommissioning Phase)

Interaction	Impact
Demolition and removal of infrastructure	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.
Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.

Impact Description

Demolition and removal of infrastructure will have a minor negative visual impact on the receiving environment. Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation is expected to have a minor negative visual impact on the receiving environment. Once the infrastructure is removed and the rehabilitation is complete, there will be an overall neutral visual impact on the receiving environment and it will be returned to a state similar to the pre-development state.

Management Objectives

The management objectives are to increase the neutral visual impact caused by the demolition and removal of infrastructure and the rehabilitation of disturbed areas.

Management Actions

The following management actions are required for the pipeline routes in the Kloof MRA:

- Apply dust suppression techniques to limit the dust from the demolition area;
- Use shade cloth / netting to screen the demolition area;
- Limit the quantity and time of rubble stored on site;
- Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography;
- Spread topsoil over the rehabilitated area;
- Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography;
- Re-vegetate the rehabilitated areas; and
- Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.

Impact Ratings

The impact ratings and mitigation / management measures for the pipeline routes are summarised in Table 82.

Table 82: Potential Impacts of the Pipeline Routes on the Visual Aspects of the Kloof MRA (Decommissioning Phase)

Activity and Interaction (Pipeline routes require demolition and removal of infrastructure)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Demolition and removal of infrastructure will have a minor negative impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment. This will help to reverse some of the changes that occurred when the infrastructure was constructed.			

Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; and ■ Limit the quantity and time of rubble stored on site.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-30)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	

Nature	Negative		
Activity and Interaction (Pipeline routes require rehabilitation of disturbed areas)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Rehabilitation of disturbed areas will have a minor negative visual impact on the receiving environment. Once the rehabilitation is complete, there will be an overall neutral visual impact on the receiving environment and will assist to return the project area to a state similar to the pre-development state.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-49)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			

- Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography;
- Spread topsoil over the rehabilitated area;
- Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography;
- Re-vegetate the rehabilitated areas; and
- Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.

Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		

11.4.1.3.2 CPP

The CPP will be decommissioned within the Kloof MRA. This is expected to have a negative visual impact on the receiving environment of the Kloof MRA. The interactions and resultant impacts of the CPP are indicated in Table 83.

Table 83: Interactions and Impacts of the CPP on the Visual Aspects of the Kloof MRA (Decommissioning Phase)

Interaction	Impact
Demolition and removal of infrastructure	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.
Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.

Impact Description

Demolition and removal of infrastructure will have a minor negative visual impact on the receiving environment. Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation is expected to have a minor negative visual impact on the receiving environment. Once the infrastructure is removed and the rehabilitation is complete, there will be an overall neutral visual impact on the receiving environment and it will be returned to a state similar to the pre-development state.

Management Objectives

The management objectives are to increase the neutral visual impact caused by the demolition and removal of infrastructure and the rehabilitation of disturbed areas.

Management Actions

The following management actions are required for the pipeline routes in the Kloof MRA:

- Apply dust suppression techniques to limit the dust from the demolition area;
- Use shade cloth / netting to screen the demolition area;
- Limit the quantity and time of rubble stored on site;
- Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography;
- Spread topsoil over the rehabilitated area;
- Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography;
- Re-vegetate the rehabilitated areas; and
- Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.

Impact Ratings

The impact ratings and mitigation / management measures for the CPP are summarised in Table 84.

Table 84: Potential Impacts of the CPP on the Visual Aspects of the Kloof MRA (Decommissioning Phase)

Activity and Interaction (CPP requires demolition and removal of infrastructure)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Demolition and removal of infrastructure will have a minor negative impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment. This will help to reverse some of the changes that occurred when the infrastructure was constructed.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-56)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; and ■ Limit the quantity and time of rubble stored on site.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal	Minor negative

		management.	(-42)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		
Activity and Interaction (CPP requires rehabilitation of disturbed areas)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Rehabilitation of disturbed areas will have a minor negative visual impact on the receiving environment. Once the rehabilitation is complete, there will be an overall neutral visual impact on the receiving environment and will assist to return the project area to a state similar to the pre-development state.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Moderate (3)	Moderate loss and / or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	Minor negative (-63)
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

Mitigation / Management Actions			
■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-48)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		

11.4.1.3.3 RTSF

The RTSF and associated infrastructure will be decommissioned within the Kloof MRA. This is expected to have a negative visual impact on the receiving environment of the Kloof MRA. The interactions and resultant impacts of the RTSF and associated infrastructure are indicated in Table 85.

Table 85: Interactions and Impacts of the RTSF and Associated Infrastructure on the Visual Aspects of the Kloof MRA (Decommissioning Phase)

Interaction	Impact
Rehabilitation of RTSF by reshaping, spreading topsoil, and re-vegetation	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment.

Impact Description

Rehabilitation of the RTSF by reshaping, spreading topsoil, and re-vegetation is expected to have a minor negative visual impact on the receiving environment. The RTSF will remain on the surface and will result in a permanent and irreversible negative visual impact on the receiving environment.

Management Objectives

The management objectives are to increase the neutral visual impact caused by rehabilitation of the RTSF.

Management Actions

The following management actions are required for the RTSF and associated infrastructure in the Kloof MRA:

- Reshape the sides of the RTSF so that they are not too steep (18° or less) to prevent slope failure;
- Rehabilitate all disturbed areas;
- Spread topsoil over the rehabilitated area;
- Re-vegetate the rehabilitated areas; and
- Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.

Impact Ratings

The impact ratings and mitigation / management measures for the RTSF and associated infrastructure are summarised in Table 86.

Table 86: Potential Impacts of the RTSF and Associated Infrastructure on the Visual Aspects of the Kloof MRA (Decommissioning Phase)

Activity and Interaction (RTSF requires rehabilitation)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Rehabilitation of disturbed areas will have a minor negative visual impact on the receiving environment. The RTSF will remain on the surface and will result in a permanent and irreversible negative visual impact on the receiving environment.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-70)
Extent	Municipal Area (4)	Will affect the whole municipal area.	
Intensity	Moderate (3)	Moderate loss and / or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Reshape the sides of the RTSF so that they are not too steep (18° or less) to prevent slope failure; ■ Rehabilitate all disturbed areas; ■ Spread topsoil over the rehabilitated area; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			

Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-54)
Extent	Municipal Area (4)	Will affect the whole municipal area.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		

11.4.2 Driefontein Mining Right Area

The project activities of the Driefontein MRA are listed in Table 87 below. The activities highlighted in red are applicable to the topography impact assessment for the Kloof MRA. Plan 7 (Appendix A) illustrates the Driefontein MRA infrastructure.

Table 87: Driefontein MRA Project Activities Applicable to Visual

Category	Activity
Infrastructure	Pipeline routes (water, slurry and thickened tailings).
	West Block Thickener (WBT) and Bulk Water Storage Facility (BWSF) complex.
	Collection sumps and pump stations at Driefontein 3 TSF and Driefontein 5 TSF.
Processes	Hydraulic reclamation of Driefontein 3 TSF and Driefontein 5 TSF.
Pumping	Pumping water from K10 to the BWSF located next to the WBT.
	Pumping water from the BWSF to the Driefontein TSFs that will be reclaimed (Driefontein 3 TSF and Driefontein 5 TSF).
	Pumping slurry from the TSF sump to the WBT (for Driefontein 3 TSF and Driefontein 5 TSF).

Category	Activity
	Pumping the thickened slurry from the WBT to the CPP.
Electricity supply	Power supply from West Driefontein 6 substation to Driefontein 3 TSF.
	Power supply from West Driefontein Gold substation to Driefontein 5 TSF.
	Power supply from East Driefontein Shaft substation to WBT and BWSF.

The Driefontein MRA consists of the following infrastructure activities:

- Pipeline routes (water, slurry and thickened tailings);
- West Block Thickener (WBT) and West Bulk Water Storage Facility (BWSF) complex; and
- Collection sumps and pump stations at Driefontein 3 TSF and Driefontein 5 TSF.

The Driefontein MRA consists of the following process activities:

- Hydraulic reclamation of Driefontein 3 TSF and Driefontein 5 TSF.

11.4.2.1 Construction Phase

The construction phase is characterised by site development and infrastructure construction. This includes site clearance and vegetation removal, topsoil removal and stockpiling and surface infrastructure development. The establishment of infrastructure and related construction activities will draw attention to the project area making receptors aware of the development. The construction phase will have negative visual impacts on the receiving environment.

11.4.2.1.1 Pipeline Routes

Pipeline routes will be constructed within the Driefontein MRA to transport water, slurry and thickened tailings. These pipeline routes are expected to have a negative visual impact on the receiving environment of the Driefontein MRA. The interactions and resultant impacts of the pipeline routes are indicated in Table 88.

Table 88: Interactions and Impacts of the Pipeline Routes on the Visual Aspects of the Driefontein MRA (Construction Phase)

Interaction	Impact
Change of land use from agriculture to industry / mining	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.
Site clearance and vegetation removal	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.
Topsoil removal and stockpiling	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.
Infrastructure development	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.

Impact Description

The pipelines will be constructed close to ground level and are only expected to be visible from the immediate vicinity. Change of land use from agriculture to industry / mining as a result of the pipeline routes will have a minor negative visual impact on the receiving environment. Site clearance and vegetation removal, and topsoil removal and stockpiling prior to the development of the pipeline infrastructure will have a minor negative visual impact on the receiving environment. Construction of the pipeline infrastructure will have a minor negative visual impact on the receiving environment.

Management Objectives

The management objectives are to minimise the negative visual impact caused by the change of land use from agriculture to industry / mining. The management objectives also aim to minimise the negative visual impact caused by site clearance and vegetation removal, topsoil removal and stockpiling and infrastructure development.

Management Actions

The following management actions are required for the pipeline routes in the Driefontein MRA:

- Vegetation should only be removed when and where necessary;
- Topsoil should only be removed when and where necessary;
- Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape;
- Limit the height of topsoil stockpiles to 3 metres;
- Apply dust suppression techniques to limit the dust dispersion from stockpiles;
- Limit the height and footprint area of pipeline infrastructure where possible;
- Use shade cloth / netting to screen the construction site;
- Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible;
- Metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the metal structures are painted, it is recommended that a neutral matt finish be used;
- If construction activities take place at night, down lighting must be implemented to minimise light pollution; and
- Where possible spread topsoil and re-vegetate the pipeline servitude areas when construction is complete.

Impact Ratings

The impact ratings and mitigation / management measures for the pipeline routes are summarised in Table 89.

Table 89: Potential Impacts of the Pipeline Routes on the Visual Aspects of the Driefontein MRA (Construction Phase)

Activity and Interaction (Pipeline routes result in change of land use from agriculture to industry / mining)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: The change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance. This impact can potentially be reversed during the decommissioning phase if all the infrastructure is removed and the area is rehabilitated.			

Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Minor negative (-49)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Moderate (3)	Moderate loss and / or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Where possible spread topsoil and re-vegetate the pipeline servitude areas when construction is complete; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-35)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur.	

		> 80% probability	
Nature	Negative		
Activity and Interaction (Pipeline routes require site clearance and vegetation removal)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: The removal of vegetation for site clearing will have a negative visual impact on the receiving environment. The project area will become noticeable to the nearby receptors as it will contrast the surrounding areas.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Vegetation should only be removed when and where necessary; and ■ Where possible re-vegetate the pipeline servitude areas when construction is complete.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-30)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	

Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		
Activity and Interaction (Pipeline routes require topsoil removal and stockpiling)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-63)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Topsoil should only be removed when and where necessary;			

■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles; and ■ Where possible spread topsoil in the pipeline servitude areas when construction is complete.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		
Activity and Interaction (Pipeline routes require infrastructure development)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-63)

Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Limit the height and footprint area of pipeline infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the metal structures are painted, it is recommended that a neutral matt finish be used; and ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.			
Post-Mitigation			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-54)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural	

		functions and processes not affected.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		

11.4.2.1.2 WBT and West BWSF Complex

The WBT and west BWSF complex will be constructed within the Driefontein MRA. This infrastructure is expected to have a negative visual impact on the receiving environment of the Driefontein MRA. The interactions and resultant impacts of the WBT and west BWSF complex are indicated in Table 90.

Table 90: Interactions and Impacts of the WBT and West BWSF Complex on the Visual Aspects of the Driefontein MRA (Construction Phase)

Interaction	Impact
Change of land use from agriculture to industry / mining	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.
Site clearance and vegetation removal	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.
Topsoil removal and stockpiling	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.
Infrastructure development	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.

Impact Description

The WBT and west BWSF complex is only expected to be visible from close proximity. Change of land use from agriculture to industry / mining as a result of the WBT and west

BWSF complex will have a minor negative visual impact on the receiving environment. Site clearance and vegetation removal, and topsoil removal and stockpiling prior to the development of the WBT and west BWSF complex infrastructure will have a minor negative visual impact on the receiving environment. Construction of the WBT and west BWSF complex infrastructure will have a minor negative visual impact on the receiving environment.

Management Objectives

The management objectives are to minimise the negative visual impact caused by the change of land use from agriculture to industry / mining. The management objectives also aim to minimise the negative visual impact caused by site clearance and vegetation removal, topsoil removal and stockpiling and infrastructure development.

Management Actions

The following management actions are required for the WBT and west BWSF complex in the Driefontein MRA:

- Vegetation should only be removed when and where necessary;
- Topsoil should only be removed when and where necessary;
- Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape;
- Limit the height of topsoil stockpiles to 3 metres;
- Apply dust suppression techniques to limit the dust dispersion from stockpiles;
- Limit the height and footprint area of WBT and west BWSF complex infrastructure where possible;
- Use shade cloth / netting to screen the construction site;
- Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible;
- Pylons and metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the pylons and metal structures are painted, it is recommended that a neutral matt finish be used; and
- If construction activities take place at night, down lighting must be implemented to minimise light pollution.

Impact Ratings

The impact ratings and mitigation / management measures for the WBT and west BWSF complex are summarised in Table 91.

Table 91: Potential Impacts of the WBT and West BWSF Complex on the Visual Aspects of the Driefontein MRA (Construction Phase)

Activity and Interaction (WBT and west BWSF complex results in change of land use from agriculture to industry / mining)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: The change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance. This impact can potentially be reversed during the decommissioning phase if all the infrastructure is removed and the area is rehabilitated.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-63)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with	Minor negative (-

		sufficient management.	48)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		
Activity and Interaction (WBT and west BWSF complex requires site clearance and vegetation removal)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: The removal of vegetation for site clearing will have a negative visual impact on the receiving environment. The project area will become noticeable to the nearby receptors as it will contrast the surrounding areas.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-56)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

Mitigation / Management Actions			
■ Vegetation should only be removed when and where necessary.			
Post-Mitigation			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-42)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		
Activity and Interaction (WBT and west BWSF complex requires topsoil removal and stockpiling)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-56)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	

Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles.			
■ **Post-Mitigation**			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-42)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		
Activity and Interaction (WBT and west BWSF complex requires infrastructure development)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.			

Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-63)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Limit the height and footprint area of WBT and west BWSF complex infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Pylons and metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the pylons and metal structures are painted, it is recommended that a neutral matt finish be used; and ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.			
Post-Mitigation			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-48)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	

Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		

11.4.2.1.3 Collection Sumps and Pump Stations

The collection sumps and pump stations at Driefontein 3 TSF and Driefontein 5 TSF will be constructed within the Driefontein MRA. This infrastructure is expected to have a negative visual impact on the receiving environment of the Driefontein MRA. The interactions and resultant impacts of the collection sumps and pump stations are indicated in Table 92.

Table 92: Interactions and Impacts of the Collection Sumps and Pump Stations on the Visual Aspects of the Driefontein MRA (Construction Phase)

Interaction	Impact
Change of land use from agriculture to industry / mining	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.
Site clearance and vegetation removal	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.
Topsoil removal and stockpiling	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.
Infrastructure development	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.

Impact Description

The collection sumps and pump stations are only expected to be visible from close proximity. Change of land use from agriculture to industry / mining as a result of the collection sumps and pump stations will have a minor negative visual impact on the receiving environment. Site clearance and vegetation removal, and topsoil removal and stockpiling prior to the development of the collection sumps and pump stations will have a minor negative visual impact on the receiving environment. Construction of the collection sumps and pump stations will have a minor negative visual impact on the receiving environment.

Management Objectives

The management objectives are to minimise the negative visual impact caused by the change of land use from agriculture to industry / mining. The management objectives also aim to minimise the negative visual impact caused by site clearance and vegetation removal, topsoil removal and stockpiling and infrastructure development.

Management Actions

The following management actions are required for the collection sumps and pump stations in the Driefontein MRA:

- Vegetation should only be removed when and where necessary;
- Topsoil should only be removed when and where necessary;
- Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape;
- Limit the height of topsoil stockpiles to 3 metres;
- Apply dust suppression techniques to limit the dust dispersion from stockpiles;
- Limit the height and footprint area of collection sump and pump station infrastructure where possible;
- Use shade cloth / netting to screen the construction site;
- Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible;
- Pylons and metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the pylons and metal structures are painted, it is recommended that a neutral matt finish be used; and
- If construction activities take place at night, down lighting must be implemented to minimise light pollution.

Impact Ratings

The impact ratings and mitigation / management measures for the collection sumps and pump stations are summarised in Table 93.

Table 93: Potential Impacts of the Collection Sumps and Pump Stations on the Visual Aspects of the Driefontein MRA (Construction Phase)

Activity and Interaction (Collection sumps and pump stations result in change of land use from agriculture to industry / mining)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: The change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance. This impact can potentially be reversed during the decommissioning phase if all the infrastructure is removed and the area is rehabilitated.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-42)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal	Minor negative (-

		management.	36)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		
Activity and Interaction (Collection sumps and pump stations require site clearance and vegetation removal)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: The removal of vegetation for site clearing will have a negative visual impact on the receiving environment. The project area will become noticeable to the nearby receptors as it will contrast the surrounding areas.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-42)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur.	

		> 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Vegetation should only be removed when and where necessary.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Negligible negative (-30)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		
Activity and Interaction (Collection sumps and pump stations require topsoil removal and stockpiling)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-42)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive	

		environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles.			
■ **Post-Mitigation**			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Negligible negative (-30)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		
Activity and Interaction (Collection sumps and pump stations require infrastructure development)			
Dimension	**Rating**	**Motivation**	**Significance**

Impact Description: The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place.

Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.

Prior to Mitigation / Management

Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-42)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

Mitigation / Management Actions

- Limit the height and footprint area of collection sump and pump station infrastructure where possible;
- Use shade cloth / netting to screen the construction site;
- Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible;
- Pylons and metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the pylons and metal structures are painted, it is recommended that a neutral matt finish be used; and
- If construction activities take place at night, down lighting must be implemented to minimise light pollution.

Post-Mitigation

Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Negligible negative (-30)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		

11.4.2.2 Operational Phase

The operational phase is characterised by operation of the pipelines, WBT and west BWSF complex, and collection sumps and pump stations. It is also characterised by the hydraulic reclamation of Driefontein 3 TSF and Driefontein 5 TSF. Only the hydraulic reclamation will have a visual impact on the receiving environment. This phase will have a negative visual impact on the receiving environment; however, once hydraulic reclamation is complete; there will be an overall neutral visual impact on the receiving environment.

11.4.2.2.1 Hydraulic Reclamation

Hydraulic reclamation of Driefontein 3 TSF and Driefontein 5 TSF will occur within the Driefontein MRA. This is expected to have a negative visual impact on the receiving environment of the Driefontein MRA. The interactions and resultant impacts of the hydraulic reclamation are indicated in Table 94.

Table 94: Interactions and Impacts of the Hydraulic Reclamation on the Visual Aspects of the Driefontein MRA (Operational Phase)

Interaction	Impact
Hydraulic reclamation	Hydraulic reclamation will have a negative visual impact on the receiving environment. Dust from the hydraulic reclamation will also have a negative visual impact. Once the hydraulic reclamation is complete, there will be an overall neutral visual impact on the receiving environment.

Impact Description

Hydraulic reclamation of Driefontein 3 TSF and Driefontein 5 TSF will have a moderate negative visual impact on the receiving environment. Once the hydraulic reclamation is complete, there will be a neutral visual impact on the receiving environment and it will be returned to a state similar to the pre-mining state.

Management Objectives

The management objectives are to minimise the negative visual impact caused by the hydraulic reclamation of Driefontein 3 TSF and Driefontein 5 TSF.

Management Actions

The following management actions are required for the hydraulic reclamation in the Driefontein MRA:

- Apply dust suppression techniques to limit the dust dispersion from reclamation.

Impact Ratings

The impact ratings and mitigation / management measures for the hydraulic reclamation are summarised in Table 95.

Table 95: Potential Impacts of the Hydraulic Reclamation on the Visual Aspects of the Driefontein MRA (Operational Phase)

Activity and Interaction (Hydraulic Reclamation of Driefontein 3 TSF and Driefontein 5 TSF)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Hydraulic reclamation will have a negative visual impact on the receiving environment. Dust from the hydraulic reclamation will also have a negative visual impact. Once the hydraulic reclamation is complete, there will be an overall neutral visual impact on the receiving environment. This will help to reverse some of the changes that occurred as a result of previous mining.			
Prior to Mitigation / Management			
Duration	Long Term (4)	The impact will occur for 6-15 years and the impact can be reversed with management.	Moderate negative (-77)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Serious (4)	Serious loss and / or damage to biological or physical resources or moderately sensitive environments, limiting ecosystem function. On-going serious social issues. Significant damage to structures / items of	

		cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Apply dust suppression techniques to limit the dust dispersion from reclamation.			
Post-Mitigation			
Duration	Long Term (4)	The impact will occur for 6-15 years and the impact can be reversed with management.	Minor negative (-60)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Moderate (3)	Moderate loss and / or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		

11.4.2.3 Decommissioning Phase

The decommissioning phase is characterised by the demolition and removal of infrastructure and rehabilitation of disturbed areas. This phase will have a negative visual impact on the receiving environment; however, once rehabilitation is complete, there will be an overall neutral visual impact on receiving environment.

11.4.2.3.1 Pipeline Routes

The pipeline routes will be decommissioned within the Driefontein MRA. This is expected to have a negative visual impact on the receiving environment of the Driefontein MRA. The interactions and resultant impacts of the pipeline routes are indicated in Table 96.

Table 96: Interactions and Impacts of the Pipeline Routes on the Visual Aspects of the Driefontein MRA (Decommissioning Phase)

Interaction	Impact
Demolition and removal of infrastructure	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.
Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.

Impact Description

Demolition and removal of infrastructure will have a minor negative visual impact on the receiving environment. Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation is expected to have a minor negative visual impact on the receiving environment. Once the infrastructure is removed and the rehabilitation is complete, there will be an overall neutral visual impact on the receiving environment and it will be returned to a state similar to the pre-development state.

Management Objectives

The management objectives are to increase the neutral visual impact caused by the demolition and removal of infrastructure and the rehabilitation of disturbed areas.

Management Actions

The following management actions are required for the pipeline routes in the Driefontein MRA:

- Apply dust suppression techniques to limit the dust from the demolition area;
- Use shade cloth / netting to screen the demolition area;
- Limit the quantity and time of rubble stored on site;
- Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography;
- Spread topsoil over the rehabilitated area;
- Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography;
- Re-vegetate the rehabilitated areas; and

- Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.

Impact Ratings

The impact ratings and mitigation / management measures for the pipeline routes are summarised in Table 97.

Table 97: Potential Impacts of the Pipeline Routes on the Visual Aspects of the Driefontein MRA (Decommissioning Phase)

Activity and Interaction (Pipeline routes require demolition and removal of infrastructure)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Demolition and removal of infrastructure will have a minor negative impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment. This will help to reverse some of the changes that occurred when the infrastructure was constructed.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; and			

■ Limit the quantity and time of rubble stored on site.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-30)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		
Activity and Interaction (Pipeline routes require rehabilitation of disturbed areas)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Rehabilitation of disturbed areas will have a minor negative visual impact on the receiving environment. Once the rehabilitation is complete, there will be an overall neutral visual impact on the receiving environment and will assist to return the project area to a state similar to the pre-development state.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-49)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	

Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		

11.4.2.3.2 WBT and West BWSF Complex

The WBT and west BWSF complex will be decommissioned within the Driefontein MRA. This is expected to have a negative visual impact on the receiving environment of the Driefontein MRA. The interactions and resultant impacts of the pipeline routes are indicated in Table 98.

Table 98: Interactions and Impacts of the WBT and West BWSF Complex on the Visual Aspects of the Driefontein MRA (Decommissioning Phase)

Interaction	Impact
Demolition and removal of infrastructure	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.
Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.

Impact Description

Demolition and removal of infrastructure will have a minor negative visual impact on the receiving environment. Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation is expected to have a minor negative visual impact on the receiving environment. Once the infrastructure is removed and the rehabilitation is complete, there will be an overall neutral visual impact on the receiving environment and it will be returned to a state similar to the pre-development state.

Management Objectives

The management objectives are to increase the neutral visual impact caused by the demolition and removal of infrastructure and the rehabilitation of disturbed areas.

Management Actions

The following management actions are required for the WBT and west BWSF complex in the Driefontein MRA:

- Apply dust suppression techniques to limit the dust from the demolition area;
- Use shade cloth / netting to screen the demolition area;
- Limit the quantity and time of rubble stored on site;
- Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography;

- Spread topsoil over the rehabilitated area;
- Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography;
- Re-vegetate the rehabilitated areas; and
- Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.

Impact Ratings

The impact ratings and mitigation / management measures for the WBT and west BWSF complex are summarised in Table 99.

Table 99: Potential Impacts of the WBT and West BWSF Complex on the Visual Aspects of the Driefontein MRA (Decommissioning Phase)

Activity and Interaction (WBT and west BWSF complex requires demolition and removal of infrastructure)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Demolition and removal of infrastructure will have a minor negative impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment. This will help to reverse some of the changes that occurred when the infrastructure was constructed.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-35)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			

■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; and ■ Limit the quantity and time of rubble stored on site.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-24)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		
Activity and Interaction (WBT and west BWSF complex requires rehabilitation of disturbed areas)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Rehabilitation of disturbed areas will have a minor negative visual impact on the receiving environment. Once the rehabilitation is complete, there will be an overall neutral visual impact on the receiving environment and will assist to return the project area to a state similar to the pre-development state.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning.	

		Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Negligible negative (-30)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		

11.4.2.3.3 Collection Sumps and Pump Stations

The collection sumps and pump stations will be decommissioned within the Driefontein MRA. This is expected to have a negative visual impact on the receiving environment of the Driefontein MRA. The interactions and resultant impacts of the pipeline routes are indicated in Table 100.

Table 100: Interactions and Impacts of the Collection Sumps and Pump Stations on the Visual Aspects of the Driefontein MRA (Decommissioning Phase)

Interaction	Impact
Demolition and removal of infrastructure	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.
Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.

Impact Description

Demolition and removal of infrastructure will have a minor negative visual impact on the receiving environment. Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation is expected to have a minor negative visual impact on the receiving environment. Once the infrastructure is removed and the rehabilitation is complete, there will be an overall neutral visual impact on the receiving environment and it will be returned to a state similar to the pre-development state.

Management Objectives

The management objectives are to increase the neutral visual impact caused by the demolition and removal of infrastructure and the rehabilitation of disturbed areas.

Management Actions

The following management actions are required for the collection sumps and pump stations in the Driefontein MRA:

- Apply dust suppression techniques to limit the dust from the demolition area;
- Use shade cloth / netting to screen the demolition area;
- Limit the quantity and time of rubble stored on site;
- Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography;

- Spread topsoil over the rehabilitated area;
- Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography;
- Re-vegetate the rehabilitated areas; and
- Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.

Impact Ratings

The impact ratings and mitigation / management measures for the collection sumps and pump stations are summarised in Table 101.

Table 101: Potential Impacts of the Collection Sumps and Pump Stations on the Visual Aspects of the Driefontein MRA (Decommissioning Phase)

Activity and Interaction (Collection sumps and pump stations require demolition and removal of infrastructure)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Demolition and removal of infrastructure will have a minor negative impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment. This will help to reverse some of the changes that occurred when the infrastructure was constructed.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-28)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			

■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; and ■ Limit the quantity and time of rubble stored on site.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-24)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		
Activity and Interaction (Collection sumps and pump stations require rehabilitation of disturbed areas)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Rehabilitation of disturbed areas will have a minor negative visual impact on the receiving environment. Once the rehabilitation is complete, there will be an overall neutral visual impact on the receiving environment and will assist to return the project area to a state similar to the pre-development state.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Negligible negative (-35)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning.	

		Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Negligible negative (-30)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		

11.4.2.3.4 Driefontein 3 TSF and Driefontein 5 TSF

The footprints of Driefontein 3 TSF and Driefontein 5 TSF will be rehabilitated within the Driefontein MRA. This is expected to have a negative visual impact on the receiving environment of the Driefontein MRA. The interactions and resultant impacts of Driefontein 3 TSF and Driefontein 5 TSF are indicated in Table 102.

Table 102: Interactions and Impacts of Driefontein 3 TSF and Driefontein 5 TSF on the Visual Aspects of the Driefontein MRA (Decommissioning Phase)

Interaction	Impact
Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.

Impact Description

Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation is expected to have a minor negative visual impact on the receiving environment. Once the rehabilitation is complete, there will be an overall neutral visual impact on the receiving environment and it will be returned to a state similar to the pre-development state.

Management Objectives

The management objectives are to increase the neutral visual impact caused by the rehabilitation of disturbed areas.

Management Actions

The following management actions are required for Driefontein 3 TSF and Driefontein 5 TSF in the Driefontein MRA:

- Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography;
- Spread topsoil over the rehabilitated area;
- Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography;
- Re-vegetate the rehabilitated areas; and
- Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.

Impact Ratings

The impact ratings and mitigation / management measures for Driefontein 3 TSF and Driefontein 5 TSF are summarised in Table 103.

Table 103: Potential Impacts of Driefontein 3 TSF and Driefontein 5 TSF on the Visual Aspects of the Driefontein MRA (Decommissioning Phase)

Activity and Interaction (Driefontein 3 TSF and Driefontein 5 TSF require rehabilitation of disturbed areas)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Rehabilitation of disturbed areas will have a minor negative visual impact on the receiving environment. Once the rehabilitation is complete, there will be an overall neutral visual impact on the receiving environment and will assist to return the project area to a state similar to the pre-development state.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-63)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Moderate (3)	Moderate loss and / or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining			

topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-48)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		

11.4.2.4 Post-Closure Phase

11.4.2.4.1 Driefontein 3 TSF and Driefontein 5 TSF

The change in land use after the hydraulic reclamation and rehabilitation of Driefontein 3 TSF and Driefontein 5 TSF from mining to a suitable end land use is expected to have a positive visual impact on the receiving environment of the Driefontein MRA. The interactions and resultant impacts of Driefontein 3 TSF and Driefontein 5 TSF are indicated in Table 104.

Table 104: Interactions and Impacts of Driefontein 3 TSF and Driefontein 5 TSF on the Visual Aspects of the Driefontein MRA (Post-Closure Phase)

Interaction	Impact
Change of land use from mining to a suitable end land use	Change of land use from mining to a suitable end land use will have a positive visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from an industrial / mining sense of place resulting in increased scenic character and decreased visual disturbance.

Impact Ratings

The impact ratings and mitigation / management measures for Driefontein 3 TSF and Driefontein 5 TSF are summarised in Table 105.

Table 105: Potential Impacts of Driefontein 3 TSF and Driefontein 5 TSF on the Visual Aspects of the Driefontein MRA (Post-Closure Phase)

Activity and Interaction (Hydraulic reclamation and rehabilitation of Driefontein 3 TSF and Driefontein 5 TSF result in change of land use from mining to a suitable end land use)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: The change of land use from mining to a suitable end land use will have a positive visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from an industrial / mining sense of place resulting in increased scenic character and decreased visual disturbance.			
Prior to Mitigation / Management			
Duration	Permanent (7)	The impact is irreversible, even with management, and will remain after the life of the project.	Moderate positive (105)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Very Serious (5)	On-going and widespread benefits to local communities and natural features of the landscape.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Positive		

11.4.3 Cooke Mining Right Area

The project activities of the Cooke MRA are listed in Table 106 below. The activities highlighted in red are applicable to the topography impact assessment for the Cooke MRA. Plan 8 (Appendix A) illustrates the Cooke MRA infrastructure.

Table 106: Cooke MRA Project Activities Applicable to Visual

Category	Activity
Infrastructure	Pipeline routes (water, slurry and thickened tailings).
	Cooke thickener and BWSF.
	Collection sumps and pump stations at Cooke TSF and Cooke 4 South TSF.
Processes	Abstraction of water from Cooke 1 shaft.
	Hydraulic reclamation of Cooke TSF and Cooke 4 South TSF.
Pumping	Pumping 500 kt/m of tailings from Cooke TSF to the Cooke thickener
	Pumping from the Cooke thickener to the CPP via Ezulwini.
Electricity Supply	Power supply from the Cooke substation to the Cooke thickener.
	Power supply from the Cooke plant to Cooke TSF.

The Cooke MRA consists of the following infrastructure activities:

- Pipeline routes (water, slurry and thickened tailings);
- Cooke thickener; and
- Collection sumps and pump stations at Cooke TSF and Cooke 4 South TSF.

The Cooke MRA consists of the following process activities:

- Hydraulic reclamation of Cooke TSF and Cooke 4 South TSF.

11.4.3.1 Construction Phase

The construction phase is characterised by site development and infrastructure construction. This includes site clearance and vegetation removal, topsoil removal and stockpiling and surface infrastructure development. The establishment of infrastructure and related construction activities will draw attention to the project area making receptors aware of the development. The construction phase will have negative visual impacts on the receiving environment.

11.4.3.1.1 Pipeline Routes

Pipeline routes will be constructed within the Cooke MRA to transport water, slurry and thickened tailings. These pipeline routes are expected to have a negative visual impact on the receiving environment of the Cooke MRA. The interactions and resultant impacts of the pipeline routes are indicated in Table 107.

Table 107: Interactions and Impacts of the Pipeline Routes on the Visual Aspects of the Cooke MRA (Construction Phase)

Interaction	Impact
Change of land use from agriculture to industry / mining	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.
Site clearance and vegetation removal	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.
Topsoil removal and stockpiling	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.
Infrastructure development	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.

Impact Description

The pipelines will be constructed close to ground level and are only expected to be visible from the immediate vicinity. Change of land use from agriculture to industry / mining as a result of the pipeline routes will have a minor negative visual impact on the receiving environment. Site clearance and vegetation removal, and topsoil removal and stockpiling prior to the development of the pipeline infrastructure will have a minor negative visual impact on the receiving environment. Construction of the pipeline infrastructure will have a minor negative visual impact on the receiving environment.

Management Objectives

The management objectives are to minimise the negative visual impact caused by the change of land use from agriculture to industry / mining. The management objectives also aim to minimise the negative visual impact caused by site clearance and vegetation removal, topsoil removal and stockpiling and infrastructure development.

Management Actions

The following management actions are required for the pipeline routes in the Cooke MRA:

- Vegetation should only be removed when and where necessary;
- Topsoil should only be removed when and where necessary;
- Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape;
- Limit the height of topsoil stockpiles to 3 metres;
- Apply dust suppression techniques to limit the dust dispersion from stockpiles;
- Limit the height and footprint area of pipeline infrastructure where possible;
- Use shade cloth / netting to screen the construction site;
- Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible;
- Metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the metal structures are painted, it is recommended that a neutral matt finish be used;
- If construction activities take place at night, down lighting must be implemented to minimise light pollution; and
- Where possible spread topsoil and re-vegetate the pipeline servitude areas when construction is complete.

Impact Ratings

The impact ratings and mitigation / management measures for the pipeline routes are summarised in Table 108.

Table 108: Potential Impacts of the Pipeline Routes on the Visual Aspects of the Cooke MRA (Construction Phase)

Activity and Interaction (Pipeline routes result in change of land use from agriculture to industry / mining)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: The change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance. This impact can potentially be reversed during the decommissioning phase if all the infrastructure is removed and the area is rehabilitated.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Minor negative (-49)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Moderate (3)	Moderate loss and / or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Where possible spread topsoil and re-vegetate the pipeline servitude areas when construction is complete; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-35)

Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (Pipeline routes require site clearance and vegetation removal)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: The removal of vegetation for site clearing will have a negative visual impact on the receiving environment. The project area will become noticeable to the nearby receptors as it will contrast the surrounding areas.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

Mitigation / Management Actions			
■ Vegetation should only be removed when and where necessary; and ■ Where possible re-vegetate the pipeline servitude areas when construction is complete.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-30)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		
Activity and Interaction (Pipeline routes require topsoil removal and stockpiling)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-63)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning.	

		Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles; and ■ Where possible spread topsoil in the pipeline servitude areas when construction is complete.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		
Activity and Interaction (Pipeline routes require infrastructure development)			
Dimension	**Rating**	**Motivation**	**Significance**

Impact Description: The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-63)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Limit the height and footprint area of pipeline infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the metal structures are painted, it is recommended that a neutral matt finish be used; and ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.			
Post-Mitigation			

Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-54)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		

11.4.3.1.2 Cooke Thickener

The Cooke thickener will be constructed within the Cooke MRA. This infrastructure is expected to have a negative visual impact on the receiving environment of the Cooke MRA. The interactions and resultant impacts of the Cooke Thickener are indicated in Table 109.

Table 109: Interactions and Impacts of the Cooke Thickener on the Visual Aspects of the Cooke MRA (Construction Phase)

Interaction	Impact
Change of land use from agriculture to industry / mining	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.
Site clearance and vegetation removal	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.
Topsoil removal and stockpiling	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.

Interaction	Impact
Infrastructure development	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.

Impact Description

The Cooke thickener is only expected to be visible from close proximity. Change of land use from agriculture to industry / mining as a result of the Cooke thickener will have a minor negative visual impact on the receiving environment. Site clearance and vegetation removal, and topsoil removal and stockpiling prior to the development of the Cooke thickener infrastructure will have a minor negative visual impact on the receiving environment. Construction of the Cooke thickener infrastructure will have a minor negative visual impact on the receiving environment.

Management Objectives

The management objectives are to minimise the negative visual impact caused by the change of land use from agriculture to industry / mining. The management objectives also aim to minimise the negative visual impact caused by site clearance and vegetation removal, topsoil removal and stockpiling and infrastructure development.

Management Actions

The following management actions are required for the Cooke thickener in the Cooke MRA:

- Vegetation should only be removed when and where necessary;
- Topsoil should only be removed when and where necessary;
- Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape;
- Limit the height of topsoil stockpiles to 3 metres;
- Apply dust suppression techniques to limit the dust dispersion from stockpiles;
- Limit the height and footprint area of Cooke thickener infrastructure where possible;
- Use shade cloth / netting to screen the construction site;
- Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible;

- Pylons and metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the pylons and metal structures are painted, it is recommended that a neutral matt finish be used; and
- If construction activities take place at night, down lighting must be implemented to minimise light pollution.

Impact Ratings

The impact ratings and mitigation / management measures for the Cooke thickener are summarised in Table 110.

Table 110: Potential Impacts of the Cooke Thickener on the Visual Aspects of the Cooke MRA (Construction Phase)

Activity and Interaction (Cooke thickener results in change of land use from agriculture to industry / mining)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: The change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance. This impact can potentially be reversed during the decommissioning phase if all the infrastructure is removed and the area is rehabilitated.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-63)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

Mitigation / Management Actions			
■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-48)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		
Activity and Interaction (Cooke thickener requires site clearance and vegetation removal)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: The removal of vegetation for site clearing will have a negative visual impact on the receiving environment. The project area will become noticeable to the nearby receptors as it will contrast the surrounding areas.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-56)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable	

		damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Vegetation should only be removed when and where necessary.			
Post-Mitigation			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-42)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		
Activity and Interaction (Cooke thickener requires topsoil removal and stockpiling)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-56)
Extent	Limited (2)	The impact is limited to the site and its	

		immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles.			
■ **Post-Mitigation**			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-42)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		
Activity and Interaction (Cooke thickener requires infrastructure development)			

Dimension	Rating	Motivation	Significance
Impact Description: The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-63)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Limit the height and footprint area of Cooke thickener infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Pylons and metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the pylons and metal structures are painted, it is recommended that a neutral matt finish be used; and ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.			

Post-Mitigation			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-48)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		

11.4.3.1.3 Collection Sumps and Pump Stations

The collection sumps and pump stations at Cooke TSF will be constructed within the Cooke MRA. This infrastructure is expected to have a negative visual impact on the receiving environment of the Cooke MRA. The interactions and resultant impacts of the collection sumps and pump stations are indicated in Table 111.

Table 111: Interactions and Impacts of the Collection Sumps and Pump Stations on the Visual Aspects of the Cooke MRA (Construction Phase)

Interaction	Impact
Change of land use from agriculture to industry / mining	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.
Site clearance and vegetation removal	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.
Topsoil removal and stockpiling	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.

Interaction	Impact
Infrastructure development	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.

Impact Description

The collection sumps and pump stations are only expected to be visible from close proximity. Change of land use from agriculture to industry / mining as a result of the collection sumps and pump stations will have a minor negative visual impact on the receiving environment. Site clearance and vegetation removal, and topsoil removal and stockpiling prior to the development of the collection sumps and pump stations will have a minor negative visual impact on the receiving environment. Construction of the collection sumps and pump stations will have a minor negative visual impact on the receiving environment.

Management Objectives

The management objectives are to minimise the negative visual impact caused by the change of land use from agriculture to industry / mining. The management objectives also aim to minimise the negative visual impact caused by site clearance and vegetation removal, topsoil removal and stockpiling and infrastructure development.

Management Actions

The following management actions are required for the collection sumps and pump stations in the Cooke MRA:

- Vegetation should only be removed when and where necessary;
- Topsoil should only be removed when and where necessary;
- Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape;
- Limit the height of topsoil stockpiles to 3 metres;
- Apply dust suppression techniques to limit the dust dispersion from stockpiles;
- Limit the height and footprint area of collection sump and pump station infrastructure where possible;
- Use shade cloth / netting to screen the construction site;

- Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible;
- Pylons and metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the pylons and metal structures are painted, it is recommended that a neutral matt finish be used; and
- If construction activities take place at night, down lighting must be implemented to minimise light pollution.

Impact Ratings

The impact ratings and mitigation / management measures for the collection sumps and pump stations are summarised in Table 112.

Table 112: Potential Impacts of the Collection Sumps and Pump Stations on the Visual Aspects of the Cooke MRA (Construction Phase)

Activity and Interaction (Collection sumps and pump stations result in change of land use from agriculture to industry / mining)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: The change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance. This impact can potentially be reversed during the decommissioning phase if all the infrastructure is removed and the area is rehabilitated.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-42)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur.	

		> 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-36)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		
Activity and Interaction (Collection sumps and pump stations require site clearance and vegetation removal)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: The removal of vegetation for site clearing will have a negative visual impact on the receiving environment. The project area will become noticeable to the nearby receptors as it will contrast the surrounding areas.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-42)

Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Vegetation should only be removed when and where necessary.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Negligible negative (-30)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		
Activity and Interaction (Collection sumps and pump stations require topsoil removal and stockpiling)			
Dimension	**Rating**	**Motivation**	**Significance**

Impact Description: Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-42)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles.			
■ **Post-Mitigation**			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Negligible negative (-30)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting	

		ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		
Activity and Interaction (Collection sumps and pump stations require infrastructure development)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-42)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Limit the height and footprint area of collection sump and pump station infrastructure where			

possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Pylons and metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the pylons and metal structures are painted, it is recommended that a neutral matt finish be used; and ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Negligible negative (-30)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		

11.4.3.2 Operational Phase

The operational phase is characterised by operation of the pipelines, Cooke thickener, and collection sumps and pump stations. It is also characterised by the hydraulic reclamation of Cooke TSF and Cooke 4 South TSF. Only the hydraulic reclamation will have a visual impact on the receiving environment. This phase will have a negative visual impact on the receiving environment; however, once hydraulic reclamation is complete; there will be an overall neutral visual impact on the receiving environment.

11.4.3.2.1 Hydraulic Reclamation

Hydraulic reclamation of Cooke TSF and Cooke 4 South TSF will occur within the Cooke MRA. This is expected to have a negative visual impact on the receiving environment of the

Cooke MRA. The interactions and resultant impacts of the hydraulic reclamation are indicated in Table 113.

Table 113: Interactions and Impacts of the Hydraulic Reclamation on the Visual Aspects of the Cooke MRA (Operational Phase)

Interaction	Impact
Hydraulic reclamation	Hydraulic reclamation will have a negative visual impact on the receiving environment. Dust from the hydraulic reclamation will also have a negative visual impact. Once the hydraulic reclamation is complete, there will be an overall neutral visual impact on the receiving environment.

Impact Description

Hydraulic reclamation of Cooke TSF will have a moderate negative visual impact on the receiving environment. Once the hydraulic reclamation is complete, there will be a neutral visual impact on the receiving environment and it will be returned to a state similar to the pre-mining state.

Management Objectives

The management objectives are to minimise the negative visual impact caused by the hydraulic reclamation of Cooke TSF.

Management Actions

The following management actions are required for the hydraulic reclamation in the Cooke MRA:

- Apply dust suppression techniques to limit the dust dispersion from reclamation.

Impact Ratings

The impact ratings and mitigation / management measures for the hydraulic reclamation are summarised in Table 114.

Table 114: Potential Impacts of the Hydraulic Reclamation on the Visual Aspects of the Cooke MRA (Operational Phase)

Activity and Interaction (Hydraulic Reclamation of Cooke TSF)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Hydraulic reclamation will have a negative visual impact on the receiving environment. Dust from the hydraulic reclamation will also have a negative visual impact. Once the hydraulic reclamation is complete, there will be an overall neutral visual impact on the receiving environment. This will help to reverse some of the changes that occurred as a result of previous mining.			

Prior to Mitigation / Management			
Duration	Long Term (4)	The impact will occur for 6-15 years and the impact can be reversed with management.	Moderate negative (-77)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Serious (4)	Serious loss and / or damage to biological or physical resources or moderately sensitive environments, limiting ecosystem function. On-going serious social issues. Significant damage to structures / items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Apply dust suppression techniques to limit the dust dispersion from reclamation.			
Post-Mitigation			
Duration	Long Term (4)	The impact will occur for 6-15 years and the impact can be reversed with management.	Minor negative (-60)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Moderate (3)	Moderate loss and / or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		

11.4.3.3 Decommissioning Phase

The decommissioning phase is characterised by the demolition and removal of infrastructure and rehabilitation of disturbed areas. This phase will have a negative visual impact on the receiving environment; however, once rehabilitation is complete, there will be an overall neutral visual impact on receiving environment.

11.4.3.3.1 Pipeline Routes

The pipeline routes will be decommissioned within the Cooke MRA. This is expected to have a negative visual impact on the receiving environment of the Cooke MRA. The interactions and resultant impacts of the pipeline routes are indicated in Table 115.

Table 115: Interactions and Impacts of the Pipeline Routes on the Visual Aspects of the Cooke MRA (Decommissioning Phase)

Interaction	Impact
Demolition and removal of infrastructure	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.
Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.

Impact Description

Demolition and removal of infrastructure will have a minor negative visual impact on the receiving environment. Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation is expected to have a minor negative visual impact on the receiving environment. Once the infrastructure is removed and the rehabilitation is complete, there will be an overall neutral visual impact on the receiving environment and it will be returned to a state similar to the pre-development state.

Management Objectives

The management objectives are to increase the neutral visual impact caused by the demolition and removal of infrastructure and the rehabilitation of disturbed areas.

Management Actions

The following management actions are required for the pipeline routes in the Cooke MRA:

- Apply dust suppression techniques to limit the dust from the demolition area;
- Use shade cloth / netting to screen the demolition area;

- Limit the quantity and time of rubble stored on site;
- Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography;
- Spread topsoil over the rehabilitated area;
- Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography;
- Re-vegetate the rehabilitated areas; and
- Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.

Impact Ratings

The impact ratings and mitigation / management measures for the pipeline routes are summarised in Table 116.

Table 116: Potential Impacts of the Pipeline Routes on the Visual Aspects of the Cooke MRA (Decommissioning Phase)

Activity and Interaction (Pipeline routes require demolition and removal of infrastructure)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Demolition and removal of infrastructure will have a minor negative impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment. This will help to reverse some of the changes that occurred when the infrastructure was constructed.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur.	

		> 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; and ■ Limit the quantity and time of rubble stored on site.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-30)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		
Activity and Interaction (Pipeline routes require rehabilitation of disturbed areas)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Rehabilitation of disturbed areas will have a minor negative visual impact on the receiving environment. Once the rehabilitation is complete, there will be an overall neutral visual impact on the receiving environment and will assist to return the project area to a state similar to the pre-development state.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-49)
Extent	Limited (2)	The impact is limited to the site and its	

		immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	

Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		

11.4.3.3.2 Cooke Thickener

The Cooke thickener will be decommissioned within the Cooke MRA. This is expected to have a negative visual impact on the receiving environment of the Cooke MRA. The interactions and resultant impacts of the pipeline routes are indicated in Table 117.

Table 117: Interactions and Impacts of the Cooke Thickener on the Visual Aspects of the Cooke MRA (Decommissioning Phase)

Interaction	Impact
Demolition and removal of infrastructure	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.
Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.

Impact Description

Demolition and removal of infrastructure will have a minor negative visual impact on the receiving environment. Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation is expected to have a minor negative visual impact on the receiving environment. Once the infrastructure is removed and the rehabilitation is complete, there will be an overall neutral visual impact on the receiving environment and it will be returned to a state similar to the pre-development state.

Management Objectives

The management objectives are to increase the neutral visual impact caused by the demolition and removal of infrastructure and the rehabilitation of disturbed areas.

Management Actions

The following management actions are required for the Cooke thickener in the Cooke MRA:

- Apply dust suppression techniques to limit the dust from the demolition area;

- Use shade cloth / netting to screen the demolition area;
- Limit the quantity and time of rubble stored on site;
- Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography;
- Spread topsoil over the rehabilitated area;
- Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography;
- Re-vegetate the rehabilitated areas; and
- Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.

Impact Ratings

The impact ratings and mitigation / management measures for the Cooke thickener are summarised in Table 118.

Table 118: Potential Impacts of the Cooke Thickener on the Visual Aspects of the Cooke MRA (Decommissioning Phase)

Activity and Interaction (Cooke thickener requires demolition and removal of infrastructure)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Demolition and removal of infrastructure will have a minor negative impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment. This will help to reverse some of the changes that occurred when the infrastructure was constructed.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-35)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur.	

		> 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; and ■ Limit the quantity and time of rubble stored on site.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-24)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		
Activity and Interaction (Cooke thickener requires rehabilitation of disturbed areas)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Rehabilitation of disturbed areas will have a minor negative visual impact on the receiving environment. Once the rehabilitation is complete, there will be an overall neutral visual impact on the receiving environment and will assist to return the project area to a state similar to the pre-development state.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its	

		immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Negligible negative (-30)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		

11.4.3.3.3 Collection Sumps and Pump Stations

The collection sumps and pump stations will be decommissioned within the Cooke MRA. This is expected to have a negative visual impact on the receiving environment of the Cooke MRA. The interactions and resultant impacts of the pipeline routes are indicated in Table 119.

Table 119: Interactions and Impacts of the Collection Sumps and Pump Stations on the Visual Aspects of the Cooke MRA (Decommissioning Phase)

Interaction	Impact
Demolition and removal of infrastructure	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.
Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.

Impact Description

Demolition and removal of infrastructure will have a minor negative visual impact on the receiving environment. Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation is expected to have a minor negative visual impact on the receiving environment. Once the infrastructure is removed and the rehabilitation is complete, there will be an overall neutral visual impact on the receiving environment and it will be returned to a state similar to the pre-development state.

Management Objectives

The management objectives are to increase the neutral visual impact caused by the demolition and removal of infrastructure and the rehabilitation of disturbed areas.

Management Actions

The following management actions are required for the collection sumps and pump stations in the Cooke MRA:

- Apply dust suppression techniques to limit the dust from the demolition area;
- Use shade cloth / netting to screen the demolition area;
- Limit the quantity and time of rubble stored on site;
- Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography;

- Spread topsoil over the rehabilitated area;
- Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography;
- Re-vegetate the rehabilitated areas; and
- Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.

Impact Ratings

The impact ratings and mitigation / management measures for the collection sumps and pump stations are summarised in Table 120.

Table 120: Potential Impacts of the Collection Sumps and Pump Stations on the Visual Aspects of the Cooke MRA (Decommissioning Phase)

Activity and Interaction (Collection sumps and pump stations require demolition and removal of infrastructure)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Demolition and removal of infrastructure will have a minor negative impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment. This will help to reverse some of the changes that occurred when the infrastructure was constructed.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-28)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			

■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; and ■ Limit the quantity and time of rubble stored on site.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-24)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		
Activity and Interaction (Collection sumps and pump stations require rehabilitation of disturbed areas)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Rehabilitation of disturbed areas will have a minor negative visual impact on the receiving environment. Once the rehabilitation is complete, there will be an overall neutral visual impact on the receiving environment and will assist to return the project area to a state similar to the pre-development state.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Negligible negative (-35)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning.	

		Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Negligible negative (-30)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		

11.4.3.3.4 Cooke TSF and Cooke 4 South

The footprint of Cooke TSF will be rehabilitated within the Cooke MRA. This is expected to have a negative visual impact on the receiving environment of the Cooke MRA. The interactions and resultant impacts of Cooke TSF and Cooke 4 South TSF are indicated in Table 121.

Table 121: Interactions and Impacts of Cooke TSF and Cooke 4 South TSF on the Visual Aspects of the Cooke MRA (Decommissioning Phase)

Interaction	Impact
Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.

Impact Description

Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation is expected to have a minor negative visual impact on the receiving environment. Once the rehabilitation is complete, there will be an overall neutral visual impact on the receiving environment and it will be returned to a state similar to the pre-development state.

Management Objectives

The management objectives are to increase the neutral visual impact caused by the rehabilitation of disturbed areas.

Management Actions

The following management actions are required for Cooke TSF and Cooke 4 South TSF in the Cooke MRA:

- Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography;
- Spread topsoil over the rehabilitated area;
- Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography;
- Re-vegetate the rehabilitated areas; and
- Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.

Impact Ratings

The impact ratings and mitigation / management measures for Cooke TSF and Cooke 4 South TSF are summarised in Table 122.

Table 122: Potential Impacts of Cooke TSF and Cooke 4 South TSF on the Visual Aspects of the Cooke MRA (Decommissioning Phase)

Activity and Interaction (Cooke TSF requires rehabilitation of disturbed areas)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Rehabilitation of disturbed areas will have a minor negative visual impact on the receiving environment. Once the rehabilitation is complete, there will be an overall neutral visual impact on the receiving environment and will assist to return the project area to a state similar to the pre-development state.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-63)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Moderate (3)	Moderate loss and / or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			

Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-48)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		

11.4.3.4 Post-Closure Phase

11.4.3.4.1 Cooke TSF and Cooke 4 South TSF

The change in land use after the hydraulic reclamation and rehabilitation of Cooke TSF and Cooke 4 South TSF from mining to a suitable end land use is expected to have a positive visual impact on the receiving environment of the Cooke MRA. The interactions and resultant impacts of Cooke TSF and Cooke 4 South TSF are indicated in Table 123.

Table 123: Interactions and Impacts of Cooke TSF and Cooke 4 South TSF on the Visual Aspects of the Cooke MRA (Post-Closure Phase)

Interaction	Impact
Change of land use from mining to a suitable end land use	Change of land use from mining to a suitable end land use will have a positive visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from an industrial / mining sense of place resulting in increased scenic character and decreased visual disturbance.

Impact Ratings

The impact ratings and mitigation / management measures for Cooke TSF and Cooke 4 South TSF are summarised in Table 124.

Table 124: Potential Impacts of Cooke TSF and Cooke 4 South TSF on the Visual Aspects of the Cooke MRA (Post-Closure Phase)

Activity and Interaction (Hydraulic reclamation and rehabilitation of Cooke TSF and Cooke 4 South TSF result in change of land use from mining to a suitable end land use)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: The change of land use from mining to a suitable end land use will have a positive visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from an industrial / mining sense of place resulting in increased scenic character and decreased visual disturbance.			
Prior to Mitigation / Management			
Duration	Permanent (7)	The impact is irreversible, even with management, and will remain after the life of the project.	Moderate positive (105)
Extent	Local (3)	The impact will extend only as far as the development site area.	
Intensity	Very Serious (5)	On-going and widespread benefits to local communities and natural features of the landscape.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Positive		

11.4.4 Ezulwini Mining Right Area

The project activities of the Ezulwini MRA are listed in Table 125 below. The activities highlighted in red are applicable to the topography impact assessment for the Ezulwini MRA. Plan 9 (Appendix A) illustrates the Ezulwini MRA infrastructure.

Table 125: Ezulwini Project Activities Applicable to Topography

Category	Activity
Infrastructure	Pipeline routes (water, slurry and thickened tailings).
Processes	Uranium extraction at Ezulwini (tailings to Ezulwini North Dump).
	Abstraction of water from Cooke shaft.
Pumping	Pumping water from Cooke 4 shaft to the Cooke 4 South TSF for reclamation.
	Pumping slurry from the TSF sump to the CPP.
Electricity supply	Power supply from Ezulwini plant to the Cooke 4 South TSF.

The Ezulwini MRA consists of the following infrastructure activities:

- Pipeline routes (water, slurry and thickened tailings).

11.4.4.1 Construction Phase

The construction phase is characterised by site development and infrastructure construction. This includes site clearance and vegetation removal, topsoil removal and stockpiling and surface infrastructure development. The establishment of infrastructure and related construction activities will draw attention to the project area making receptors aware of the development. The construction phase will have negative visual impacts on the receiving environment.

11.4.4.1.1 Pipeline Routes

Pipeline routes will be constructed within the Ezulwini MRA to transport water, slurry and thickened tailings. These pipeline routes are expected to have a negative visual impact on the receiving environment of the Ezulwini MRA. The interactions and resultant impacts of the pipeline routes are indicated in Table 126.

Table 126: Interactions and Impacts of the Pipeline Routes on the Visual Aspects of the Ezulwini MRA (Construction Phase)

Interaction	Impact
Change of land use from agriculture to industry / mining	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.

Interaction	Impact
Site clearance and vegetation removal	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.
Topsoil removal and stockpiling	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.
Infrastructure development	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.

Impact Description

The pipelines will be constructed close to ground level and are only expected to be visible from the immediate vicinity. Change of land use from agriculture to industry / mining as a result of the pipeline routes will have a minor negative visual impact on the receiving environment. Site clearance and vegetation removal, and topsoil removal and stockpiling prior to the development of the pipeline infrastructure will have a minor negative visual impact on the receiving environment. Construction of the pipeline infrastructure will have a minor negative visual impact on the receiving environment.

Management Objectives

The management objectives are to minimise the negative visual impact caused by the change of land use from agriculture to industry / mining. The management objectives also aim to minimise the negative visual impact caused by site clearance and vegetation removal, topsoil removal and stockpiling and infrastructure development.

Management Actions

The following management actions are required for the pipeline routes in the Ezulwini MRA:

- Vegetation should only be removed when and where necessary;
- Topsoil should only be removed when and where necessary;
- Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape;
- Limit the height of topsoil stockpiles to 3 metres;

- Apply dust suppression techniques to limit the dust dispersion from stockpiles;
- Limit the height and footprint area of pipeline infrastructure where possible;
- Use shade cloth / netting to screen the construction site;
- Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible;
- Metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the metal structures are painted, it is recommended that a neutral matt finish be used;
- If construction activities take place at night, down lighting must be implemented to minimise light pollution; and
- Where possible spread topsoil and re-vegetate the pipeline servitude areas when construction is complete.

Impact Ratings

The impact ratings and mitigation / management measures for the pipeline routes are summarised in Table 127.

Table 127: Potential Impacts of the Pipeline Routes on the Visual Aspects of the Ezulwini MRA (Construction Phase)

Activity and Interaction (Pipeline routes result in change of land use from agriculture to industry / mining)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: The change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance. This impact can potentially be reversed during the decommissioning phase if all the infrastructure is removed and the area is rehabilitated.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Minor negative (-49)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Moderate (3)	Moderate loss and / or damage to biological or physical resources or low to moderately sensitive environments, limiting ecosystem function.	

		On-going social issues. Damage to items of cultural significance.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Where possible spread topsoil and re-vegetate the pipeline servitude areas when construction is complete; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-35)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Activity and Interaction (Pipeline routes require site clearance and vegetation removal)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: The removal of vegetation for site clearing will have a negative visual impact on the receiving environment. The project area will become noticeable to the nearby receptors as it will contrast the surrounding areas.			

Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Vegetation should only be removed when and where necessary; and ■ Where possible re-vegetate the pipeline servitude areas when construction is complete.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-30)
Extent	Very Limited / Isolated (1)	The impact is limited to specific isolated parts of the site.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	

Nature	Negative		
Activity and Interaction (Pipeline routes require topsoil removal and stockpiling)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-63)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles; and ■ Where possible spread topsoil in the pipeline servitude areas when construction is complete.			
Post-Mitigation			
Duration	Medium Term	The impact will occur for 1-5 years and the impact can be reversed with minimal	Minor negative (-

	(3)	management.	42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		
Activity and Interaction (Pipeline routes require infrastructure development)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.			
Prior to Mitigation / Management			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-63)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect	

		that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Limit the height and footprint area of pipeline infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the metal structures are painted, it is recommended that a neutral matt finish be used; and ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.			
Post-Mitigation			
Duration	Project Life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor negative (-54)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		

11.4.4.2 Decommissioning Phase

The decommissioning phase is characterised by the demolition and removal of infrastructure and rehabilitation of disturbed areas. This phase will have a negative visual impact on the

receiving environment; however, once rehabilitation is complete, there will be an overall neutral visual impact on receiving environment.

11.4.4.2.1 Pipeline Routes

The pipeline routes will be decommissioned within the Ezulwini MRA. This is expected to have a negative visual impact on the receiving environment of the Ezulwini MRA. The interactions and resultant impacts of the pipeline routes are indicated in Table 128.

Table 128: Interactions and Impacts of the Pipeline Routes on the Visual Aspects of the Ezulwini MRA (Decommissioning Phase)

Interaction	Impact
Demolition and removal of infrastructure	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.
Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.

Impact Description

Demolition and removal of infrastructure will have a minor negative visual impact on the receiving environment. Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation is expected to have a minor negative visual impact on the receiving environment. Once the infrastructure is removed and the rehabilitation is complete, there will be an overall neutral visual impact on the receiving environment and it will be returned to a state similar to the pre-development state.

Management Objectives

The management objectives are to increase the neutral visual impact caused by the demolition and removal of infrastructure and the rehabilitation of disturbed areas.

Management Actions

The following management actions are required for the pipeline routes in the Ezulwini MRA:

- Apply dust suppression techniques to limit the dust from the demolition area;
- Use shade cloth / netting to screen the demolition area;
- Limit the quantity and time of rubble stored on site;
- Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography;

- Spread topsoil over the rehabilitated area;
- Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography;
- Re-vegetate the rehabilitated areas; and
- Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.

Impact Ratings

The impact ratings and mitigation / management measures for the pipeline routes are summarised in Table 129.

Table 129: Potential Impacts of the Pipeline Routes on the Visual Aspects of the Ezulwini MRA (Decommissioning Phase)

Activity and Interaction (Pipeline routes require demolition and removal of infrastructure)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Demolition and removal of infrastructure will have a minor negative impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment. This will help to reverse some of the changes that occurred when the infrastructure was constructed.			
Prior to Mitigation / Management			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		

Mitigation / Management Actions			
■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; and ■ Limit the quantity and time of rubble stored on site.			
Post-Mitigation			
Duration	Short Term (2)	The impact will occur for less than 1 year and is reversible.	Negligible negative (-30)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minimal (1)	Minimal to no loss and / or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		
Activity and Interaction (Pipeline routes require rehabilitation of disturbed areas)			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Rehabilitation of disturbed areas will have a minor negative visual impact on the receiving environment. Once the rehabilitation is complete, there will be an overall neutral visual impact on the receiving environment and will assist to return the project area to a state similar to the pre-development state.			
Prior to Mitigation / Management			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-49)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem	

		functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Definite (7)	There are sound scientific reasons to expect that the impact will definitely occur. > 80% probability	
Nature	Negative		
Mitigation / Management Actions			
■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.			
Post-Mitigation			
Duration	Medium Term (3)	The impact will occur for 1-5 years and the impact can be reversed with minimal management.	Minor negative (-42)
Extent	Limited (2)	The impact is limited to the site and its immediate surroundings.	
Intensity	Minor (2)	Minor loss and / or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	
Probability	Almost Certain / Highly Probable (6)	It is most likely that the impact will occur. < 80% probability	
Nature	Negative		

12 Cumulative Impacts

The proposed CPP is situated near the existing Kloof mining infrastructure. This existing infrastructure has impacts on the visual aesthetics / character of the receiving environment and the development of the proposed CPP will add to these existing visual impacts.

The receiving environment of the proposed RTSF consists mainly of small holdings, agriculture and open land with some small residential areas. Only a small percentage of the receiving environment has been disturbed by mining and prior to the construction of the new Gold Fields Doornpoort TSF there was no mining activity within 3.5 km of the proposed RTSF site. The construction of the new Gold Fields Doornpoort TSF and the proposed RTSF will have significant negative visual impacts on the visual aesthetics / character of the receiving environment. The visibility of these large developments will alter the sense of place of the receiving environment from rural to industrial / mining and result in a loss of scenic character and increased visual disturbance.

The proposed activities associated with the WRTRP within the Driefontein, Cooke and Ezulwini MRAs will have a neutral visual impact on the receiving environment. The reclamation of the Driefontein 3, Driefontein 5, Cooke and Cooke 4 South TSFs will have a negative visual impact during the reclamation phase but ultimately after the rehabilitation phase there will be a positive visual impact because the negative visual impact of mining created by the TSFs will be removed. This positive visual impact will be increased as the number of reclaimed dumps increases.

13 Unplanned Events and Low Risks

The unplanned events and low risks are listed in Table 130.

Table 130: Unplanned Events, Low Risks and Their Management Measures

Unplanned Event	Potential Impact	Mitigation / Management / Monitoring
Slope failure	Potential injury / loss of life. Potential damage / loss of equipment.	■ Ensure the slopes of stockpiles, RTSF and TSFs being reclaimed are contoured and not too steep (18° or less) to prevent slope failure.

14 Environmental Management Plan

Due to the length of this report, the Environmental Management Plan tables have been included in Appendix C.

14.1 Topography

14.1.1 Project Activities with Potentially Significant Impacts

The project activities with potentially significant impacts on the topography are listed in Appendix C.

14.1.2 Summary of Mitigation and Management Measures

Appendix C provides a summary of the proposed project activities, environmental aspects and impacts on the receiving environment. Information on the frequency of mitigation, relevant legal requirements, recommended management plans, timing of implementation, and roles / responsibilities of persons implementing the EMP are also included. The prescribed environmental management standards, practices, guidelines, policies and laws are listed in Appendix C.

14.2 Visual

14.2.1 Project Activities with Potentially Significant Impacts

The project activities with potentially significant visual impacts on the receiving environment are listed in Appendix C.

14.2.2 Summary of Mitigation and Management Measures

Appendix C provides a summary of the proposed project activities, environmental aspects and impacts on the receiving environment. Information on the frequency of mitigation, relevant legal requirements, recommended management plans, timing of implementation, and roles / responsibilities of persons implementing the EMP are also included. The prescribed environmental management standards, practices, guidelines, policies and laws are listed in Appendix C.

14.3 General Mitigation

According to Bush et al (1979), vegetation screening is the best mitigation measure to conceal a development. Figure 23 illustrates the screening effect of vegetation. It is recommended that any vegetation which may potentially conceal the proposed development be left undisturbed, especially on the project boundary and around infrastructure. Vegetation left undisturbed along the perimeter of the project has the ability to conceal the proposed infrastructure from nearby receptors. Figure 24 illustrates the effect of cleared vegetation allowing direct views of the proposed infrastructure.

Figure 23: Screening Effect of Vegetation

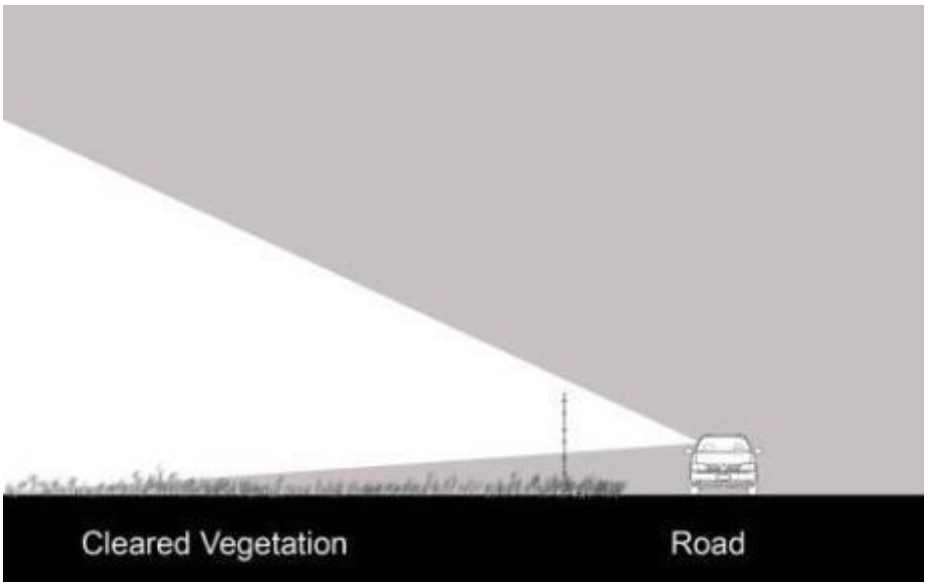

Figure 24: Effect of Cleared Vegetation

Other general mitigation measures that should be implemented where possible include:

- As much existing vegetation as possible should be retained, specifically bushes and trees if present. This will assist to conceal the development;
- Areas susceptible to dust should be frequently wetted by means of a water bowser. It is extremely important to suppress the visual aspects of dust to avoid creating the impression of a polluting industry;
- Down lighting must be implemented to minimise light pollution at night; and

- An appropriate grievance mechanism should be developed to respond to grievances from receptors that relate to visual aspects.

15 Monitoring Programme

The following monitoring activities should be undertaken on a monthly basis for the life of the project:

- Dust monitoring and management as per the Air Quality Monitoring Plan (reducing the dust on site will reduce the visual impact of dust);
- Vegetation screens need to be maintained and protected against fire and utilisation of the vegetation for fire wood, etc.; and
- Grievances from visual receptors must be monitored and addressed through a Grievance Mechanism.

16 Comments and Responses

This is a draft T&VIA report. Once this report has been out for public review, the comments and responses section will be populated with any comments received.

17 Recommendations

It is recommended that the mitigation measures detailed in Section 14 above are implemented to reduce the impact that the proposed WRTRP will have on the topography and visual character of the receiving environment. Vegetation and topsoil should only be removed when and where necessary to avoid exposing larger areas for longer periods of time which could result in soil erosion and increased visual disturbance.

The most important mitigation aspect is rehabilitation of the site. The success of this rehabilitation will influence the overall long term impacts of the proposed project. Where possible, it is of utmost importance that the topography of the site be re-contoured and profiled to create a free-draining topography that resembles the pre-mining topography as closely as possible. It is also essential to reconstruct all pre-development surface water and drainage lines to ensure that a free-draining surface is created and that the surface water flow returns to its original state. After re-contouring and profiling the site, it should be covered with topsoil and re-vegetated to complete the rehabilitation process.

The RTSF will remain indefinitely and will stand out in the surrounding area resulting in a long term visual impact. This visual impact can be reduced by vegetating the RTSF.

18 Conclusion

18.1 Kloof Mining Right Area

The receiving environment of the proposed activities associated with the WRTRP within the Kloof MRA has a moderate visual sensitivity as there are moderately visible areas in the

landscape. The topography of the Kloof MRA is undulating with ridges and river valleys. The proposed CPP is surrounded on the north, east and south by ridges. These ridges are expected to provide some screening of the proposed CPP. The proposed RTSF is situated on a spur between the Leeuspruit River and one of its tributaries. The relatively flat topography is expected to only provide minimal screening of the proposed RTSF. The receiving environment is characterised by residential areas, small holdings, agriculture and mining with little of the natural Grassland vegetation remaining. The agricultural and remaining natural vegetation will only provide minimal screening of the proposed activities associated with the WRTRP within the Kloof MRA.

The theoretical viewshed model for the proposed CPP was refined to a practical viewshed model with a buffer of 4 km around the proposed infrastructure and divided into areas that are likely to experience different categories of visual exposure. Due to the nature of the receiving environment it is unlikely that the proposed CPP will be visible beyond this 4 km buffer. The practical viewshed model depicts the area from which the proposed CPP is likely to be visible. This practical viewshed covers an area of approximately 37.83 km².

The theoretical viewshed model for the proposed RTSF was refined to a practical viewshed model with a buffer of 12 km around the proposed infrastructure and divided into areas that are likely to experience different categories of visual exposure. Due to the nature of the receiving environment it is unlikely that the proposed RTSF will be visible beyond this 12 km buffer. The practical viewshed model depicts the area from which the proposed RTSF is likely to be visible. This practical viewshed covers an area of approximately 644.48 km².

The combined practical viewshed model for the proposed CPP and RTSF depicts the area from which both the proposed CPP and RTSF are likely to be visible. The combined practical viewshed covers an area of approximately 644.48 km².

The proposed activities associated with the WRTRP within the Kloof MRA have a high visibility and a high visual exposure as they will be visible from a large area and will be dominant in the landscape and clearly noticeable to the viewer. The proposed activities associated with the WRTRP within the Kloof MRA have a high visual intrusion as they result in a noticeable change and are discordant with the surroundings.

The receiving environment and receptors of the proposed activities associated with the WRTRP within the Kloof MRA have a moderate sensitivity. The receiving environment has a low VAC because there is little screening by the topography and vegetation. According to Oberholzer (2005) the proposed activities associated with the WRTRP within the Kloof MRA are expected to have a high visual impact on the receiving environment. The findings of this T&VIA concur that the proposed activities associated with the WRTRP within the Kloof MRA will have a high visual impact on the receiving environment.

18.2 Driefontein Mining Right Area

The receiving environment of the proposed activities associated with the WRTRP within the Driefontein MRA has a moderate visual sensitivity as there are moderately visible areas in

the landscape. The topography of the Driefontein MRA is undulating with ridges and river valleys. The undulating topography is expected to provide some screening of the proposed activities associated with the WRTRP within the Driefontein MRA. The receiving environment is characterised by residential areas, small holdings, agriculture and mining with little of the natural Bushveld and Grassland vegetation remaining. The agricultural and remaining natural vegetation will only provide minimal screening of the proposed activities associated with the WRTRP within the Driefontein MRA.

The proposed activities associated with the WRTRP within the Driefontein MRA have a high visibility and a moderate visual exposure as they will be visible from a large area and will be recognisable to the viewer. The proposed activities associated with the WRTRP within the Driefontein MRA have a moderate visual intrusion as they partially fit into the surroundings but are clearly noticeable.

The receiving environment and receptors of the proposed activities associated with the WRTRP within the Driefontein MRA have a moderate sensitivity. The receiving environment has a moderate VAC because there is partial screening by the topography and vegetation. According to Oberholzer (2005) the proposed activities associated with the WRTRP within the Driefontein MRA are expected to have a high visual impact on the receiving environment. The findings of this T&VIA concur that the proposed activities associated with the WRTRP within the Driefontein MRA will have a high visual impact on the receiving environment.

18.3 Cooke Mining Right Area

The receiving environment of the proposed activities associated with the WRTRP within the Cooke MRA has a moderate visual sensitivity as there are moderately visible areas in the landscape. The topography of the Cooke MRA is undulating with ridges and river valleys. The Cooke TSF is situated on a relatively flat area and the topography is expected to only provide minimal screening of the proposed activities associated with the WRTRP within the Cooke MRA. The receiving environment is characterised by residential areas, small holdings, agriculture and mining with little of the natural Grassland vegetation remaining. The agricultural and remaining natural vegetation will only provide minimal screening of the proposed activities associated with the WRTRP within the Cooke MRA.

The proposed activities associated with the WRTRP within the Cooke MRA have a high visibility and a high visual exposure as they will be visible from a large area and will be dominant in the landscape and clearly noticeable to the viewer. The proposed activities associated with the WRTRP within the Cooke MRA have a high visual intrusion as they result in a noticeable change and are discordant with the surroundings.

The receiving environment and receptors of the proposed activities associated with the WRTRP within the Cooke MRA have a moderate sensitivity. The receiving environment has a low VAC because there is little screening by the topography and vegetation. According to Oberholzer (2005) the proposed activities associated with the WRTRP within the Cooke MRA are expected to have a high visual impact on the receiving environment. The findings

of this T&VIA concur that the proposed activities associated with the WRTRP within the Cooke MRA will have a high visual impact on the receiving environment.

18.4 Ezulwini Mining Right Area

The receiving environment of the proposed activities associated with the WRTRP within the Ezulwini MRA has a moderate visual sensitivity as there are moderately visible areas in the landscape. The topography of the Ezulwini MRA is undulating. The undulating topography is expected to provide some screening of the proposed activities associated with the WRTRP within the Ezulwini MRA. The receiving environment is characterised by residential areas, small holdings, agriculture and mining with little of the natural Grassland and Bushveld vegetation remaining. The agricultural and remaining natural vegetation will only provide minimal screening of the proposed activities associated with the WRTRP within the Ezulwini MRA.

The proposed activities associated with the WRTRP within the Ezulwini MRA have a low visibility and a low visual exposure as they will be visible from a small area around the project site and will not be particularly noticeable to the viewer. The proposed activities associated with the WRTRP within the Ezulwini MRA have a moderate visual intrusion as they partially fit into the surroundings but are clearly noticeable.

The receiving environment and receptors of the proposed activities associated with the WRTRP within the Ezulwini MRA have a moderate sensitivity. The receiving environment has a moderate VAC because there is partial screening by the topography and vegetation. According to Oberholzer (2005) the proposed activities associated with the WRTRP within the Ezulwini MRA are expected to have a high visual impact on the receiving environment. The findings of this T&VIA do not concur with this. The only planned infrastructure for the WRTRP within the Ezulwini MRA are the pipeline routes. Therefore the proposed activities associated with the WRTRP within the Ezulwini MRA are expected to only have a moderate visual impact on the receiving environment.

18.5 Conclusion

The proposed WRTRP will have negative topographic and visual impacts on the receiving environment. The RTSF will remain indefinitely resulting in a permanent and irreversible negative impact on the topography and visual aesthetics.

During the closure phase, the negative impacts can be reduced by implementing mitigation measures; the most important of these is rehabilitation with the emphasis being on re-contouring the site and reconstructing the surface water and drainage lines. The success of this rehabilitation will influence the overall long term impact of the proposed project on the topography and visual / aesthetic character of the receiving environment.

Based on the findings of this T&VIA only (not taking into account the findings of any other studies), from a topography and visual perspective it is recommended that the proposed WRTRP proceed.

19 Reference List

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Appendix A: Plans

Plan 1: Regional Setting

Plan 2: Kloof MRA Local Setting

Plan 3: Driefontein MRA Local Setting

Plan 4: Cooke MRA Local Setting

Plan 5: Ezulwini MRA Local Setting

Plan 6: Kloof MRA Infrastructure

Plan 7: Driefontein MRA Infrastructure

Plan 8: Cooke MRA Infrastructure

Plan 9: Ezulwini MRA Infrastructure

Plan 10: Topographical Model

Plan 11: Slope Model

Plan 12: CPP Theoretical Viewshed Model

Plan 13: CPP Practical Viewshed Model

Plan 14: RTSF Theoretical Viewshed Model

Plan 15: RTSF Practical Viewshed Model

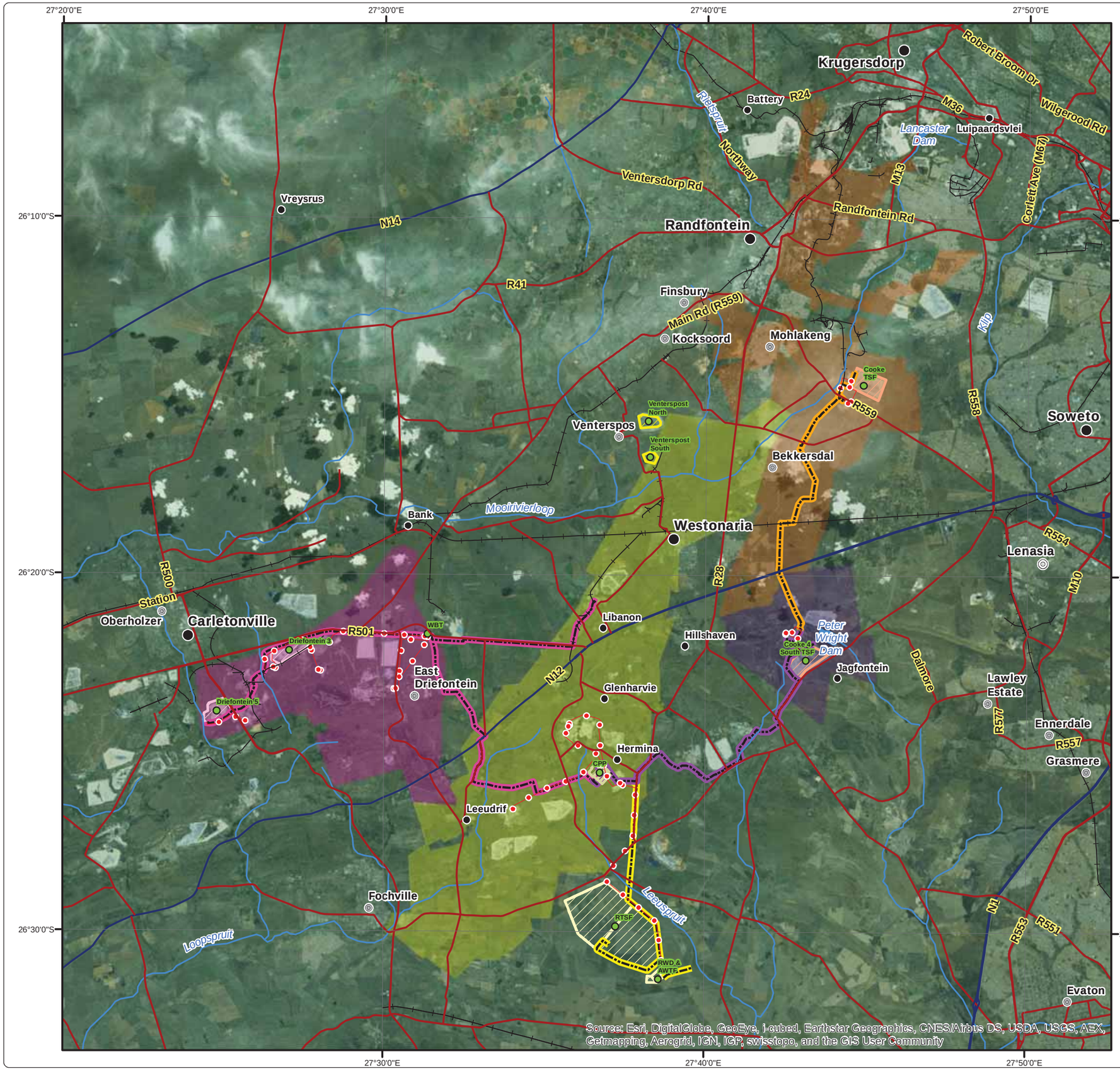
Plan 16: Kloof Practical Viewshed Model

Plan 17: Viewpoints for Photomontages

Plan 1

Sibanye WRTRP EIA

Regional Setting



Legend

- Major Town
- Secondary Town
- Other Town
- Settlement
- Main Roads
- National Roads
- Railway Line
- River
- Dam

Infrastructure

- Infrastructure Point
- Powerlines
- Pipelines: Kloof Mining Right
- Pipelines: Driefontein Mining Right
- Pipelines: Cooke Mining Right
- Pipelines: Ezulwini Mining Right
- CPP and Future Uranium Plant
- Regional Tailings Storage Facility
- TSF within Kloof Mining Right
- TSF within Driefontein Mining Right
- TSF within Cooke Mining Right
- Kloof Mining Right
- Driefontein Mining Right
- Cooke Mining Right
- Ezulwini Mining Right

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Central Meridian: 27°E	Date: 26/10/2015

N

0 2.5 5 10

Kilometres

1:200 000

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Plan 2

Sibanye WRTRP EIA

Kloof MRA Local Setting

Legend

- Major Town
- Other Town
- Settlement
- Arterial / National Route
- Main Road
- Minor Road
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Perennial Pan
- Non-Perennial Pan
- Wetland

Infrastructure

- Infrastructure Point
- CPP and Future Uranium Plant
- Regional Tailings Storage Facility
- TSF within Kloof Mining Right
- Kloof Mining Right

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Revision Number: 1
Date: 26/11/2015

N

0 1 2 4 6

Kilometres

1:120 000

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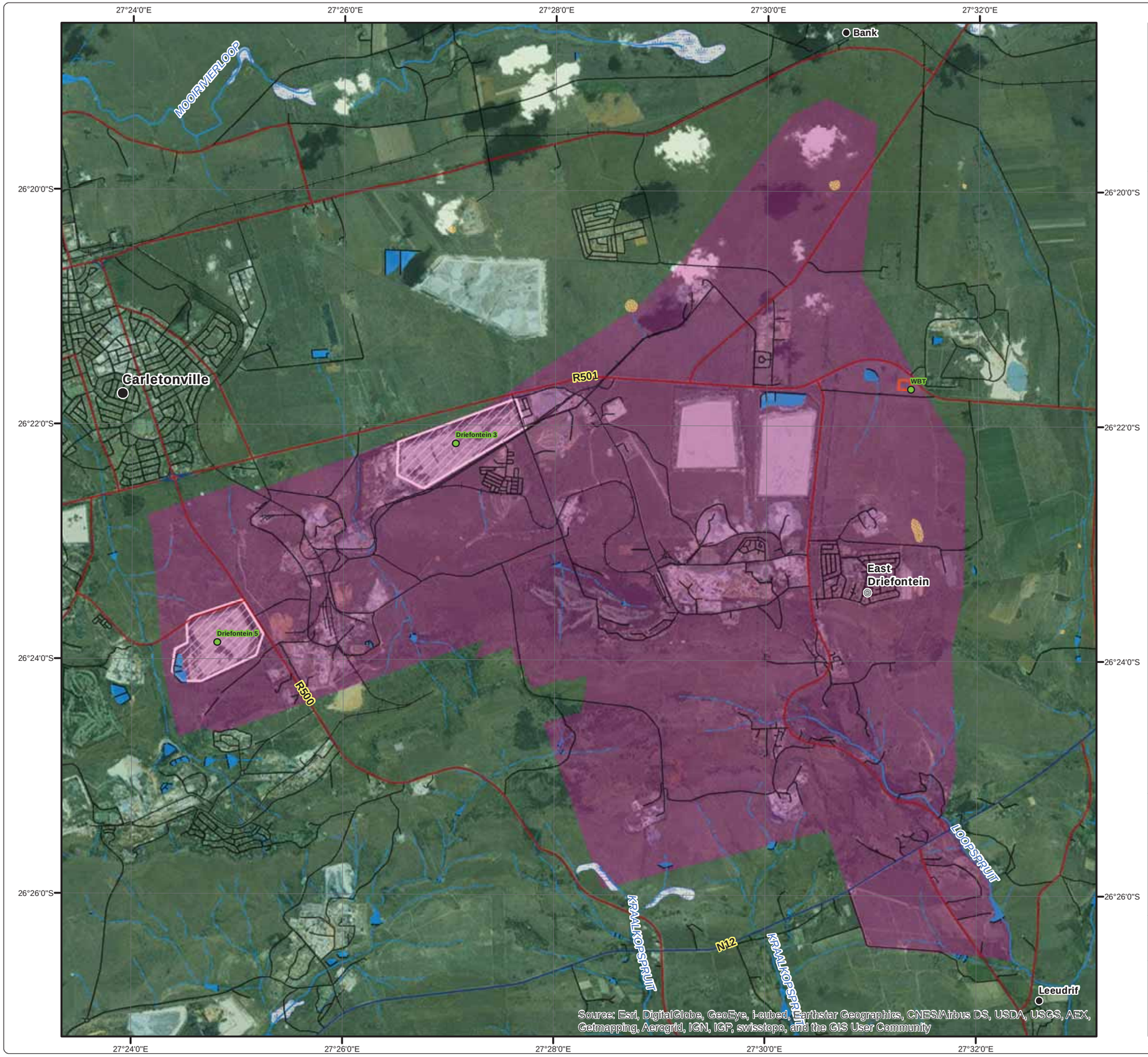
Plan 3

Sibanye WRTRP EIA

Driefontein MRA Local Setting



Legend

- Major Town
- Other Town
- Settlement
- Arterial / National Route
- Main Road
- Minor Road
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Non-Perennial Pan
- Wetland

Infrastructure

- Infrastructure Point
- TSF within Driefontein Mining Right
- WBT Footprint
- Driefontein Mining Right

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N

0 0.5 1 2 3

Kilometres

1:60 000

Plan 4

Sibanye WRTRP EIA

Cooke MRA Local Setting

Legend

- Major Town
- Secondary Town
- Other Town
- Settlement
- Arterial / National Route
- Main Road
- Minor Road
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Perennial Pan
- Non-Perennial Pan
- Wetland

Infrastructure

- Infrastructure Point
- TSF within Cooke Mining Right
- Cooke Mining Right

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N

0 1 2 4 6

Kilometres

1:110 000

Plan 5

Sibanye WRTRP EIA

Ezulwini MRA
Local Setting

27°40'0"E
27°42'0"E
27°44'0"E
27°46'0"E
26°20'0"S
26°22'0"S
26°24'0"S

N12
R28
Cooke 4 South TSF
Jagfontein

Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Legend

- Settlement
- Arterial / National Route
- Main Road
- Minor Road
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Perennial Pan
- Non-Perennial Pan
- Wetland

Infrastructure

- Infrastructure Point
- TSF within Cooke Mining Right
- Ezulwini Mining Right

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N

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Kilometres

1:40 000

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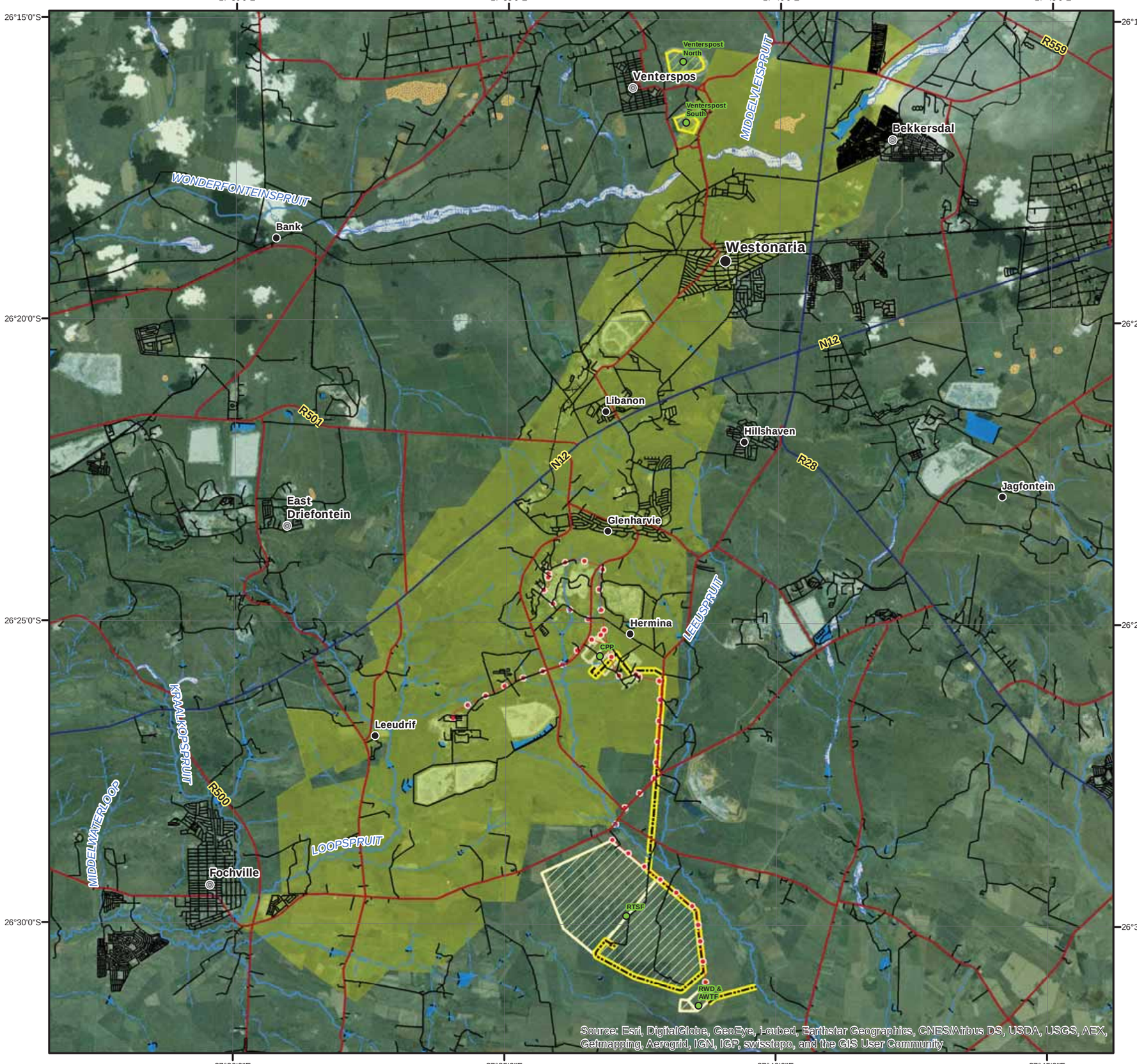
Plan 6

Sibanye WRTRP EIA

Kloof MRA Infrastructure



Legend

- Major Town
- Other Town
- Settlement
- Arterial / National Route
- Main Road
- Minor Road
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Perennial Pan
- Non-Perennial Pan
- Wetland

Infrastructure

- Infrastructure Point
- Powerlines
- Pipelines: Kloof Mining Right
- CPP and Future Uranium Plant
- Regional Tailings Storage Facility
- TSF within Kloof Mining Right
- Kloof Mining Right

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N

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Kilometres

1:120 000

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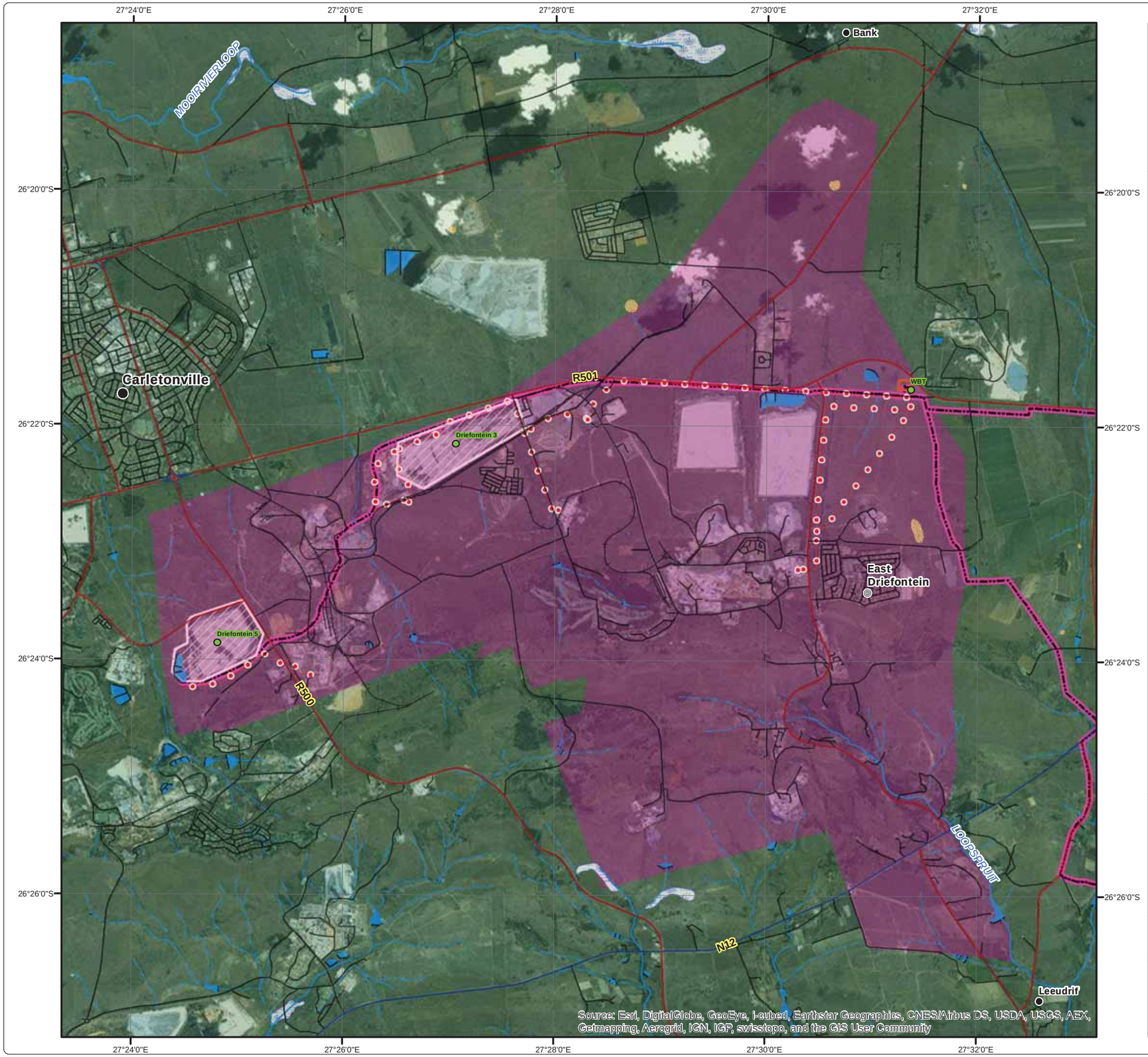
Plan 7

Sibanye WRTRP EIA

Driefontein MRA Infrastructure



Legend

- Major Town
- Other Town
- Settlement
- Arterial / National Route
- Main Road
- Minor Road
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Non-Perennial Pan
- Wetland

Infrastructure

- Infrastructure Point
- Powerlines
- Pipelines: Driefontein Mining Right
- WBT Footprint
- TSF within Driefontein Mining Right
- Driefontein Mining Right

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N

0 0.5 1 2 3

Kilometres

1:60 000

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Plan 8

Sibanye WRTRP EIA

Cooke MRA Infrastructure

Legend

- Major Town
- Secondary Town
- Other Town
- Settlement
- Arterial / National Route
- Main Road
- Minor Road
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Perennial Pan
- Non-Perennial Pan
- Wetland

Infrastructure

- Infrastructure Point
- Powerlines
- Pipelines: Cooke Mining Right
- TSF within Cooke Mining Right
- Cooke Mining Right

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N

0 1 2 4 6

Kilometres

1:100 000

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Plan 9

Sibanye WRTRP EIA

Ezulwini MRA Infrastructure

Legend

- Settlement
- Arterial / National Route
- Main Road
- Minor Road
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Perennial Pan
- Non-Perennial Pan
- Wetland

Infrastructure

- Infrastructure Point
- Powerlines
- Pipelines: Ezulwini Mining Right
- Ezulwini Mining Right

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N

0 0.5 1 2

Kilometres

1:40 000

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Plan 10

Sibanye WRTRP EIA

Topography

Legend

- Major Town
- Secondary Town
- Other Town
- Settlement
- Main Road
- National Road
- Railway Line
- River
- Dam

Infrastructure

- Infrastructure Point
- CPP and Future Uranium Plant
- Regional Tailings Storage Facility
- TSF within Kloof Mining Right
- TSF within Driefontein Mining Right
- TSF within Cooke Mining Right
- Kloof Mining Right
- Driefontein Mining Right
- Cooke Mining Right
- Ezulwini Mining Right

Topography

Elevation

High : 1803

Low : 1364

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N

0 2 4 8 12

Kilometres

1:210 000

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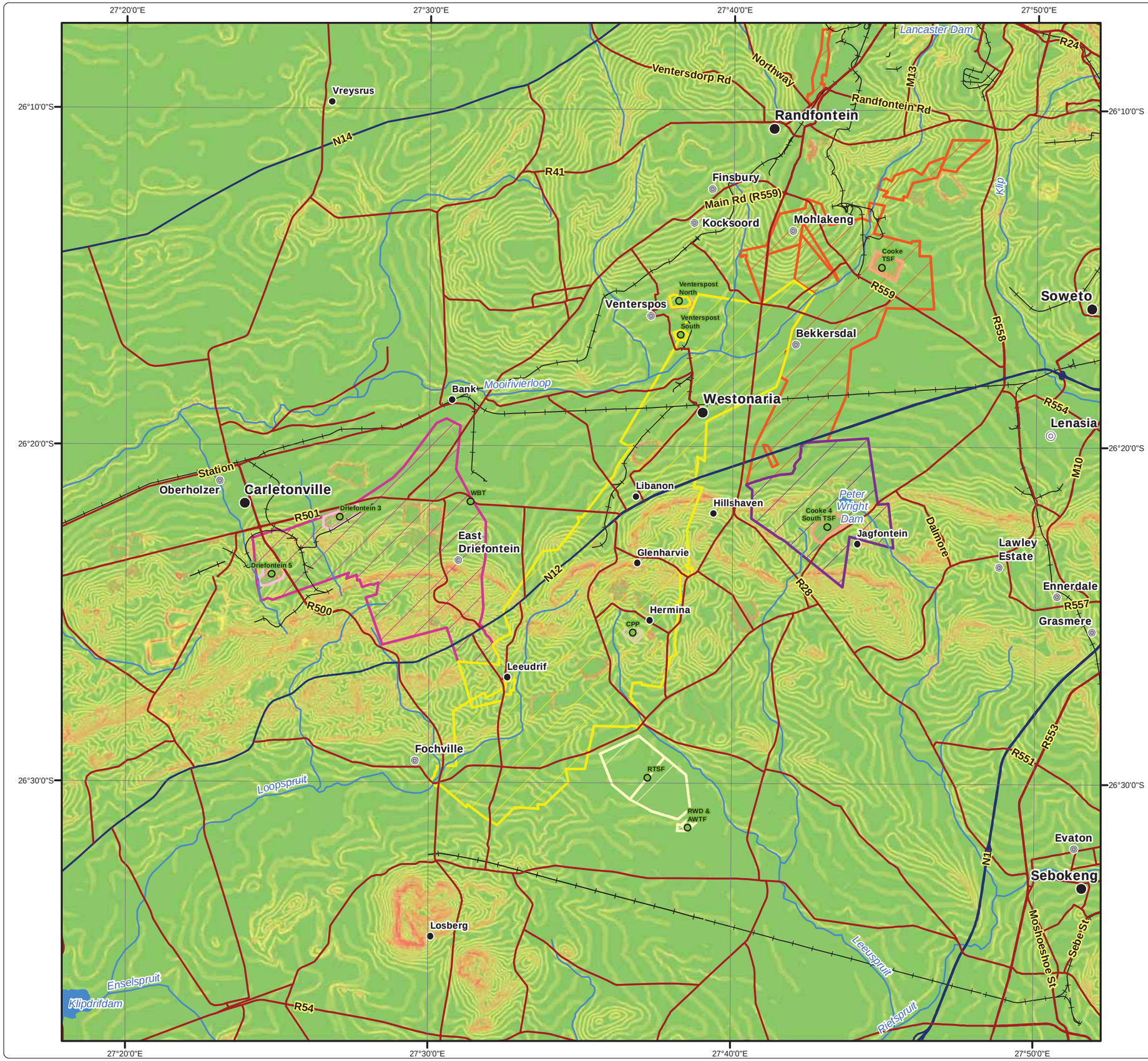
Plan 11

Sibanye WRTRP EIA

Slope Model



Legend

- Major Town
- Secondary Town
- Other Town
- Settlement
- Main Road
- National Road
- Railway Line
- River
- Dam

Infrastructure

- Infrastructure Point
- CPP and Future Uranium Plant
- Regional Tailings Storage Facility
- TSF within Kloof Mining Right
- TSF within Driefontein Mining Right
- TSF within Cooke Mining Right
- Kloof Mining Right
- Driefontein Mining Right
- Cooke Mining Right
- Ezulwini Mining Right

Slope Model

Degree (°)

- 0 - 1.2
- 1.3 - 3.3
- 3.4 - 6.5
- 6.6 - 11
- 11.1 - 16.9
- 17 - 24.3
- 24.4 - 75.4

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Projection: Transverse Mercator
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N

0 2 4 8 12

Kilometres

1:210 000

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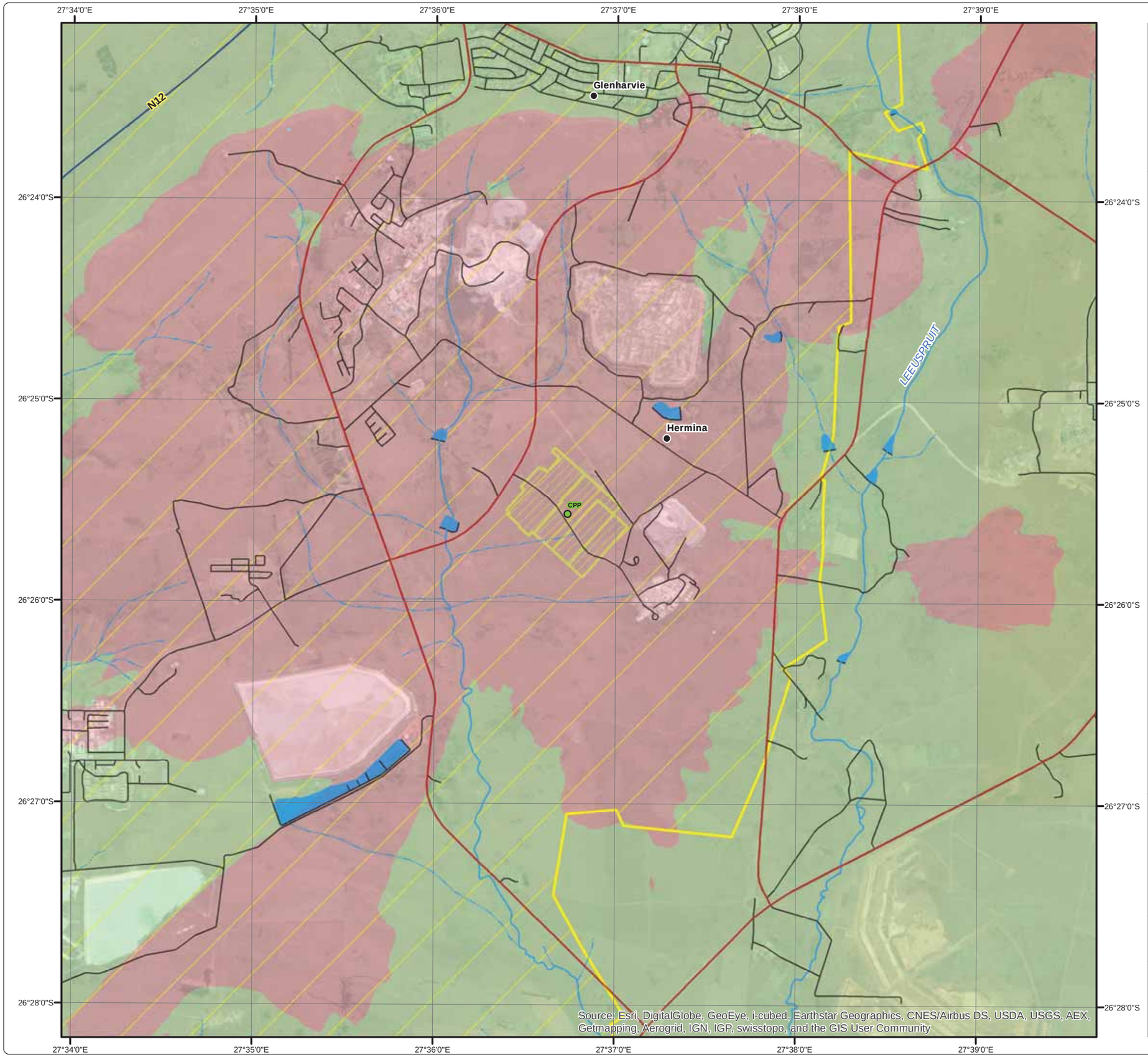
Plan 12

Sibanye WRTRP EIA

CPP Theoretical Viewshed Model



Legend

- Settlement
- Arterial / National Route
- Main Road
- Minor Road
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Perennial Pan

Infrastructure

- Infrastructure Point
- CPP and Future Uranium Plant
- Kloof Mining Right

CPP Theoretical Viewshed

- Not Visible
- Potentially Visible

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Projection: Transverse Mercator
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Revision Number: 1
Date: 26/10/2015

N

0 0.5 1 2

Kilometres

1:35 000

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Plan 13

Sibanye WRTRP EIA

CPP Practical Viewshed Model

27°34'0"E 27°35'0"E 27°36'0"E 27°37'0"E 27°38'0"E 27°39'0"E

26°24'0"S
26°25'0"S
26°26'0"S
26°27'0"S
26°28'0"S

Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Legend

- Settlement
- Arterial / National Route
- Main Road
- Minor Road
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Perennial Pan

Infrastructure

- Infrastructure Point
- CPP and Future Uranium Plant
- Kloof Mining Right

CPP Practical Viewshed

- 0 - 1.5 km: Potentially High Visual Exposure
- 1.5 - 3 km: Potentially Moderate Visual Exposure
- 3 - 4 km: Potentially Low Visual Exposure
- 4 km Buffer of CPP

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Date: 26/10/2015

N

0 0.5 1 2

Kilometres

1:35 000

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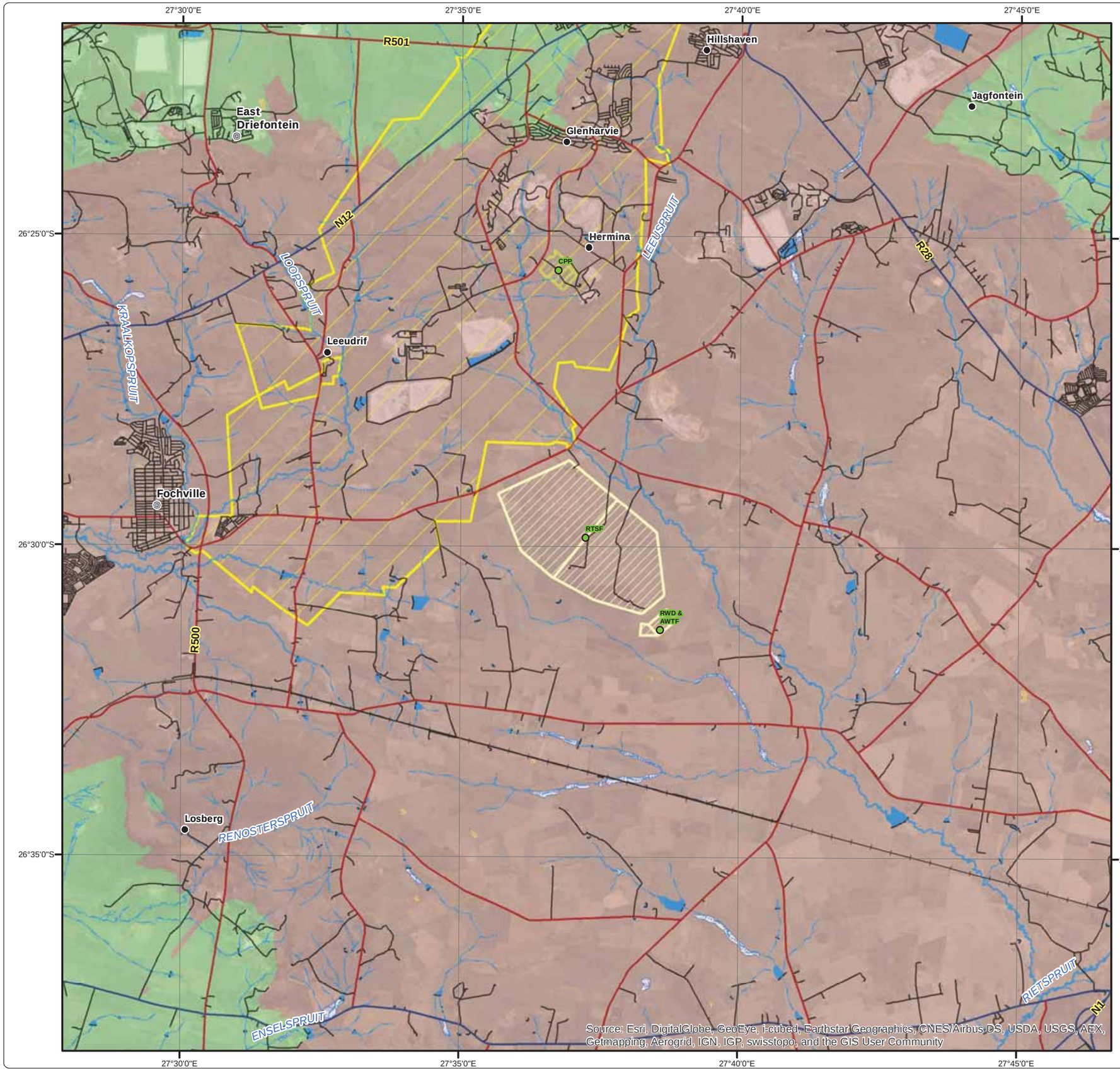
Plan 14

Sibanye WRTRP EIA

RTSF Theoretical Viewshed Model



Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Legend

- Other Town
- Settlement
- Arterial / National Route
- Main Road
- Minor Road
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Perennial Pan
- Non-Perennial Pan
- Wetland

Infrastructure

- Infrastructure Point
- CPP and Future Uranium Plant
- Regional Tailings Storage Facility
- Kloof Mining Right

RTSF Theoretical Viewshed

- Not Visible
- Visible

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N

0 1.5 3 6

Kilometres

1:115 000

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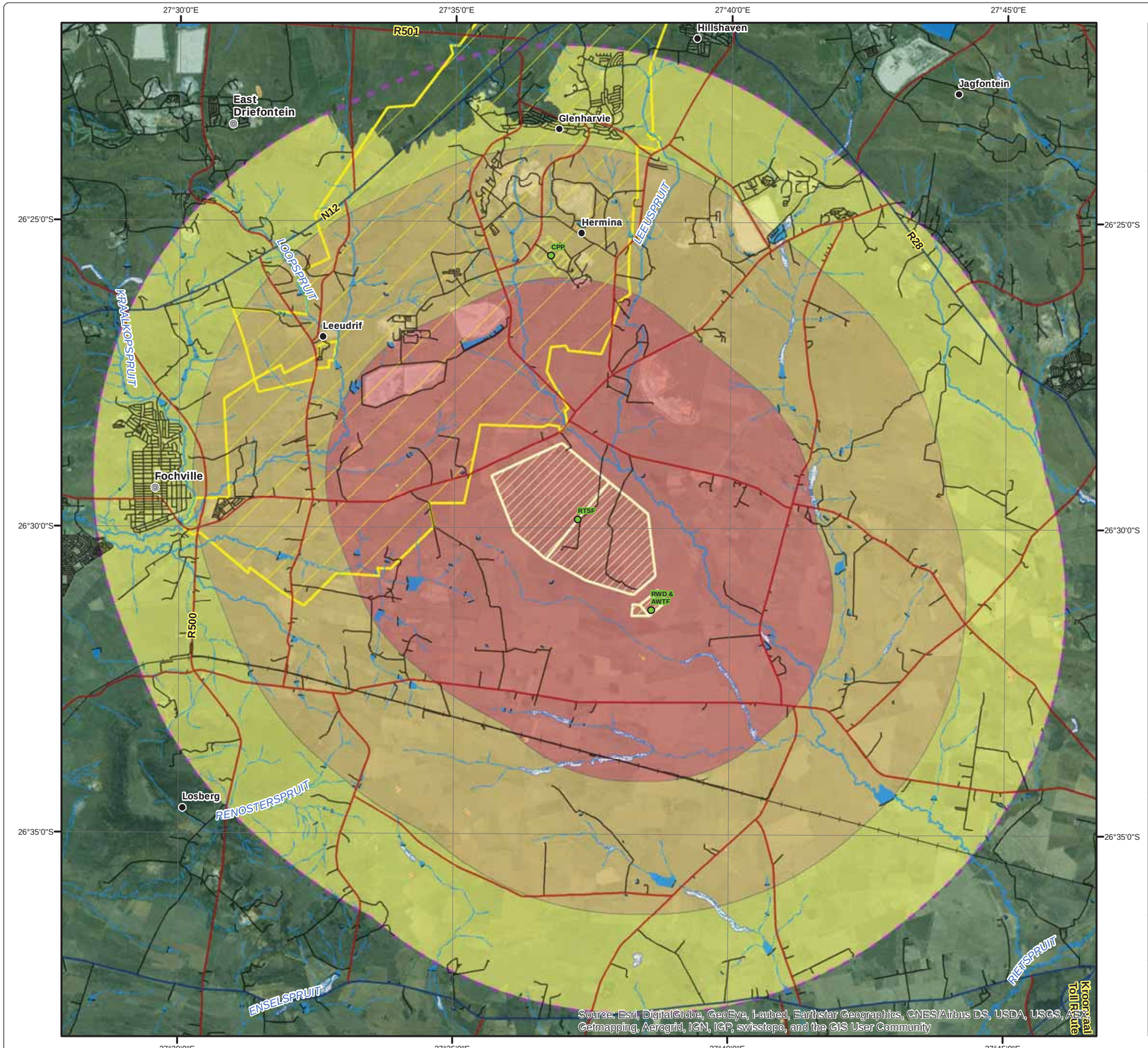
Plan 15

Sibanye WRTRP EIA

RTSF Practical Viewshed Model



Legend

- Other Town
- Settlement
- Arterial / National Route
- Main Road
- Minor Road
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Perennial Pan
- Non-Perennial Pan
- Wetland

Infrastructure

- Infrastructure Point
- CPP and Future Uranium Plant
- Regional Tailings Storage Facility
- Kloof Mining Right

RTSF Practical Viewshed

- 0 - 5 km: Potentially High Visual Exposure
- 5 - 9 km: Potentially Moderate Visual Exposure
- 9 - 12 km: Potentially Low Visual Exposure
- 12 km Buffer of RTSF

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Projection: Transverse Mercator
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Revision Number: 1
Date: 26/11/2015

N

0 1.5 3 6

Kilometres

1:115 000

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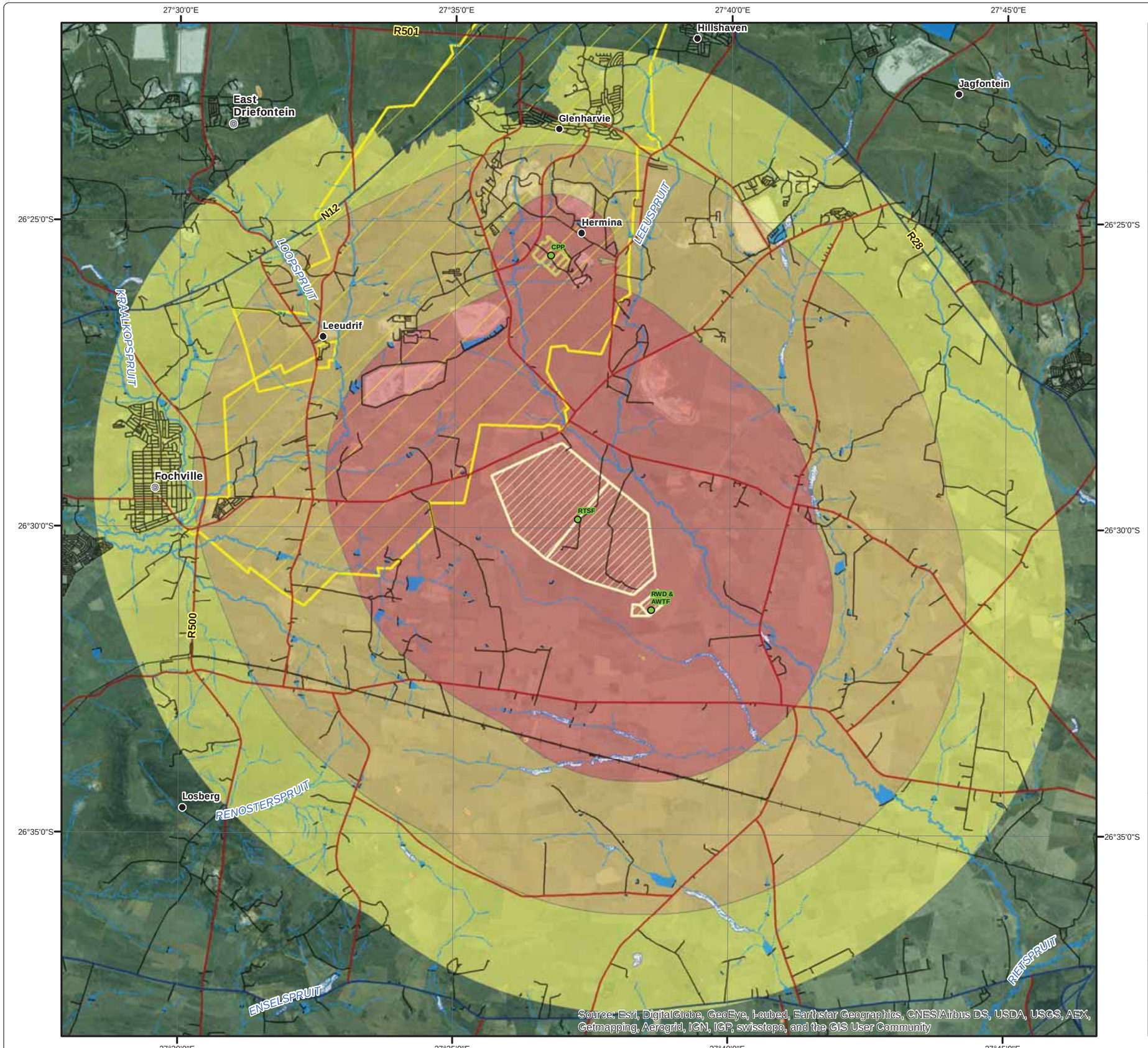
Plan 16

Sibanye WRTRP EIA

Kloof Practical Viewshed Model



Legend

- Other Town
- Settlement
- Arterial / National Route
- Main Road
- Minor Road
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Perennial Pan
- Non-Perennial Pan
- Wetland

Infrastructure

- Infrastructure Point
- CPP and Future Uranium Plant
- Regional Tailings Storage Facility
- Kloof Mining Right

Kloof Practical Viewshed

- Potentially High Visual Exposure
- Potentially Moderate Visual Exposure
- Potentially Low Visual Exposure

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Revision Number: 1
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N

0 1.5 3 6

Kilometres

1:115 000

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Plan 17

Sibanye WRTRP EIA

Viewpoints for Photomontages

27°30'0"E
27°40'0"E
26°10'0"S
26°20'0"S
26°30'0"S

Vreysrus
Randfontein
Luipaardsvlei
Lancaster Dam
Northway
Ventersdorp Rd
Riesspruit
Randfontein Rd
M13
R558
R24
N14
R41
Finsbury
Main Rd (R559)
Kocksoord
Mohlakeng
Kip
Cooke TSF
R559
Venterspost North
Venterspos
Venterspost South
Bekkersdal
Viewpoint 5
R500
Mooirivierloop
Bank
Westonaria
Station
Oberholzer
Carletonville
Viewpoint 4
WBT
R501
Driefontein 3
Libanon
Hillshaven
Peter Wright Dam
Cooke 4 South TSF
Jagfontein
Dalmore
East Driefontein
N12
Glenharvie
R29
Lawley Estate
R577
Driefontein 5
Viewpoint 2
Hermina
CPP
Viewpoint 1
Leeudrif
Loopspruit
Fochville
RTSF
Leeuspruit
Viewpoint 3
RWD & AWTF
R551
N1

Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Legend

- Major Town
- Secondary Town
- Other Town
- Settlement
- Viewpoint
- View Direction
- Main Roads
- National Roads
- Railway Line
- River
- Dam

Infrastructure

- Infrastructure Point
- Powerlines
- Pipelines: Kloof Mining Right
- Pipelines: Driefontein Mining Right
- Pipelines: Cooke Mining Right
- Pipelines: Ezulwini Mining Right
- CPP and Future Uranium Plant
- Regional Tailings Storage Facility
- TSF within Kloof Mining Right
- TSF within Driefontein Mining Right
- TSF within Cooke Mining Right
- Kloof Mining Right
- Driefontein Mining Right
- Cooke Mining Right
- Ezulwini Mining Right

DIGBY WELLS ENVIRONMENTAL

• Sustainability • Service • Positive Change • Professionalism • Future Focused • Integrity

Projection: Transverse Mercator
Datum: WGS 1984
Central Meridian: 27°E

Ref #: kam.GOL2376.201508.023
Revision Number: 1
Date: 26/10/2015

N

0 2 4 8

Kilometres

1:175 000

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Appendix B: CV

STEPHANIE MULDER

Mrs Stephanie Mulder

Unit Manager: GIS

Digby Wells Environmental

1 EDUCATION

2006: BSc (Hons) Geography (cum laude) at University of Johannesburg

Major subjects: Philosophy and Research Methodology; Strategic Environmental Planning; Geographic Information Systems (GIS); Urban Geography; Geomorphology

2003 to 2005: BSc Geography and Informatics with Financial Orientation at University of Johannesburg

Major subjects: Geography; Informatics

Ancillary subjects: Mathematics, Analytical Techniques, Financial Management, Accounting, Business Management

2 TRAINING

2012: Diplôme D'Études en Langue Française – DELF A1 (La Commission Nationale du DELF et du DALF)

2011: ArcPad for ArcGIS (ESRI)

2011: Mining for Non-Miners (Snowden)

2009: Emerging Management Development Programme (EMDP) (University of Pretoria in association with the Public Administration Leadership and Management academy (PALAMA) and the School of Public Management and Administration)

2008: Building Geodatabases (ESRI)

2008: Geodatabase Design Concepts (ESRI)

2007: Introduction to ArcGIS I (ESRI)

3 LANGUAGE SKILLS

English (excellent)

Afrikaans (good)

French (intermediate)

4 PROFESSIONAL AFFILIATIONS

Geographic Information Society of South Africa (GISSA)

International Association of Impact Assessment South Africa (IAIASA)

5 EMPLOYMENT

September 2009 to present:	Digby Wells Environmental
January 2007 to August 2009:	Statistics South Africa

6 EXPERIENCE

I have experience in using Geographic Information Systems (GIS) as a digital cartographic and spatial analytical tool. As a GIS Specialist at Statistics South Africa I was responsible for maintaining the geodatabase and I gained experience working with vector data, aerial photography and satellite imagery. I was responsible for the data preparation and mapping for the Community Survey 2007 Digital Atlas CD. I assisted with map production for surveys and user requests for spatial data. I also worked on the Dwelling Frame Project, Placename and Enumerator Area Demarcation.

My responsibilities at Digby Wells currently include but are not limited to:

- Management of the GIS unit;
- Generation of maps for projects;
- Conducting Topography and Visual Impact Assessments (T&VIAs);
- Review of GIS maps and T&VIA Reports;
- Assisting with the maintenance of the GIS databases by storing all electronic files in a well organised structure;
- Expanding and improving the GIS databases by identifying gaps and sources of additional mapping data;
- The production of spatial information in map format;
- Application of GPS technology, aerial photo and satellite images.
- Assessing digital databases to ensure a high level of accuracy of data available at all times; and
- Spatial analyses relating to environmental projects.

7 PROJECT EXPERIENCE

My project experience at Digby Wells includes but is not limited to:

Year	Client	Project	Responsibility	Location
2015	Anker Coal	Elandsfontein and Golfview Baseline Studies	Mapping	Mpumalanga, South Africa
2015	Anker Coal	Elandsfontein and Golfview Closure Cost Assessments	3D modelling and closure calculations Mapping	Mpumalanga, South Africa
2015	Anker Coal	Elandsfontein and Golfview IWULAs	Mapping	Mpumalanga, South Africa
2015	Anker Coal	Golfview Rehabilitation Plan	3D modelling and volume calculations Mapping	Mpumalanga, South Africa
2015	BECSA (South 32)	KPSX: Weltevreden EIA	Topography and Visual Impact Assessment Supervise mapping	Mpumalanga, South Africa
2015	CDC Group	Fauna and Flora, and Social Studies	Data compilation Mapping	DRC
2015	Fountain Capital	Oakleaf Open Pit Coal Mine EIA	Assist with Topography and Visual Impact Assessment Supervise mapping	Gauteng, South Africa
2015	Gold One	Sibanye WRTRP EIA	Topography and Visual Impact Assessment Supervise mapping	Gauteng, South Africa
2015	Harmony Gold	Closure Cost Assessment 2015	3D modelling and closure calculations Supervise mapping	Free State, Gauteng and North West, South Africa
2015	Lanxess Mining	Lanxess Chrome Mine Section 102 EMP Amendment	Topography and Visual Impact Assessment Mapping	North West, South Africa
2015	Pamish Investments	Magnetite EIA	Topography and Visual Impact Assessment Mapping	Limpopo, South Africa

2015	Sasol Mining	Sigma Interactive Map and Document Management System	Project Manager	Mpumalanga, South Africa
2014	AECOM	EIA for Management of AMD from the Eastern Basin	Assist with Topography and Visual Impact Assessment Supervise mapping	Gauteng, South Africa
2014	BECSA (South 32)	KPSX: South EIA	Topography and Visual Impact Assessment Supervise mapping	Mpumalanga, South Africa
2014	Ergo	Pipeline GIS Audit	Project Manager	Gauteng, South Africa
2014	Exxaro	Tshikondeni Closure Plan	Mapping	Limpopo, South Africa
2014	Genesis Analytics	Evaluation of Environmental Governance	Interviews, Research and Report Compilation	South Africa
2014	Glencore Xstrata	Tavistock EMP	Mapping	Mpumalanga, South Africa
2014	Harmony Gold	Closure Cost Assessment 2014	3D modelling and closure calculations Supervise mapping	Free State, Gauteng and North West, South Africa
2013	Amara Sega	Cluff Sega RAP	Data compilation Mapping	Burkina Faso
2013	Anglo American Thermal Coal	Dalyshope Coal Mine EIA	Topography and Visual Impact Assessment Mapping	Limpopo, South Africa
2013	Aureus Mining Inc	New Liberty Gold Mine RAP	Questionnaire design Data compilation and analysis Mapping	Liberia
2013	Glencore Xstrata	GIS Phase 2 Project	Project Manager	Mpumalanga, South Africa
2013	Glencore Xstrata	Closure Cost Assessment 2013	3D modelling and closure calculations Supervise mapping	Mpumalanga, South Africa

2013	Harmony Gold	Closure Cost Assessment 2013	3D modelling and closure calculations Supervise mapping	Free State, Gauteng and North West, South Africa
2013	Platreef Resources	Platreef EIA	Topography and Visual Impact Assessment Mapping	Limpopo, South Africa
2013	Rhodium Reefs	Rhodium Reefs EIA	Topography and Visual Impact Assessment	Limpopo, South Africa
2013	Vedanta	Vedanta IPP EIA	Topography and Visual Scoping Study Mapping	Limpopo, South Africa
2012	Bokoni Platinum Mine	Bokoni Water Balance	Mapping	Limpopo, South Africa
2012	Platreef Resources	Platreef Agricultural Survey	Project Manager Data compilation Mapping	Limpopo, South Africa
2012	Platreef Resources	Platreef Skills and Business Survey	Project Manager Digital survey methodology Data compilation and analysis	Limpopo, South Africa
2012	Xstrata Coal	Closure Cost Assessment 2012	3D modelling and closure calculations Supervise mapping	Mpumalanga, South Africa
2012	Xstrata Coal	Consolidated EIA EMP for Tavistock	Mapping	Mpumalanga, South Africa
2011	DRD Gold	Crown Knights Reclamation of Sand Dump 4/A/6 (Lycaste)	Topography and Visual Impact Assessment Mapping	Gauteng, South Africa
2011	DRD Gold	Crown Pipeline Audit	Mapping	Gauteng South Africa
2011	DRD Gold	Crown Consolidated EMP	Mapping	Gauteng, South Africa
2011	Koidu	Koidu RAP	Questionnaire design Data compilation and analysis	Sierra Leone

2011	Rand Gold	Gounkoto RAP	Fieldwork Mapping	Mali
2011	ResGen	Boikarabelo Railway EIA	Topography and Visual Impact Assessments	Limpopo, South Africa
2011	ResGen	Boikarabelo Power Station EIA	Topography Impact Assessment Mapping	Limpopo, South Africa
2011	Temo Coal	Temo Coal Mine EIA	Topography and Visual Impact Assessments	Limpopo, South Africa
2011	Universal Coal	Brakfontein Social and Environmental Screening Study	Mapping	Mpumalanga, South Africa
2011	Universal Coal	Roodekop EIA	Mapping	Mpumalanga, South Africa
2011	Xstrata Coal	Closure Cost Assessment 2011	3D modelling and closure calculations Mapping	Mpumalanga, South Africa
2011	Xstrata Alloys	Lesedi Power Station EIA	Topography Impact Assessment Mapping	Mpumalanga, South Africa
2010	DRD Gold	Crown Pipeline EIA	Mapping	Gauteng, South Africa
2010	DRD Gold	Crown City Deep Reclamation of Slimes Dam 4/L/2	Mapping	Gauteng, South Africa
2010	DRD Gold	Crown City Deep Reclamation of Slimes Dams 3/L/40 & 3/L/42	Mapping	Gauteng, South Africa
2010	Galaxy Gold	Galaxy Gold Mine EIA	Topography and Visual Impact Assessments Mapping	Mpumalanga, South Africa
2010	HCI Coal	Nokuhle Colliery EIA	Topography Impact Assessment Mapping	Mpumalanga, South Africa
2010	HCI Coal	Palesa Extension EIA	Topography and Visual Impact Assessments	Mpumalanga, South Africa

			Mapping	
2010	Mmamabula	Mookane Domestic Power Project	Mapping	Botswana
2010	ResGen	Boikarabelo Coal Mine EIA	Mapping	Limpopo South Africa
2010	Xstrata Coal	Closure Cost Assessment 2010	3D modelling and closure calculations Mapping	Mpumalanga, South Africa
2010	Xstrata Coal	Zonnebloem Colliery EIA	Mapping	Mpumalanga, South Africa
2009	BHP Billiton	Naudesbank & Vaalbank Baseline Studies	Mapping	Mpumalanga, South Africa
2009	MSA	Nkwe Social Survey	Mapping	Limpopo, South Africa
2009	Sasol Mining	Syferfontein Colliery EIA	Mapping	Mpumalanga, South Africa
2009	Universal Coal	Kangala Coal Mine EIA	Mapping	Mpumalanga, South Africa
2009	Xstrata Coal	Community Baseline Survey	Data analysis Mapping	Mpumalanga, South Africa
2009	Xstrata Coal	Tavistock EMPR	Mapping	Mpumalanga, South Africa

Appendix C: Environmental Management Plan

Potentially Significant Topography Impacts of the Proposed Project

Activity	Phase	Interaction	Potential Significant Impacts
Kloof Mining Right Area			
Pipelines	Construction	Site clearance and vegetation removal	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.
		Topsoil removal and stockpiling	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.
		Infrastructure development	Construction of the pipeline infrastructure will add features to the topography thereby changing it.
	Operational	N/A	No impacts expected.
	Decommissioning	Demolition and removal of infrastructure	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.
		Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will change the topography.
CPP	Construction	Site clearance and vegetation removal	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.
		Topsoil removal and stockpiling	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.

Activity	Phase	Interaction	Potential Significant Impacts
		Infrastructure development	Construction of the CPP will add features to the topography thereby changing it.
	Operational	N/A	No impacts expected.
	Decommissioning	Demolition and removal of infrastructure	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.
		Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will change the topography.
RTSF and associated infrastructure	Construction	Site clearance and vegetation removal	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.
		Topsoil removal and stockpiling	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.
		Infrastructure development	Construction of the RTSF and associated infrastructure will add features to the topography thereby changing it.
	Operational	Operation of the RTSF	Operation of the RTSF involves adding to the surface and will thereby change the topography.
	Decommissioning	Rehabilitation of RTSF by reshaping, spreading topsoil, and re-vegetation	Rehabilitation of disturbed areas will change the topography.
Driefontein Mining Right Area			

Activity	Phase	Interaction	Potential Significant Impacts
Pipelines	Construction	Site clearance and vegetation removal	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.
		Topsoil removal and stockpiling	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.
		Infrastructure development	Construction of the pipeline infrastructure will add features to the topography thereby changing it.
	Operational	N/A	No impacts expected.
	Decommissioning	Demolition and removal of infrastructure	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.
		Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will change the topography.
WBT and west BWSF complex	Construction	Site clearance and vegetation removal	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.
		Topsoil removal and stockpiling	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.
		Infrastructure development	Construction of the WBT and west BWSF complex infrastructure will add features to the topography thereby changing it.

Activity	Phase	Interaction	Potential Significant Impacts
	Operational	N/A	No impacts expected.
	Decommissioning	Demolition and removal of infrastructure	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.
		Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will change the topography.
Collection sumps and pump stations	Construction	Site clearance and vegetation removal	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.
		Topsoil removal and stockpiling	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.
		Infrastructure development	Construction of the collection sump and pump station infrastructure will add features to the topography thereby changing it.
	Operational	N/A	No impacts expected.
	Decommissioning	Demolition and removal of infrastructure	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.
		Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will change the topography.
Hydraulic	Construction	N/A	No impacts expected.

Activity	Phase	Interaction	Potential Significant Impacts
reclamation	Operational	Hydraulic reclamation	Hydraulic reclamation involves removing features from the surface and will thereby change the topography.
	Decommissioning	Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will change the topography.
Cooke Mining Right Area			
Pipelines	Construction	Site clearance and vegetation removal	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.
		Topsoil removal and stockpiling	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.
		Infrastructure development	Construction of the pipeline infrastructure will add features to the topography thereby changing it.
	Operational	N/A	No impacts expected.
	Decommissioning	Demolition and removal of infrastructure	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.
		Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will change the topography.
Cooke thickener	Construction	Site clearance and vegetation removal	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.

Activity	Phase	Interaction	Potential Significant Impacts
		Topsoil removal and stockpiling	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.
		Infrastructure development	Construction of the Cooke thickener infrastructure will add features to the topography thereby changing it.
	Operational	N/A	No impacts expected.
	Decommissioning	Demolition and removal of infrastructure	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.
		Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will change the topography.
Collection sumps and pump stations	Construction	Site clearance and vegetation removal	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.
		Topsoil removal and stockpiling	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.
		Infrastructure development	Construction of the collection sump and pump station infrastructure will add features to the topography thereby changing it.
	Operational	N/A	No impacts expected.

Activity	Phase	Interaction	Potential Significant Impacts
	Decommissioning	Demolition and removal of infrastructure	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.
		Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will change the topography.
Hydraulic reclamation	Construction	N/A	No impacts expected.
	Operational	Hydraulic reclamation	Hydraulic reclamation involves removing features from the surface and will thereby change the topography.
	Decommissioning	Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will change the topography.
Ezulwini Mining Right Area			
Pipelines	Construction	Site clearance and vegetation removal	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.
		Topsoil removal and stockpiling	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.
		Infrastructure development	Construction of the pipeline infrastructure will add features to the topography thereby changing it.
	Operational	N/A	No impacts expected.

Activity	Phase	Interaction	Potential Significant Impacts
	Decommissioning	Demolition and removal of infrastructure	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.
		Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will change the topography.

Topography Impacts

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
Kloof Mining Right Area					
Pipelines	Construction	Limited	■ Vegetation should only be removed when and where necessary; ■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure; ■ Limit the footprint area of pipeline infrastructure where possible; and ■ Where possible spread topsoil and re-vegetate the pipeline servitude areas when construction is complete.	No legal requirements for topography in South Africa	Construction Phase
	Operational	No impacts expected.	N/A	N/A	N/A
	Decommissioning	Limited	■ Ensure that all unnecessary	No legal requirements	Upon cessation of

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; ■ Rehabilitate all areas where infrastructure has been removed; ■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	for topography in South Africa	project

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
CPP	Construction	Limited	■ Vegetation should only be removed when and where necessary; ■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure; and ■ Limit the footprint area of CPP infrastructure where possible.	No legal requirements for topography in South Africa	Construction Phase
	Operational	No impacts expected.	N/A	N/A	N/A
	Decommissioning	Limited	■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; ■ Rehabilitate all areas where infrastructure has been removed;	No legal requirements for topography in South Africa	Upon cessation of project

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		
RTSF and associated infrastructure	Construction	Local	■ Vegetation should only be removed when and where necessary; ■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; ■ Ensure topsoil stockpiles are	No legal requirements for topography in South Africa	Construction Phase

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			contoured and not too steep (18° or less) to prevent slope failure; and ■ Limit the footprint area of RTSF and associated infrastructure where possible.		
	Operational	Local	■ Ensure the RTSF is contoured and not too steep (18° or less) to prevent slope failure.	No legal requirements for topography in South Africa	Operational Phase
	Decommissioning	Local	■ Reshape the sides of the RTSF so that they are not too steep (18° or less) to prevent slope failure; ■ Rehabilitate all disturbed areas; ■ Spread topsoil over the rehabilitated area; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	No legal requirements for topography in South Africa	Upon cessation of project

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
Driefontein Mining Right Area					
Pipelines	Construction	Limited	■ Vegetation should only be removed when and where necessary; ■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure; ■ Limit the footprint area of pipeline infrastructure where possible; and ■ Where possible spread topsoil and re-vegetate the pipeline servitude areas when construction is complete.	No legal requirements for topography in South Africa	Construction Phase
	Operational	No impacts expected.	N/A	N/A	N/A
	Decommissioning	Limited	■ Ensure that all unnecessary infrastructure is demolished;	No legal requirements for topography in	Upon cessation of project

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			■ Ensure that all demolished infrastructure is removed from the project area; ■ Rehabilitate all areas where infrastructure has been removed; ■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	South Africa	
WBT and west BWSF complex	Construction	Limited	■ Vegetation should only be removed when and where necessary;	No legal requirements for topography in	Construction Phase

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure; and ■ Limit the footprint area of WBT and west BWSF complex infrastructure where possible.	South Africa	
	Operational	No impacts expected.	N/A	N/A	N/A
	Decommissioning	Limited	■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; ■ Rehabilitate all areas where infrastructure has been removed; ■ Rehabilitate all disturbed areas;	No legal requirements for topography in South Africa	Upon cessation of project

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		
Collection sumps and pump stations	Construction	Limited	■ Vegetation should only be removed when and where necessary; ■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; ■ Ensure topsoil stockpiles are contoured and not too steep (18° or	No legal requirements for topography in South Africa	Construction Phase

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			less) to prevent slope failure; and ■ Limit the footprint area of collection sump and pump station infrastructure where possible.		
	Operational	No impacts expected.	N/A	N/A	N/A
	Decommissioning	Limited	■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; ■ Rehabilitate all areas where infrastructure has been removed; ■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and	No legal requirements for topography in South Africa	Upon cessation of project

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		
Hydraulic Reclamation	Construction	No impacts expected.	N/A	N/A	N/A
	Operational	Local	■ Ensure the slopes of the TSFs are not too steep (18° or less) during reclamation to prevent slope failure.	No legal requirements for topography in South Africa	Operational Phase
	Decommissioning	Local	■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to	No legal requirements for topography in South Africa	Upon cessation of project

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		
Cooke Mining Right Area					
Pipelines	Construction	Limited	■ Vegetation should only be removed when and where necessary; ■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure; ■ Limit the footprint area of pipeline infrastructure where possible; and ■ Where possible spread topsoil and re-vegetate the pipeline servitude areas	No legal requirements for topography in South Africa	Construction Phase

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			when construction is complete.		
	Operational	No impacts expected.	N/A	N/A	N/A
	Decommissioning	Limited	■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; ■ Rehabilitate all areas where infrastructure has been removed; ■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas;	No legal requirements for topography in South Africa	Upon cessation of project

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		
Cooke Thickener	Construction	Limited	■ Vegetation should only be removed when and where necessary; ■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure; and ■ Limit the footprint area of Cooke thickener infrastructure where possible.	No legal requirements for topography in South Africa	Construction Phase
	Operational	No impacts expected.	N/A	N/A	N/A
	Decommissioning	Limited	■ Ensure that all unnecessary	No legal requirements for topography in	Upon cessation of

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; ■ Rehabilitate all areas where infrastructure has been removed; ■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	South Africa	project

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
Collection sumps and pump stations	Construction	Limited	■ Vegetation should only be removed when and where necessary; ■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure; and ■ Limit the footprint area of collection sump and pump station infrastructure where possible.	No legal requirements for topography in South Africa	Construction Phase
	Operational	No impacts expected.	N/A	N/A	N/A
	Decommissioning	Limited	■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; ■ Rehabilitate all areas where	No legal requirements for topography in South Africa	Upon cessation of project

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			infrastructure has been removed; ■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		
Hydraulic reclamation	Construction	No impacts expected.	N/A	N/A	N/A
	Operational	Local	■ Ensure the slopes of the TSF are not too steep (18° or less) during reclamation to prevent slope failure.	No legal requirements for topography in South Africa	Operational Phase

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
	Decommissioning	Local	■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	No legal requirements for topography in South Africa	Upon cessation of project
Ezulwini Mining Right Area					
Pipelines	Construction	Limited	■ Vegetation should only be removed when and where necessary; ■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be	No legal requirements for topography in South Africa	Construction Phase

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			vegetated where possible; ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure; ■ Limit the footprint area of pipeline infrastructure where possible; and ■ Where possible spread topsoil and re-vegetate the pipeline servitude areas when construction is complete.		
	Operational	No impacts expected.	N/A	N/A	N/A
	Decommissioning	Limited	■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; ■ Rehabilitate all areas where infrastructure has been removed; ■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is	No legal requirements for topography in South Africa	Upon cessation of project

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		

Objectives and Outcomes of the Topography EMP

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
Kloof Mining Right Area					
Pipelines	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.	Topography	Construction	■ Vegetation should only be removed when and where necessary; and ■ Where possible re-vegetate the pipeline servitude areas when construction is complete.	To minimise topography change caused by site clearance and removal of vegetation.
	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.			■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure; and ■ Where possible spread topsoil in the pipeline servitude areas	To minimise topography change caused by topsoil removal and stockpiling.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
				when construction is complete	
	Construction of the pipeline infrastructure will add features to the topography thereby changing it.			■ Limit the footprint area of pipeline infrastructure where possible.	To minimise topography change caused by infrastructure construction.
	No impacts expected.		Operational	N/A	N/A
	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.		Decommissioning	■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; and ■ Rehabilitate all areas where infrastructure has been removed.	To rehabilitate the topography by demolition and removal of infrastructure.
	Rehabilitation of disturbed areas will change the topography.			■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining	To rehabilitate the topography by rehabilitation of disturbed areas.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
				topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	
CPP	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.		Construction	■ Vegetation should only be removed when and where necessary.	To minimise topography change caused by site clearance and removal of vegetation.
	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby			■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be	To minimise topography change caused by topsoil removal and stockpiling.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	changing the topography.			vegetated where possible; and ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure.	
	Construction of the CPP will add features to the topography thereby changing it.			■ Limit the footprint area of CPP infrastructure where possible.	To minimise topography change caused by infrastructure construction.
	No impacts expected.		Operational	N/A	N/A
	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.		Decommissioning	■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; and ■ Rehabilitate all areas where infrastructure has been removed.	To rehabilitate the topography by demolition and removal of infrastructure.
	Rehabilitation of disturbed areas will change the			■ Rehabilitate all disturbed	To rehabilitate the topography by rehabilitation

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	topography.			areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	of disturbed areas.
RTSF	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.		Construction	■ Vegetation should only be removed when and where necessary.	To minimise topography change caused by site clearance and removal of vegetation.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.			■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; and ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure.	To minimise topography change caused by topsoil removal and stockpiling.
	Construction of the RTSF and associated infrastructure will add features to the topography thereby changing it.			■ Limit the footprint area of RTSF and associated infrastructure where possible.	To minimise topography change caused by infrastructure construction.
	Operation of the RTSF involves adding to the surface and will thereby change the topography.		Operational	■ Ensure the RTSF is contoured and not too steep (18° or less) to prevent slope failure.	To minimise the topography change as a result of operation of the RTSF.
	Rehabilitation of disturbed areas will change the		Decommissioning	■ Reshape the sides of the RTSF so that they are not too steep (18° or less) to prevent	To rehabilitate the topography by rehabilitation

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	topography.			slope failure; ■ Rehabilitate all disturbed areas; ■ Spread topsoil over the rehabilitated area; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	of disturbed areas.
Driefontein Mining Right Area					
Pipelines	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.	Topography	Construction	■ Vegetation should only be removed when and where necessary; and ■ Where possible re-vegetate the pipeline servitude areas when construction is complete.	To minimise topography change caused by site clearance and removal of vegetation.
	Topsoil removal will change the			■ Topsoil should only be	To minimise topography

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.			removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure; and ■ Where possible spread topsoil in the pipeline servitude areas when construction is complete	change caused by topsoil removal and stockpiling.
	Construction of the pipeline infrastructure will add features to the topography thereby changing it.			■ Limit the footprint area of pipeline infrastructure where possible.	To minimise topography change caused by infrastructure construction.
	No impacts expected.		Operational	N/A	N/A
	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.		Decommissioning	■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from	To rehabilitate the topography by demolition and removal of infrastructure.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
				the project area; and ■ Rehabilitate all areas where infrastructure has been removed.	
	Rehabilitation of disturbed areas will change the topography.			■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation	To rehabilitate the topography by rehabilitation of disturbed areas.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
				reports are conducted.	
WBT and west BWSF complex	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.		Construction	■ Vegetation should only be removed when and where necessary.	To minimise topography change caused by site clearance and removal of vegetation.
	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.			■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; and ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure.	To minimise topography change caused by topsoil removal and stockpiling.
	Construction of the WBT and west BWSF complex infrastructure will add features to the topography thereby changing it.			■ Limit the footprint area of WBT and west BWSF complex infrastructure where possible.	To minimise topography change caused by infrastructure construction.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	No impacts expected.		Operational	N/A	N/A
	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.		Decommissioning	■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; and ■ Rehabilitate all areas where infrastructure has been removed.	To rehabilitate the topography by demolition and removal of infrastructure.
	Rehabilitation of disturbed areas will change the topography.			■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-	To rehabilitate the topography by rehabilitation of disturbed areas.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
				draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	
Collection sumps and pump stations	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.		Construction	■ Vegetation should only be removed when and where necessary.	To minimise topography change caused by site clearance and removal of vegetation.
	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.			■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; and ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure.	To minimise topography change caused by topsoil removal and stockpiling.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	Construction of the collection sumps and pump stations infrastructure will add features to the topography thereby changing it.			■ Limit the footprint area of collection sump and pump station infrastructure where possible.	To minimise topography change caused by infrastructure construction.
	No impacts expected.		Operational	N/A	N/A
	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.		Decommissioning	■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; and ■ Rehabilitate all areas where infrastructure has been removed.	To rehabilitate the topography by demolition and removal of infrastructure.
	Rehabilitation of disturbed areas will change the topography.			■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography;	To rehabilitate the topography by rehabilitation of disturbed areas.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
				■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	
Hydraulic reclamation	No impacts expected.		Construction	N/A	N/A
	Hydraulic reclamation involves removing features from the surface and will thereby change the topography.		Operational	■ Ensure the slopes of the TSFs are not too steep (18° or less) during reclamation to prevent slope failure.	To return the topography to a state similar to the pre-mining state by means of hydraulic reclamation.
	Rehabilitation of disturbed areas will change the topography.		Decommissioning	■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated	To rehabilitate the topography by rehabilitation of disturbed areas.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
				area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	
Cooke Mining Right Area					
Pipelines	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.	Topography	Construction	■ Vegetation should only be removed when and where necessary; and ■ Where possible re-vegetate the pipeline servitude areas	To minimise topography change caused by site clearance and removal of vegetation.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
				when construction is complete.	
	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.			■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure; and ■ Where possible spread topsoil in the pipeline servitude areas when construction is complete	To minimise topography change caused by topsoil removal and stockpiling.
	Construction of the pipeline infrastructure will add features to the topography thereby changing it.			■ Limit the footprint area of pipeline infrastructure where possible.	To minimise topography change caused by infrastructure construction.
	No impacts expected.		Operational	N/A	N/A
	Demolition and removal of		Decommissioning	■ Ensure that all unnecessary	To rehabilitate the

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	infrastructure will remove features from the surface and thereby change the topography.			infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; and ■ Rehabilitate all areas where infrastructure has been removed.	topography by demolition and removal of infrastructure.
	Rehabilitation of disturbed areas will change the topography.			■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and	To rehabilitate the topography by rehabilitation of disturbed areas.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
				■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	
Cooke thickener	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.		Construction	■ Vegetation should only be removed when and where necessary.	To minimise topography change caused by site clearance and removal of vegetation.
	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.			■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; and ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure.	To minimise topography change caused by topsoil removal and stockpiling.
	Construction of the Cooke thickener infrastructure will add features to the topography			■ Limit the footprint area of Cooke thickener infrastructure	To minimise topography change caused by infrastructure construction.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	thereby changing it.			where possible.	
	No impacts expected.		Operational	N/A	N/A
	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.		Decommissioning	■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; and ■ Rehabilitate all areas where infrastructure has been removed.	To rehabilitate the topography by demolition and removal of infrastructure.
	Rehabilitation of disturbed areas will change the topography.			■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are	To rehabilitate the topography by rehabilitation of disturbed areas.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
				rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	
Collection sumps and pump stations	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.		Construction	■ Vegetation should only be removed when and where necessary.	To minimise topography change caused by site clearance and removal of vegetation.
	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.			■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; and ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope	To minimise topography change caused by topsoil removal and stockpiling.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
				failure.	
	Construction of the collection sump and pump station infrastructure will add features to the topography thereby changing it.			■ Limit the footprint area of collection sump and pump station infrastructure where possible.	To minimise topography change caused by infrastructure construction.
	No impacts expected.		Operational	N/A	N/A
	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.		Decommissioning	■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; and ■ Rehabilitate all areas where infrastructure has been removed.	To rehabilitate the topography by demolition and removal of infrastructure.
	Rehabilitation of disturbed areas will change the topography.			■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining	To rehabilitate the topography by rehabilitation of disturbed areas.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
				topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	
Hydraulic reclamation	No impacts expected.		Construction	N/A	N/A
	Hydraulic reclamation involves removing features from the surface and will thereby change the topography.		Operational	■ Ensure the slopes of the TSFs are not too steep (18° or less) during reclamation to prevent slope failure.	To return the topography to a state similar to the pre-mining state by means of hydraulic reclamation.
	Rehabilitation of disturbed areas will change the		Decommissioning	■ Rehabilitate all disturbed areas;	To rehabilitate the topography by rehabilitation

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	topography.			■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	of disturbed areas.
Ezulwini Mining Right Area					
Pipelines	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.	Topography	Construction	■ Vegetation should only be removed when and where necessary; and ■ Where possible re-vegetate	To minimise topography change caused by site clearance and removal of vegetation.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
				the pipeline servitude areas when construction is complete.	
	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.			■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure; and ■ Where possible spread topsoil in the pipeline servitude areas when construction is complete	To minimise topography change caused by topsoil removal and stockpiling.
	Construction of the pipeline infrastructure will add features to the topography thereby changing it.			■ Limit the footprint area of pipeline infrastructure where possible.	To minimise topography change caused by infrastructure construction.
	No impacts expected.		Operational	N/A	N/A

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.		Decommissioning	■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; and ■ Rehabilitate all areas where infrastructure has been removed.	To rehabilitate the topography by demolition and removal of infrastructure.
	Rehabilitation of disturbed areas will change the topography.			■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated	To rehabilitate the topography by rehabilitation of disturbed areas.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
				areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	

Topography Mitigation

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
Kloof Mining Right Area					
Pipelines	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.	Topography	■ Vegetation should only be removed when and where necessary; and ■ Where possible re-vegetate the pipeline servitude areas when construction is complete.	Construction Phase	No legal requirements for topography in South Africa
	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.		■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure; and ■ Where possible spread topsoil in the pipeline servitude areas when construction is complete		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
	Construction of the pipeline infrastructure will add features to the topography thereby changing it.		■ Limit the footprint area of pipeline infrastructure where possible.		
	No impacts expected.		N/A	Operational Phase	
	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.		■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; and ■ Rehabilitate all areas where infrastructure has been removed.	Decommissioning Phase	
	Rehabilitation of disturbed areas will change the topography.		■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area;		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
			■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		
CPP	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.		■ Vegetation should only be removed when and where necessary.	Construction Phase	
	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.		■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; and ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
			failure.		
	Construction of the CPP will add features to the topography thereby changing it.		■ Limit the footprint area of CPP infrastructure where possible.		
	No impacts expected.		N/A	Operational Phase	
	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.		■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; and ■ Rehabilitate all areas where infrastructure has been removed.	Decommissioning Phase	
	Rehabilitation of disturbed areas will change the topography.		■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
			rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		
RTSF	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.		■ Vegetation should only be removed when and where necessary.	Construction Phase	
	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.		■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; and ■ Ensure topsoil stockpiles are contoured and not too steep		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
			(18° or less) to prevent slope failure.		
	Construction of the RTSF and associated infrastructure will add features to the topography thereby changing it.		■ Limit the footprint area of RTSF and associated infrastructure where possible.		
	Operation of the RTSF involves adding to the surface and will thereby change the topography.		■ Ensure the RTSF is contoured and not too steep (18° or less) to prevent slope failure.	Operational Phase	
	Rehabilitation of disturbed areas will change the topography.		■ Reshape the sides of the RTSF so that they are not too steep (18° or less) to prevent slope failure; ■ Rehabilitate all disturbed areas; ■ Spread topsoil over the rehabilitated area; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and	Decommissioning Phase	

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
			rehabilitation reports are conducted.		
Driefontein Mining Right Area					
Pipelines	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.	Topography	■ Vegetation should only be removed when and where necessary; and ■ Where possible re-vegetate the pipeline servitude areas when construction is complete.	Construction Phase	No legal requirements for topography in South Africa
	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.		■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure; and ■ Where possible spread topsoil in the pipeline servitude areas		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
			when construction is complete		
	Construction of the pipeline infrastructure will add features to the topography thereby changing it.		■ Limit the footprint area of pipeline infrastructure where possible.		
	No impacts expected.		N/A	Operational Phase	
	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.		■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; and ■ Rehabilitate all areas where infrastructure has been removed.	Decommissioning Phase	
	Rehabilitation of disturbed areas will change the topography.		■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography;		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
			■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		
WBT and west BWSF complex	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.		■ Vegetation should only be removed when and where necessary.	Construction Phase	
	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.		■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; and ■ Ensure topsoil stockpiles are		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
			contoured and not too steep (18° or less) to prevent slope failure.		
	Construction of the WBT and west BWSF complex infrastructure will add features to the topography thereby changing it.		■ Limit the footprint area of WBT and west BWSF complex infrastructure where possible.		
	No impacts expected.		N/A	Operational Phase	
	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.		■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; and ■ Rehabilitate all areas where infrastructure has been removed.	Decommissioning Phase	
	Rehabilitation of disturbed areas will change the topography.		■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
			to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		
Collection sumps and pump stations	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.		■ Vegetation should only be removed when and where necessary.	Construction Phase	
	Topsoil removal will change the topography. Stockpiling of topsoil will add		■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
	features to the surface thereby changing the topography.		vegetated where possible; and ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure.		
	Construction of the collection sump and pump station infrastructure will add features to the topography thereby changing it.		■ Limit the footprint area of collection sump and pump station infrastructure where possible.		
	No impacts expected.		N/A	Operational Phase	
	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.		■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; and ■ Rehabilitate all areas where infrastructure has been removed.	Decommissioning Phase	

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
	Rehabilitation of disturbed areas will change the topography.		■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		
Hydraulic reclamation	No impacts expected.		N/A	Construction Phase	
	Hydraulic reclamation involves removing features from the surface and will thereby change		■ Ensure the slopes of the TSFs are not too steep (18° or less) during reclamation to prevent	Operational Phase	

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
	the topography.		slope failure.		
	Rehabilitation of disturbed areas will change the topography.		■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	Decommissioning Phase	
Cooke Mining Right Area					
Pipelines	Site clearance and removal of	Topography	■ Vegetation should only be	Construction Phase	No legal

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
	vegetation will change the surface of the project area and therefore the topography.		removed when and where necessary; and ■ Where possible re-vegetate the pipeline servitude areas when construction is complete.		requirements for topography in South Africa
	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.		■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure; and ■ Where possible spread topsoil in the pipeline servitude areas when construction is complete		
	Construction of the pipeline infrastructure will add features to the topography thereby changing it.		■ Limit the footprint area of pipeline infrastructure where possible.		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
	No impacts expected.		N/A	Operational Phase	
	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.		■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; and ■ Rehabilitate all areas where infrastructure has been removed.	Decommissioning Phase	
	Rehabilitation of disturbed areas will change the topography.		■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography;		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
			■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		
Cooke thickener	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.		■ Vegetation should only be removed when and where necessary.	Construction Phase	
	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.		■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; and ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure.		
	Construction of the Cooke thickener infrastructure will add features to the topography		■ Limit the footprint area of Cooke thickener infrastructure where		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
	thereby changing it.		possible.		
	No impacts expected.		N/A	Operational Phase	
	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.		■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; and ■ Rehabilitate all areas where infrastructure has been removed.	Decommissioning Phase	
	Rehabilitation of disturbed areas will change the topography.		■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
			topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		
Collection sumps and pump stations	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.		■ Vegetation should only be removed when and where necessary.	Construction Phase	
	Topsoil removal will change the topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.		■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; and ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure.		
	Construction of the collection		■ Limit the footprint area of		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
	sump and pump station infrastructure will add features to the topography thereby changing it.		collection sump and pump station infrastructure where possible.		
	No impacts expected.		N/A	Operational Phase	
	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.		■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; and ■ Rehabilitate all areas where infrastructure has been removed.	Decommissioning Phase	
	Rehabilitation of disturbed areas will change the topography.		■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area;		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
			■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		
Hydraulic reclamation	No impacts expected.		N/A	Construction Phase	
	Hydraulic reclamation involves removing features from the surface and will thereby change the topography.		■ Ensure the slopes of the TSFs are not too steep (18° or less) during reclamation to prevent slope failure.	Operational Phase	
	Rehabilitation of disturbed areas will change the topography.		■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography;	Decommissioning Phase	

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
			■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		
Ezulwini Mining Right Area					
Pipelines	Site clearance and removal of vegetation will change the surface of the project area and therefore the topography.	Topography	■ Vegetation should only be removed when and where necessary; and ■ Where possible re-vegetate the pipeline servitude areas when construction is complete.	Construction Phase	No legal requirements for topography in South Africa
	Topsoil removal will change the		■ Topsoil should only be removed		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
	topography. Stockpiling of topsoil will add features to the surface thereby changing the topography.		when and where necessary; ■ Topsoil stockpiles should be vegetated where possible; ■ Ensure topsoil stockpiles are contoured and not too steep (18° or less) to prevent slope failure; and ■ Where possible spread topsoil in the pipeline servitude areas when construction is complete		
	Construction of the pipeline infrastructure will add features to the topography thereby changing it.		■ Limit the footprint area of pipeline infrastructure where possible.		
	No impacts expected.		N/A	Operational Phase	
	Demolition and removal of infrastructure will remove features from the surface and thereby change the topography.		■ Ensure that all unnecessary infrastructure is demolished; ■ Ensure that all demolished infrastructure is removed from the project area; and	Decommissioning Phase	

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
			■ Rehabilitate all areas where infrastructure has been removed.		
	Rehabilitation of disturbed areas will change the topography.		■ Rehabilitate all disturbed areas; ■ Ensure that the rehabilitated area is contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		

Prescribed Environmental Management Standards, Practices, Guidelines, Policies or Laws for Topography

Specialist Field	Applicable Standard, Practice, Guideline, Policy or Law
Topography	N/A

Potentially Significant Visual Impacts of the Proposed Project

Activity	Phase	Interaction	Potential Significant Impacts
Kloof Mining Right Area			
Pipelines	Construction	Change of land use from agriculture to industry / mining	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.
		Site clearance and vegetation removal	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.
		Topsoil removal and stockpiling	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.
		Infrastructure development	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.
	Operational	N/A	No impacts expected.

Activity	Phase	Interaction	Potential Significant Impacts
	Decommissioning	Demolition and removal of infrastructure	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.
		Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.
CPP	Construction	Change of land use from agriculture to industry / mining	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance. The change in land-use will contribute to the cumulative impacts of mining on the regional environment.
		Site clearance and vegetation removal	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.
		Topsoil removal and stockpiling	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.

Activity	Phase	Interaction	Potential Significant Impacts
		Infrastructure development	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.
	Operational	N/A	No impacts expected.
	Decommissioning	Demolition and removal of infrastructure	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.
		Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.

Activity	Phase	Interaction	Potential Significant Impacts
RTSF and associated infrastructure	Construction	Change of land use from agriculture to industry / mining	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance. This impact will be permanent and irreversible as the RTSF will remain indefinitely. The change in land-use will contribute to the cumulative impacts of mining on the regional environment.
		Site clearance and vegetation removal	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.
		Topsoil removal and stockpiling	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.
		Infrastructure development	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.

Activity	Phase	Interaction	Potential Significant Impacts
	Operational	Operation of the RTSF	Operation of the RTSF will have a negative visual impact on the receiving environment. This impact will be permanent and irreversible as the RTSF will remain indefinitely. Infrastructure lighting will be visible at night resulting in a negative visual impact on the receiving environment.
	Decommissioning	Rehabilitation of RTSF by reshaping, spreading topsoil, and re-vegetation	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment.
Driefontein Mining Right Area			
Pipelines	Construction	Change of land use from agriculture to industry / mining	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.
		Site clearance and vegetation removal	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.
		Topsoil removal and stockpiling	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.

Activity	Phase	Interaction	Potential Significant Impacts
		Infrastructure development	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.
	Operational	N/A	No impacts expected.
	Decommissioning	Demolition and removal of infrastructure	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.
		Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.
WBT and west BWSF complex	Construction	Change of land use from agriculture to industry / mining	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.

Activity	Phase	Interaction	Potential Significant Impacts
		Site clearance and vegetation removal	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.
		Topsoil removal and stockpiling	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.
		Infrastructure development	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.
	Operational	N/A	No impacts expected.
	Decommissioning	Demolition and removal of infrastructure	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.
		Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.

Activity	Phase	Interaction	Potential Significant Impacts
Collection sumps and pump stations	Construction	Change of land use from agriculture to industry / mining	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.
		Site clearance and vegetation removal	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.
		Topsoil removal and stockpiling	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.
		Infrastructure development	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.
	Operational	N/A	No impacts expected.
	Decommissioning	Demolition and removal of infrastructure	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.

Activity	Phase	Interaction	Potential Significant Impacts
		Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.
Hydraulic reclamation	Construction	N/A	No impacts expected.
	Operational	Hydraulic reclamation	Hydraulic reclamation will have a negative visual impact on the receiving environment. Dust from the hydraulic reclamation will also have a negative visual impact. Once the hydraulic reclamation is complete, there will be an overall neutral visual impact on the receiving environment.
	Decommissioning	Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.
	Post-Closure	Change of land use from mining to a suitable end land use	Change of land use from mining to a suitable end land use will have a positive visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from an industrial / mining sense of place resulting in increased scenic character and decreased visual disturbance.
Cooke Mining Right Area			
Pipelines	Construction	Change of land use from agriculture to industry / mining	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.

Activity	Phase	Interaction	Potential Significant Impacts
		Site clearance and vegetation removal	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.
		Topsoil removal and stockpiling	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.
		Infrastructure development	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.
	Operational	N/A	No impacts expected.
	Decommissioning	Demolition and removal of infrastructure	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.
		Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.

Activity	Phase	Interaction	Potential Significant Impacts
Cooke thickener	Construction	Change of land use from agriculture to industry / mining	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.
		Site clearance and vegetation removal	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.
		Topsoil removal and stockpiling	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.
		Infrastructure development	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.
	Operational	N/A	No impacts expected.
	Decommissioning	Demolition and removal of infrastructure	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.

Activity	Phase	Interaction	Potential Significant Impacts
		Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.
Collection sumps and pump stations	Construction	Change of land use from agriculture to industry / mining	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.
		Site clearance and vegetation removal	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.
		Topsoil removal and stockpiling	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.
		Infrastructure development	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.
	Operational	N/A	No impacts expected.

Activity	Phase	Interaction	Potential Significant Impacts
	Decommissioning	Demolition and removal of infrastructure	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.
		Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.
Hydraulic reclamation	Construction	N/A	No impacts expected.
	Operational	Hydraulic reclamation	Hydraulic reclamation will have a negative visual impact on the receiving environment. Dust from the hydraulic reclamation will also have a negative visual impact. Once the hydraulic reclamation is complete, there will be an overall neutral visual impact on the receiving environment.
	Decommissioning	Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.
	Post-Closure	Change of land use from mining to a suitable end land use	Change of land use from mining to a suitable end land use will have a positive visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from an industrial / mining sense of place resulting in increased scenic character and decreased visual disturbance.
Ezulwini Mining Right Area			

Activity	Phase	Interaction	Potential Significant Impacts
Pipelines	Construction	Change of land use from agriculture to industry / mining	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.
		Site clearance and vegetation removal	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.
		Topsoil removal and stockpiling	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.
		Infrastructure development	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.
	Operational	N/A	No impacts expected.
	Decommissioning	Demolition and removal of infrastructure	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.

Activity	Phase	Interaction	Potential Significant Impacts
		Rehabilitation of disturbed areas by spreading topsoil, profiling and contouring, and re-vegetation	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.

Visual Impacts

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
Kloof Mining Right Area					
Pipelines	Construction	Limited	■ Vegetation should only be removed when and where necessary; ■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles; ■ Limit the height and footprint area of pipeline infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Metal structures should be galvanised so as to	No legal requirements for visual in South Africa	Construction Phase

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			weather to a matt grey finish rather than be painted silver. If the metal structures are painted, it is recommended that a neutral matt finish be used; ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution; and ■ Where possible spread topsoil and re-vegetate the pipeline servitude areas when construction is complete.		
	Operational	No impacts expected.	N/A	N/A	N/A
	Decommissioning	Limited	■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; ■ Limit the quantity and time of rubble stored on site; ■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography;	No legal requirements for visual in South Africa	Upon cessation of project

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		
CPP	Construction	Local	■ Vegetation should only be removed when and where necessary; ■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit footprint area of topsoil stockpiles where possible; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles; ■ Plant fast-growing indigenous vegetation in	No legal requirements for visual in South Africa	Construction Phase

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			areas where it can conceal the stockpiles and reduce dust generation; ■ Ensure vegetation screens of indigenous trees (are built close to receptors (residential areas and roads) and maintained; ■ Limit the height and footprint area of CPP infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Pylons and metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the pylons and metal structures are painted, it is recommended that a neutral matt finish be used; ■ Construction of vegetation berms must be implemented close to surface infrastructure so that vegetation can be established; ■ If construction activities take place at night, down lighting must be implemented to minimise		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			light pollution; and ■ Where possible spread topsoil and re-vegetate the pipeline servitude areas when construction is complete.		
	Operational	No impacts expected.	N/A	N/A	N/A
	Decommissioning	Local	■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; ■ Limit the quantity and time of rubble stored on site; ■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and	No legal requirements for visual in South Africa	Upon cessation of project

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		
RTSF and associated infrastructure	Construction	Municipal area	■ Vegetation should only be removed when and where necessary; ■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit footprint area of topsoil stockpiles where possible; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles; ■ Plant fast-growing indigenous vegetation in areas where it can conceal the stockpiles and reduce dust generation; ■ Ensure vegetation screens of indigenous trees (are built close to receptors (residential areas and roads) and maintained; ■ Limit the height and footprint area of RTSF and	No legal requirements for visual in South Africa	Construction Phase

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			associated infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Pylons and metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the pylons and metal structures are painted, it is recommended that a neutral matt finish be used; ■ Construction of vegetation berms must be implemented close to surface infrastructure so that vegetation can be established; ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution; and ■ Where possible spread topsoil and re-vegetate the pipeline servitude areas when construction is complete.		
	Operational	Municipal area	■ Plant fast-growing indigenous vegetation in	No legal requirements for	Operational Phase

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			areas where it can conceal the RTSF; ■ Ensure RTSF does not exceed the proposed height of 30 m ■ Ensure vegetation screens of indigenous trees are built close to receptors (residential areas and roads) and maintained; and ■ Down lighting must be implemented to minimise light pollution around the mine infrastructure area at night.	visual in South Africa	
	Decommissioning	Municipal area	■ Reshape the sides of the RTSF so that they are not too steep (18° or less) to prevent slope failure; ■ Rehabilitate all disturbed areas; ■ Spread topsoil over the rehabilitated area; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	No legal requirements for visual in South Africa	Upon cessation of project
Driefontein Mining Right Area					

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
Pipelines	Construction	Limited	■ Vegetation should only be removed when and where necessary; ■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles; ■ Limit the height and footprint area of pipeline infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the metal structures are painted, it is recommended that a neutral matt	No legal requirements for visual in South Africa	Construction Phase

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			finish be used; ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution; and ■ Where possible spread topsoil and re-vegetate the pipeline servitude areas when construction is complete.		
	Operational	No impacts expected.	N/A	N/A	N/A
	Decommissioning	Limited	■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; ■ Limit the quantity and time of rubble stored on site; ■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines	No legal requirements for visual in South Africa	Upon cessation of project

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		
WBT and west BWSF complex	Construction	Limited	■ Vegetation should only be removed when and where necessary; ■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles; ■ Limit the height and footprint area of WBT and west BWSF complex infrastructure where possible; ■ Use shade cloth / netting to screen the construction site;	No legal requirements for visual in South Africa	Construction Phase

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Pylons and metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the pylons and metal structures are painted, it is recommended that a neutral matt finish be used; and ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.		
	Operational	No impacts expected.	N/A	N/A	N/A
	Decommissioning	Limited	■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; ■ Limit the quantity and time of rubble stored on site; ■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining	No legal requirements for visual in South Africa	Upon cessation of project

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		
Collection sumps and pump stations	Construction	Very limited / isolated	■ Vegetation should only be removed when and where necessary; ■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles; ■ Limit the height and footprint area of collection sump and pump station infrastructure where	No legal requirements for visual in South Africa	Construction Phase

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Pylons and metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the pylons and metal structures are painted, it is recommended that a neutral matt finish be used; and ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.		
	Operational	No impacts expected.	N/A	N/A	N/A
	Decommissioning	Very limited / isolated	■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; ■ Limit the quantity and time of rubble stored on	No legal requirements for visual in South Africa	Upon cessation of project

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			site; ■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		
Hydraulic reclamation	Construction	No impacts expected.	N/A	N/A	N/A
	Operational	Local	■ Apply dust suppression techniques to limit the dust dispersion from reclamation.	No legal requirements for visual in South Africa	Operational Phase
	Decommissioning	Local	■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography;	No legal requirements for visual in South	Upon cessation of project

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	Africa	
	Post-Closure	Local	N/A	No legal requirements for visual in South Africa	Post-Closure
Cooke Mining Right Area					
Pipelines	Construction	Limited	■ Vegetation should only be removed when and where necessary; ■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape;	No legal requirements for visual in South Africa	Construction Phase

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles; ■ Limit the height and footprint area of pipeline infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the metal structures are painted, it is recommended that a neutral matt finish be used; ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution; and ■ Where possible spread topsoil and re-vegetate the pipeline servitude areas when construction is complete.		

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
	Operational	No impacts expected.	N/A	N/A	N/A
	Decommissioning	Limited	■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; ■ Limit the quantity and time of rubble stored on site; ■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	No legal requirements for visual in South Africa	Upon cessation of project
Cooke thickener	Construction	Limited	■ Vegetation should only be removed when and	No legal requirements for	Construction

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			where necessary; ■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles; ■ Limit the height and footprint area of Cooke thickener infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Pylons and metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the pylons and metal structures are painted, it is recommended that a neutral matt finish be used; and ■ If construction activities take place at night,	visual in South Africa	Phase

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			down lighting must be implemented to minimise light pollution.		
	Operational	No impacts expected.	N/A	N/A	N/A
	Decommissioning	Limited	■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; ■ Limit the quantity and time of rubble stored on site; ■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the	No legal requirements for visual in South Africa	Upon cessation of project

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			closure and rehabilitation reports are conducted.		
Collection sumps and pump stations	Construction	Very limited / isolated	■ Vegetation should only be removed when and where necessary; ■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles; ■ Limit the height and footprint area of collection sump and pump station infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Pylons and metal structures should be galvanised so as to weather to a matt grey finish	No legal requirements for visual in South Africa	Construction Phase

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			rather than be painted silver. If the pylons and metal structures are painted, it is recommended that a neutral matt finish be used; and ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.		
	Operational	No impacts expected.	N/A	N/A	N/A
	Decommissioning	Very limited / isolated	■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; ■ Limit the quantity and time of rubble stored on site; ■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining	No legal requirements for visual in South Africa	Upon cessation of project

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		
Hydraulic reclamation	Construction	No impacts expected.	N/A	N/A	N/A
	Operational	Local	■ Apply dust suppression techniques to limit the dust dispersion from reclamation.	No legal requirements for visual in South Africa	Operational Phase
	Decommissioning	Local	■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the	No legal requirements for visual in South Africa	Upon cessation of project

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			closure and rehabilitation reports are conducted.		
	Post-Closure	Local	N/A	No legal requirements for visual in South Africa	Post-Closure
Ezulwini Mining Right Area					
Pipelines	Construction	Limited	■ Vegetation should only be removed when and where necessary; ■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles; ■ Limit the height and footprint area of pipeline infrastructure where possible; ■ Use shade cloth / netting to screen the	No legal requirements for visual in South Africa	Construction Phase

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the metal structures are painted, it is recommended that a neutral matt finish be used; ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution; and ■ Where possible spread topsoil and re-vegetate the pipeline servitude areas when construction is complete.		
	Operational	No impacts expected.	N/A	N/A	N/A
	Decommissioning	Limited	■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area;	No legal requirements for visual in South Africa	Upon cessation of project

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
			■ Limit the quantity and time of rubble stored on site; ■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		

Objectives and Outcomes of the Visual EMP

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
Kloof Mining Right Area					
Pipelines	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.	Visual	Construction	■ Where possible spread topsoil and re-vegetate the pipeline servitude areas when construction is complete; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	To minimise the negative visual impact caused by change of land use from agriculture to industry / mining.
	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.			■ Vegetation should only be removed when and where necessary; and ■ Where possible re-vegetate the pipeline servitude areas when construction is complete.	To minimise the negative visual impact caused by site clearance and removal of vegetation.
	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative			■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as	To minimise the negative visual impact caused by topsoil removal and

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	visual impact.			to blend into the surrounding landscape; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles; and ■ Where possible spread topsoil in the pipeline servitude areas when construction is complete.	stockpiling.
	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a			■ Limit the height and footprint area of pipeline infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Metal structures should be galvanised so as to weather to a matt grey finish rather than be	To minimise the negative visual impact caused by construction of infrastructure.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	negative impact on the sense of place.			painted silver. If the metal structures are painted, it is recommended that a neutral matt finish be used; and ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.	
	No impacts expected.		Operational	N/A	N/A
	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.		Decommissioning	■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; and ■ Limit the quantity and time of rubble stored on site.	To increase the neutral visual impact caused by the demolition and removal of infrastructure.
	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving			■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography;	To increase the neutral visual impact caused by the rehabilitation of

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	environment.			■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	disturbed areas.
CPP	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance. The change in land-use will contribute to the cumulative impacts of mining on		Construction	■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	To minimise the negative visual impact caused by change of land use from agriculture to industry / mining.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	the regional environment.				
	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.			■ Vegetation should only be removed when and where necessary.	To minimise the negative visual impact caused by site clearance and removal of vegetation.
	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.			■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit footprint area of topsoil stockpiles where possible; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles; and ■ Plant fast-growing indigenous vegetation in areas where it can	To minimise the negative visual impact caused by topsoil removal and stockpiling.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
				conceal the stockpiles and reduce dust generation.	
	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.			■ Ensure vegetation screens of indigenous trees (are built close to receptors (residential areas and roads) and maintained; ■ Limit the height and footprint area of CPP infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Pylons and metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the pylons and metal structures are painted, it is recommended that a neutral matt finish be	To minimise the negative visual impact caused by construction of infrastructure.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
				used; ■ Construction of vegetation berms must be implemented close to surface infrastructure so that vegetation can be established; and ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.	
	No impacts expected.		Operational	N/A	N/A
	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.		Decommissioning	■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; and ■ Limit the quantity and time of rubble stored on site.	To increase the neutral visual impact caused by the demolition and removal of infrastructure.
	Rehabilitation of disturbed areas will have a negative visual impact on the			■ Ensure that the rehabilitated area is re-contoured and	To increase the neutral visual impact

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.			profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	caused by the rehabilitation of disturbed areas.
RTSF and associated infrastructure	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.		Construction	■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	To minimise the negative visual impact caused by change of land use from agriculture to industry / mining.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	This impact will be permanent and irreversible as the RTSF will remain indefinitely. The change in land-use will contribute to the cumulative impacts of mining on the regional environment.				
	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.			■ Vegetation should only be removed when and where necessary.	To minimise the negative visual impact caused by site clearance and removal of vegetation.
	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.			■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit footprint area of topsoil stockpiles where possible; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression	To minimise the negative visual impact caused by topsoil removal and stockpiling.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
				techniques to limit the dust dispersion from stockpiles; and ■ Plant fast-growing indigenous vegetation in areas where it can conceal the stockpiles and reduce dust generation.	
	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.			■ Ensure vegetation screens of indigenous trees (are built close to receptors (residential areas and roads) and maintained; ■ Limit the height and footprint area of RTSF and associated infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Pylons and metal structures should be galvanised so as to weather to a matt grey finish	To minimise the negative visual impact caused by construction of infrastructure.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
				rather than be painted silver. If the pylons and metal structures are painted, it is recommended that a neutral matt finish be used; ■ Construction of vegetation berms must be implemented close to surface infrastructure so that vegetation can be established; and ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.	
	Operation of the RTSF will have a negative visual impact on the receiving environment. This impact will be permanent and irreversible as the RTSF will remain indefinitely. Infrastructure lighting will be visible at night resulting in a negative visual impact on the receiving environment.		Operational	■ Plant fast-growing indigenous vegetation in areas where it can conceal the RTSF; ■ Ensure RTSF does not exceed the proposed height of 30 m ■ Ensure vegetation screens of indigenous trees are built close to receptors (residential areas	To minimise the negative visual impact caused by the operation of the tailings storage facility and infrastructure lighting at night.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
				and roads) and maintained; and ■ Down lighting must be implemented to minimise light pollution around the mine infrastructure area at night.	
	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment.		Decommissioning	■ Reshape the sides of the RTSF so that they are not too steep (18° or less) to prevent slope failure; ■ Rehabilitate all disturbed areas; ■ Spread topsoil over the rehabilitated area; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	To increase the neutral visual impact caused by rehabilitation of the RTSF.
Driefontein Mining Right Area					
Pipelines	Change of land use from agriculture to	Visual	Construction	■ Where possible spread topsoil	To minimise the

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.			and re-vegetate the pipeline servitude areas when construction is complete; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	negative visual impact caused by change of land use from agriculture to industry / mining.
	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.			■ Vegetation should only be removed when and where necessary; and ■ Where possible re-vegetate the pipeline servitude areas when construction is complete.	To minimise the negative visual impact caused by site clearance and removal of vegetation.
	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.			■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit the height of topsoil stockpiles to 3 metres;	To minimise the negative visual impact caused by topsoil removal and stockpiling.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
				■ Apply dust suppression techniques to limit the dust dispersion from stockpiles; and ■ Where possible spread topsoil in the pipeline servitude areas when construction is complete.	
	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.			■ Limit the height and footprint area of pipeline infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the metal structures are painted, it is recommended that a neutral matt finish be used; and	To minimise the negative visual impact caused by construction of infrastructure.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
				■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.	
	No impacts expected.		Operational	N/A	N/A
	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.		Decommissioning	■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; and ■ Limit the quantity and time of rubble stored on site.	To increase the neutral visual impact caused by the demolition and removal of infrastructure.
	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.			■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated	To increase the neutral visual impact caused by the rehabilitation of disturbed areas.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
				to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	
WBT and west BWSF complex	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.		Construction	■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	To minimise the negative visual impact caused by change of land use from agriculture to industry / mining.
	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.			■ Vegetation should only be removed when and where necessary.	To minimise the negative visual impact caused by site clearance and removal of vegetation.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.			■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles.	To minimise the negative visual impact caused by topsoil removal and stockpiling.
	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the			■ Limit the height and footprint area of WBT and west BWSF complex infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible;	To minimise the negative visual impact caused by construction of infrastructure.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	project area. This will also have a negative impact on the sense of place.			■ Pylons and metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the pylons and metal structures are painted, it is recommended that a neutral matt finish be used; and ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.	
	No impacts expected.		Operational	N/A	N/A
	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.		Decommissioning	■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; and ■ Limit the quantity and time of rubble stored on site.	To increase the neutral visual impact caused by the demolition and removal of infrastructure.
	Rehabilitation of disturbed areas will			■ Ensure that the rehabilitated	To increase the

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.			area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	neutral visual impact caused by the rehabilitation of disturbed areas.
Collection sumps and pump stations	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual		Construction	■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	To minimise the negative visual impact caused by change of land use from agriculture to industry / mining.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	disturbance.				
	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.			■ Vegetation should only be removed when and where necessary.	To minimise the negative visual impact caused by site clearance and removal of vegetation.
	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.			■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles.	To minimise the negative visual impact caused by topsoil removal and stockpiling.
	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure			■ Limit the height and footprint area of collection sump and pump station infrastructure	To minimise the negative visual impact caused by construction of

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.			where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Pylons and metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the pylons and metal structures are painted, it is recommended that a neutral matt finish be used; and ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.	infrastructure.
	No impacts expected.		Operational	N/A	N/A
	Demolition and removal of infrastructure will have a negative		Decommissioning	■ Apply dust suppression techniques to limit the dust from	To increase the neutral visual impact

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.			the demolition area; ■ Use shade cloth / netting to screen the demolition area; and ■ Limit the quantity and time of rubble stored on site.	caused by the demolition and removal of infrastructure.
	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.			■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	To increase the neutral visual impact caused by the rehabilitation of disturbed areas.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
Hydraulic reclamation	No impacts expected.		Construction	N/A	N/A
	Hydraulic reclamation will have a negative visual impact on the receiving environment. Dust from the hydraulic reclamation will also have a negative visual impact. Once the hydraulic reclamation is complete, there will be an overall neutral visual impact on the receiving environment.		Operational	■ Apply dust suppression techniques to limit the dust dispersion from reclamation.	To minimise the negative visual impact caused by the hydraulic reclamation.
	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.		Decommissioning	■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures	To increase the neutral visual impact caused by the rehabilitation of disturbed areas.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
				outlined in the closure and rehabilitation reports are conducted.	
	Change of land use from mining to a suitable end land use will have a positive visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from an industrial / mining sense of place resulting in increased scenic character and decreased visual disturbance.		Post-Closure	N/A	To increase the positive visual impact resulting from the reclamation and rehabilitation of the TSFs.
Cooke Mining Right Area					
Pipelines	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.	Visual	Construction	■ Where possible spread topsoil and re-vegetate the pipeline servitude areas when construction is complete; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	To minimise the negative visual impact caused by change of land use from agriculture to industry / mining.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.			■ Vegetation should only be removed when and where necessary; and ■ Where possible re-vegetate the pipeline servitude areas when construction is complete.	To minimise the negative visual impact caused by site clearance and removal of vegetation.
	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.			■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles; and ■ Where possible spread topsoil in the pipeline servitude areas when construction is complete.	To minimise the negative visual impact caused by topsoil removal and stockpiling.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.			■ Limit the height and footprint area of pipeline infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the metal structures are painted, it is recommended that a neutral matt finish be used; and ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.	To minimise the negative visual impact caused by construction of infrastructure.
	No impacts expected.		Operational	N/A	N/A

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.		Decommissioning	■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; and ■ Limit the quantity and time of rubble stored on site.	To increase the neutral visual impact caused by the demolition and removal of infrastructure.
	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.			■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and	To increase the neutral visual impact caused by the rehabilitation of disturbed areas.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
				rehabilitation reports are conducted.	
Cooke thickener	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.		Construction	■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	To minimise the negative visual impact caused by change of land use from agriculture to industry / mining.
	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.			■ Vegetation should only be removed when and where necessary.	To minimise the negative visual impact caused by site clearance and removal of vegetation.
	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.			■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding	To minimise the negative visual impact caused by topsoil removal and stockpiling.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
				landscape; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles.	
	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.			■ Limit the height and footprint area of Cooke thickener infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Pylons and metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the pylons and metal structures are painted, it is recommended that a neutral matt finish be	To minimise the negative visual impact caused by construction of infrastructure.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
				used; and ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.	
	No impacts expected.		Operational	N/A	N/A
	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.		Decommissioning	■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; and ■ Limit the quantity and time of rubble stored on site.	To increase the neutral visual impact caused by the demolition and removal of infrastructure.
	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.			■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and	To increase the neutral visual impact caused by the rehabilitation of disturbed areas.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
				drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	
Collection sumps and pump stations	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.		Construction	■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	To minimise the negative visual impact caused by change of land use from agriculture to industry / mining.
	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast			■ Vegetation should only be removed when and where necessary.	To minimise the negative visual impact caused by site clearance and removal of vegetation.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	the surrounding areas.				
	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.			■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles.	To minimise the negative visual impact caused by topsoil removal and stockpiling.
	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible			■ Limit the height and footprint area of collection sump and pump station infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding	To minimise the negative visual impact caused by construction of infrastructure.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.			landscape where possible; ■ Pylons and metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the pylons and metal structures are painted, it is recommended that a neutral matt finish be used; and ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.	
	No impacts expected.		Operational	N/A	N/A
	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.		Decommissioning	■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; and ■ Limit the quantity and time of rubble stored on site.	To increase the neutral visual impact caused by the demolition and removal of infrastructure.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.			■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	To increase the neutral visual impact caused by the rehabilitation of disturbed areas.
Hydraulic reclamation	No impacts expected.		Construction	N/A	N/A
	Hydraulic reclamation will have a negative visual impact on the receiving environment. Dust from the hydraulic reclamation will also have a negative		Operational	■ Apply dust suppression techniques to limit the dust dispersion from reclamation.	To minimise the negative visual impact caused by the hydraulic reclamation.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	visual impact. Once the hydraulic reclamation is complete, there will be an overall neutral visual impact on the receiving environment.				
	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.		Decommissioning	■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	To increase the neutral visual impact caused by the rehabilitation of disturbed areas.
	Change of land use from mining to a suitable end land use will have a		Post-Closure	N/A	To increase the positive visual impact

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	positive visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from an industrial / mining sense of place resulting in increased scenic character and decreased visual disturbance.				resulting from the reclamation and rehabilitation of the TSFs.
Ezulwini Mining Right Area					
Pipelines	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.	Visual	Construction	■ Where possible spread topsoil and re-vegetate the pipeline servitude areas when construction is complete; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	To minimise the negative visual impact caused by change of land use from agriculture to industry / mining.
	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.			■ Vegetation should only be removed when and where necessary; and ■ Where possible re-vegetate the pipeline servitude areas when	To minimise the negative visual impact caused by site clearance and removal of vegetation.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
				construction is complete.	
	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.			■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles; and ■ Where possible spread topsoil in the pipeline servitude areas when construction is complete.	To minimise the negative visual impact caused by topsoil removal and stockpiling.
	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place.			■ Limit the height and footprint area of pipeline infrastructure where possible; ■ Use shade cloth / netting to screen the construction site;	To minimise the negative visual impact caused by construction of infrastructure.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.			■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the metal structures are painted, it is recommended that a neutral matt finish be used; and ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.	
	No impacts expected.		Operational	N/A	N/A
	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving		Decommissioning	■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; and ■ Limit the quantity and time of	To increase the neutral visual impact caused by the demolition and removal of infrastructure.

Activities	Potential Impacts	Aspects Affected	Phase	Mitigation	Standard to be Achieved / Objective
	environment.			rubble stored on site.	
	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.			■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	To increase the neutral visual impact caused by the rehabilitation of disturbed areas.

Visual Mitigation

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
Kloof Mining Right Area					
Pipelines	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.	Visual	■ Where possible spread topsoil and re-vegetate the pipeline servitude areas when construction is complete; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	Construction Phase	No legal requirements for visual in South Africa
	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.		■ Vegetation should only be removed when and where necessary; and ■ Where possible re-vegetate the pipeline servitude areas when construction is complete.		
	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will		■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
	also have a negative visual impact.		vegetated where possible so as to blend into the surrounding landscape; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles; and ■ Where possible spread topsoil in the pipeline servitude areas when construction is complete.		
	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This		■ Limit the height and footprint area of pipeline infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Metal structures should be		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
	will also have a negative impact on the sense of place.		galvanised so as to weather to a matt grey finish rather than be painted silver. If the metal structures are painted, it is recommended that a neutral matt finish be used; and ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.		
	No impacts expected.		N/A	Operational Phase	
	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.		■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; and ■ Limit the quantity and time of rubble stored on site.	Decommissioning Phase	
	Rehabilitation of disturbed areas will have a negative visual impact on the receiving		■ Ensure that the rehabilitated area is re-contoured and profiled to		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
	environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.		create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		
CPP	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance. The change in land-use will contribute to		■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	Construction Phase	

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
	the cumulative impacts of mining on the regional environment.				
	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.		■ Vegetation should only be removed when and where necessary.		
	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.		■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit footprint area of topsoil stockpiles where possible; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles; and ■ Plant fast-growing indigenous		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
			vegetation in areas where it can conceal the stockpiles and reduce dust generation.		
	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.		■ Ensure vegetation screens of indigenous trees (are built close to receptors (residential areas and roads) and maintained; ■ Limit the height and footprint area of CPP infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Pylons and metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the pylons and metal structures are painted, it is recommended		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
			that a neutral matt finish be used; ■ Construction of vegetation berms must be implemented close to surface infrastructure so that vegetation can be established; and ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.		
	No impacts expected.		N/A	Operational Phase	
	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.		■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; and ■ Limit the quantity and time of rubble stored on site.	Decommissioning Phase	
	Rehabilitation of disturbed areas will have		■ Ensure that the rehabilitated area		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
	a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.		is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		
RTSF and associated infrastructure	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.		■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	Construction Phase	

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
	This impact will be permanent and irreversible as the RTSF will remain indefinitely. The change in land-use will contribute to the cumulative impacts of mining on the regional environment.				
	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.		■ Vegetation should only be removed when and where necessary.		
	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.		■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit footprint area of topsoil stockpiles where possible; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
			techniques to limit the dust dispersion from stockpiles; and ■ Plant fast-growing indigenous vegetation in areas where it can conceal the stockpiles and reduce dust generation.		
	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.		■ Ensure vegetation screens of indigenous trees (are built close to receptors (residential areas and roads) and maintained; ■ Limit the height and footprint area of RTSF and associated infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Pylons and metal structures should be galvanised so as to		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
			weather to a matt grey finish rather than be painted silver. If the pylons and metal structures are painted, it is recommended that a neutral matt finish be used; ■ Construction of vegetation berms must be implemented close to surface infrastructure so that vegetation can be established; and ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.		
	Operation of the RTSF will have a negative visual impact on the receiving environment. This impact will be permanent and irreversible as the RTSF will remain indefinitely. Infrastructure lighting will be visible at night resulting in a negative visual impact		■ Plant fast-growing indigenous vegetation in areas where it can conceal the RTSF; ■ Ensure RTSF does not exceed the proposed height of 30 m ■ Ensure vegetation screens of indigenous trees are built close to receptors (residential areas and	Operational Phase	

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
	on the receiving environment.		roads) and maintained; and ■ Down lighting must be implemented to minimise light pollution around the mine infrastructure area at night.		
	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment.		■ Reshape the sides of the RTSF so that they are not too steep (18° or less) to prevent slope failure; ■ Rehabilitate all disturbed areas; ■ Spread topsoil over the rehabilitated area; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	Decommissioning Phase	
Driefontein Mining Right Area					

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
Pipelines	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.	Visual	■ Where possible spread topsoil and re-vegetate the pipeline servitude areas when construction is complete; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	Construction Phase	No legal requirements for visual in South Africa
	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.		■ Vegetation should only be removed when and where necessary; and ■ Where possible re-vegetate the pipeline servitude areas when construction is complete.		
	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.		■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape;		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
			■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles; and ■ Where possible spread topsoil in the pipeline servitude areas when construction is complete.		
	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.		■ Limit the height and footprint area of pipeline infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the metal		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
			structures are painted, it is recommended that a neutral matt finish be used; and ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.		
	No impacts expected.		N/A	Operational Phase	
	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.		■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; and ■ Limit the quantity and time of rubble stored on site.	Decommissioning Phase	
	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual		■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
	impact on the receiving environment.		rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		
WBT and west BWSF complex	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.		■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	Construction Phase	
	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area		■ Vegetation should only be removed when and where		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
	will become noticeable to nearby receptors as it will contrast the surrounding areas.		necessary.		
	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.		■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles.		
	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the		■ Limit the height and footprint area of WBT and west BWSF complex infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
	receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.		blend into the surrounding landscape where possible; ■ Pylons and metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the pylons and metal structures are painted, it is recommended that a neutral matt finish be used; and ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.		
	No impacts expected.		N/A	Operational Phase	
	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.		■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; and ■ Limit the quantity and time of	Decommissioning Phase	

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
			rubble stored on site.		
	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.		■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		
Collection sumps and pump stations	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of		■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	Construction Phase	

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
	place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.				
	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.		■ Vegetation should only be removed when and where necessary.		
	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.		■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles.		
	The construction of surface infrastructure		■ Limit the height and footprint area		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
	will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.		of collection sump and pump station infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Pylons and metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the pylons and metal structures are painted, it is recommended that a neutral matt finish be used; and ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
	No impacts expected.		N/A	Operational Phase	
	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.		■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; and ■ Limit the quantity and time of rubble stored on site.	Decommissioning Phase	
	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.		■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
			outlined in the closure and rehabilitation reports are conducted.		
Hydraulic reclamation	No impacts expected.		N/A	Construction Phase	
	Hydraulic reclamation will have a negative visual impact on the receiving environment. Dust from the hydraulic reclamation will also have a negative visual impact. Once the hydraulic reclamation is complete, there will be an overall neutral visual impact on the receiving environment.		■ Apply dust suppression techniques to limit the dust dispersion from reclamation.	Operational Phase	
	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.		■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to	Decommissioning Phase	

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
			create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		
	Change of land use from mining to a suitable end land use will have a positive visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from an industrial / mining sense of place resulting in increased scenic character and decreased visual disturbance.		N/A	Post-Closure Phase	
Cooke Mining Right Area					
Pipelines	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project	Visual	■ Where possible spread topsoil and re-vegetate the pipeline servitude areas when	Construction Phase	No legal requirements for visual in

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
	area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.		construction is complete; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		South Africa
	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.		■ Vegetation should only be removed when and where necessary; and ■ Where possible re-vegetate the pipeline servitude areas when construction is complete.		
	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.		■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
			techniques to limit the dust dispersion from stockpiles; and ■ Where possible spread topsoil in the pipeline servitude areas when construction is complete.		
	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.		■ Limit the height and footprint area of pipeline infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the metal structures are painted, it is recommended that a neutral matt finish be used; and		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
			■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.		
	No impacts expected.		N/A	Operational Phase	
	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.		■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; and ■ Limit the quantity and time of rubble stored on site.	Decommissioning Phase	
	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.		■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
			create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		
Cooke thickener	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.		■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	Construction Phase	
	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.		■ Vegetation should only be removed when and where necessary.		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.		■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles.		
	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and		■ Limit the height and footprint area of Cooke thickener infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible;		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
	will draw attention to the project area. This will also have a negative impact on the sense of place.		■ Pylons and metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the pylons and metal structures are painted, it is recommended that a neutral matt finish be used; and ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.		
	No impacts expected.		N/A	Operational Phase	
	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.		■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; and ■ Limit the quantity and time of rubble stored on site.	Decommissioning Phase	

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.		■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		
Collection sumps and pump stations	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic		■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.	Construction Phase	

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
	character and increased visual disturbance.				
	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.		■ Vegetation should only be removed when and where necessary.		
	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.		■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles.		
	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface		■ Limit the height and footprint area of collection sump and pump station infrastructure where		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
	infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.		possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Pylons and metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the pylons and metal structures are painted, it is recommended that a neutral matt finish be used; and ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.		
	No impacts expected.		N/A	Operational Phase	
	Demolition and removal of infrastructure		■ Apply dust suppression	Decommissioning	

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
	will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.		techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; and ■ Limit the quantity and time of rubble stored on site.	Phase	
	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.		■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are conducted.		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
Hydraulic reclamation	No impacts expected.		N/A	Construction Phase	
	Hydraulic reclamation will have a negative visual impact on the receiving environment. Dust from the hydraulic reclamation will also have a negative visual impact. Once the hydraulic reclamation is complete, there will be an overall neutral visual impact on the receiving environment.		■ Apply dust suppression techniques to limit the dust dispersion from reclamation.	Operational Phase	
	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.		■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures	Decommissioning Phase	

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
			outlined in the closure and rehabilitation reports are conducted.		
	Change of land use from mining to a suitable end land use will have a positive visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from an industrial / mining sense of place resulting in increased scenic character and decreased visual disturbance.		N/A	Post-Closure Phase	
Ezulwini Mining Right Area					
Pipelines	Change of land use from agriculture to industry / mining will have a negative visual impact on the receiving environment. This change in land-use will change the sense of place of the project area and surrounds from a rural sense of place to an industrial / mining sense of place resulting in a loss of scenic character and increased visual disturbance.	Visual	■ Where possible spread topsoil and re-vegetate the pipeline servitude areas when construction is complete; and ■ Ensure all mitigation measures outlined in the closure and rehabilitation reports are	Construction Phase	No legal requirements for visual in South Africa

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
			conducted.		
	Site clearance and removal of vegetation will have a negative visual impact on the receiving environment. The project area will become noticeable to nearby receptors as it will contrast the surrounding areas.		■ Vegetation should only be removed when and where necessary; and ■ Where possible re-vegetate the pipeline servitude areas when construction is complete.		
	Topsoil removal and stockpiling will have a negative visual impact on the receiving environment. Dust from the stockpiles will also have a negative visual impact.		■ Topsoil should only be removed when and where necessary; ■ Topsoil stockpiles should be vegetated where possible so as to blend into the surrounding landscape; ■ Limit the height of topsoil stockpiles to 3 metres; ■ Apply dust suppression techniques to limit the dust dispersion from stockpiles; and ■ Where possible spread topsoil in the pipeline servitude areas when		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
			construction is complete.		
	The construction of surface infrastructure will have a negative visual impact on the receiving environment. The surface infrastructure will change the sense of place of the project area from a rural sense of place to an industrial / mining sense of place. Construction area lighting at night will have a negative visual impact on the receiving environment. The construction area lighting will be visible from afar and will draw attention to the project area. This will also have a negative impact on the sense of place.		■ Limit the height and footprint area of pipeline infrastructure where possible; ■ Use shade cloth / netting to screen the construction site; ■ Surface infrastructure should be painted natural hues so as to blend into the surrounding landscape where possible; ■ Metal structures should be galvanised so as to weather to a matt grey finish rather than be painted silver. If the metal structures are painted, it is recommended that a neutral matt finish be used; and ■ If construction activities take place at night, down lighting must be implemented to minimise light pollution.		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
	No impacts expected.		N/A	Operational Phase	
	Demolition and removal of infrastructure will have a negative visual impact on the receiving environment. Once the infrastructure is removed, there will be an overall neutral visual impact on the receiving environment.		■ Apply dust suppression techniques to limit the dust from the demolition area; ■ Use shade cloth / netting to screen the demolition area; and ■ Limit the quantity and time of rubble stored on site.	Decommissioning Phase	
	Rehabilitation of disturbed areas will have a negative visual impact on the receiving environment. Once rehabilitation is complete, there will be a neutral visual impact on the receiving environment.		■ Ensure that the rehabilitated area is re-contoured and profiled to create a free-draining topography; ■ Spread topsoil over the rehabilitated area; ■ Ensure that surface water and drainage lines are rehabilitated to create a free-draining topography; ■ Re-vegetate the rehabilitated areas; and ■ Ensure all mitigation measures		

Activities	Potential Impacts	Aspects Affected	Mitigation Type	Time Period for Implementation	Compliance with Standards
			outlined in the closure and rehabilitation reports are conducted.		

Prescribed Environmental Management Standards, Practices, Guidelines, Policies or Laws for Visual

Specialist Field	Applicable Standard, Practice, Guideline, Policy or Law
Visual	(Refer to Section 4 above) International ■ European Landscape Convention (2007); ■ IFC Performance Standard 3 (2012); and ■ World Bank Environmental, Health and Safety Guidelines for Mining (2007). National ■ Regulations in Chapter 5 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA); ■ Section 23(1)(d) of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA); ■ National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA); and ■ Section 17 of the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) (NEM: PAA). Guideline ■ Guideline for involving visual and aesthetic specialists in EIA processes: Edition 1. CSIR Report No ENV-S-C 2005 053 F (2005)