Anglo American Platinum: Rustenburg Platinum Mines

Mogalakwena Mine Complex

VISUAL IMPACT ASSESSMENT

WASTE ROCK DISPOSAL AREAS

May 2022

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Prepared by: Reata Colyn

The opinions expressed in this Report have been based on the information supplied to Alta van Dyk Environmental Consultants cc (AvDE) by company officials. The opinions in this Report are provided in response to a specific request from company officials to do so. AvDE has exercised all due care in reviewing the supplied information. Whilst AvDE has compared key supplied data with expected values, the accuracy of the results and conclusions from the review are entirely reliant on the accuracy and completeness of the supplied data. AvDE does not accept responsibility for any errors or omissions in the supplied information and does not accept any consequential liability arising from commercial decisions or actions resulting from them. Opinions presented in this report apply to the site conditions and features as they existed at the time of AvDE's investigations, and those reasonably foreseeable. These opinions do not necessarily apply to conditions and features that may arise after the date of this Report, about which AvDE had no prior knowledge nor had the opportunity to evaluate.

VERSION CONTROL

Alta van Dyk Environmental cc

Author: Reata Colyn

Approved by: Alta van Dyk

Signed: 

Position: Environmental Specialist

Version: Final

Date: May 2022

Executive Summary

The concept of a Visual Impact Assessment (VIA) plays a significant role in the understanding of how a project influences the visual attributes of the landscape and how these changes influence the community within the area. The motivation of understanding and improving the concept of VIA contributes to an overall better contextualization of visual impacts and how impacts can be mitigated or reduced to minimize negative visual impacts on a community.

Visibility analysis is a fundamental component of VIA, as it assists in determining the visual significance of a proposed project. This VIA have been compiled in support of a Regulation 31 Application process in order to determine the impact of an increase in height of the five main Waste Rock Disposal areas on the visual perception of receptors. A viewshed analysis was the visibility analysis technique used in support of the VIA. The VIA was supported by a through field visit.

The Visual Assessment concluded the following:

Component	Description	Rating		Specific Criteria	Visual Assessment Outcome
Visual Sensitivity of Receptors	The level of visual impact considered acceptable is dependent on the type of receptors.	High Sensitivity		The majority of the visual receptors within the Zone of Visual Influence (ZVI) are residential areas (community clusters) and has been deemed HIGHLY sensitive visual receptors.	An increase in height of an existing facility within close proximity of a visual receptor does not contribute to an increase in sensitivity of a visual receptor already highly impacted upon by the original development of this facility within its surrounding landscape.
		Moderate Sensitivity		People travelling in an around the area to work or home are considered to be moderately sensitive receptors	
Affected Area and Scenic Resources	The geographical area from which the project will theoretically be visible, known as the view catchment area and is primarily dictated by topography and scenic resources	Low Impact		The affected area of the receiving landscape has already been altered and impacted upon by the extent of the Mogalakwena Mine operations and its associated infrastructure (Waste Rock Disposal Areas).	An increase in the height of an existing waste rock disposal area, where the footprint area will not be expanded, will not noticeably contribute to an additional visual impact on an already highly affected area and/or scenic resource.
Visual Exposure	Zone of Visual Influence - Visibility analysis determines visibility on the principle of "line-of-sight" (LOS)	High Visual Exposure		Dominant or clearly noticeable to visual receptors in the geographical area and covers a large area (e.g., several square kilometres).	The visual exposure of the Waste Rock Disposal Areas is high to visual receptors in the area as they are dominantly noticeable in the geographical area.
		Low Visual Exposure		Not particularly noticeable to the visual receptor in the geographical area and will not expand development footprint of original facility.	The increase in height of these existing facilities has been assessed as a low exposure as the proposed height increase will not in particular be noticeable to the visual receptors
Visual Sensitivity	The inherent visibility of the sites' landscape is usually determined by a combination of topography, landform, vegetation cover, settlement pattern and special features.	Low Visual Sensitivity		Visual Sensitivity of the area has already been severely impacted upon by the initial establishment of the five main Waste Rock Disposal Areas and the mine as a whole	The increase in Waste Rock Disposal Area heights will not affect the visual sensitivity of the landscape as this has already been significantly altered/impacted by the extent of the Mogalakwena Mine operations within close proximity to sensitive features.

Visual Absorption Capacity	Visual Absorption Capacity is the potential of the landscape to conceal the proposed project.	Moderate Visual Absorption Capacity		The potential of the landscape and surrounding areas to conceal the height of the five main Waste Rock Disposal Areas varies from “Moderate to Low”.	The visual absorption capacity of the current landscape will accommodate the increase in height of the Waste Rock Disposal Areas and the VAC will still be deemed “Moderate to Low”.

The initial establishment of the Mogalakwena Mine operations and its associated infrastructure has already altered the visual landscape of the area. The highly sensitive receptors that surround the mining operation have already been visually impacted upon and the sense of place drastically altered due to the initial establishment of infrastructure that is not congruent to that of the visual backdrop.

The increase in the five main Waste Rock Disposal Areas will not contribute to a significantly additional impact as this increase in height only will be barely noticeable to the visual perception of the visual receptors.

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GLOSSARY AND TERMINOLOGY

Act - means the National Environmental Management Act. 1998 (Act. No. 107 of 1998)

Direct (or primary) effects - occur at the same time and in the same space as the activity. For example, the loss of views through construction of buildings.

Impact - A description of the effect of an aspect of the development on a specified component of the visual, aesthetic, or scenic environment within a defined time and space.

Indirect (or secondary) effects - occur later in time, or at a different place, from the causal activity. For example, the construction of power lines leading to a subsequent drop in property values in the surrounding area.

Landform - An element of and within the landscape with specific shape characteristics. This may also refer to an artificial element which can be compared to a natural landform and is subject to the same geomorphologic. It is the combinations of slope and elevation that produce the shape and form of the land

Landscape integrity - The relative intactness of the existing landscape or townscape, whether natural, rural or urban, and with an absence of intrusions or discordant structures.

Receiving environment - The surrounding area within which the development is situated. The area depends on the scale of the development and its influence on the context.

Receptors - Individuals, groups or communities who are subject to the visual influence of a particular project. Also referred to as observers, viewers, or viewer groups.

Sense of place - The unique quality or character of a place, whether natural, rural, or urban. Relates to uniqueness, distinctiveness, or strong identity. Sometimes referred to as genius loci meaning 'spirit of the place'.

Scenic corridor - A linear movement route, usually in the form of a scenic drive, but which could also be a railway, hiking trail, horse-riding trail or 4x4 trail.

Stakeholders - A subgroup of the public whose interests may be positively or negatively affected by a proposal or activity and/or who are concerned with a proposal or activity and its consequences. The term includes the proponent, authorities and all interested and affected parties.

Viewpoint - A selected point in the landscape from which views of a particular project or other feature can be obtained.

Viewshed - The outer boundary defining a view catchment area, usually along crests and ridgelines (similar to a watershed).

Visual - The full range of visual, aesthetic, cultural and spiritual aspects of the environment, which together contribute to the sense of place.

Visual Absorption Capacity - The ability of an area to visually absorb development as a result of screening topography, vegetation or structures in the landscape.

Visual Exposure - The degree to which a potential project or feature would be exposed or visually apparent to receptors.

Visual Field - The visual field refers to the total area in which objects can be seen in the side (peripheral) vision as a person focus their eyes on a central point.

Zone of visual influence - An area subject to the direct visual influence of a particular project.

ABBREVIATIONS

AAP	Anglo-American Platinum
DEA	Department of Environmental Affairs
EAP	Environmental Assessment Practitioner
EMP	Environmental Management Plan
GIS	Geographic Information Systems
Km	Kilometre
KPM	Kroondal Platinum Mine
LOS	Line of Sight
MNC	Mogalakwena North Concentrator
MSC	Mogalakwena South Concentrator
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEMWA	National Environmental Management Waste Act, 2008 (Act No. 59 of 2008)
NHRA	The National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NWA	National Water Act, 1998 (Act No. 36 of 1998)
PCB	Polychlorinated Biphenyls
TA	Traditional Authority
VAC	Visual Absorption Capacity
VIA	Visual Impact Assessment
WRD	Waste Rock Dump
ZVI	Zone of Visual Influence

DECLARATION BY THE EAP

Alta van Dyk Environmental Consultants cc has been appointed to conduct the Visual Impact Assessment (VIA) in support of the change in height of the five main Waste Rock Disposal Areas.

Main Authors

Reata Colyn holds a B.Sc in Human Physiology, Genetics and Psychology from the University of Pretoria and is currently in the process of completing her Master's in Environmental Toxicology and Pollution Control at the University of Ulster in Northern Ireland. In terms of professional affiliations, Reata Colyn is a registered candidate Environmental Assessment Practitioner in accordance with the Environmental Assessment Practitioners Association of South Africa (Reference: 2020 • Ref: 2020/1534) and is registered with the Toxicology Society of South Africa. Reata has been involved as an environmental consultant in various EIA's in terms of the National Environmental Management Act (NEMA) (No 107 of 1998), Water Use Applications in terms of the National Water Act (NWA) (No 36 of 1998) and external audits. Reata's responsibilities include the overall management of projects, financial management, permitting assistance and the identification and assessment of environmental impacts.

Alta van Dyk holds a Master's Degree in Environmental Management from the University of North-West and a Master's of Law (LLM) in International Commercial Law with the Salford University in Manchester. In terms of professional affiliation, Alta van Dyk is registered with the South African Council for Natural Scientific Professions (SACNASP – 400099/02) in Natural Science Services and Environmental Science fields of practice and is a registered Environmental Assessment Practitioner in accordance with the Environmental Assessment Practitioners Association of South Africa (Reference: 2020 • Ref: 2019/962). Alta van Dyk has been involved as the project manager in various EIAs in terms of the National Environmental Management Act (NEMA) (No 107 of 1998), the National Environmental Management Waste Act (NEMWA) (No 59 of 2008), the National Water Act (NWA) (No 36 of 1998) as well as the Mineral and Petroleum Resources Development Act (MPRDA) (No 28 of 2002). Her responsibilities included the overall management of the project, the identification and assessment of environmental impacts and the development of environmental management plans.

Alta van Dyk and Reata Colyn meet the requirements for independence as they do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed, and has no vested interest in the proposed activity proceeding, and also has no, and will not engage in, conflicting interests in the undertaking of the activity.

Declaration by EAPs

I, Alta van Dyk declare that –

- I act as the independent specialist in this Visual Impact Assessment (VIA) study;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.

_____ _____

Signature *Signature*

27 May 2022

Date:

1 INTRODUCTION AND BACKGROUND

1.1 Introduction & Background

Mogalakwena Mine Complex is a wholly owned subsidiary of Anglo-American Platinum Limited (AAP). Mogalakwena Mine is situated approximately 30 km north-west of the town of Mokopane within the Mogalakwena Local Municipality, which forms part of the greater Waterberg District Municipality of the Limpopo Province. Prospecting activities commenced in 1926 and the mine became operational in 1993.

The Mogalakwena Mine lease area covers approximately 51.05 km^2 and stretches over approximately 8 km from east to west and approximately 13 km from north to south. To the east of Mogalakwena Mine lies the National N11 highway.

Mogalakwena Mine's mining right falls on the following farms:

- Portion 0 of the farm Drenthe 778 LR;
- Portion 0 Remaining Extent of the farm Gillimberg 861 LR (Previously Witrivier 777 LR);
- Portion 0 of the farm Overysel 815 LR;
- Portion 0 of the farm Zwartfontein 818 LR;
- Portion 0, Remaining Extent of the farm Blinkwater 820 LR;
- Portion 0 of the farm Sandsloot 236 KR;
- Portion 0 of the farm Vaalkop 819 LR;
- Portion 0 of the farm Knapdaar 234 KR;
- Portion 1, 2 Remaining Extent and 3 of the farm Tweefontein 238 KR; and
- Portion 0 of the farm Rietfontein 240 KR

Mogalakwena Mine currently operates under an approved Environmental Management Programme (EMP) and has an approved Water Use Licence (WUL) and four Waste Management Licences (WML).

The mine is surrounded by 42 villages under the Mapela Traditional Authority (Mapela TA), and 20 villages falling under the Mokopane Traditional Authority (Mokopane TA). The town of Mokopane is located 25 km in a south-south easterly direction, Polokwane 55km in an easterly direction and Modimolle 93 km in a south-westerly direction. The Ga-Pila, Motlhotlo (Ga Sekhaolelo) and Motlhotlo (Ga-Puka) villages were relocated allowing for mine development.

Platinum group metals (PGMs) and various base metals are currently mined at Mogalakwena Mine via five open pits, namely the Sandsloot, Zwartfontein, South, Central and North Pits. The ore is beneficiated by the Mogalakwena North Concentrator (MNC) and Mogalakwena South Concentrator (MSC) into concentrate, which is transported to the AAP Polokwane Smelter for smelting, to produce furnace matte.

Mogalakwena Mine dispose waste rock on five main Waste Rock Disposal Areas.

- West WRD (02) - located to the west of the North Pit;
- East WRD (020) – located to the east of the North Pit;
- W01 – located to the north-east of the South Pit;
- RS3 – located to the west of the Sandsloot Pit;
- W07 – located to the south of the Sandsloot Pit;

1.2 Previous Visual Impact Assessment Studies Considered

During 2019, SRK Consulting undertook the Specialist Visual Impact Assessment in support of the Mogalakwena Platinum Mine Expansion Project Consolidated EMPr which was approved in August 2020. This 2019 assessment included the assessment of the five main Waste Rock Disposal Areas as part of the existing infrastructure utilised as a baseline for the expansion activities.

The 2019 estimated surveyed elevation levels of the five main Waste Rock Disposal Facilities (i.e., a single elevation point, not considering the uneven nature of these facilities) was used to assess the baseline impact on neighbouring areas (viewshed). These estimated elevation levels already exceeded the 2020 EMPr documented heights of 60m.

This assessment concluded that the baseline visual quality of Mogalakwena Mine in 2019 which included the five main Waste Rock Disposal Areas WRD 01, WRD 07, RS3, East WRD (020) and West WRD (02) were deemed "*medium*" with the impact becoming "*medium to high*" as distance increases away from the mine and villages. This means that as you move away from the impacted area, the extent of the Mogalakwena Mine operation, as a whole, becomes more visually accessible.

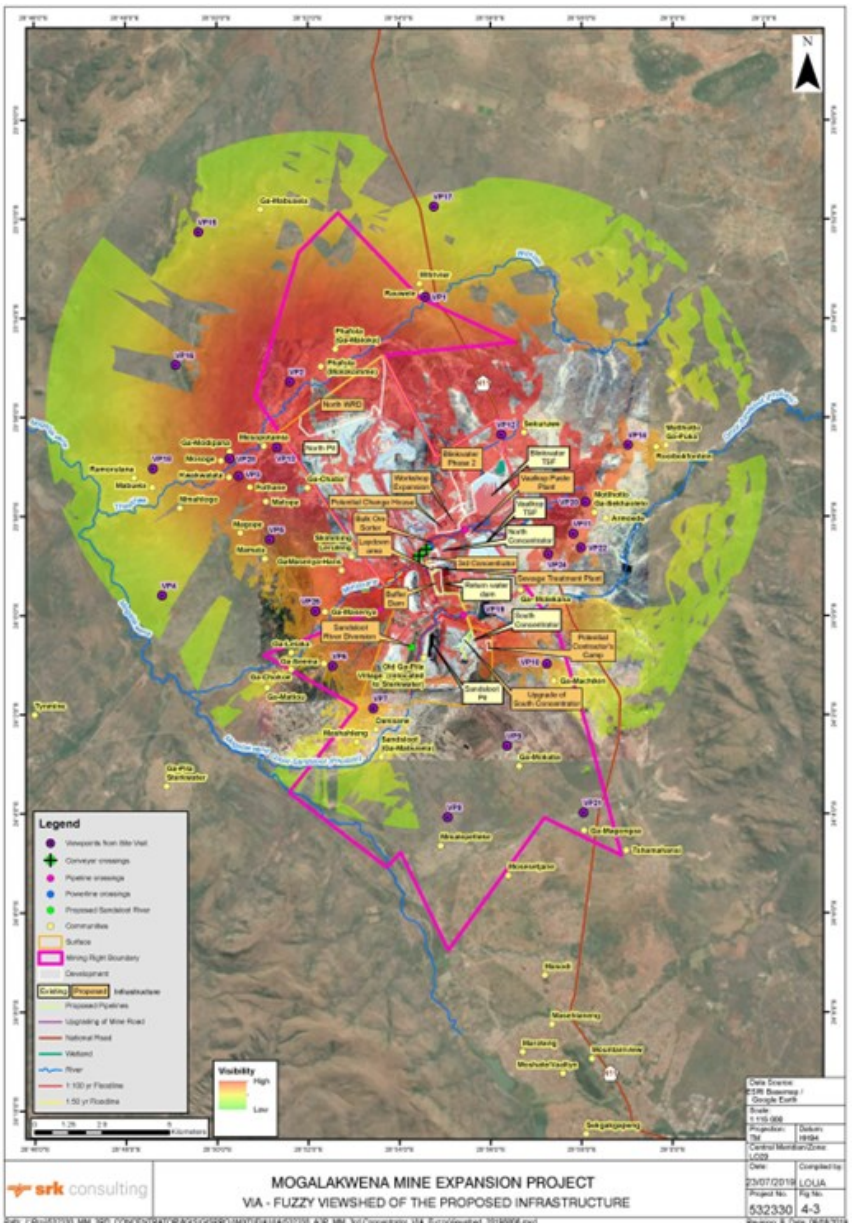

Figure 1-1: Fuzzy Viewshed Analysis (SRK, 2019)

1.3 Terms of Reference for the Visual Impact Assessment (VIA)

The Visual Impact Assessment (VIA) involves the assessment of visual impacts through the evaluation of possible changes in the visual attributes of a landscape caused by a proposed project. The assessment of an object's visual impact on the receiving landscape's visual properties can either be positive or negative, depending on the observer's view. Principles and Concepts[1] underpinning Visual input include:

[1] *Oberholzer, B. 2005. Guideline for involving visual & aesthetic specialists in EIA processes: Edition 1. CSIR Report No ENV-S-C 2005 053 F. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs & Development Planning, Cape Town. https://www.westerncape.gov.za/text/2005/4/deadp_visual_guideline_draft_15april05.pdf . Date of access: 20 May 2022.*

- An awareness that '*visual*' implies the full range of visual, aesthetic, cultural and spiritual aspects of the environment that contribute to the area's "*sense of place*".
- The consideration of both the natural and the cultural landscape, and their inter-relatedness.
- The identification of all scenic resources, protected areas, and sites of special interest, together with their relative importance in the region.
- An understanding of the landscape processes, including geological, vegetation and settlement patterns, which give the landscape its particular character or scenic attributes.
- The need to include both quantitative criteria, such as '*visibility*', and qualitative criteria, such as landscape or townscape '*character*'.
- The need to include visual input as an integral part of the project planning and design process, so that the findings and recommended mitigation measures can inform the final design, and hopefully the quality of the project.

1.4 Methodology

Alta van Dyk Environmental Consultants cc (AvDE) undertook the following activities in support of this Visual Impact Assessment (VIA):

- Review of existing information;
    - The former Visual Impact Assessment Report - SRK Consulting, 2019. Visual Impact Assessment in support of the Mogalakwena Platinum Mine Expansion Project Consolidated EMPr. Report Ref No: 532330/VIA.
- A site reconnaissance visit and photographic survey;
- A desktop study and Visual Impact Assessment Report inclusive of:
    - the description and assessment of the scenic resources/visual character of the area in general;
    - the development of viewsheds and zones of visual influence information;
    - the identification of viewpoints, receptors and visual sensitivity of the site (by describing the slope grades, landforms, vegetation, special features and land use);
    - Indicate potential visual impacts using established criteria – Viewshed Analysis; and
    - Describe mitigation measures and monitoring programmes

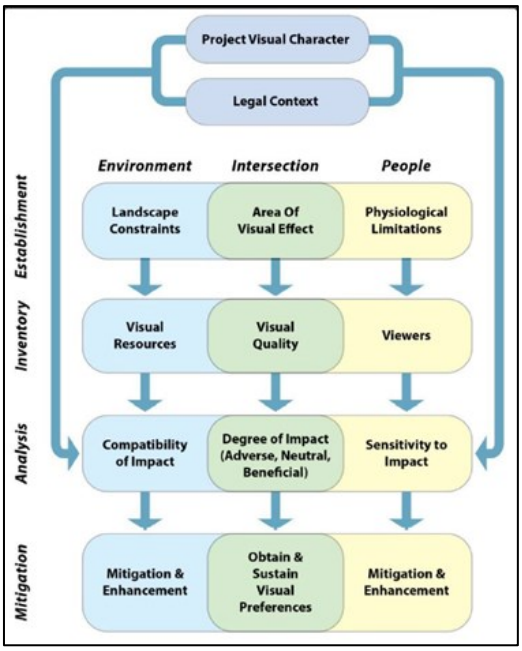

Figure 1-2: Visual Assessment Process

1.5 Assumptions and Limitations

This Visual Impact Assessment assumes the following:

- This visual assessment assumes that the information provided by the client is correct (Waste Rock Disposal Areas current heigh and expected change in height;
- The visual study relies on 1:250 000 and 1:50 000 Topo-cadastral and a visit to the site to determine the View Catchment and Zone of Visual Influence.
- The footprint areas and vertical height elevations were provided by Anglo American Platinum (AAP) Mogalakwena Mine for each of the five main Waste Rock Disposal Areas. These heights were used in the development of the viewshed model.
- Due to the undulating nature of the Waste Rock Disposal Areas, the elevations, sizes, and dimensions of the facilities are representative to the activities undertaken at the time of the assessment. Continuous deposition on the active faces alters the visual viewshed.
- The visual mitigation measures and designs on final heights are based on design information and specifications provided by the project engineers, previous studies, and commitments within the EMP documentation. Additional mitigation measures were proposed where required.
- Photographs were taken from publicly accessible areas i.e., (N11, Mapela Road, Bakenberg Road etc). Specific views within residences bordering onto the site were not photographed, as these areas are not publicly accessible.

2 PROJECT DESCRIPTION

2.1 Project Background

2.1.1 Waste Rock Disposal Areas

As part of the VIA, the focus was centred only on the height of the Waste Rock Disposal Areas as the Waste Rock Disposal Areas are already established on site and has been present as part of the existing landscape since the on-set of the mine during 1993.

The VIA focusses on the following Waste Rock Disposal Areas (Refer to Figure 2-1):

Table 2-1: Approved Waste Rock Disposal Areas

Waste Rock Disposal Facility	Current Average Undulating Height (m)*	Approved Footprint which will remain the same	Proposed Average Undulating Amendment Height (m)*
W01	82	42.28	82
W07	82	84.32	82
RS3	109	195.64	109
East WRD (020)	135	1027	175
West WRD (02)	92	385	95

*Average height is used due to topography differences that occur across the WRD facility

2.1.2 Topography

Topographic elevations within the Mogalakwena mining area vary from 1,750 mamsl in the east to 1,000 mamsl in the west. The natural topography has been locally altered by the existing mining operations (Blinkwater, Vaalkop and Vaalkop Extension Tailings Storage Facilities and associated return water dams, various open pit mining areas (Sandsloot, Zwartfontein, Central, North), Sandsloot rivers diversion, the five main waste rocks dumps, buildings (offices, change houses, stores, conveyors, processing plant), concentrators (North and South), low grade ore and ore pebble stockpiles, topsoil and subsoil dumps etc.). Drainage follows topography and migrates downstream from east to west.

2.1.3 Landforms

Land use in the surrounding area is dominated by residential developments and small-scale agricultural plots under dryland cropping. The area is also used for grazing of livestock and wood harvesting.

2.1.4 Climate – Wind speed and direction

The prevailing wind directions are predominantly from the east-northeast with lower occurrences from the northeast, east and east-southeast. Daytime winds (06:00-18:00) prevail from the northwest, with lower occurrences of winds from the northerly and easterly quadrants. Winds blowing during the earlier parts of the night (18:00-00:00) and latter parts of the night (00:00-06:00) are similar, with the prevailing winds being from the east-northeast.

The highest average wind speeds of 3.87m/s occurs during spring with calm conditions occurring 3.57 % of the time. The lowest average wind speeds occur during autumn with an average wind speed of 3.07 m/s and calm conditions occur 6.78% of the time. The wind speeds during summer and winter are 3.65 and 3.27 m/s respectively.

2.1.5 Land Use and Sensitive Receptors[2]

Mogalakwena area has a very well defined and established development footprint. It consists of 3 proclaimed townships and 178 villages. The proclaimed townships include the Mokopane, Mahwelereng and Rebone areas. The municipality has been demarcated into 32 wards. The municipal area also covers a range of smaller settlements located between Mokopane and Rebone about 100km to the north along the N11 and Marken along the R518.

The N1, N11, and R518, together with the Mogalakwena River and mountains provide very strong structural elements, cultural diversity and a physical resource base that predetermines the agricultural and mining activity in the area, shaping the development in the municipal area.

The development of a nodal system is dependent on the movement of goods and services. A land use management system of the municipality consists of various mechanisms of which the Spatial Development Framework (SDF), official municipal land use policies as well as the Land Use Management Scheme (LUMS) form the main or core components of a land use management system. National Government has included Mogalakwena Municipality as one of the mining areas and Mokopane as the mining town. The municipality is working towards a goal to realize the provision of housing and supporting infrastructure.

The employment profile and income categories indicated that unemployment in the area vary between 45% to 70% of the economically active population (people between the ages of 15 and 64 years) and that the population in general are poor. Women, and especially rural women, form the greatest number affected by the lack of job opportunities as well as other social problems.

Platinum mining in Mokopane area is a leading driving force to economic development, employment creation and community skills development and prosperity. The incorporation of this sector in the diversification of the local economy and promoting value-chain development for the purposes of clustering supportive economic functions in a single area will assist in the goals and objectives as identified within the Mogalakwena (Integrated Development Plan (IDP), Waterberg Local Economic Development Plan) (LED) and the Local Development Plan (LDP). The LDP has identified that the long-term strategic vision of the mining sector should be transformed to become not only a resource-based industry but should also become knowledge-based industry which collectively create conducive environment for value-addition.

The Mogalakwena Mining area is located within the Mogalakwena Local Municipality and is bordered by the following communities as the sensitive visual receptors.

- Phfola
- Ga-modipana
- Mesopotania
- Ga-Modege
- Ga-Tshaba
- Mapela
- Ga-Masenya
- Ga-Mapela West
- Ga-Mapela
- Ga-Molekana
- Ga-Sekhaolelo
- Sekuruwe

The locality of these visual receptors in relation to the Mogalakwena Mine and its associated Waste Rock Disposal Areas has been depicted in Figure 3-1.

[2] *Mogalakwena Local Municipality, 2021/22. Draft Integrated Development Plan review. http://www.mogalakwena.gov.za/mogalakwena-admin/pages/sites/mogalakwena/documents/idp/2021_22_Draft_IDP.pdf. Date of access: 20 May 2022.*

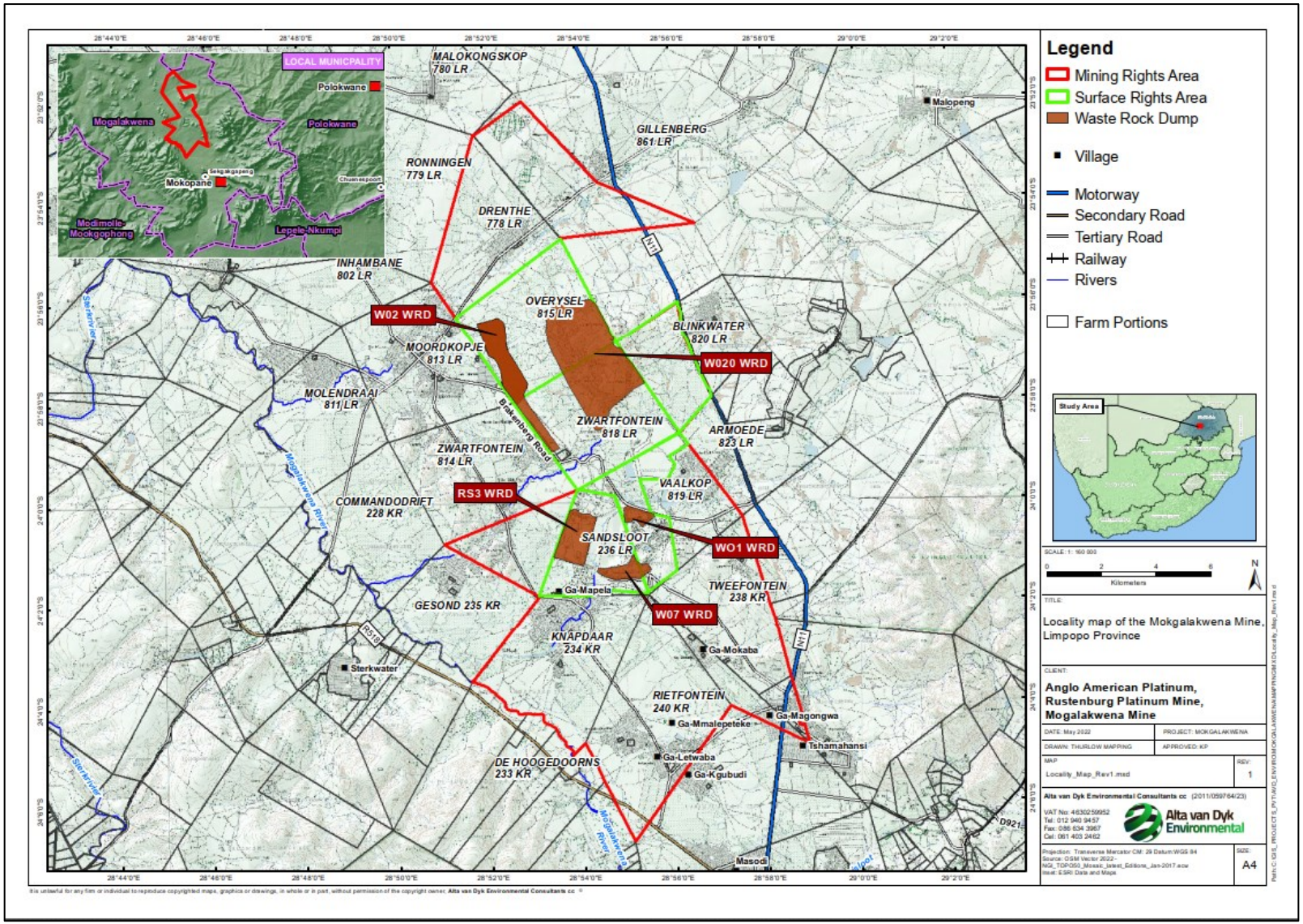

Figure 2-1 : Mogalakwena Waste Rock Disposal Areas

3 VISUAL ASSESSMENT

3.1 Sensitivity of Receptors

The level of visual impact considered acceptable is dependent on the type of receptors. The assessment has been based on the following criteria:

- ***High sensitivity – e.g., residential areas, nature reserves and scenic routes or trails;***
- ***Moderate sensitivity – e.g., sporting or recreational areas, or places of work;***
- ***Low sensitivity – e.g., industrial, or degraded areas.***

The Mogalakwena Mining area is located within the Mogalakwena Local Municipality and is bordered by the following communities as visual receptors to the mine and its associated infrastructure (Waste Rock Disposal Areas): the communities of Phafola to the north, Ga-Modipana, Mesopotani and Ga-Mosege to the north-west, Ga-Tshaba, Mapela and Ga-Masenya to the west, Ga-mapela to the west and south-west, Ga-Molekana, Ga-Sekhaolelo and Sekuruwe to the east.

The majority of the visual receptors within the Zone of Visual Influence (ZVI) are residential areas (community clusters) and has been deemed HIGHLY sensitive visual receptors. Although the visual receptors have been deemed as highly sensitive, this evaluation is centred not around the increase in heights of the existing Waste Rock Disposal Areas, but rather the existence of these facilities within close proximity of these community clusters.

People travelling in an around the area to work or home are considered to be moderately sensitive receptors. These visual receptors have a particular interest in their living environment and are exposed to visual impacts adjacent to the road or near their working environment more frequently than for instance a once-off visitor to the region.

An increase in height of an existing facility within close proximity of a visual receptor does not contribute to an increase in sensitivity of a visual receptor already highly impacted upon by the original development of this facility within its surrounding landscape.

3.2 Description of the Affected Area and the Scenic Resources

The assessment of the affected area and scenic resources has been based on the geographical area from which the project will theoretically be visible, known as the view catchment area and is primarily dictated by topography.

The Mogalakwena Mine lease area covers approximately 51.05 km^2 and stretches over approximately 8 km from east to west and approximately 13 km from north to south and has been operational since 1993. To the east of Mogalakwena Mine lies the National N11 highway.

Mogalakwena Mine's mining right falls on the following farms:

- Portion 0 of the farm Drenthe 778 LR;
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- Portion 1, 2 Remaining Extent and 3 of the farm Tweefontein 238 KR; and
- Portion 0 of the farm Rietfontein 240 KR

The affected area of the receiving landscape has already been altered and impacted upon by the extent of the Mogalakwena Mine operations and its associated infrastructure (Waste Rock Disposal Areas).

Due to the fact that the Waste Rock Disposal Areas under assessment are existing facilities that have already altered the geographical area and scenic resource of the landscape through its original establishment, an increase in the height of an existing waste rock disposal area, where the footprint area will not be expanded, will not noticeably contribute to an additional visual impact on an already highly affected area and/or scenic resource.

3.3 Visual Exposure

The visual exposure assessment is based on the following criteria:

- ***High exposure – dominant or clearly noticeable;***
- ***Moderate exposure – recognisable to the viewer;***
- ***Low exposure – not particularly noticeable to the viewer;***

Within the Zone of Visual Influence (ZVI) - view corridors, viewpoints and receptors will experience "*Visual Exposure*" to the Mogalakwena mine operation and its associated infrastructure (Waste Rock Disposal Areas). Based on distance from the project to selected view corridors, viewpoints, or receptors, the '*visual exposure*' or visual impact tends to diminish exponentially with distance.

Visibility analysis determines visibility on the principle of "*line-of-sight*" (LOS) – a straight line is generated between two points, and if at any point the line is obstructed by the surface, the target point is deemed "*not visible*". The area determined as visible through visibility analysis is known as a "*viewshed*" and presents the area determined as visible within the setting from the point of which visibility was determined.

Visual exposure to the five main Waste Rock Disposal Areas is influenced by the following aspects:

- Distance from the source of visual impact;
- True visibility of the project keeping in mind visual contrast (Visual Absorption Capacity), topography and the decrease in visibility over distance;
- Duration, i.e., prolonged, temporary, intermittent exposure, etc.

The visual exposure of the Waste Rock Disposal Areas is high to visual receptors in the area as they are dominantly noticeable in the geographical area. This evaluation is however centred not around the increase in heights of the existing Waste Rock Disposal Areas, but rather the existence of these facilities within the specific landscape.

Table 3-1: Existing Visual Exposure of the Waste Rock Disposal Areas

Component	Description	Rating		Specific Criteria
Visual exposure of the area	The geographic area from which the Waste Rock Disposal Areas will be visible, or view catchment area. (The actual zone of visual influence of the project may be smaller because of screening by existing trees and buildings).	High visual exposure		Dominant or clearly noticeable to visual receptors in the geographical area and covers a large area (e.g., several square kilometres).

The increase in height of these existing facilities has been assessed as a low exposure as the proposed height increase *will not* in particular be noticeable to the visual receptors.

Table 3-2: Visual Exposure of the increase in heigh of the Waste Rock Disposal Areas

Component	Description	Rating		Specific Criteria
Visual exposure of the area	The geographic area from which the increase in height of the Waste Rock Disposal Areas will be visible, or view catchment area. (The actual zone of visual influence of the project may be smaller because of screening by existing trees and buildings).	Low visual exposure		Not particularly noticeable to the visual receptor in the geographical area and will not expand development footprint of original facility.

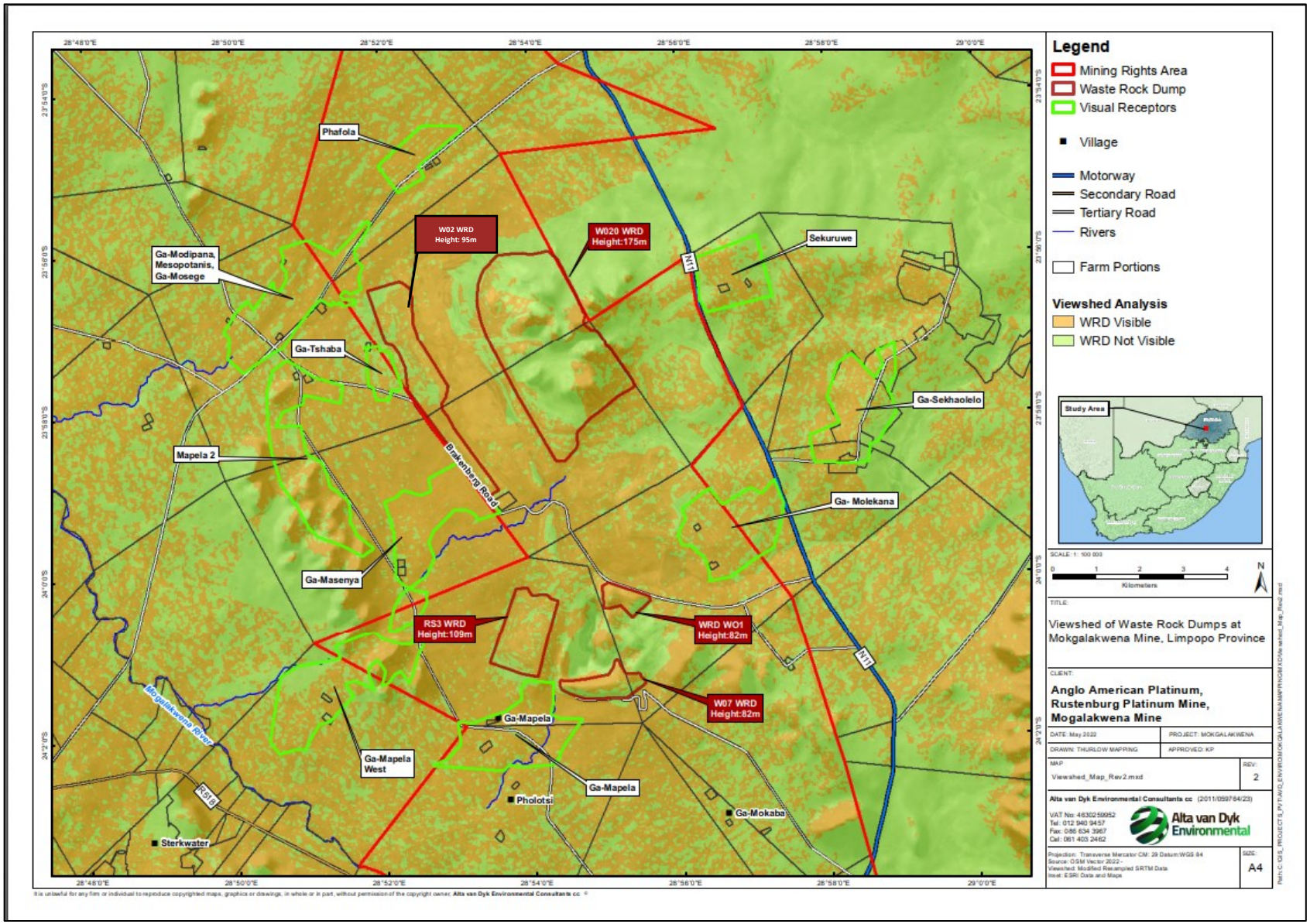

Figure 3-1: View Catchment Area

3.3.1 Viewshed and Line-of-Sight Analysis

The section below details the findings from the viewshed and Line-of-Sight analysis (included as Annexure A and Figure 3-1).

Figure 3-1 analysed the viewshed of the five Waste Rock Disposal Areas at the proposed increased heights as tabulated in Table 2-1.

The "*Line-of-Sight*" (LoS) analysis in Annexure A analysed (as part of the on-site assessment) three of the five Waste Rock Disposal Areas at the proposed increased heights (WRD 01 (82m), WRD 07 (82m), WRD RS3 (109m), West WRD (02) (92m) and the East WRD (020) at a height of 135m.

3.3.1.1 Viewshed

Due to the extent of the Mogalakwena Mine operations and its associated infrastructure (Waste Rock Disposal Areas) and the close proximity of the community clusters in relation to these operations, the Waste Rock Disposal Areas will be highly visible to all receptors within its vicinity. The main zone of visual influence is approximately 5km after which an increase in the distance from these facilities will start to diminish the visibility.

Refer to Figure 3-1 for an indication of the visibility of the five main Waste Rock Disposal Areas against the receptors in the area.

3.3.1.2 Annexure A – Line-of-Sight 1

This LoS analysis was undertaken from an on-site perspective. The LoS direction is towards the south and south-east and considers the WRD 01, WRD 07 and the WRD RS3 Waste Rock Disposal Areas. The Waste Rock Disposal Facilities at the time of the site assessment were at the proposed increased heights.

On site staff have been deemed as moderately sensitive visual receptors. The initial establishment of these Waste Rock Disposal Areas would have resulted in the loss of views of the surrounding landscape which includes community clusters, agricultural land, and informal roads.

The current height on these Waste Rock Disposal Areas does not significantly alter the initial loss of these views.

3.3.1.3 Annexure A – Line-of-Sight 2

This LoS analysis was undertaken from a gravel road located on a ridge to the east of the WRD 07 Waste Rock Disposal Area. The LoS direction is towards the north-west and west and considers the WRD 01 and WRD RS3 Waste Rock Disposal Areas. The Waste Rock Disposal Facilities at the time of the site assessment were at the proposed increased heights.

From the ridge, which is not located in close proximity to any of the highly sensitive visual receptors identified, the WRD 01 and WRD RS3 Waste Rock Disposal Areas are visible. From Figure 7-2 it can be observed that even though these facilities are highly visible, the Waste Rock Disposal Facilities fade into the backdrop of the undulated topography of the geographical area.

The initial establishment of these Waste Rock Disposal Areas would have resulted in the altered view of the surrounding landscape which includes community clusters, agricultural land, and informal roads.

The current height on these Waste Rock Disposal Areas does not significantly alter the initial loss of these views.

3.3.1.4 Annexure A – Line-of-Sight 3

This LoS analysis was undertaken from the Mapela Road located to the west of the west of WRD 07 and to the south-west of WRD RS3 Waste Rock Disposal Areas. The LoS direction is towards the north-east and considers the WRD RS3 Waste Rock Disposal Area. The Waste Rock Disposal Facility at the time of the site assessment were at the proposed increased height.

Travellers travelling on the Mapela road have been deemed as moderately sensitive visual receptors while the community clusters (Ga-Mapela and Mapela) are deemed as highly sensitive visual receptors.

From Figure 7-3 it can be observed that this facility actively obstructs visibility to the landscape and the mining activities located beyond.

The initial establishment of this Waste Rock Disposal Area would have resulted in the obstructed view of the surrounding landscape which includes the mining activity and the undulated topography of the landscape beyond.

The current height on these Waste Rock Disposal Areas does not significantly alter the initial loss of these views.

3.3.1.5 Annexure A – Line-of-Sight 4

This LoS analysis was undertaken from the edge of the Ga-Mapela West community on a gravel road located to the west of the WRD RS3 Waste Rock Disposal Area. The LoS direction is towards the east and considers the WRD RS3 Waste Rock Disposal Area. This Waste Rock Disposal Facility at the time of the site assessment was at the proposed increased height.

This assessment is taken in close proximity to the Ga-Mapela West community which has been identified as a highly sensitive visual receptor. From Figure 7-4 it can be observed that this facility is highly visible to the sensitive receptor and traveller on the Mapela road.

The initial establishment of this Waste Rock Disposal Area would have resulted in the obstructed view from a community perspective onto the surrounding landscape which includes mining, agricultural land, and undulated topography of the geographical area.

The current height on these Waste Rock Disposal Areas does not significantly alter the initial loss of these views.

3.3.1.6 Annexure A – Line-of-Sight 5

This LoS analysis was undertaken from the Mapela road located to the west of the WRD West Waste Rock Disposal Area. The LoS direction is towards the east and considers the West WRD (02) Waste Rock Disposal Area. The Waste Rock Disposal Facilities at the time of the site assessment were at the proposed increased heights.

This assessment is taken in close proximity to the Ga-Tshaba and Mapela communities which have been identified as highly sensitive visual receptors with the Ga-Tshaba community having the higher visual impact due to its closer proximity to the foot of the West WRD (02) Waste Rock Disposal Area. From Figure 7-5 it can be observed that this facility is highly visible to the sensitive receptors and traveller on the Mapela and Bakenberg roads.

The initial establishment of these Waste Rock Disposal Areas would have resulted in the obstructed view from a community perspective onto the surrounding landscape which includes mining, agricultural land, Mohlotho Mountains and undulated topography of the geographical area. With the Ga-Tshaba community this obstructed view is magnified due to the lack of distance between the community and the facility and a persons perceived visual field.

The current height on these Waste Rock Disposal Areas does not significantly alter the initial loss of these views. With reference to the Figure 7-5, the Mohlotho Mountains remain visible to the Mapela community.

3.3.1.7 Annexure A – Line-of-Sight 6

This LoS analysis was undertaken from an informal gravel road located within the Kwakwalata Mesopotamia community to the north-west of the West WRD (02) Waste Rock Disposal Area. The LoS direction is towards the south-east and considers the West WRD (02) Waste Rock Disposal Area. The Waste Rock Disposal Facility at the time of the site assessment was at the proposed increased height.

This assessment is taken in close proximity to the Kwakwalata Mesopotamia and the Ga-Modipana communities which have been identified as highly sensitive visual receptors with the development edge of the Kwakwalata Mesopotamia community having the higher visual impact due to its closer proximity to the foot of the West WRD (02) Waste Rock Disposal Area. From Figure 7-6 it can be observed that this facility is highly visible to the sensitive receptors and traveller on the informal gravel road.

The initial establishment of these Waste Rock Disposal Areas would have resulted in the obstructed view from a community perspective onto the surrounding landscape which includes mining and undulated topography of the geographical area. With the development edge of the Kwakwalata Mesopotamia community this obstructed view is magnified due to the lack of

distance between the community and the facility and a persons perceived visual field. It was also noted during the site observation that overburden dumps are located just beyond and adjacent to the West WRD (02) Waste Rock Disposal Area and also contribute to the obstructed view from a community perspective.

The current height on this Waste Rock Disposal Area does not significantly alter the initial loss of these views.

3.3.1.8 Annexure A – Line-of-Sight 7

This LoS analysis was undertaken from an informal gravel road located within the Phafola community to the north-west of the East WRD (020) Waste Rock Disposal Area. The LoS direction is towards the south-east and considers the East WRD (020) Waste Rock Disposal Area. The Waste Rock Disposal Facility at the time of the site assessment was at a height of 135m. The proposed increased height will result in a final height of 175m (increase of 40m).

This assessment is taken in close proximity to the Phafola community which has been identified as highly sensitive visual receptors. From Figure 7-7 it can be observed that this facility is highly visible to the sensitive receptors and traveller on the informal gravel road.

The initial establishment of these Waste Rock Disposal Areas would have resulted in the obstructed view from a community perspective onto the surrounding landscape which includes mining, the Mohlotho Mountains and undulated topography of the geographical area. From Figure 7-7, the Mohlotho Mountains is visible and located adjacent to the EAST WRD (020) Waste Rock Disposal Area. However, this view will change pending the LoS and the Waste Rock Disposal Area will obstruct the view from certain community viewpoints.

Due to the community's location from the East WRD (020) (± 2,2 km), the anticipated increase of 40m (30% of current height) will not drastically alter the current perceived view as the current Waste Rock Disposal Area has already significantly alter the initial loss of these views.

3.3.1.9 Annexure A – Line-of-Sight 8

This LoS analysis was undertaken from the N11 to the north-east of the East WRD (020) Waste Rock Disposal Area. The LoS direction is towards the south-west and considers the East WRD (020) Waste Rock Disposal Area. The Waste Rock Disposal Facility at the time of the site assessment was at a height of 135m. The proposed increased height will result in a final height of 175m (increase of 40m).

Travellers travelling on the N11 have been deemed as moderately sensitive visual receptors. No community clusters are located to the north-east of the East WRD (020).

From Figure 7-8 it can be observed that this facility is highly visible to the traveller on the N11 road.

The initial establishment of this Waste Rock Disposal Areas would have resulted in the loss of views of the surrounding landscape which includes community clusters, agricultural land, and informal roads. The Mohlotho Mountains and undulated topography of the geographical area can still be seen from this view. The Waste Rock Disposal Facility fade into the backdrop of the undulated topography of the geographical area.

Due to the N11's location from the East WRD (020) (± 3,9 km), the anticipated increase of 40m (30% of current height) will not drastically alter the current perceived view as the current Waste Rock Disposal Area has already significantly alter the initial loss of these views.

3.4 Visual Sensitivity

The inherent visibility of the sites' landscape is usually determined by a combination of topography, landform, vegetation cover, settlement pattern and special features.

This translates into visual sensitivity. The assessment has been based on the following criteria:

- ***High visual sensitivity – highly visible and potentially sensitive areas in the landscape,***
- ***Moderate visual sensitivity – moderately visible areas in the landscape,***
- ***Low visual sensitivity – minimally visible areas in the landscape***

The Mogalakwena Mining Area is located outside of National Protected Area Expansion Strategy Focus Area (sourced by South African National Biodiversity Institute), however, expands into a Critical Biodiversity Areas namely the Limpopo Critical Biodiversity Area (CBA 1 & CBA 2) and falls within a 5km buffer zone of a Nature Reserve (Witvinger).

Mogalakwena Mine falls outside a 10km buffer zone of any National Park, World Heritage Site and outside a 5km buffer zone from any core area of a biosphere reserve.

The topography and landform of the area has been highlighted in section 0 and 2.1.3.

The settlement development surrounding the Mogalakwena Mine operations with its associated infrastructure (Waste Rock Disposal Areas) has been detailed in section 2.1.5.

The visual sensitivity of the surrounding landscape has been deemed as low. This is due to the fact that the Waste Rock Disposal Areas are existing infrastructure that was already approved and established since the mine's commencement in 1993. The increase in Waste Rock Disposal Area heights will not affect the visual sensitivity of the landscape as this has already been significantly altered/impacted by the extent of the Mogalakwena Mine operations within close proximity to sensitive features.

Table 3-3: Visual Sensitivity of the surrounding landscape

Component	Description	Rating		Specific Criteria
Visual Sensitivity of the surrounding landscape	The inherent visibility of the sites' landscape is usually determined by a combination of topography, landform, vegetation cover, settlement pattern and special features.	Low Visual Sensitivity		Visual Sensitivity of the area has already been severely impacted upon by the initial establishment of the five main Waste Rock Disposal Areas and the mine as a whole.

3.5 Visual Absorption Capacity

Visual Absorption Capacity is the potential of the landscape to conceal the proposed project. The assessment has been based on the following criteria:

- ***High VAC – e.g., effective screening by topography and vegetation;***
- ***Moderate VAC - e.g., partial screening by topography and vegetation;***
- ***Low VAC - e.g., little screening by topography or vegetation.***

Visual Absorption Capacity (VAC) is the capacity for the landscape to conceal the proposed development. The VAC of a landscape depends on its topography and on the type of vegetation that occurs in the landscape. The size and type of the development also plays a role.

Fuzzy visibility analysis / distance decay function - the significance of visibility decreases with an increase in distance between the Waste Rock Disposal Areas and the observer. The human perspective of visibility is influenced by the environmental conditions at a specific time and surface features.

Environmental factors include lighting and climatic conditions, particularly how each influences the limit of visibility perceived depending on the time of day and the climatic conditions of that particular day. Surface features include both man-made structures and natural land cover which enhances the screening effect already caused by topographical features.

The Mogalakwena Mine operations and its associated five main Waste Rock Disposal Areas is located in a geographical area which consists of undulated topography (koppies), which screen the visual perspective onto these facilities depending on the LoS and distance from the operation itself. Due to the height of the Waste Rock Disposal Areas, vegetation will not completely screen the visibility of these features for the highly sensitive visual receptors. However, during the site assessment, it is clear that the Waste Rock Disposal Areas, screen the extent of the Mogalakwena Mine operations as well as the associated infrastructure such as overburden dumps, pits and other waste rock disposal areas. The closer the observe is in distance to the Waste Rock Disposal Areas the greater the visual influence and the screening of the extent of the mine.

The potential of the landscape and surrounding areas to conceal the height of the five main Waste Rock Disposal Areas varies from "Moderate to Low". Although these disposal areas create an elevated landform resulting in these areas being visually exposed to the surrounding area, the VAC partially screens these facilities through the geographical topography.

The rehabilitation of these facilities and the subsequent development of vegetation cover and scattered tree species over the long-term period will provide additional absorption of these facilities into the landscape.

The visual absorption capacity of the current landscape will accommodate the increase in height of the Waste Rock Disposal Areas and the VAC will still be deemed "*Moderate to Low*". This was confirmed by the site assessment for the five main Waste Rock Disposal Areas of which three of these are already at the proposed increased heights.

Table 3-4: Visual Absorption Capacity for the increase in heigh of the Waste Rock Disposal Areas:

Component	Description	Rating	Specific Criteria
Visual absorption capacity (VAC)	The potential of the landscape to conceal the proposed project	Moderate VAC	Partial screening by topography and vegetation

The figures below support the visual absorption capacity of the surrounding landscape on the increased heights of the Waste Rock Disposal Areas.

Figure 3-2: Visual Absorption Capacity - Photographic Representation

3.6 Visual Intrusion

Visual Intrusion is defined as the level of compatibility or congruence of the project with the particular qualities of the area, or its 'sense of place'. This is related to the idea of context and maintaining the integrity of the landscape or townscape. The assessment has been based on the following criteria.

- ***High visual intrusion – results in a noticeable change or is discordant with the surroundings;***
- ***Moderate visual intrusion – partially fits into the surroundings, but clearly noticeable;***
- ***Low visual intrusion – minimal change or blends in well with the surroundings.***

The visual intrusion of the Waste Rock Disposal Areas is high to visual receptors in the area as they are dominantly noticeable change in the geographical area as the initial establishment of the Waste Rock Disposal Areas are not a compatible infrastructure to the landform and ultimately contributed to a loss in sense of place. This evaluation is however centred not around the increase in heights of the existing Waste Rock Disposal Areas, but rather the existence of these facilities within the specific landscape.

Table 3-5: Existing Visual Intrusion of the Existing Waste Rock Disposal Areas

Component	Description	Rating	Specific Criteria
Visual Intrusion of the Waste Rock Disposal Areas	Compatibility of the proposed project and associated infrastructure into a surrounding landscape and the project's contribution to the loss in sense of place	Highly visible	Results in a noticeable change or is discordant with the surroundings

The increase in height of these existing facilities has been assessed as a low intrusion as the proposed height increase will not contribute to an additional impact on the loss of sense of place as the existing infrastructure in question is already not compatible to the landform.

Table 3-6: Visual Intrusion due to an increase in height of the Waste Rock Disposal Areas

Component	Description	Rating	Specific Criteria
Visual Intrusion of the Waste Rock Disposal Areas	Compatibility of the proposed increase in heights of the existing Waste Rock Disposal Areas into a surrounding landscape and the increased height's contribution to the loss in sense of place	Low visual intrusion	Minimal change or blends in well with the existing surroundings.

3.7 Summary of the Visual Assessment

The Table below summarises the visual assessment of the increase in Waste Rock Disposal Area heights against the sensitive visual receptors and landscape.

Table 3-7: Specific criteria used for the visual impact assessment

Component	Description	Rating	Specific Criteria	Visual Assessment Outcome
Visual Sensitivity of Receptors	The level of visual impact considered acceptable is dependent on the type of receptors.	High Sensitivity	The majority of the visual receptors within the Zone of Visual Influence (ZVI) are residential areas (community clusters) and has been deemed HIGHLY sensitive visual receptors.	An increase in height of an existing facility within close proximity of a visual receptor does not contribute to an increase in sensitivity of a visual receptor already highly impacted upon by the original development of this facility within its surrounding landscape.
		Moderate Sensitivity	People travelling in an around the area to work or home are considered to be moderately sensitive receptors	
Affected Area and Scenic Resources	The geographical area from which the project will	Low Impact	The affected area of the receiving landscape has already been altered and impacted upon by the extent of the	An increase in the height of an existing waste rock disposal area, where the footprint area

	theoretically be visible, known as the view catchment area and is primarily dictated by topography and scenic resources			Mogalakwena Mine operations and its associated infrastructure (Waste Rock Disposal Areas).	will not be expanded, will not noticeably contribute to an additional visual impact on an already highly affected area and/or scenic resource.
Visual Exposure	Zone of Visual Influence - Visibility analysis determines visibility on the principle of "line-of-sight" (LOS)	High Visual Exposure		Dominant or clearly noticeable to visual receptors in the geographical area and covers a large area (e.g., several square kilometres).	The visual exposure of the Waste Rock Disposal Areas is high to visual receptors in the area as they are dominantly noticeable in the geographical area.
		Low Visual Exposure		Not particularly noticeable to the visual receptor in the geographical area and will not expand development footprint of original facility.	The increase in height of these existing facilities has been assessed as a low exposure as the proposed height increase will not in particular be noticeable to the visual receptors
Visual Sensitivity	The inherent visibility of the sites' landscape is usually determined by a combination of topography, landform, vegetation cover, settlement pattern and special features.	Low Visual Sensitivity		Visual Sensitivity of the area has already been severely impacted upon by the initial establishment of the five main Waste Rock Disposal Areas and the mine as a whole	The increase in Waste Rock Disposal Area heights will not affect the visual sensitivity of the landscape as this has already been significantly altered/impacted by the extent of the Mogalakwena Mine operations within close proximity to sensitive features.
Visual Absorption Capacity	Visual Absorption Capacity is the potential of the landscape to conceal the proposed project.	Moderate Visual Absorption Capacity		The potential of the landscape and surrounding areas to conceal the height of the five main Waste Rock Disposal Areas varies from "Moderate to Low".	The visual absorption capacity of the current landscape will accommodate the increase in height of the Waste Rock Disposal Areas and the VAC will still be deemed "Moderate to Low".

4 LEGISLATIVE BACKGROUND

4.1 Constitution of the Republic of South Africa, 1996 (Act 108 of 1996)

Mogalakwena Platinum Mine is bound by the Constitution of the Republic of South Africa (Act 108 of 1996) and aims to achieve the objectives as set out in the Constitution.

Section 24 of the Constitution states that:

"Everyone has the right:

- To an environment that is not harmful to their health or well-being;
- To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:
    - Prevent pollution and ecological degradations;
    - Promote conservation; and
    - Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development

4.2 National Environmental Management Act, 1998 (Act No 107 of 1998), GNR 549, 10 July 2014.

The NEMA gives effect to the rights contained under section 24 of the constitution which states that "*everyone has the right to an environment that is not harmful to their health or well-being; and to have the environment protected, for the benefit of present and future generations*".

In accordance with NEMA, Amendments to the Environmental Impact Assessment Regulations, 2014 (Government Notice No 326, Gazette No 40772, dated 7 April 2017, an environmental impact assessment must be undertaken with the inclusion of certain specialist reports as to quantify the risks, impacts, cumulative impacts, developments have on geographical, physical, biological, social, economic, heritage and cultural aspects of the environment.

In accordance with Appendix 3 (d) of this Regulations, specialist studies must determine the nature, significance, consequence, extent, duration, and probability of the impacts.

Appendix 6 of this Regulation specifically details the contents and structure of specialist reports compiled as supporting documentation for an environmental impact assessment.

4.3 National Heritage Resources Act, 199 (Act No. 25 of 1999)

The National Heritage Resources Act 25 of 1999 intends:

- to introduce an integrated and interactive system for the management of the national heritage resources;
- to promote good government at all levels, and empower civil society to nurture and conserve their heritage resources so that they may be bequeathed to future generations;
- to lay down general principles for governing heritage resources management throughout the Republic;
- to introduce an integrated system for the identification, assessment and management of the heritage resources of South Africa;
- to establish the South African Heritage Resources Agency together with its Council to co-ordinate and promote the management of heritage resources at national level;
- to set norms and maintain essential national standards for the management of heritage resources in the Republic and to protect heritage resources of national significance;
- to control the export of nationally significant heritage objects and the import into the Republic of cultural property illegally exported from foreign countries;
- to enable the provinces to establish heritage authorities which must adopt powers to protect and manage certain categories of heritage resources;
- to provide for the protection and management of conservation-worthy places and areas by local authorities; and
- to provide for matters connected therewith.

Section 28 of Act states the following with regards to "*Protected Areas*":

(1) *SAHRA may, with the consent of the owner of an area, by notice in the Gazette designate as a protected area—*
(a) such area of land surrounding a national heritage site as is reasonably necessary to ensure the protection and reasonable enjoyment of such site, or to protect the view of and from such site; or
(b) such area of land surrounding any wreck as is reasonably necessary to ensure its protection; or
(c) such area of land covered by a mine dump.
(2) A provincial heritage resources authority may, with the consent of the owner of an area, by notice in the Provincial Gazette designate as a protected area—
(a) such area of land surrounding a provincial heritage site as is reasonably necessary to ensure the protection and reasonable enjoyment of such site, or to protect the view of and from such site; or
(b) such area of land surrounding any archaeological or palaeontological site or meteorite as is reasonably necessary to ensure its protection.

The Mogalakwena Mining Rights Area is not gazetted as a "*Protected Area*".

4.4 Advertising on Roads and Ribbons Act (Act No. 21 of 1940)

The Advertising on Roads and Ribbon Development Act 21 of 1940 intends:

- to regulate
  - the display of advertisements outside certain urban areas at places visible from public roads, and
  - the depositing of disused machinery or refuse and the erection of structures near certain public roads, and
  - the access to certain land from such roads and
- to amend the National Roads Act, 1935 (repealed in 1971).

This component is not applicable to the Mogalakwena Mining Complex.

4.5 Guidelines

In terms of NEMA, procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for environmental authorisation dated 20 March 2020, Government Notice 320, Gazette No 43110 no specific assessment protocol has been prescribed for Visual Environmental Themes. As such, the site sensitivity verification and minimum report content requirement as prescribed in the procedures has been supplemented with the following guidelines:

- Oberholzer, B. 2005. Guideline for involving visual & aesthetic specialists in EIA processes: Edition 1. CSIR Report No ENV-S-C 2005 053 F. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs & Development Planning, Cape Town. https://www.westerncape.gov.za/text/2005/4/deadp_visual_guideline_draft_15april05.pdf . Date of access: 20 May 2022.

5 IMPACT ASSESSMENT

5.1 Impact Assessment Methodology

The assessment of visual impacts is based on a synthesis of criteria including: nature of impact, extent, duration of the impact, intensity, probability of occurrence, reversibility, Irreplaceable loss of resources, cumulative effect and level of significance (see Table 5-1).

The nature of the visual impacts on the receiving environment has been considered for the Operational and Closure Phases due to the fact that the visual impact assessment focusses only on a height increase on already existing facilities.

- Operational Phase – the activity includes the active disposal of waste rock material onto the five Waste Rock Disposal areas.
- Closure Phase – the activity includes the final benching of the side slopes of these facilities and final vegetation cover.

Table 5-1: Scale utilised for the evaluation of the Environmental Risk Ratings

Evaluation Component	Rating	Scale	Description / criteria
MAGNITUDE of negative impact (at the indicated spatial scale)	**10**	**Very high**	Bio-physical and/or social functions and/or processes might be *severely* altered.
	8	**High**	Bio-physical and/or social functions and/or processes might be *considerably* altered.
	6	**Medium**	Bio-physical and/or social functions and/or processes might be *notably* altered.
	4	**Low**	Bio-physical and/or social functions and/or processes might be *slightly* altered.
	2	**Very low**	Bio-physical and/or social functions and/or processes might be *negligibly* altered.
	0	**Zero**	Bio-physical and/or social functions and/or processes will remain *unaltered.*
MAGNITUDE of POSITIVE IMPACT (at the indicated spatial scale)	**10**	**Very high**	Positive: Bio-physical and/or social functions and/or processes might be *substantially* enhanced.
	8	**High**	**Positive**: Bio-physical and/or social functions and/or processes might be *considerably* enhanced.
	6	**Medium**	**Positive**: Bio-physical and/or social functions and/or processes might be *notably* enhanced.
	4	**Low**	**Positive**: Bio-physical and/or social functions and/or processes might be *slightly* enhanced.
	2	**Very low**	**Positive**: Bio-physical and/or social functions and/or processes might be *negligibly* enhanced.
	0	**Zero**	**Positive**: Bio-physical and/or social functions and/or processes will remain *unaltered.*
DURATION	**5**	**Permanent**	**Impact in perpetuity. –**
	4	**Long term**	Impact ceases after operational phase/life of the activity > 60 years.
	3	**Medium term**	Impact might occur during the operational phase/life of the activity – 60 years.
	2	**Short term**	Impact might occur during the construction phase - < 3 years.
	1	**Immediate**	**Instant impact.**
EXTENT (or spatial scale/influence of impact)	**5**	**International**	**Beyond the National boundaries.**
	4	**National**	Beyond provincial boundaries, but within National boundaries.
	3	**Regional**	Beyond 5 km of the site and within the provincial boundaries.
	2	**Local**	Within a 5 km radius of the site.
	1	**Site-specific**	**On site or within 100 meters of the site boundaries.**
	0	**None**	**Zero extent.**
IRREPLACEABLE loss of resources	**5**	**Definite**	**Definite** loss of irreplaceable resources.
	4	**High potential**	**High** potential for loss of irreplaceable resources.
	3	**Moderate potential**	**Moderate** potential for loss of irreplaceable resources.
	2	**Low potential**	**Low** potential for loss of irreplaceable resources.
	1	**Very low potential**	**Very low** potential for loss of irreplaceable resources.
	0	**None**	**Zero potential.**
REVERSIBILITY of impact	**5**	**Irreversible**	Impact **cannot** be reversed.
	4	**Low irreversibility**	**Low** potential that impact might be reversed.

	3	**Moderate reversibility**	**Moderate** potential that impact might be reversed.
	2	**High reversibility**	**High** potential that impact might be reversed.
	1	**Reversible**	Impact **will be** reversible.
	0	**No impact**	No impact.
PROBABILITY (of occurrence)	**5**	**Definite**	>95% chance of the potential impact occurring.
	4	**High probability**	75% - 95% chance of the potential impact occurring.
	3	**Medium probability**	25% - 75% chance of the potential impact occurring
	2	**Low probability**	5% - 25% chance of the potential impact occurring.
	1	**Improbable**	<5% chance of the potential impact occurring.
	0	**No probability**	**Zero probability.**
Evaluation Component	**Rating scale and description / criteria**		
CUMULATIVE impacts	**High**: The activity is one of several similar past, present or future activities in the same geographical area, and might contribute to a very significant combined impact on the natural, cultural, and/or socio-economic resources of local, regional or national concern. ***Medium****:* The activity is one of a few similar past, present or future activities in the same geographical area, and might have a combined impact of moderate significance on the natural, cultural, and/or socio-economic resources of local, regional or national concern. ***Low****:* The activity is localised and might have a negligible cumulative impact. ***None****:* No cumulative impact on the environment.		

Once the Environmental Risk Ratings have been evaluated for each potential environmental impact, the Significance Score of each potential environmental impact is calculated by using the following formula:

- **SS (Significance Score) = (magnitude + duration + extent + irreplaceable + reversibility) x probability.**

The maximum Significance Score value is 150.

The Significance Score is then used to rate the Environmental Significance of each potential environmental impact as per Table 5-2below. The Environmental Significance rating process is completed for all identified potential environmental impacts both before and after implementation of the recommended mitigation measures.

Table 5-2: Scale used for the evaluation of the Environmental Significance Ratings

Significance Score	Environmental Significance	Description / criteria
125 – 150	**Very high (VH)**	An impact of very high significance will mean that the project cannot proceed, and that impacts are irreversible, regardless of available mitigation options.
100 – 124	**High (H)**	An impact of high significance which could influence a decision about whether or not to proceed with the proposed project, regardless of available mitigation options.
75 – 99	**Medium-high (MH)**	If left unmanaged, an impact of medium-high significance could influence a decision about whether or not to proceed with a proposed project. Mitigation options should be relooked at.
40 – 74	**Medium (M)**	If left unmanaged, an impact of moderate significance could influence a decision about whether or not to proceed with a proposed project.
<40	**Low (L)**	An impact of low is likely to contribute to positive decisions about whether or not to proceed with the project. It will have little real effect and is unlikely to have an influence on project design or alternative motivation.
+	**Positive impact (+)**	A positive impact is likely to result in a positive consequence/effect, and is likely to contribute to positive decisions about whether or not to proceed with the project.

5.2 Cumulative Impacts

This Visual Impact Assessment considered the height increase on the five main Waste Rock Disposal Areas which are already well-established structures within the Mogalakwena Mine operations and receiving landscape. The receiving landscape has already been severely impacted upon by the initial establishment of the fine main Waste Rock Disposal Facilities and a such the cumulative impact of a height increase on these existing facilities will be "*Low*".

Table 5-3: Operational Phase Visual Impact Assessment and Mitigation Measures

POTENTIAL ENVIRONMENTAL IMPACT	ACTIVITY/STRUCTURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								Cumulative	Status	RECOMMENDED MITIGATION MEASURES/ REMARKS	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
		M	D	S	I	R	P	TOTAL	SP				M	D	S	I	R	P	TOTAL	SP
VISUAL IMPACT ASSESSMENT																				
Visual Impact on visual receptors	The visual impact of the increase in height on the five main Waste Rock Disposal Areas taking into consideration VAC, Visual Sensitivity, Visual Receptors and Visual Exposure.	2	4	1	1	2	2	20	L	Low	Negative	Waste Rock Deposition Strategy allowing for: 1) Proper benching as to promote easier rehabilitation and vegetation cover to ease visual intrusion and promote visual absorption capacity. 2) Deposition Strategy that takes into consideration end-of Life of Mine and end land-use management. 3) Benching that allows for proper stormwater management on side slopes of the Waste Rock Disposal Facilities that promotes rehabilitation and vegetation cover and reduce risk of erosion and gully formation. 4) The implementation of air quality mitigation measures as to reduce fugitive dust generation and possible additional visual intrusion thereof.	2	4	1	1	2	2	20	L

Table 5-4: Closure Phase Visual Impact Assessment and Mitigation Measures

POTENTIAL ENVIRONMENTAL IMPACT	ACTIVITY/STRUCTURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								Cumulative	Status	RECOMMENDED MITIGATION MEASURES/ REMARKS	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
		M	D	S	I	R	P	TOTAL	SP				M	D	S	I	R	P	TOTAL	SP
VISUAL IMPACT ASSESSMENT																				
Visual Impact on visual receptors	The visual impact of the final five main Waste Rock Disposal Areas to remain with closure while taking into consideration VAC, Visual Sensitivity, Visual Receptors and Visual Exposure	10	5	2	1	2	5	100	H	High	Negative	Waste Rock Closure Strategy to allow for: 1) Promote rehabilitation vegetation cover.	10	5	2	1	2	5	100	H

6 CONCLUSION AND RECOMMENDATIONS

The initial establishment of the Mogalakwena Mine operations and its associated infrastructure has already altered the visual landscape of the area. The highly sensitive receptors that surround the mining operation have already been visually impacted upon and the sense of place drastically altered due to the initial establishment of infrastructure that is not congruent to that of the visual backdrop.

The increase in the five main Waste Rock Disposal Areas will not contribute to a significantly additional impact as this increase in height only will be barely noticeable to the visual perception of the visual receptors.

7 REFERENCES

Mogalakwena Local Municipality, 2020/21. Integrated Development Plan review. http://www.mogalakwena.gov.za/mogalakwena-admin/pages/sites/mogalakwena/documents/idp/Draft%20IDP%202020_21%20Mogalakwena20200608.pdf. Date of access: 20 May 2022.

Mogalakwena Local Municipality, 2021/22. Draft Integrated Development Plan review. http://www.mogalakwena.gov.za/mogalakwena-admin/pages/sites/mogalakwena/documents/idp/2021_22_Draft_IDP.pdf. Date of access: 20 May 2022.

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Oberholzer, B. 2005. Guideline for involving visual & aesthetic specialists in EIA processes: Edition 1. CSIR Report No ENV-S-C 2005 053 F. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs & Development Planning, Cape Town. https://www.westerncape.gov.za/text/2005/4/deadp_visual_guideline_draft_15april05.pdf . Date of access: 20 May 2022.

WRD01 (a)

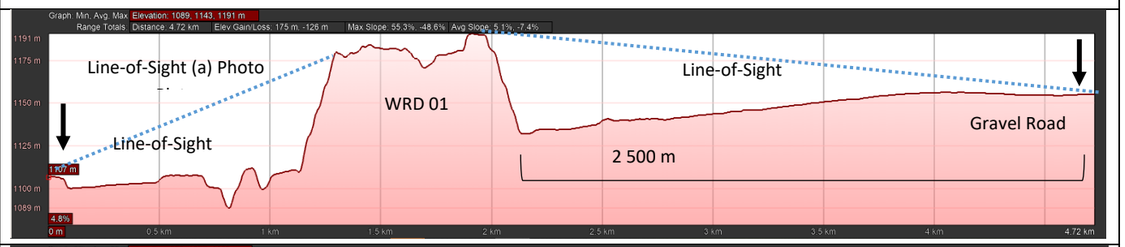
Line-of-Sight Analysis 1

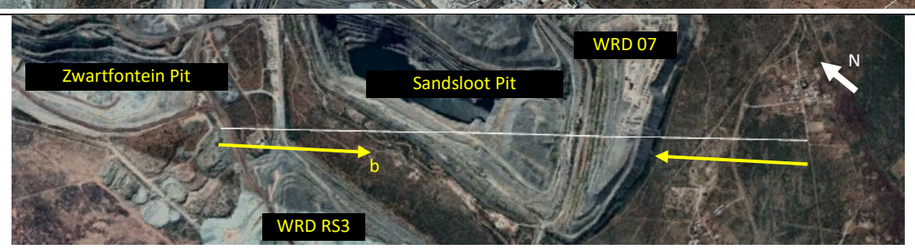
Coordinates: 24° 0'7.00"S: 28°54'17.00"E

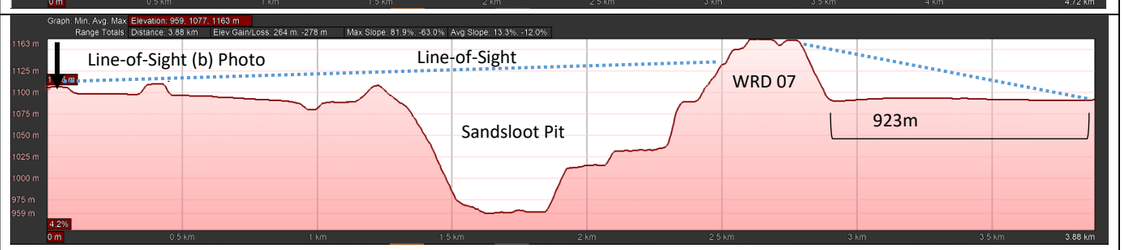
Images taken looking south and south east

WRD 07 (b)

WRD RS3 (c)







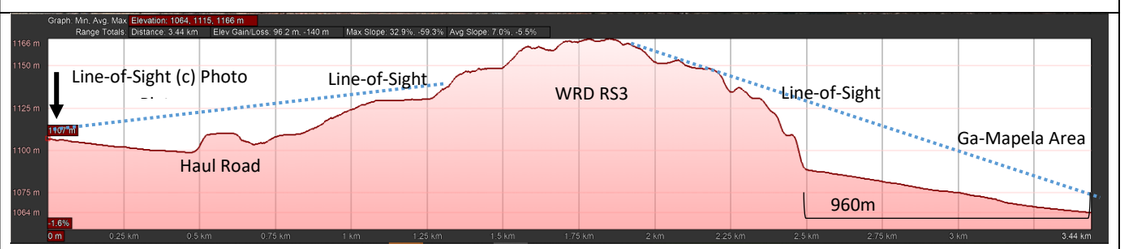
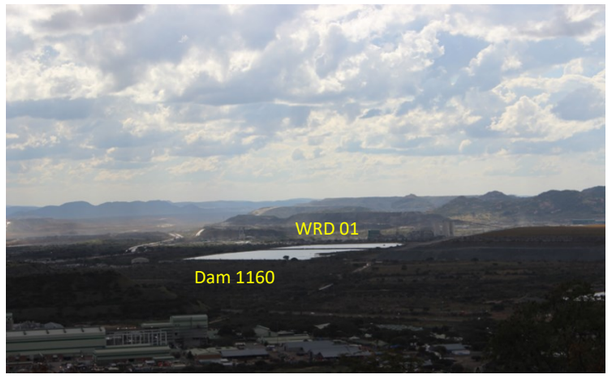
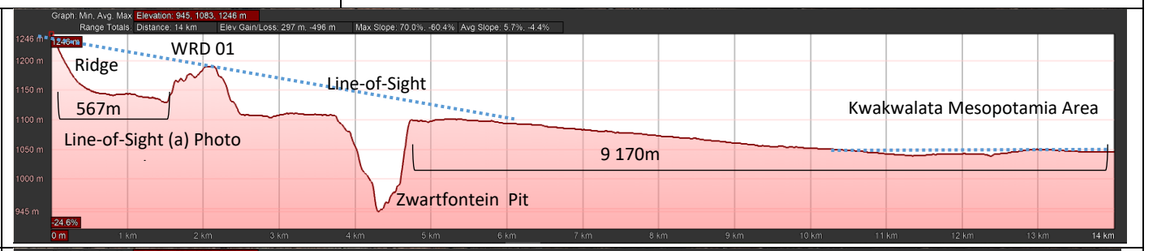


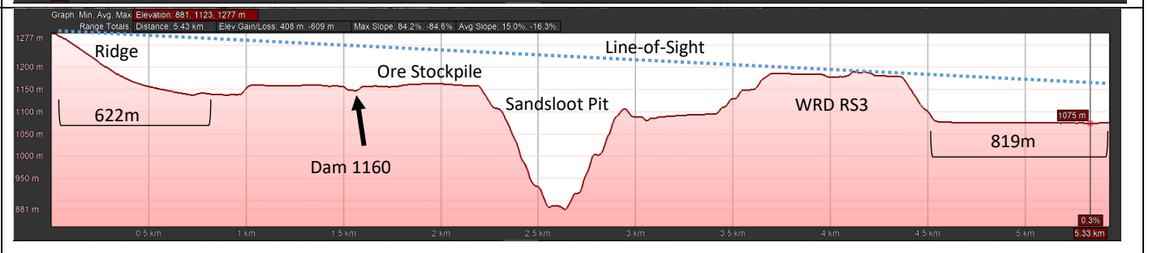
Figure 7-1: Line-of-Sight Analysis 1

WRD 01 (a)



WRD RS3 (b)





Line-of-Sight – Analysis 2

Coordinates:

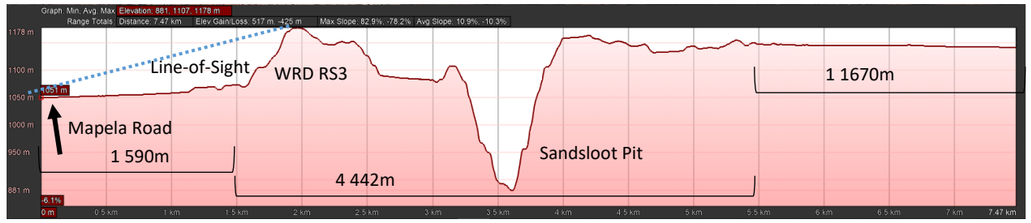
24° 1'2.03"S

28°56'6.83"E

Images taken looking north-west and west

Figure 7-2: Line-of-Sight Analysis 2

WRD RS3



Viewshed (a) Photo Plate

Figure 7-3: Line-of-Sight Analysis 3

WRD RS3

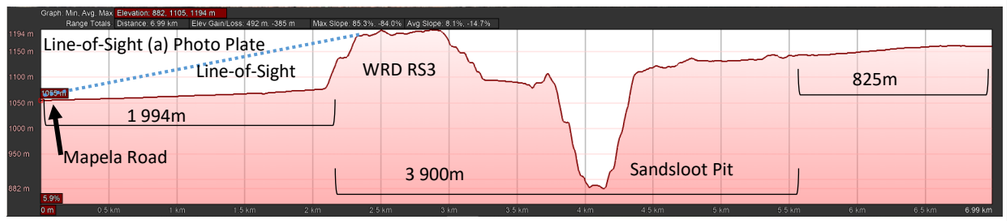


Figure 7-4: Line-of-Sight Analysis 4

Line-of-Sight Analysis 5

Coordinates:

23°58'9.30"S
28°50'55.47"E
Images taken looking east

WRD East

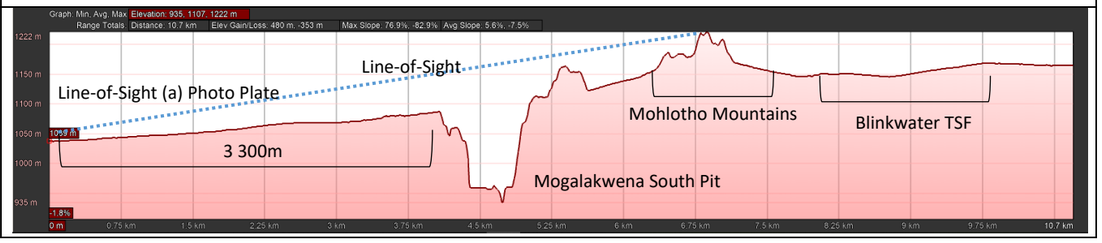
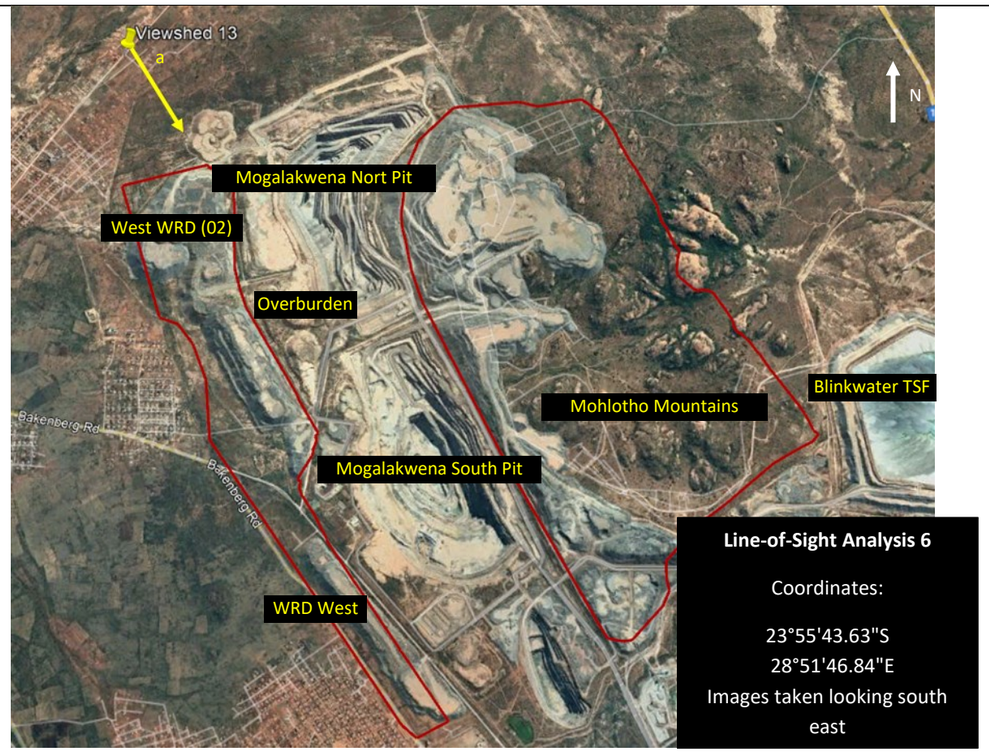


Figure 7-5: Line-of-Sight Analysis 5



WRD West

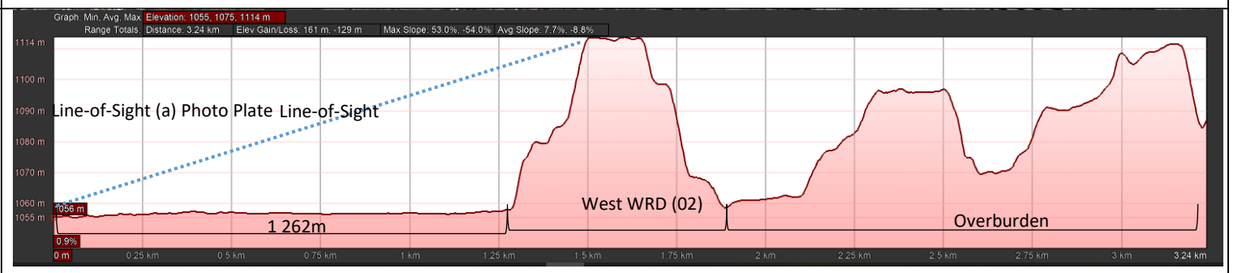
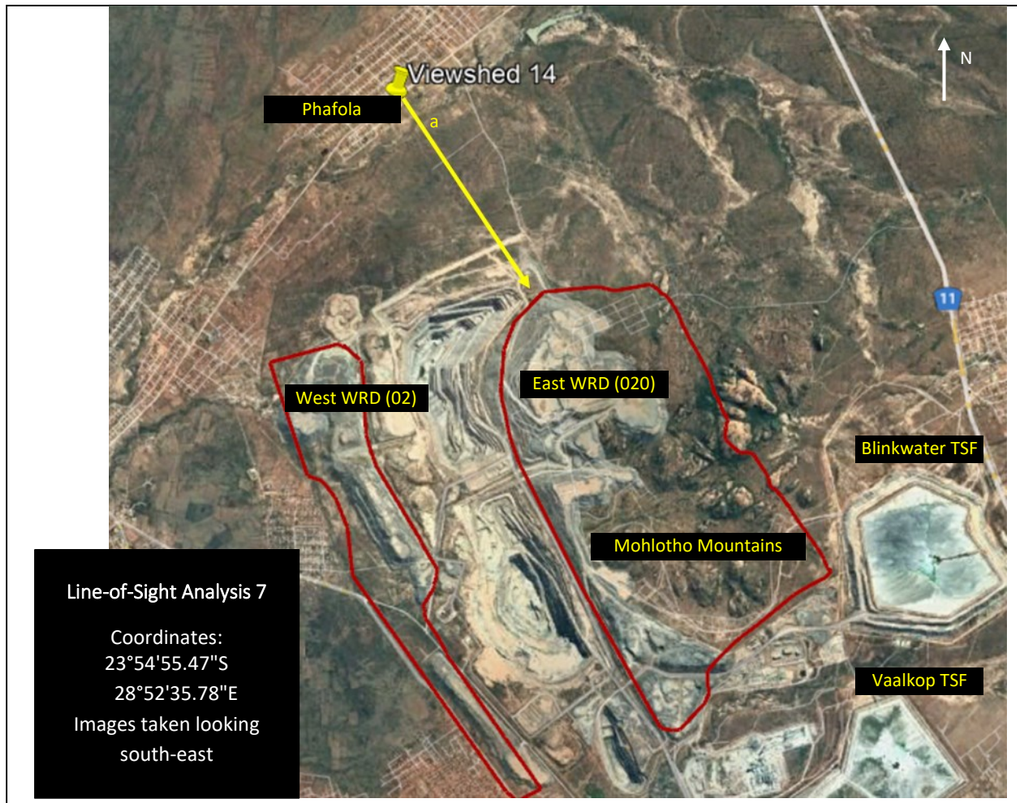


Figure 7-6: Line-of-Sight Analysis 6



WRD East

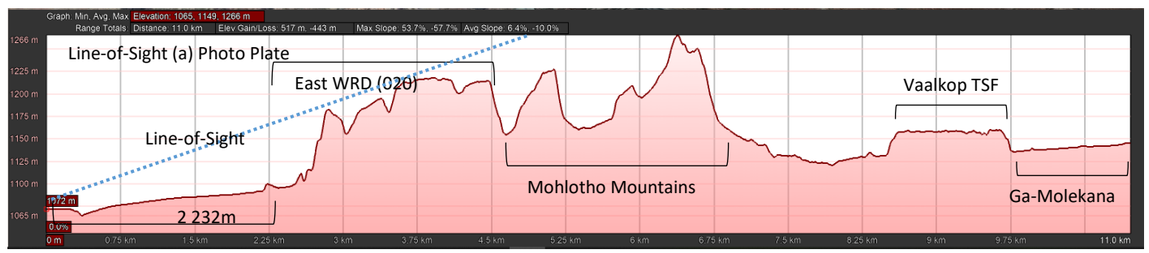
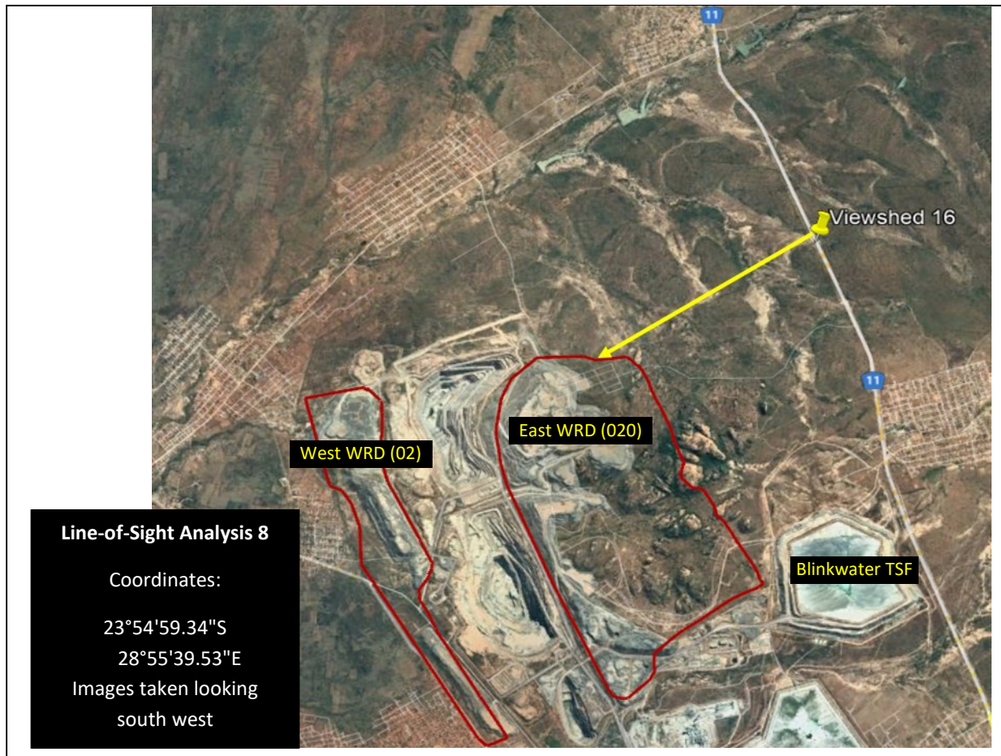


Figure 7-7: Line-of-Sight Analysis 7



WRD East

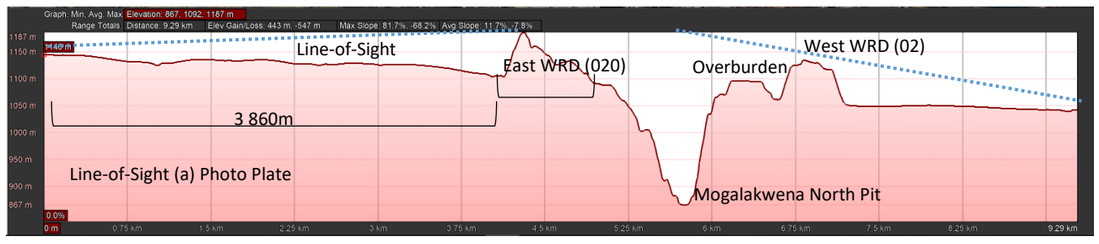


Figure 7-8: Line-of-Sight Analysis 8