ENVIRONMENTAL & ENGINEERING

REPORT

NNDANGANENI COAL

VISUAL IMPACT ASSESSMENT (VIA)

REPORT REF: 22-1732

NNDANGANENI COLLIERY EXPANSION - MPUMALANGA PROVINCE

04 November 2022

VERSION AA - Draft

Updated- 4/11/2022

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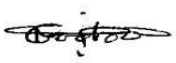
AA – draft	04/11/2022	Nakéla Naidoo		First draft for review / comments
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DISCLAIMER:

EXECUTIVE SUMMARY

Nndanganeni Coal is planning to expand its existing void around the northern grootpan on its existing Mining Right, 10134 MR, located approximately 20 kilometres southeast of Middleburg within the Steve Tshwete Local Municipality, which forms part of the Nkangala District Municipality, in the Mpumalanga Province of South Africa. The identified resources will be mined via box cut opencast mining with a roll over rehabilitation sequence. Clean and dirty water separation systems and access/haulage roads will also be required. The proposed opencast expansion and associated activities may have adverse effects on the visual characteristics of the surrounding environment therefore, Eco Elementum (Pty) Ltd were appointed to conduct a Visual Impact Assessment for the proposed project.

The scope of work for this VIA included the following:

1. Describing the existing visual characteristics of the proposed site and its environment;
2. A viewshed and viewing distance determination using Geographic Information System analysis up to 15 Kilometres from the proposed structures;
3. A visual exposure analysis for each project;
4. Identifying and rating of potential visual impacts; and
5. Recommending mitigation measures for the identified visual impacts.

SUMMARY OF FINDINGS

The proposed opencast pit expansion is expected to create low negative visual impacts on the surrounding sensitive receptors during the pre-construction and construction phases of the activity. Low to medium negative visual impacts on the surrounding sensitive receptors are expected during the operational, decommissioning, rehabilitation, and post-closure phases. However, these identified impacts can be reduced to a low negative impact provided that the recommended mitigation measures are implemented. The low impacts are mainly due to the ability of the existing land uses within the surrounding area being able to visually absorb the proposed mining activity. Furthermore, the proposed opencast pit expansion is expected to increase the cumulative visual impact on the surrounding sensitive receptors. It is important to note that the identified sensitive receptors expected to experience some level of visual impact, as determined by the visual exposure analysis, are currently exposed to and familiar with the existing visual landscape i.e., the existing mining, industrial and agricultural activities. The proposed activity is also expected not to contrast with the areas existing sense of place. However, notwithstanding these factors and notwithstanding the study area's ability to visually absorb the proposed activity, it is still recommended that the recommended mitigation measures are implemented to help reduce potential cumulative visual impacts on the surrounding sensitive receptors.

Overall, considering the results of the VIA and from a visual perspective, the proposed opencast pit expansion may proceed provided that the recommended mitigation measures are implemented.

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DEFINITION OF TERMS

Assessment	A systematic, independent and documented review of operations and practises to ensure that relevant requirements are met.
Construction	The time period that corresponds to any event, process, or activity that occurs during the Construction phase (e.g., building of site, buildings, and processing units) of the proposed project. This phase terminates when the project goes into full operation or use.
Critical viewpoints	Important points from where viewers will be able to view the proposed or actual development and from where the development may be significant.
Cumulative Impacts	The summation of the effects that result from changes caused by a development in conjunction with the other past, present or reasonably foreseen actions (The landscape Institute, Institute of Environmental Management & Assessment. 2002).
Decommissioning	To remove or retire (a mine, etc.) from active service.
Environmental Component	An attribute or constituent of the environment (i.e., air quality; marine water; waste management; geology, seismicity, soil, and groundwater; marine ecology; terrestrial ecology, noise, traffic, socio-economic) that may be impacted by the proposed project.
Environmental Impact	A positive or negative condition that occurs to an environmental component as a result of the activity of a project or facility. This impact can be directly or indirectly caused by the project's different phases (i.e., Construction, Operation, and Decommissioning).
Field of view	The field of view is the angular extent of the observable world that is seen at any given moment. Humans have an almost 180º forward-facing field of view. Note that human stereoscopic (binocular) vision only covers 140º of the field of view in humans; the remaining peripheral 40º have no binocular vision due to the lack of overlap of the images of the eyes. The lower the focal length of a lens, the wider the field of view.
Landscape Integrity	Landscape integrity are visual qualities, which enhance the visual and aesthetic experience of the area.
Mitigation	In the context of Visual Impact Assessments - Any action taken or not taken in order to avoid, minimise, rectify, reduce, eliminate, or compensate for actual or potential adverse visual impacts.
Operation	The time period that corresponds to any event, process, or activity that occurs during the Operation (i.e., fully functioning) phase of the proposed project or development. (The Operation phase follows the Construction phase, and then terminates when the project or development goes into the Decommissioning phase).
Scenic value	Degree of visual quality resulting from the level of variety, harmony and contrast among the basic visual elements.
Sense of place	The character of a place, whether natural, rural or urban, it is allocated to a place or area through cognitive experience by the user.
Viewshed	The theoretical area within which an observer is likely to see a specific structure or area in the landscape. It is

generated from a digital terrain model (DTM) made up of 3D contour lines of the landform. Intervening objects, structures or vegetation will modify the view shed at ground level.

Visual Absorption Capacity The ability of elements of the landscape to "absorb" or mitigate the visibility of an element in the landscape. Visual absorption capacity is based on factors such as vegetation height (the greater the height of vegetation, the higher the absorption capacity), structures (the larger and higher the intervening structures, the higher the absorption capacity) and topographical variation (rolling topography presents opportunities to hide an element in the landscape and therefore increases the absorption capacity).

Visual character The overall impression of a landscape created by the order of the patterns composing it; the visual elements of these patterns are the form, line, colour and texture of the landscape's components. Their interrelationships are described in terms of dominance, scale, diversity and continuity. This characteristic is also associated with land use.

Visual Exposure Visual exposure is based on distance from the project to selected viewpoints. Visual exposure or visual impact tends to diminish exponentially with distance. The visibility or visual exposure of any structure or activity is the point of departure for the visual impact assessment. It stands to reason that if the proposed mine activities and associated infrastructure were not visible, no visual impact would occur. Visual exposure is determined by the Viewshed or the view catchment being the area within which the proposed development will be visible.

Visual sensitivity Visual sensitivity can be determined by several factors in combination, such as prominent topographic or other scenic features, including high points, steep slopes and axial vistas.

ACRONYMS AND ABBREVIATIONS

AAP	Anglo American Platinum
DTM	Digital Terrain Model
DSM	Digital Surface Model
GIS	Geographic Information System
Km	Kilometre
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMPr	Environmental Management Programme
I&AP's	Interested and Affected Parties
Mamsl	Meters Above Mean Sea Level
MR	Mining Right
MRA	Mining Right Area
ROM	Run of Mine
VAC	Visual Absorption Capacity
VIA	Visual Impact Assessment

PROJECT INFORMATION

Table 1-1: Applicant Details

Name of Applicant:	Nndanganeni Coal
Contact Person:	-
Contact Number:	-
Email:	-
Postal Address:	-
Physical Address:	-
File Reference Number DMR:	-

Table 1-2: EAP Details

EAP Company:	Eco Elementum (Pty) Ltd
Company Reg. No.:	2012/021578/07
Physical Address:	361 Oberon Avenue, Glenfield Office Park, Faerie Glen, Pretoria, 0081
Postal Address:	Postnet Suite #252, Private Bag X025. Lynnwood Ridge, Pretoria, 0040
Contact Person:	Lian Roos
Contact Number:	012 807 0383
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Table 1-3: Specialist Details

Specialist Company:	Eco Elementum (Pty) Ltd
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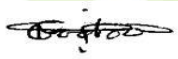
Physical Address:	361 Oberon Avenue, Glenfield Office Park, Faerie Glen, Pretoria, 0081
Postal Address:	Postnet Suite #252, Private Bag X025. Lynnwood Ridge, Pretoria, 0040
Contact Person:	Nakéla Naidoo
Contact Number:	012 807 0383
Email:	info@ecoe.co.za
Website:	www.ecoe.co.za

SPECIALIST DECLARATION OF INDEPENDENCE

In support of an application in terms of the National Environmental Management Act 107 of 1998 (GNR983, GNR984 and GNR985, GG38282 of 4 December 2014 ("Listed Activities") that will require an environmental authorisation if triggered. As amended by GNR 327, GNR 325 and GNR 324.

I, **Nakéla Naidoo** as specialist, has been appointed in terms of regulation 12(1) or 12(2), and can confirm that I shall —

a. Be independent;
b. have expertise in undertaking specialist work as required, including knowledge of the Act, these Regulations and any guidelines that have relevance to the proposed activity;
c. ensure compliance with these Regulations;
d. 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 application'
e. take into account, to the extent possible, the matters referred to in regulation 18 when preparing the application and any report, plan or document relating to the application;
f. disclose to the proponent or applicant, registered interested and affected parties to the proponent or applicant, registered interested and affected parties and the competent authority all material information in the possession of the EAP and, where applicable, the specialist, that reasonably has or may have the potential of influencing –
g. any decision to be taken with respect to the application by the competent authority in terms of these Regulations; or
h. the objectivity of any report, plan or document to be prepared by the EAP or specialist, in terms of these Regulations for submission to the competent authority; and
i. Unless access to that information is protected by law, in which case it must be indicated that such protected information exists and is only provided to the competent authority.

Nakéla Naidoo	
Name and Surname	Signature
04/11/2022	**Sunninghill**
Date	Signed at

1. INTRODUCTION

Nndanganeni Coal (the applicant) is planning to expand its existing void around the northern grootpan on its existing Mining Right (MR) 10134 MR, located approximately 20 kilometres (km) southeast of Middleburg within the Steve Tshwete Local Municipality, which forms part of the Nkangala District Municipality, in the Mpumalanga Province of South Africa (SA) (Refer to Figure 1.1 below). The identified resources will be mined via box cut opencast mining with a roll over rehabilitation sequence. Clean and dirty water separation systems and access/haulage roads will also be required. The proposed opencast expansion and associated activities may have adverse effects on the visual characteristics of the surrounding environment therefore, Eco Elementum (Pty) Ltd were appointed to conduct a Visual Impact Assessment (VIA) for the proposed project.

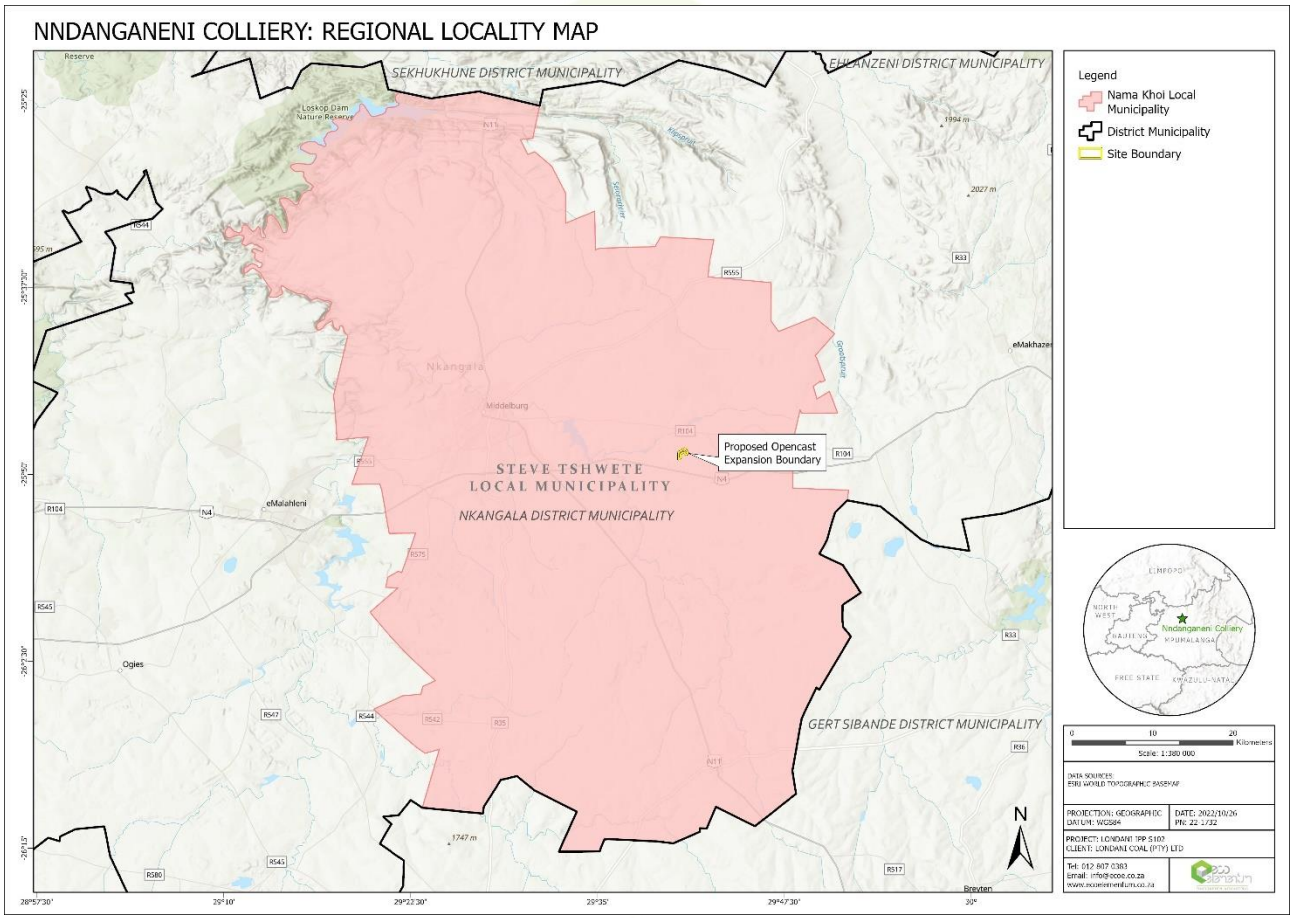


Figure 1.1: Regional Locality Map

2. SCOPE OF WORK

The scope of work for this VIA will include the following:

1. Describing the existing visual characteristics of the proposed site and its environment;
2. Viewshed and viewing distance determination using Geographic Information System (GIS) analysis up to 15 Kilometres (km) from the proposed structures.
3. Visual Exposure Analysis comprising the following aspects:
   - Terrain Slope;
     - Slope angle is determined from the Digital Surface Model (DSM) and the location of the proposed structures given a ranking depending on the steepness of the slope.
   - Aspect of structure location;
     - Aspect of the slope where the structures are to be built, are calculated from the DSM and given a ranking determined by the sun angle.
   - Landforms;
     - Landform of the location of the proposed structures are determined from the DSM and ranked according to the type of landform. Structures built on certain landforms, e.g. ridges, will be more visible than structures built in valleys.
   - Slope Position of structure;
     - Using GIS analysis, the position of the proposed structure is determined and ranked according to the position on the slope the structure is to be built.
   - Relative elevation of structure;
     - Using the DSM, the elevation of the proposed structures relative to the surrounding elevation is determined and ranked according to the difference in height of the surrounding areas.
   - Terrain Ruggedness;
     - The terrain ruggedness is determined from the DSM and given a ranking based on the homogeneousness of the terrain.
   - Viewer Sensitivity;
     - The viewer sensitivity ranking of the surrounding areas is determined using various land cover and land use datasets and ranked according to the sensitivity of the related structures to the environment.
   - Overall Visual Impact;
     - Combing all the above datasets, a final visual impact of the proposed structures is calculated.

4. Impact Identification and Ratings
5. Mitigation of Identified Visual Impacts

3. PROJECT DESCRIPTION

The identified resources will be mined via box cut opencast mining with a roll over rehabilitation sequence. Clean and dirty water separation systems and access/haulage roads will also be required.

From the above activities, only the proposed infrastructure expected to create the highest visual impact on the surrounding area was included in the visual analysis. The heights of these infrastructure are indicated in Table 3-1 below.

Table 3-1: Assumed heights of the relevant proposed infrastructure

Proposed Infrastructure	Assumed Height (m)
Opencast Pit	3

The proposed site layout is indicated in Figure 3.1 below.

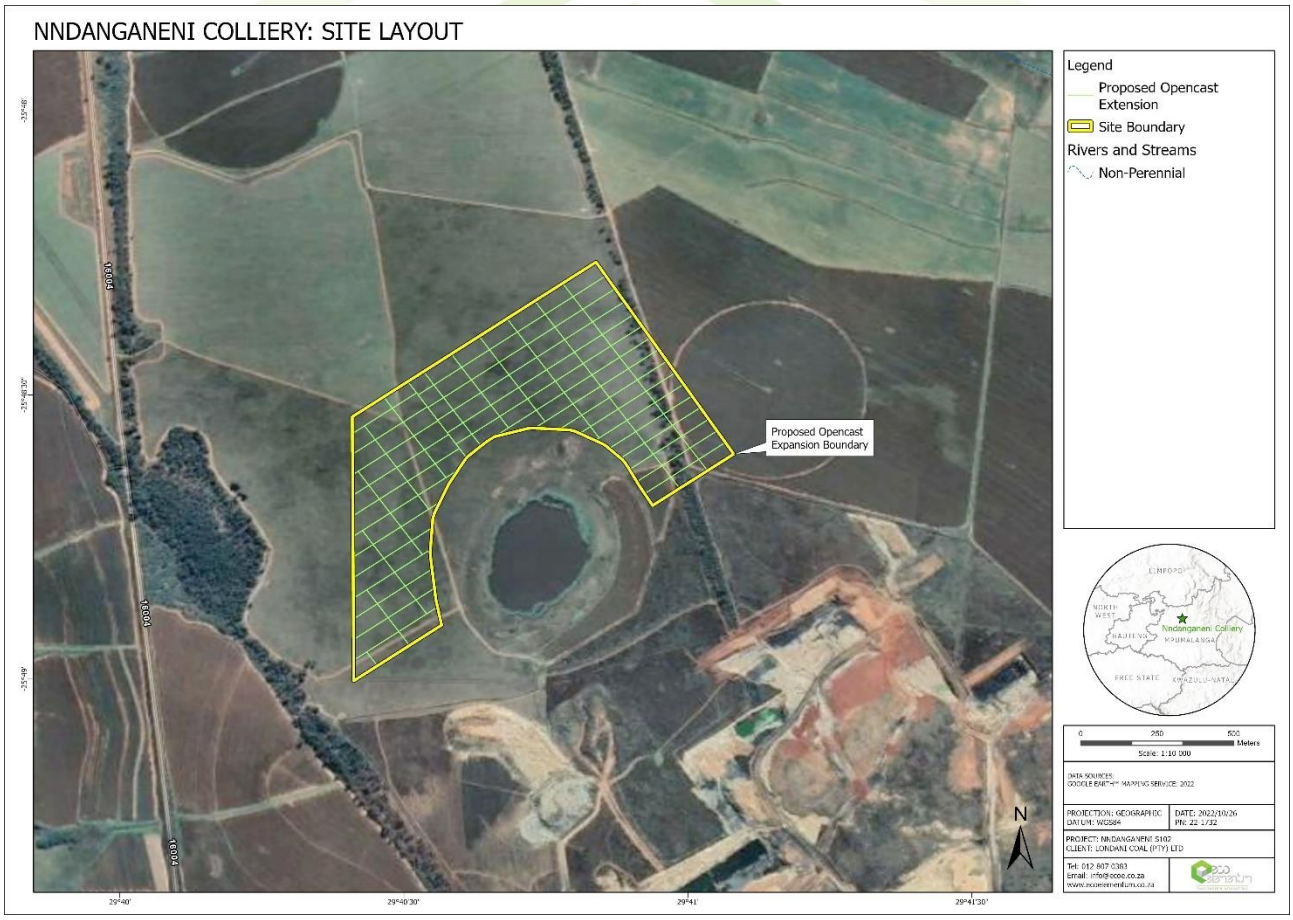


Figure 3.1: Site Layout

4. DESCRIPTION OF THE AFFECTED AREA AND ENVIRONMENT

This section describes the status of the receiving environment and will serve as a baseline for the assessment of the proposed mining activity. A site visit was not conducted for the assessment due to time constraints. However, various data sources are referenced in the desktop analysis of the receiving environment.

4.1 TOPOGRAPHY

The topography of the area can be described as a gently undulating landscape. The surface elevation varies between 1 468 meters above mean sea level (mamsl) and 1 769 mamsl within 15 km of the proposed mining area. Figure 4.1 indicates the regional topography of the study area.

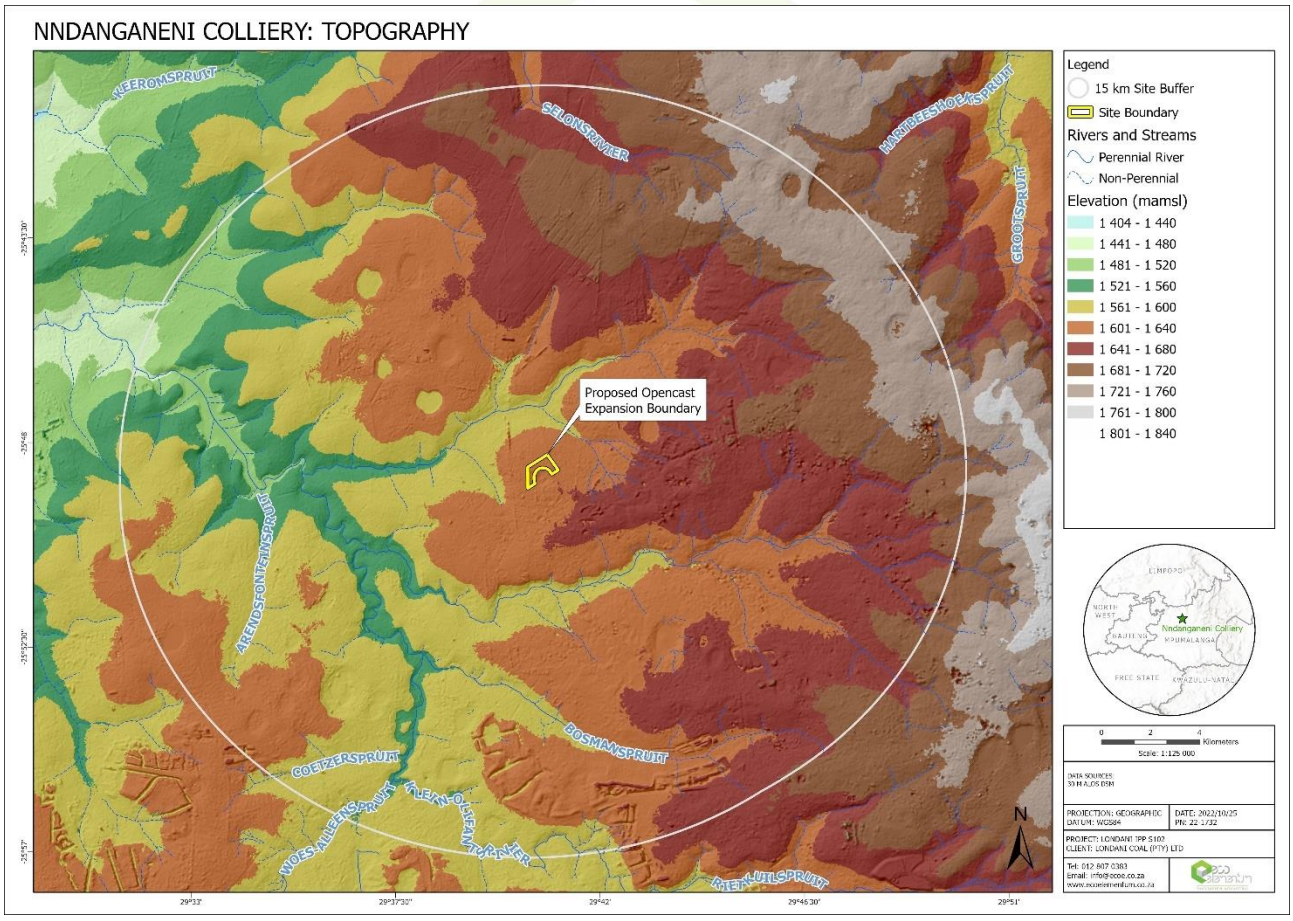


Figure 4.1: Regional Topography

4.2 VEGETATION

The Visual Absorption Capacity (VAC) is the capacity of the receiving environment to absorb the potential visual impact of the proposed infrastructure. The VAC is primarily a function of the surrounding vegetation, and will be high if the vegetation is tall, dense and continuous. Conversely, low growing, sparse and patchy vegetation will have a low VAC. Figure 4.2 below shows the 2018 national vegetation of the study area. The figure indicates that the proposed mining operations is situated within the Eastern Highveld Grassland and the Rand Highveld Grassland vegetation types. The Eastern Highveld Grassland vegetation type is characterised by slightly to moderately undulating plains, including some low hills and pan depressions (Mucina et al., 2006). The vegetation is short, dense grassland dominated by the highveld grass composition with small, scattered rocky outcrops with wiry, sour grasses and some woody species. Mucina et al (2006) describes the Rand Highveld Grassland vegetation type as a highly variable landscape with extensive sloping plains with a series of ridges slightly elevated over undulating surrounding plains. The vegetation is species-rich, wiry, sour grassland alternating with low, sour shrubland on rocky outcrops and steeper slopes (Mucina et al., 2006). Figure 4.3 and Figure 4.4 overleaf shows the respective vegetation types as shown by Mucina et al., (2006).

From the above descriptions of the vegetation types, it can be inferred that the surrounding vegetation of the area creates a low VAC for the proposed project. However, from a desktop analysis of the areas satellite imagery, it is important to note that the vegetation within the study area has been significantly disturbed by human activities.

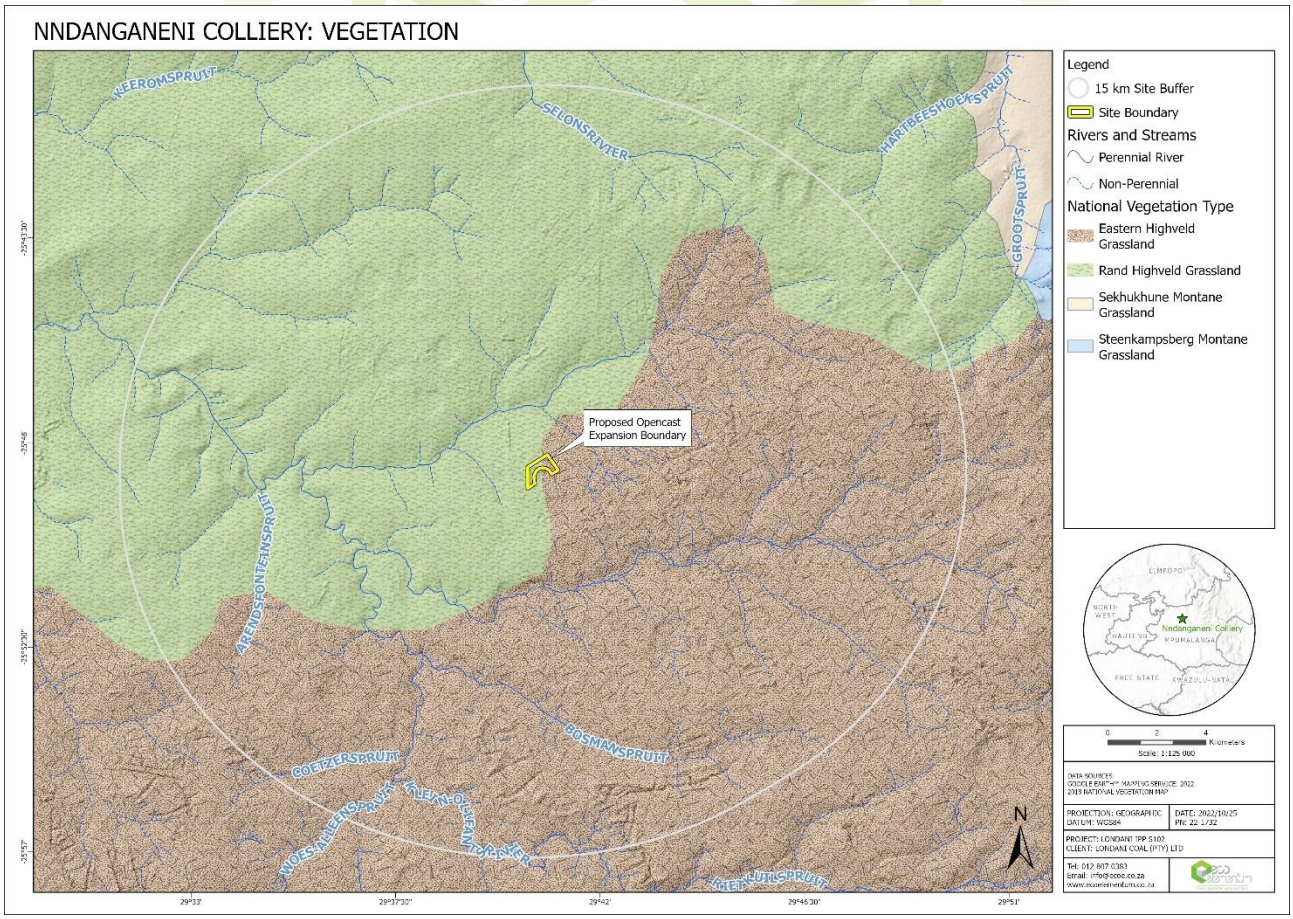


Figure 4.2: Vegetation

Figure 4.3: Eastern Highveld Grassland: Grasslands of the Warburton area (Mpumalanga) (Mucina et al., 2006; p400)

Figure 4.4: Rand Highveld Grassland: Grasslands south of Bronkhorstspruit (Mpumalanga) (Mucina et al., 2006; p399)

4.3 LANDCOVER

Figure 4.5 below indicates the surrounding landcover of the study area. The landcover type within 15 km of the proposed project consists mainly of existing agricultural and mining activities. Patches of fallow land/old fields and natural grassland are also present within the study area. The figure also indicates a few formal residential areas scattered throughout the study area. Overall, the existing landcover creates a high VAC for the study area due to the existing mining and agricultural activities dominating the area.

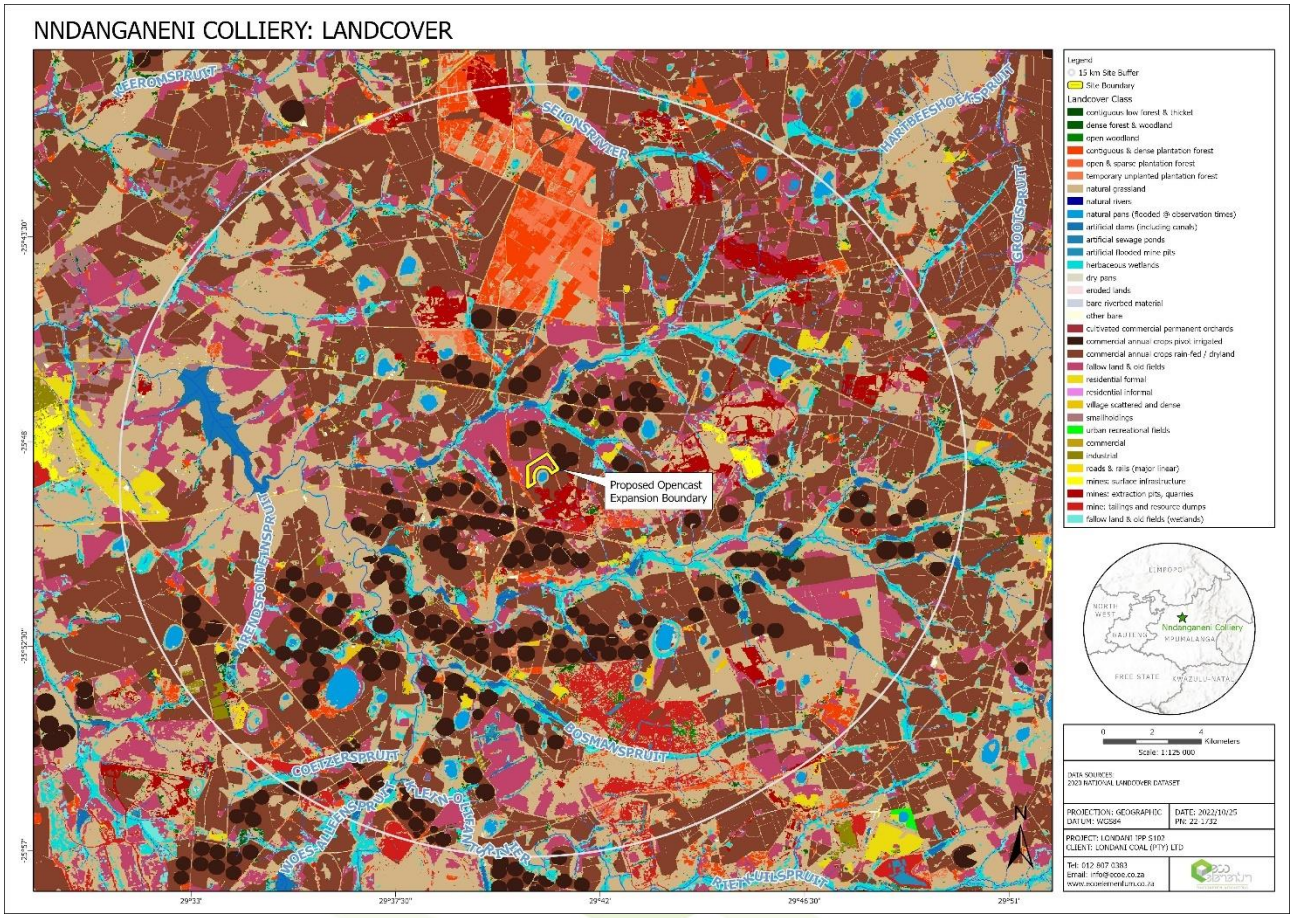


Figure 4.5: Landcover

4.4 SENSITIVE RECEPTORS

From a desktop study of satellite imagery and available national data, potential sensitive receptors were identified within 15 km of the proposed operations and are presented in Figure 4.6 below. Using satellite imagery, homesteads; schools; residential areas and recreational facilities were identified as potential sensitive receptors to the proposed project. It should be noted that the sensitive receptors in the area may differ from those identified as not all areas may have been identified from the imagery successfully

The users on the road networks surrounding the study area are also considered as sensitive receptors due to their potential momentary views of the proposed development. The identified road network includes the R104 main road, the N4 and N11 National Roads and several secondary roads which service the identified homesteads, schools, residential areas and recreational facilities.

The identified homesteads, schools, residential areas and recreational facilities are expected to experience higher levels of visual impacts due to their static views of the proposed development, as compared to travellers using the road networks who are expected to experience lower levels of visual impacts due to their momentary views of the proposed development. However, due to the low density of sensitive receptors, along with the sensitive receptors current exposure to existing agricultural, mining and industrial activities, the identified sensitive receptors are expected to have a low sensitivity towards the proposed opencast pit expansion. Figure 4.7 overleaf is an indication of some of the existing mining and industrial areas, within 15 km of the proposed site, in relation to the identified sensitive receptors. The existing mining and industrial areas were delineated using satellite imagery.

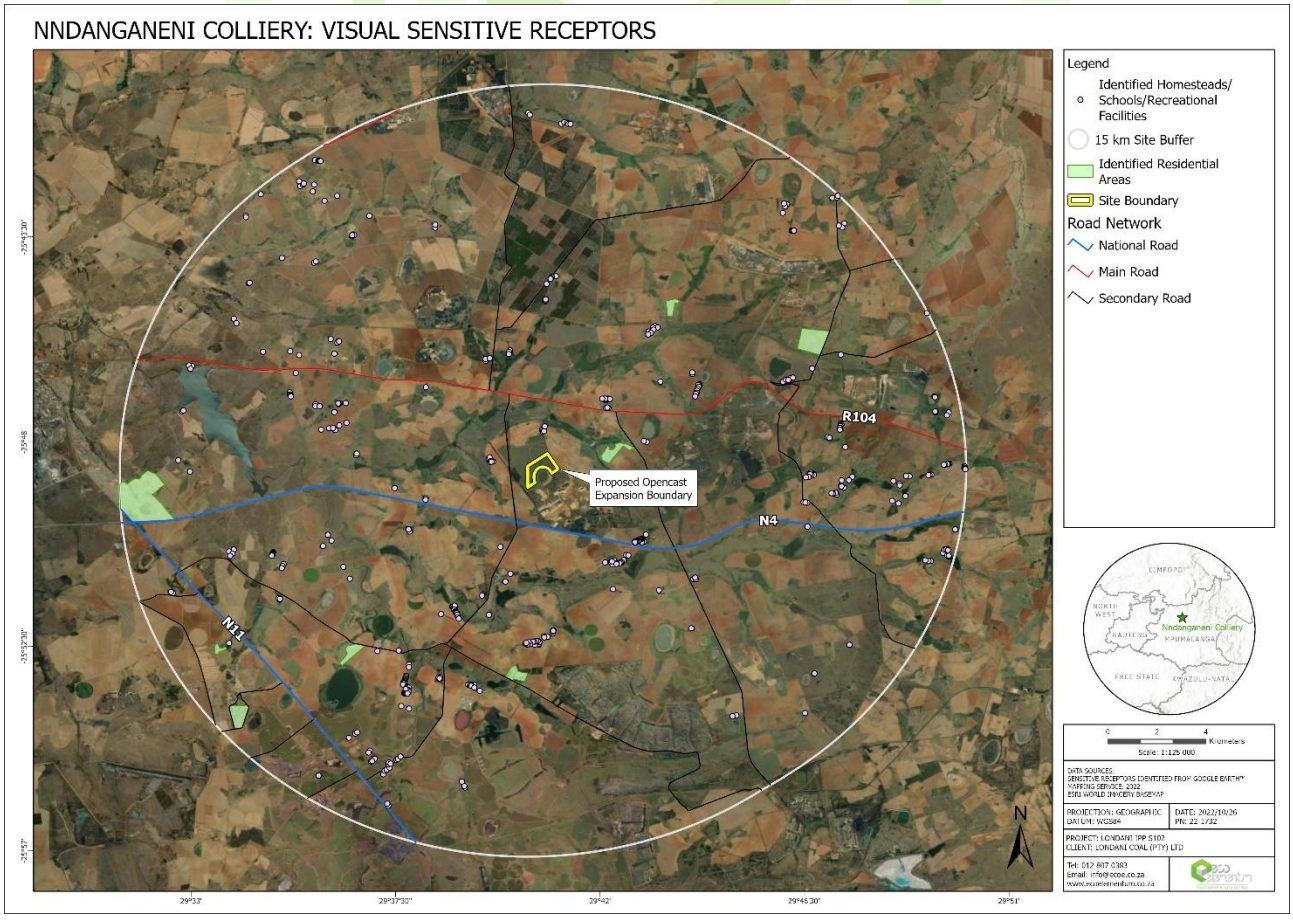


Figure 4.6: Identified Sensitive Receptors

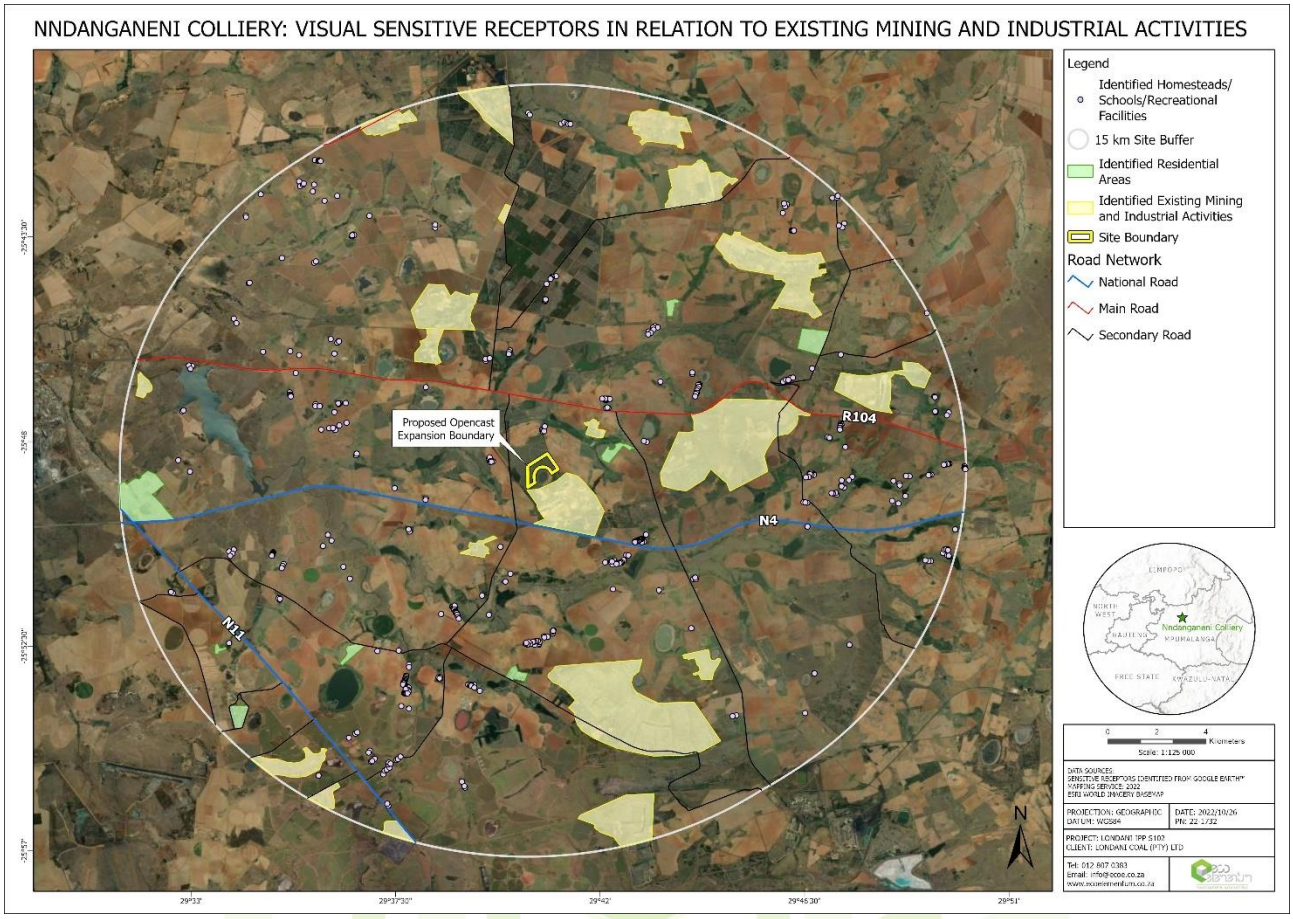


Figure 4.7: Sensitive Receptors in Relation to Existing Mining and Industrial Activities

4.5 Sense Of Place

The concept of "a Sense of Place" does not equate simply to the creation of picturesque landscapes or pretty buildings, but to recognize the importance of a sense of belonging. Embracing uniqueness, as opposed to standardization, attains quality of place. In terms of the natural environment, it requires the identification, a response to and the emphasis of the distinguishing features and characteristics of landscapes. Different natural landscapes suggest different responses. The areas current sense of place was extracted mainly from the Steve Tshwete Local Municipality 2022 – 2027 Integrated Development Plan (IDP).

The proposed site is located approximately 20 km southeast of the town of Middelburg, within the Steve Tshwete Local Municipality, which forms part of the Nkangala District Municipality. One of the most important features of the local municipality is the intersection between two national transport corridors, the N4 (Maputo Development Corridor) and the N11 (Middelburg/ Bethal/ Ermelo/ Richards Bay Corridor) (IDP, 2022 – 2027). The local municipality is home to several large industries such as Columbus Steel, Eskom, the Nkangala District Municipality's headquarters, and various government departments (IDP, 2022 – 2027).

The local municipality's contribution to the district economy was 34.4% in 2020, which made it the second largest economy in the district (IDP, 2022 – 2027). The municipality's dominant contribution was to Nkangala's agriculture and manufacturing industries and also contributes significantly in all of the other seven industries (IDP, 2022 – 2027). Furthermore, in 2020, the largest industries were mining, manufacturing, community services and finance, which together contributed 72.9% to the Steve Tshwete's economy (IDP, 2022 – 2027) Steve Tshwete holds comparative advantages in agriculture, mining, manufacturing, and utilities (IDP, 2022 – 2027).

The 2022 – 2027 IDP also indicates that the most prominent development directives emerging from the various developments policy documents, which should inform the development of the Steve Tshwete Municipal Spatial Development Framework (MSDF) includes the Mpumalanga Vision 2030, which states that spatial rationale for future development of Mpumalanga should centre around eight key drivers: nodal development, business, commercial and industrial development, tourism, forestry, agriculture and mining. Another important directive applicable to local municipality is to achieve a sustainable equilibrium between urbanisation, biodiversity conservation, industry, mining, agriculture, forestry, and tourism-related activities within the municipality, by way of effective management of land uses and environmental resources (IDP, 2022 – 2027). This directive should be adhered to should the proposed project go ahead.

The study areas sense of place further interlinks with the level of visual intrusion expected from the proposed project. Visual intrusion refers to the level of compatibility of the project with the particular qualities of the area, which is related to the idea of context and maintaining integrity of the landscape (Oberholzer, 2005). Considering the above description of the study areas sense of place, the proposed project is expected to create a low level of visual intrusion where the proposed expansion is expected to cause minimal change or blends in well with the surroundings. (Oberholzer, 2005).

Overall, the sense of place of the current study area can be characterized by the predominant mining, industrial and agricultural activities. The proposed mining operation is therefore not expected to significantly detract from the existing sense of place.

5. METHODOLOGY

The following methodology was followed to quantify the potential visual impacts of the proposed project.

1. Viewshed and viewing distance was modelled using GIS analysis up to 15 km from the proposed structures utilizing ArcGIS Pro 2.9.3 and Spatial Analyst Extension.

2. In order to model the decreasing visual impact of the structures, concentric radii zones of 1 km to 15 km from the proposed mine activities were superimposed on the viewshed to determine the level of visual exposure. The closest zone to the proposed structures indicates the area of most significant impact, and the zone further than 10 km from the structures indicates the area of least impact. The visual ratings of the zones have been defined as follows:
   - < 1 km (very high);
   - 1 - 2 km (high);
   - 2 - 5 km (moderate);
   - 5 - 10 km (low);
   - 10 - 15 km (very low); and
   - > 15 km (insignificant).

3. Visual exposure analyses were conducted which included the following parameters:

– Terrain Slope
  - Slope angle was determined from the Digital Surface Model (DSM) and the location of the proposed structures given a ranking depending on the steepness of the slope;
  - Structures built on steep slopes are assumed to be more visible and exposed than those on flat surfaces.

– Aspect of structure location
  - Aspect of the slope where the structures are to be built, were calculated from the DSM and given a ranking determined by the sun angle.
  - Structures on flat surface are illuminated by the sun the whole day and thus visible from all directions. In the southern hemisphere structures on north facing slopes are less visible from the south, structures on east and west facing slopes are only illuminated during half of the day thus less visible where structures on the southern slopes are mostly in the shade.

– Landforms
  - Landform of the location of the proposed structures were determined from the DSM and ranked according to the type of landform. Structures built on certain landforms, e.g. ridges, will be more visible than structures built in valleys.

– Slope Position of structure
  - Using GIS analysis, the position of the proposed structures were determined and ranked according to the position on the slope the structure are to be built.

– Relative elevation of structures
  - Using the DSM, the elevation of the proposed structure relative to the surrounding elevation is determined and ranked according to the difference in height of the surrounding areas. Structures built on higher ground are more visible than those built in low lying areas.

- Terrain Ruggedness
  - The terrain ruggedness is determined from the DSM and given a ranking based on the homogeneousness of the terrain. Rugged terrain has a tendency to increase the visual absorption characteristics of the terrain.
- Visual Absorption Capacity (VAC)
  - To simulate the VAC of the landscape, land cover data of the area was assigned a VAC ranking. The visual exposure results and VAC rankings of the landscape were use in an algorithm to determine a quantitative visual exposure for each sensitive receptor.

- Overall Visual Impact
  - Combing all the above datasets, a final visual exposure ranking was determined for the identified sensitive receptor areas.

5.1 Assumptions

- The core study area can be defined as an area with a radius of not more than 10 km from the structures and a total study area with a radius of 15 km from the structures. This is because the visual impact of structures beyond a distance of 10 km would be so reduced that it can be considered negligible even if there is direct line of sight.
- It is assumed that there are no alternative locations for the structures and that the visual assessment, therefore, assessed only the proposed site.
- The assessment was undertaken during the planning stage of the project and is based on the information available at that time.
- The heights were generalized for the visual assessment.
- Only the infrastructure expected to cause the most visual impact was included in the visual analysis.

5.2 Limitations

- Visual perception is by nature a subjective experience, as it is influenced largely by personal values. For instance, what one viewer experiences as an intrusion in the landscape, another may regard as positive. Such differences in perception are greatly influenced by culture, education and socio-economic background. A degree of subjectivity is therefore bound to influence the rating of visual impacts. In order to limit such subjectivity, a combination of quantitative and qualitative assessment methods were used. A high degree of reliance has been placed on GIS-based analysis viewsheds, visibility analyses, and on making transparent assumptions and value judgements, where such assumptions or judgements are necessary.
- The viewshed generated in GIS cannot be guaranteed as 100% accurate. Some viewpoints, which are indicated on the viewshed as being inside of the viewshed, can be outside of the viewshed. This is due to the change of the natural environment by surrounding activities as well as natural vegetation that play a significant role and can have a positive or negative influence on the viewshed.
- The modelling of visibility is merely conceptual. Being based on the ALOS DSM and land cover data, it does not fully take into account the real-world effect of buildings, trees etc. that could shield the structures from being visible or could have changed over time. The viewshed analysis therefore signifies a worst-case scenario.

5.3 Legal Requirements

There are no specific legal requirements for visual impact assessment in South Africa. Visual impacts are, however required to be assessed by implication when the provisions of relevant acts governing environmental impacts management are considered.

6. CRITERIA USED IN THE ASSESSMENT OF VISUAL IMPACTS

6.1 View Points And View Corridors

Viewpoints have been selected based on prominent viewing positions in the area. The selected viewpoints and view corridors were used as a basis for determining potential visual ability and visual impacts of the proposed structures.

6.2 Visual Exposure

Visual exposure is based on distance from the project to selected viewpoints. Visual exposure or visual impact tends to diminish exponentially with distance. The visibility or visual exposure of any structure or activity is the point of departure for the visual impact assessment. It stands to reason that if the proposed structures were not visible, no visual impact would occur. Visual exposure was determined by the following variables:

- Slope angle,
- Aspect of slope,
- Landforms,
- Slope Position of structure,
- Relative Elevation of structure; and
- Terrain Ruggedness.

6.3 Landscape Integrity

Landscape integrity are visual qualities represented by the following qualities, which enhance the visual and aesthetic experience of the area:

- Intactness of the natural and cultural landscape;
- Lack of visual intrusions or incompatible structures; and
- Presence of a ‘sense of place’.

6.4 Determine The Visual Absorption Capacity

Topography and built forms have the capacity to ‘absorb’ visual impact. The digital elevation model utilised in the calculation of the visual exposure of the facility does not incorporate potential visual absorption capacity. It is therefore necessary to determine the VAC by means of the interpretation of the vegetation cover, landcover, topography and structures. Land cover was used in the ranking of the VAC for this study.

7. VIEWSHED AND VISUAL EXPOSURE RESULTS

Figure 7.1 to Figure 7.7 shows the cumulative viewshed results for the proposed project.

7.1 TERRAIN SLOPE

Figure 7.1 below shows the slope angles of the terrain within the 15 km buffer area surrounding the proposed project. The results indicate that the proposed study area has a gently undulating slope with an average of 2.43 degrees across the total study area. The results also indicate that the opencast pit expansion is located on a relatively flat surface with an average slope of 1.53 degrees.

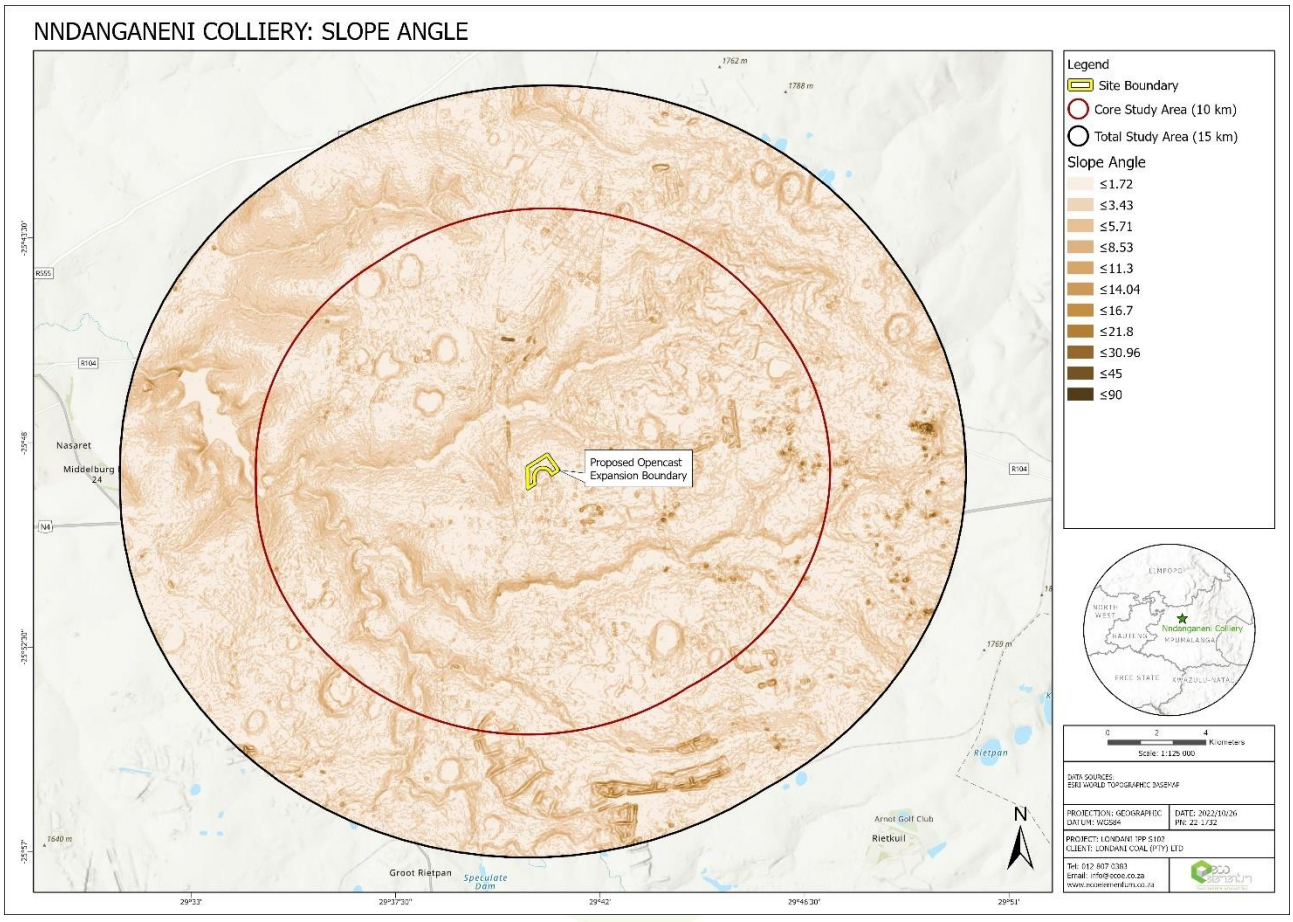


Figure 7.1: Slope Angles

7.2 Aspect Of The Slope

Figure 7.2 shows the slope aspect of the terrain within the 15 km buffer area surrounding the proposed project. The average slope aspect of the project site is a 49-degree, Northeast facing slope. However, since the site is located on a gentle slope/flat surface, the proposed expansion will be illuminated from sunrise to sunset and thus visible from all directions.

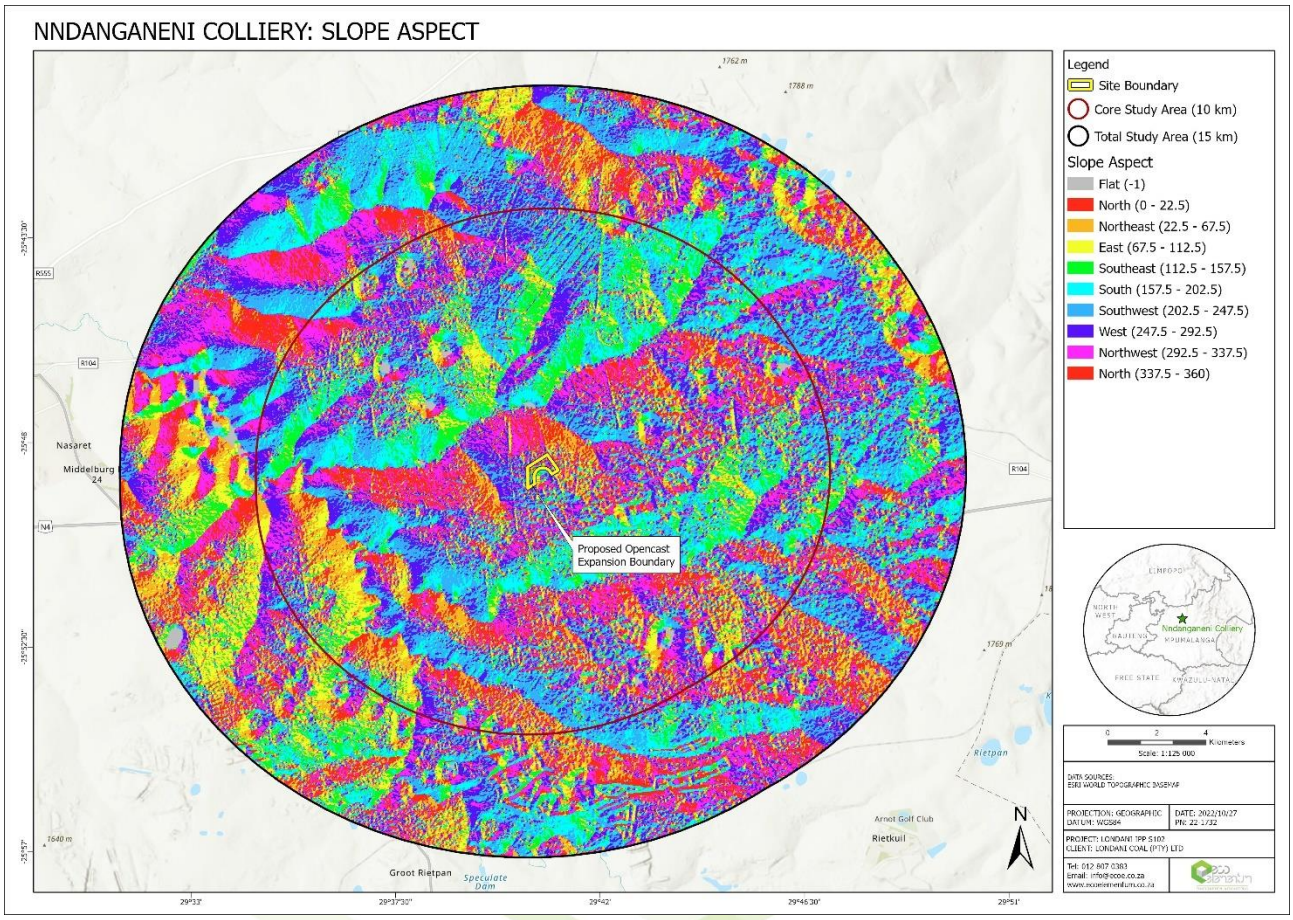


Figure 7.2: Slope Aspect

7.3 TERRAIN RUGGEDNESS

The results indicate a low to medium level of terrain ruggedness across most of the total study area. Figure 7.3 shows the terrain ruggedness within 15 km of the proposed project area.

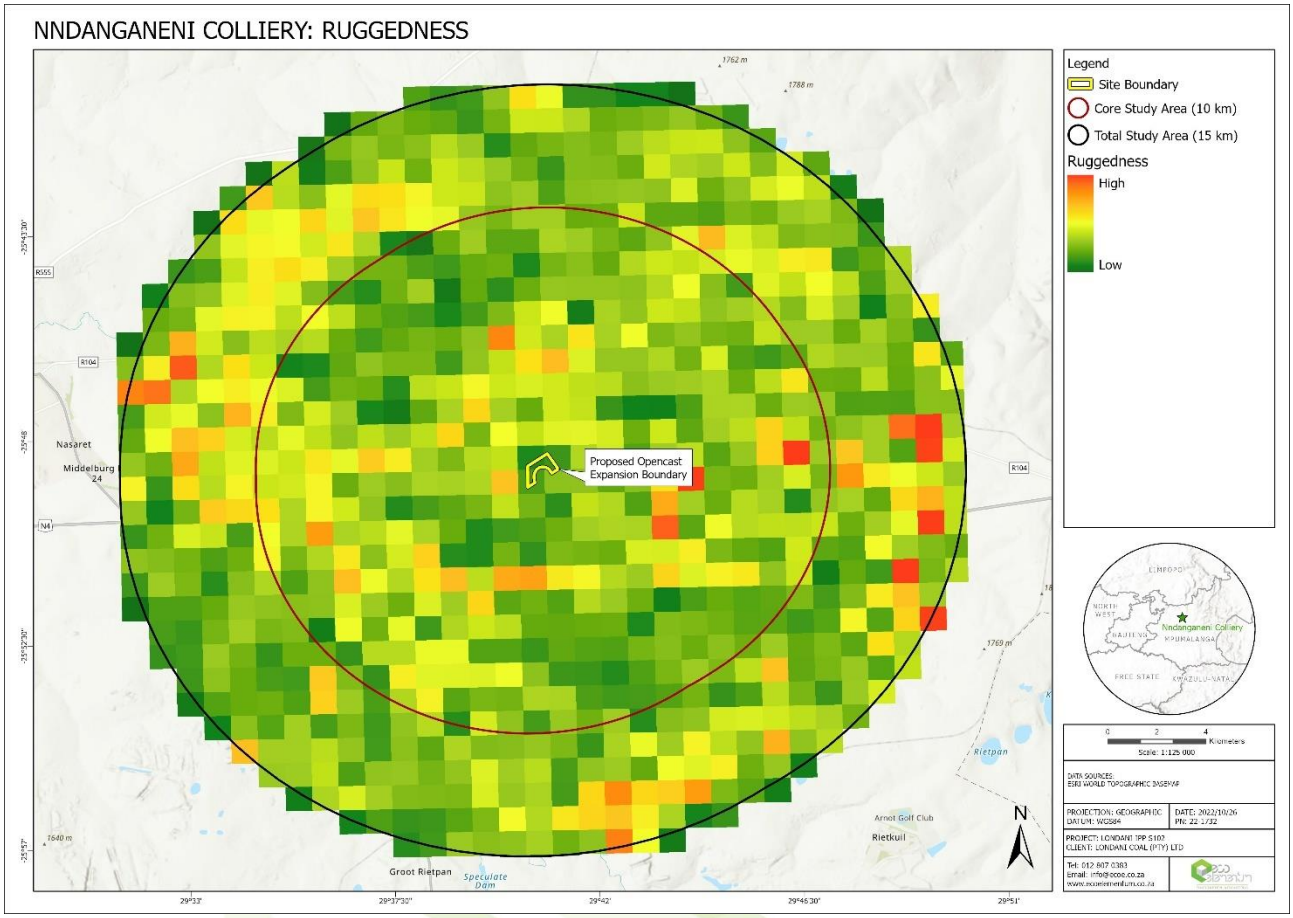


Figure 7.3: Terrain Ruggedness

7.4 Relative Elevation

The results of the relative elevation shows that the proposed infrastructure will be built high lying areas, which may make it more visible to surrounding areas. Figure 7.4 shows the relative elevation within 15 km of the proposed project.

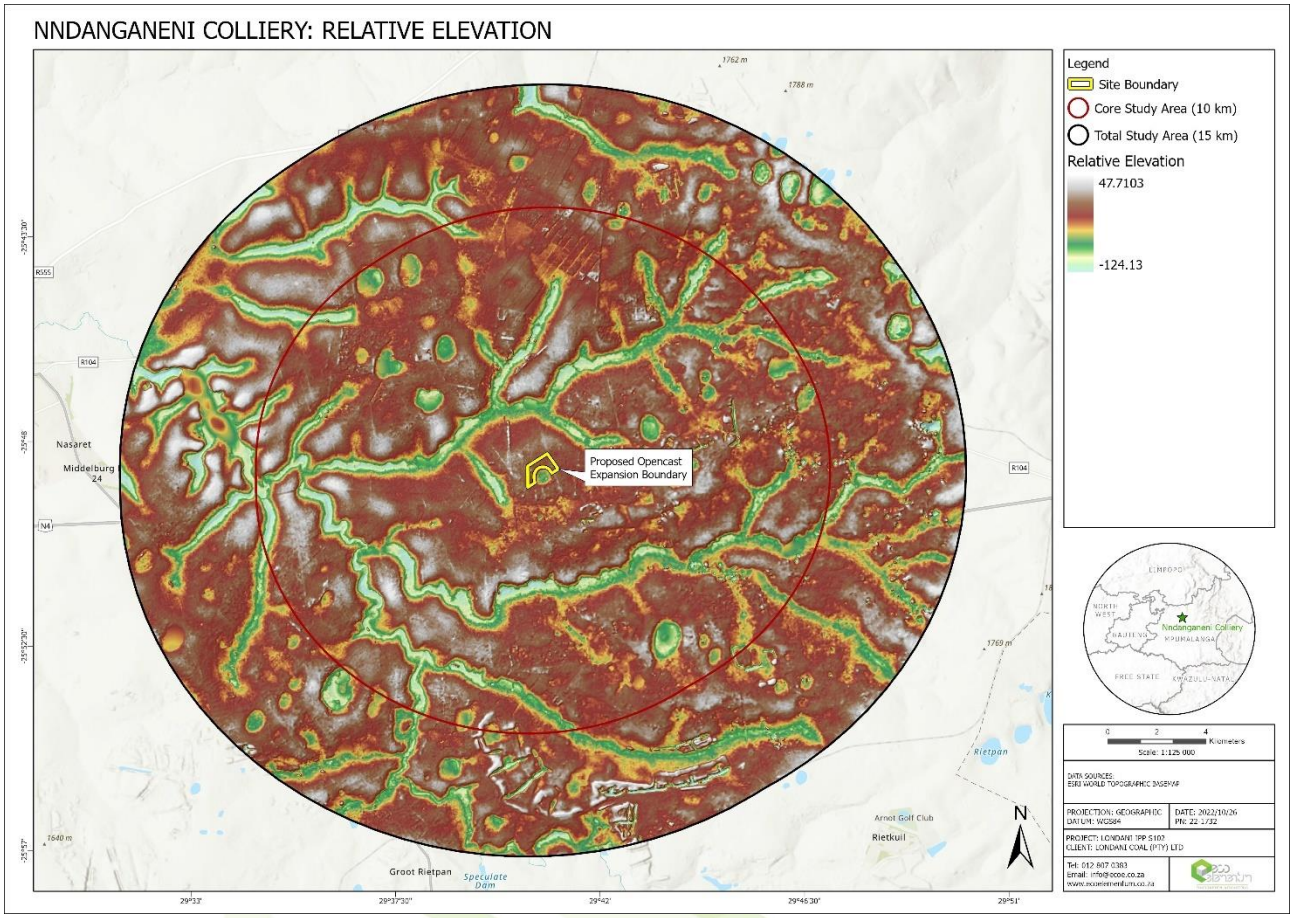


Figure 7.4: Relative Elevation

7.5 LANDFORMS

Figure 7.5 below indicates the landforms of the surrounding study area. The landform results show that most of the site is situated on upper slopes, which may make it more visible to surrounding areas.

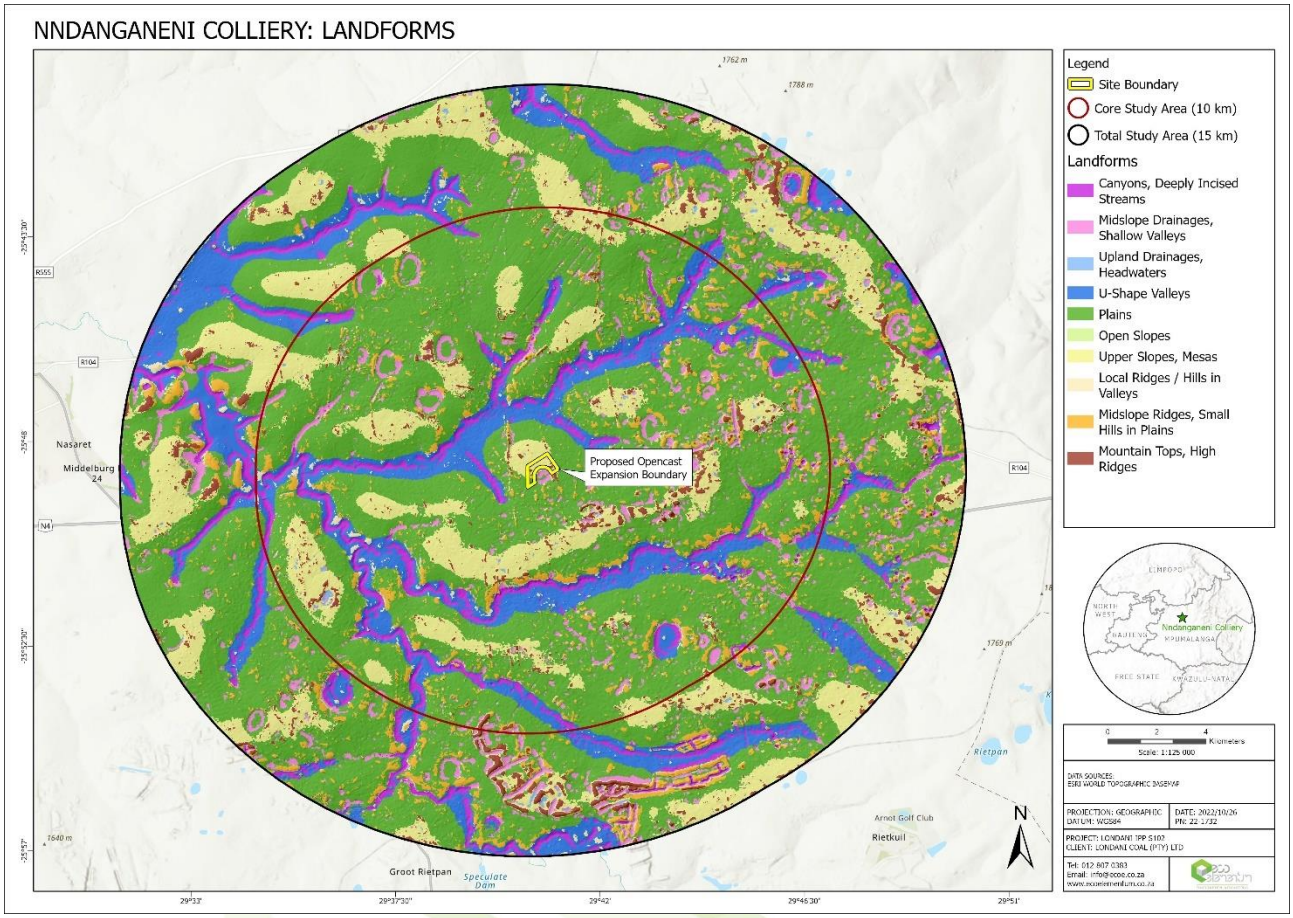


Figure 7.5: Landforms

7.6 SLOPE POSITION

The results of the slope position shown in Figure 7.6 below show that the study area lies within an area with valleys, upper slopes and ridges. The areas of upper slopes and ridges may assist in screening the proposed project from potential sensitive receptors. However, the proposed expansion is more likely to be visible should a sensitive receptor be located on these high lying areas.

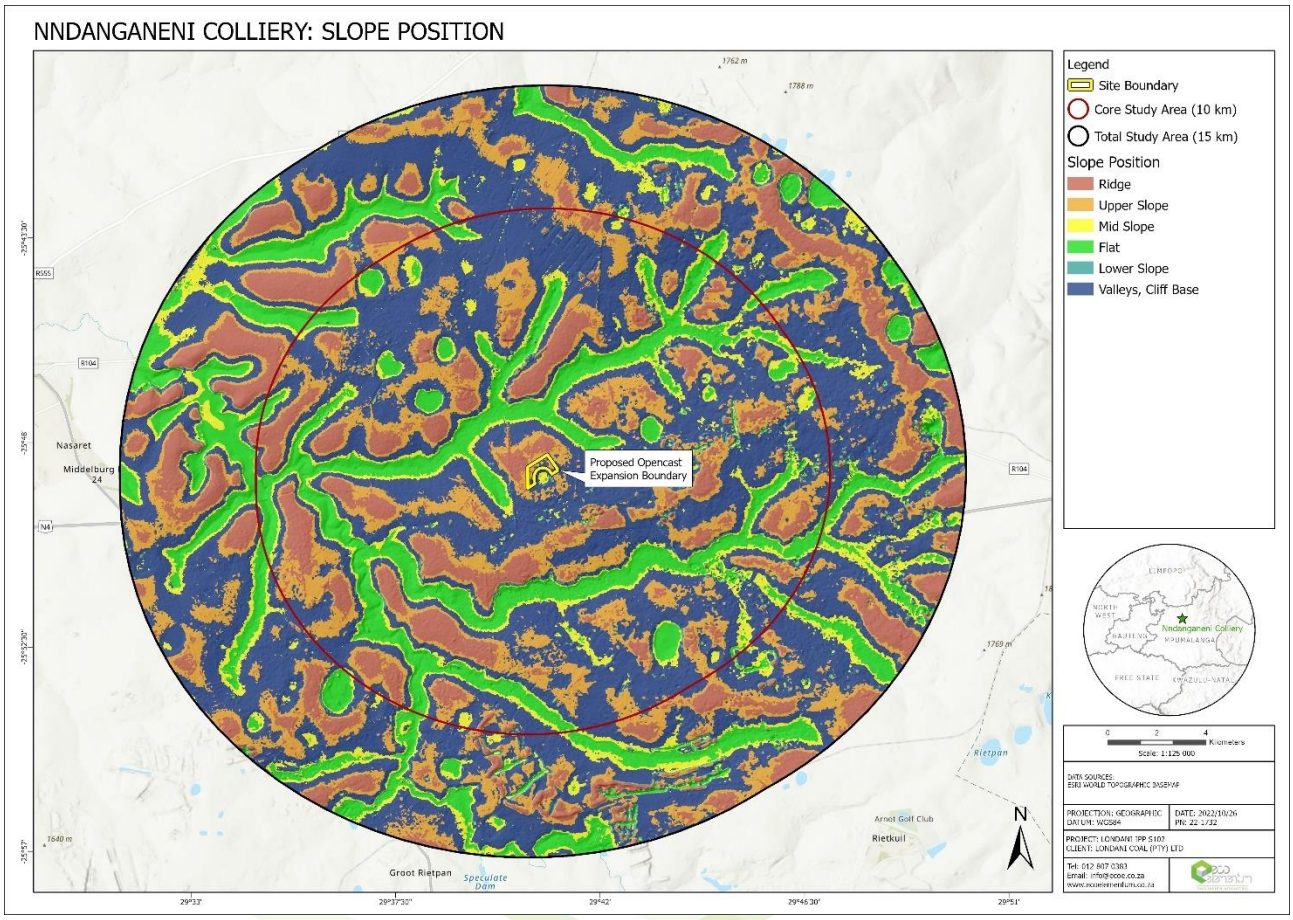


Figure 7.6: Slope Positions

7.7 LANDCOVER VAC

Figure 7.7 indicates the possible VAC of the study area calculated using the surrounding landcover. The results indicate that the study area has a medium to high VAC. Furthermore, considering the landcover and sense of place discussed in section 4, the results reiterate that the study area has a high VAC. This suggests that the proposed infrastructure will have a high compatibility with the landscape integrity and will blend in well with the surroundings.

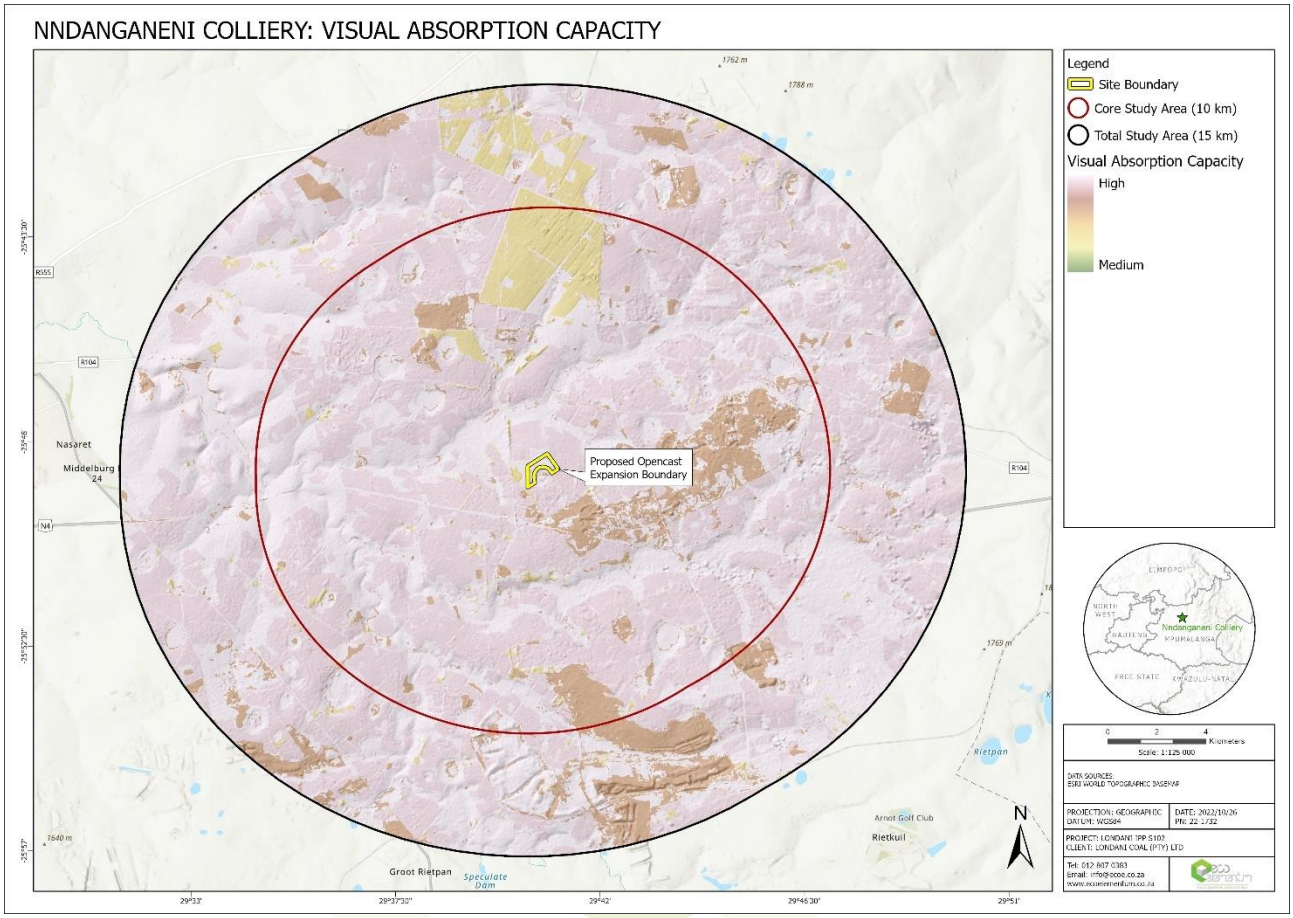


Figure 7.7: Potential VAC

7.8 VIEWSHED VISIBILITY

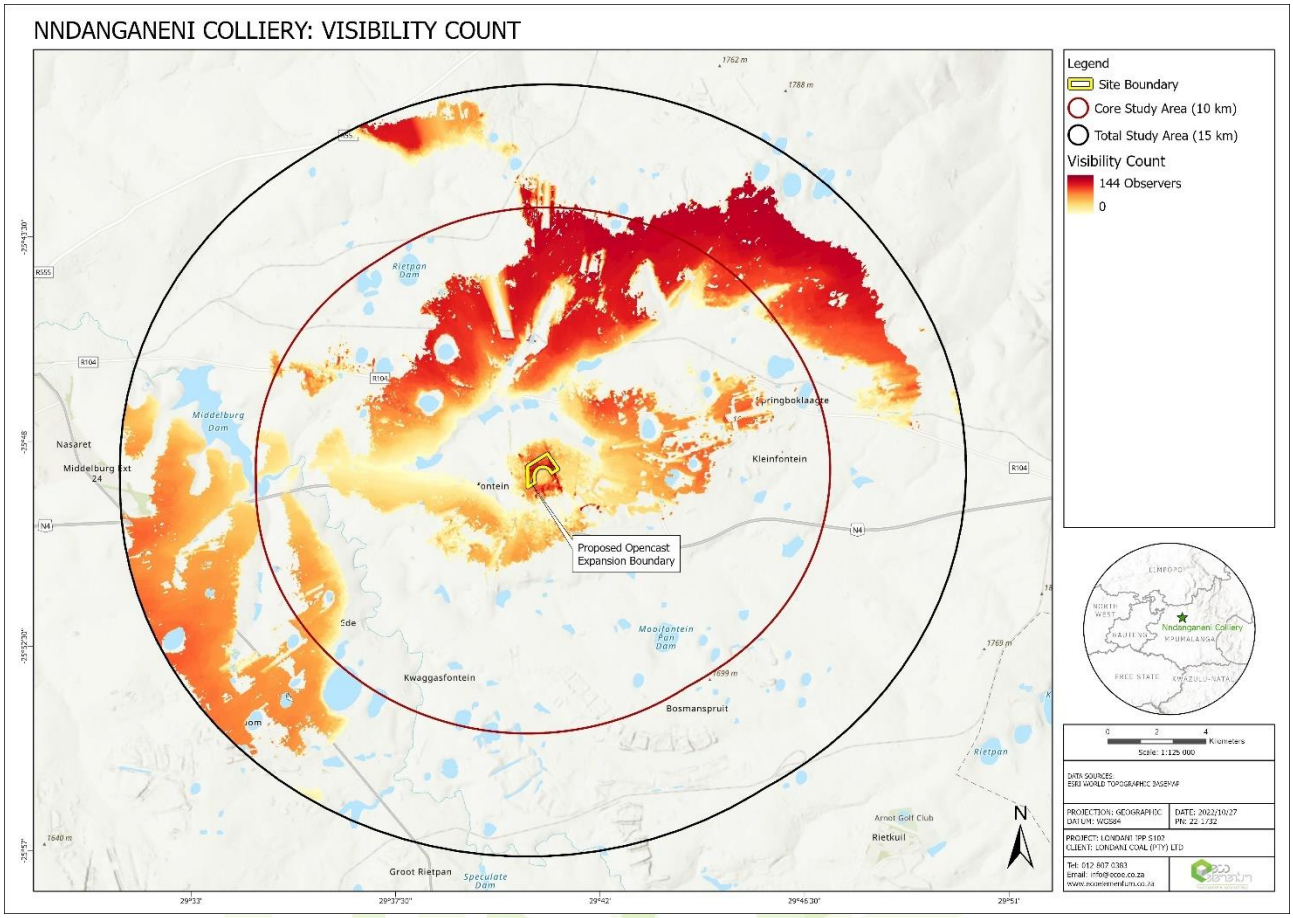


Figure 7.8: Viewshed Visibility Count – showing the number of observer points that may be visible from within 15 km of the proposed site

For the assessment of the visibility of the area, the proposed infrastructure was allocated 144 control points which were used as the observer points within the analysis. The viewshed shows the number of observer points that may be seen from any point within 15 km of the proposed project.

Figure 7.8 indicates that the proposed opencast pit expansion may be visible from approximately 26% of the total study area. Furthermore, the results show that the proposed project may be visible from areas running along the southwest to the northeast of the study area, and from within the immediate area surrounding the proposed site. The highest number of observer points is expected to be visible from the areas north and northeast of the site. Areas further south and east of the site are expected to be screened from the proposed development.

7.9 VIEWSHED VISIBILITY – DISTANCE RANKING

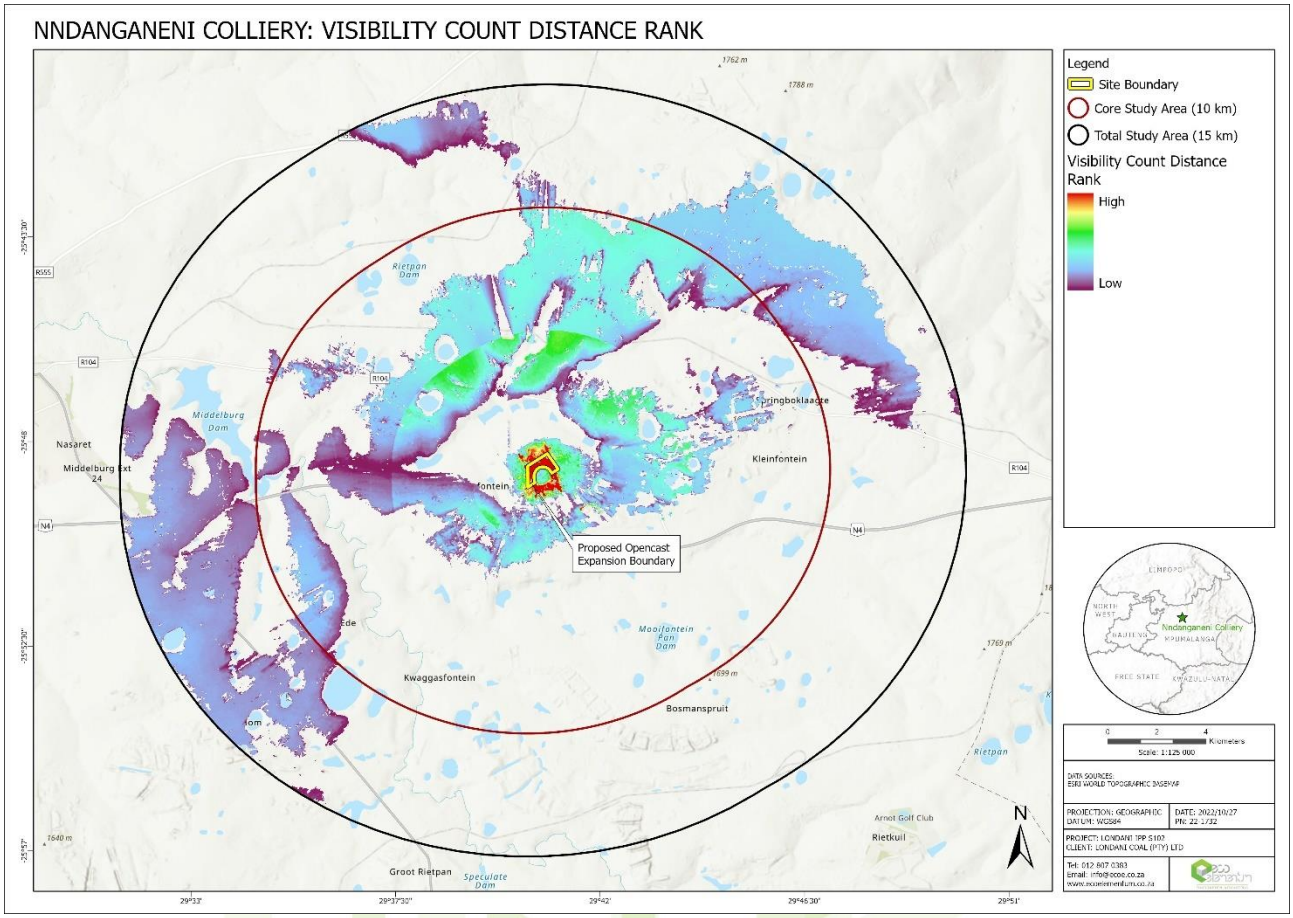


Figure 7.9: Visibility Count Distance Rank – showing the number of observer points that may be visible from within 15 km of the proposed site, ranked according to the distance from the proposed infrastructure

The results from the viewshed visibility are further ranked based on the distance from the centre of the proposed site. The distances are ranked according to Table 7-1 below.

Table 7-1: Visibility Rating

12 – 15 km	Very Low
9 – 12 km	Low
6 – 9 km	Medium
3 – 6 km	High
0 – 3 km	Very High

The results in Figure 7.9 shows that the visibility of the proposed infrastructure will be very high directly north and south of the site. The visibility impact decreases as the distance from the site increases.

7.10 Visual Exposure Ranking

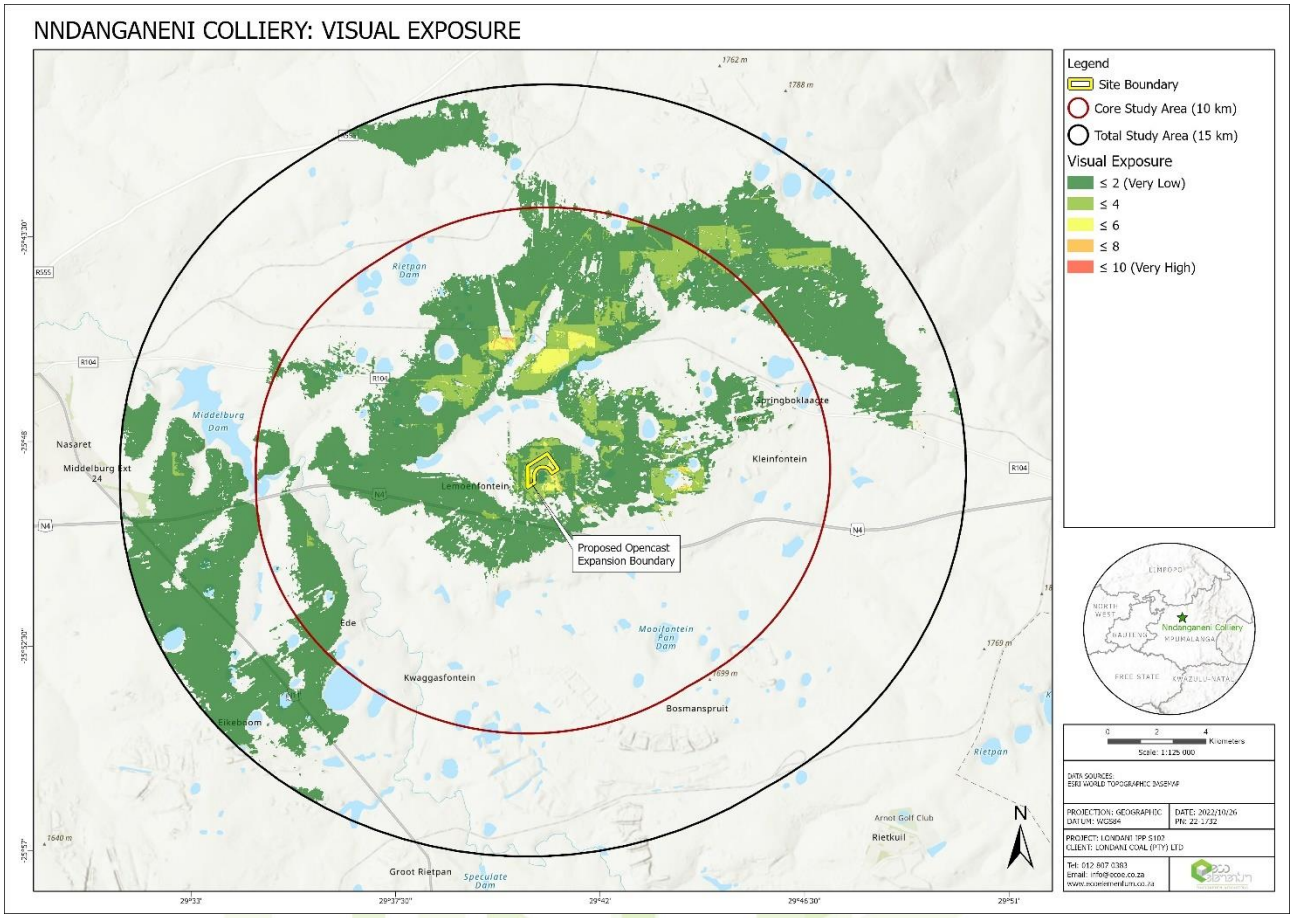


Figure 7.10: Visual exposure – showing the level of visual exposure which may be experienced within 15 km of the proposed site

The viewshed visibility and distance ranking is combined with the slope angle, slope aspect, slope position, ruggedness, relative elevation, landforms and landcover VAC to obtain a quantitative visual exposure ranking of all areas where the proposed infrastructure may potentially be visible from. Table 7-2 below indicates the visual exposure ranking.

Table 7-2: Visual Exposure Ranking

1 - 2	Very Low
3 - 4	Low
5 - 6	Medium
7 - 8	High
9 - 10	Very High

The overall visual exposure (Figure 7.10) indicates that the highest level of visual exposure will be experienced from areas approximately 5 km north and 5 km east of the proposed study area. The remaining areas covered by the viewshed are expected to experience lower levels of visual exposure. Overall, the visual exposure of the proposed project is expected to be low across the study area.

7.11 VIEWPOINTS

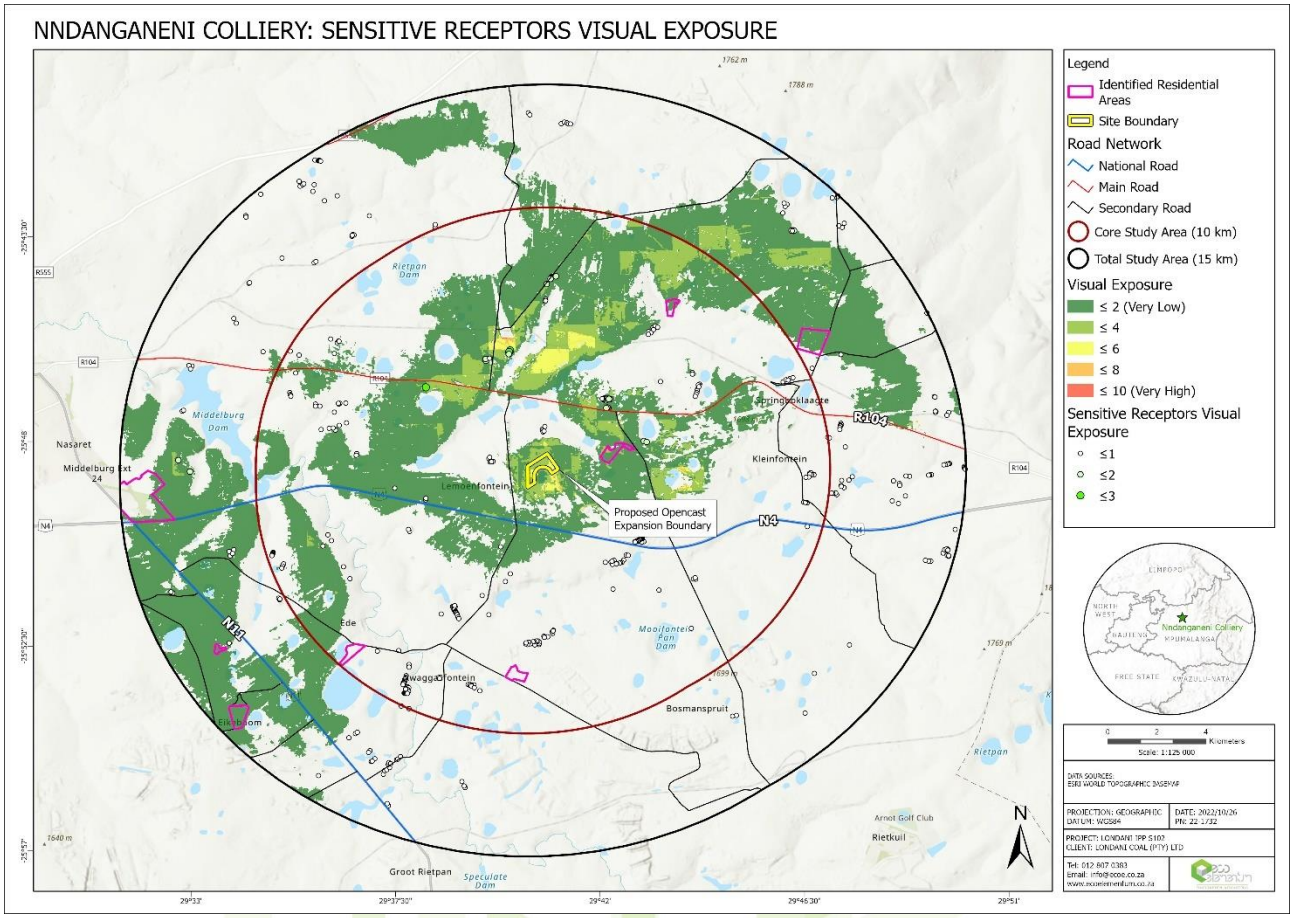


Figure 7.11: Visual exposure and sensitive receptors – showing the level of visual exposure potentially experienced by identified sensitive receptors

Each identified sensitive receptor is then overlaid on the visual exposure ranking. It is important to note that the GIS tools used to quantify the overall visual exposure levels potentially experienced by the identified sensitive receptors only incorporates the variables as described in this report. Factors such as real time and micro scale vegetation are not considered, thus the actual level of visual exposure may be lower or higher depending on the updated land use in the vicinity or latest vegetation growth or height on a micro and macro scale. The results are by no means a rating of visual quality; it is rather used to determine the likelihood of the proposed infrastructure being visible from the viewpoint receptors

Figure 7.11 shows that travellers on the identified national roads, main road and secondary roads are expected to experience no to low levels of visual exposure from the proposed project. With the exception of travellers on a portion of the identified secondary road, approximately 5 km north of the site, who are expected to experience medium levels of visual exposure. The results also indicate that 14% of the identified homesteads, schools and recreational facilities are expected to experience visual exposure from the proposed development. All 14% of the sensitive receptors are expected to experience very low to low levels of visual exposure. Furthermore, the visual exposure analysis shows that the identified residential areas will experience no to low levels of visual exposure.

Overall, the proposed project is expected to have a low visual impact on the identified sensitive receptors.

8. VISUAL IMPACT ASSESSMENT

For the proposed project, all specialists were required to assess the proposed activity in relation to the construction, operational, closure and decommissioning phases in order to identify the potential impacts that may be associated with such activity and to develop appropriate mitigation measures that can be implemented to reduce or eliminate the potential impacts identified. The impact assessment methodology has been formalised by EcoE and will be applied to this VIA. Table 8-1 to Table 8-4 below indicate how the potential visual impacts were quantified before and after the implementation of the recommended mitigation measures.

Table 8-1: Impact Assessment Criteria and Assigned Rating

Magnitude/Severity		**ASSIGNED QUANTITATIVE SCORE**
The intensity of the impact is considered by examining whether the impact is destructive or benign, whether it has a significant, moderate or insignificant		
(L)OW	The impact alters the affected environment in such a way that the natural processes or functions are not affected.	**1**
(M)EDIUM	The affected environment is altered, but functions and processes continue, albeit in a modified way.	**3**
(H)IGH	Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.	**5**
Duration		
The lifetime of the impact, that is measure in relation to the lifetime of the proposed development.		
(S)HORT TERM	The impact will either disappear with mitigation or will be mitigated through a natural process in a period shorter than that of the construction phase.	**1**
(SM) SHORT - MEDIUM TERM	The impact will be relevant through to the end of a construction phase.	**2**
(M)MEDIUM	The impact will last up to the end of the development phases, where after it will be entirely negated.	**3**
(L)ONG TERM	The impact will continue or last for the entire operational lifetime (i.e. exceed 20years) of the development, but will be mitigated by direct human action or by natural processes thereafter.	**4**
(P)ERMANENT	This is the only class of impact, which will be non-transitory. Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact is transient.	**5**

Spatial Scale/Extent		
Classification of the physical and spatial aspect of the impact		
(F)OOTPRINT	The impacted area extends only as far as the activity, such as footprint occurring within the total site area.	**1**
(S)ITE	The impact could affect the whole, or a significant portion of the site.	**2**
(R)EGIONAL	The impact could affect the area including the neighbouring Farms, the transport routes and the adjoining towns.	**3**
(N)ATIONAL	The impact could have an effect that expands throughout the country (South Africa).	**4**
(I)NTERNATIONAL	Where the impact has international ramifications that extend beyond the boundaries of South Africa.	**5**
Probability		
This describes the likelihood of the impact actually occurring. The impact may occur for any length of time during the life cycle of the activity. The classes are rated as follows:		
(I)MPROBABLE	The possibility of the Impact occurring is none, due to the circumstances or design. The chance of this Impact occurring is zero (0%)	**1**
(P)OSSIBLE	The possibility of the Impact occurring is very low, due either to the circumstances or design. The chance of this Impact occurring is defined as 25% or less	**2**
(L)IKELY	There is a possibility that the impact will occur to the extent that provisions must therefore be made. The chances of Impact occurring is defined as 50%	**3**
(H)IGHLY LIKELY	It is most likely that the Impacts will occur at some stage of the development. Plans must be drawn up before carrying out the activity. The chances of this impact occurring is defined as 75 %.	**4**
(D)EFINITE	The impact will take place regardless of any prevention plans, and only mitigation actions or contingency plans to contain the effect can be relied on. The chance of this impact occurring is defined as 100 %.	**5**
Weighting Factor		
Subjective score assigned by Impact Assessor to give the relative importance of a particular environmental component based on project knowledge and previous experience. Simply, such a weighting factor is indicative of the importance of the impact in terms of the potential effect that it could have on the surrounding environment. Therefore, the aspects considered to have a relatively high value will score a relatively higher weighting than that which is of lower importance		
(L)OW		**1**
LOW- MEDIUM		**2**
MEDIUM (M)		**3**
MEDIUM-HIGH		4
HIGH (H)		5

Mitigation Measures and Mitigation Efficiency		
Determination of significance refers to the foreseeable significance of the impact after the successful implementation of the necessary mitigation measures		
Mitigation measures were recommended to enhance benefits and minimise negative impacts and address the following: Mitigation objectives: what level of mitigation must be aimed at: For each identified impact, the specialist must provide mitigation objectives (tolerance limits) which would result in measurable reduction in impact. Where limited knowledge or expertise exists on such tolerance limits, the specialist must make "educated guesses" based on professional experience; Recommended mitigation measures: For each impact the specialist must recommend practicable mitigation actions that can measurably affect the significance rating. The specialist must also identify management actions, which could enhance the condition of the environment. Where no mitigation is considered feasible, this must be stated and reasons provided; Effectiveness of mitigation measures: The specialist must provide quantifiable standards (performance criteria) for reviewing or tracking the effectiveness of the proposed mitigation actions, where possible; and Recommended monitoring and evaluation programme: The specialist is required to recommend an appropriate monitoring and review programme, which can track the efficacy of the mitigation objectives. Each environmental impact is to be assessed before and after mitigation measures have been implemented. The management objectives, design standards, etc., which, if achieved, can eliminate, minimise or enhance potential impacts or benefits. National standards or criteria are examples, which can be stated as mitigation objectives.		
HIGH	The impact is of major importance. Mitigation of the impact is not possible on a cost-effective basis. The impact is regarded as high importance and taken within the overall context of the project, is regarded as a fatal flaw. An impact regarded as high significance, after mitigation could render the entire development option or entire project proposal unacceptable.	**1.00**
MEDIUM-HIGH	The impact is of major importance but through the implementation of the correct mitigation measures, the negative impacts will be reduced to acceptable levels	**0.80**
MEDIUM	Notwithstanding the successful implementation of the mitigation measures, to reduce the negative impacts to acceptable levels, the negative impact will remain of significance. However, taken within the overall context of the project, the persistent impact does not constitute a fatal flaw	**0.60**
LOW -MEDIUM	The impact is of importance, however, through the implementation of the correct mitigation measures such potential impacts can be reduced to acceptable levels	**0.40**
LOW	The impact will be mitigated to the point where it is of limited importance	**0.20**

Table 8-2: Description of bio-physical assessment parameters with its respective weighting

Extent	Duration	Intensity	Probability	Weighting Factor (WF)	Significance Rating (SR)	Mitigation Efficiency (ME)	Significance Following Mitigation (SFM)
Footprint 1	Short term 1	Low 1	Probable 1	Low 1	Low 0-19	High 0,2	Low 0-19
Site 2	Short to medium 2		Possible 2	Low to medium 2	Low to medium 20-39	Medium to high 0,4	Low to medium 20-39
Regional 3	Medium term 3	Medium 3	Likely 3	Medium 3	Medium 40-59	Medium 0,6	Medium 40-59
National 4	Long term 4		Highly Likely 4	Medium to high 4	Medium to high 60-79	Low to medium 0,8	Medium to high 60-79
International 5	Permanent 5	High 5	Definite 5	High 5	High 80-100	Low 1,0	High 80-100

Table 8-3: Significant Rating Scale Without Mitigation

Potential Impacts Without Mitigation Measures (WOM) Following the assignment of the necessary weights to the respective aspects, criteria are summed and multiplied by their assigned weightings, resulting in a value for each impact (prior to the implementation of mitigation measures).		
SIGNIFICANT RATING EQUATION Significant Rating (SR) = (Extent + Intensity + Duration) x Probability		
S=0	**INSIGNIFICANT**	The impact will be mitigated to the point where it is regarded as insubstantial
SR < 30	**LOW (L)**	The impact will be mitigated to the point where it is of limited importance.
20<SR<39	**LOW- MEDIUM**	The impact is of importance, however, through the implementation of the correct mitigation measures such potential impacts can be reduced to acceptable levels;
40> SR < 59	**MEDIUM (M)**	Notwithstanding the successful implementation of the mitigation measures, to reduce the negative impacts to acceptable levels, the negative impact will remain of significance. However, taken within the overall context of the project, the persistent impact does not constitute a fatal flaw.
60<SR>79	**MEDIUM-HIGH**	The impact is of major importance but through the implementation of the correct mitigation measures, the negative impacts will be reduced to acceptable levels.
80<SR > 100	**HIGH (H)**	The impact is of major importance. Mitigation of the impact is not possible on a cost-effective basis. The impact is regarded as high importance and taken within the overall context of the project, is regarded as a fatal flaw. An impact regarded as high significance, after mitigation could render the entire development option or entire project proposal unacceptable.

Table 8-4: Significant Rating Scale with Mitigation

Potential Impacts with Mitigation Measures (WM) – In order to gain a comprehensive understanding of the overall significance of the impact, after implementation of the mitigation measures, it will be necessary to re-evaluate the impact.		
SIGNIFICANT RATING WITH MITIGATION EQUATION Significance Rating (WM) = Significance Rating (WOM) x Mitigation Efficiency Or WM = WOM x ME		
S=0	**INSIGNIFICANT**	The impact will be mitigated to the point where it is regarded as insubstantial.
SR < 30	**LOW (L)**	The impact will be mitigated to the point where it is of limited importance.
20<SR<39	**LOW- MEDIUM**	The impact is of importance, however, through the implementation of the correct mitigation measures such potential impacts can be reduced to acceptable. levels;
40> SR < 59	**MEDIUM (M)**	Notwithstanding the successful implementation of the mitigation measures, to reduce the negative impacts to acceptable levels, the negative impact will remain of significance. However, taken within the overall context of the project, the persistent impact does not constitute a fatal flaw.
60<SR>79	**MEDIUM-HIGH**	The impact is of major importance but through the implementation of the correct mitigation measures, the negative impacts will be reduced to acceptable levels.
80<SR > 100	**HIGH (H)**	The impact is of major importance. Mitigation of the impact is not possible on a cost-effective basis. The impact is regarded as high importance and taken within the overall context of the project, is regarded as a fatal flaw. An impact regarded as high significance, after mitigation could render the entire development option or entire project proposal unacceptable.

Table 8-5 overleaf shows the identified visual impacts rated according to the above methodology. The rating of the impacts considers the results of the viewshed and visual exposure analysis.

Table 8-5: Impact Assessment

				Category Rating													
Activity	**Aspect**	**Impact**	**Phase**	**Extent**	**Severity**	**Durations**	**Probability**	**Weighting Factor**	**+/-**	**Significance without mitigation**		**+/-**	**Mitigation efficiency**	**Significance with mitigation**		**Mitigation measures**	**Action Plan**
Site clearance/establishment	Removal of vegetation	Negative impact on aesthetics - due to the site being more visible	Pre-Construction Phase	1	1	2	2	1	Negative	6	Low	Negative	0.2	1.2	Low	Limit the construction footprint to only the development area	Demarcate the development area
Construction related activities	Movement of construction vehicles and heavy machinery Presence of laydown areas and construction camp	Dust creation and change in visual/landscape character	Construction Phase	2	3	2	2	1	Negative	9	Low	Negative	0.4	3.6	Low	Limit the construction footprint to only the development area Regulate the speed of vehicles on site Implement dust suppression activities Laydown areas and construction camps should blend in or be screened from surrounding sensitive receptors	Implement a suitable speed limit of construction vehicles Implement dust suppression activities on the relevant areas Locate laydown areas and construction camps in areas where they would be less visible to the surrounding sensitive receptors, or screen these areas using suitable screening methods
Construction related activities	Night Lighting	Light pollution at night on the identified sensitive receptors	Construction Phase	3	3	2	2	1	Negative	10	Low	Negative	0.4	4	Low	Reduce spill light and glare	Choose lighting types which reduce spill light and glare Only focus lighting to where it is needed When possible, limit construction activities to daylight hours
Mining activity	Presence and operation of open pit	Visual impact on surrounding identified sensitive receptors	Operational Phase	3	3	4	2	3	Negative	36	Low-Med	Negative	0.4	14.4	Low	Establish and maintain visual screens/barriers between the development and the identified sensitive receptors Ancillary infrastructure should blend in with the surrounding existing sense of place	Ensure that the existing vegetation along the secondary road directly west of the site is maintained. Plant indigenous vegetation along the northern and eastern border of the proposed site. Consult a botanist/landscape architect if needed Ancillary infrastructure should be painted natural colours
Mining activity	Movement of construction vehicles and heavy machinery	Dust creation and change in visual/landscape character due to an increased number of vehicles	Operational Phase	2	3	4	2	2	Negative	22	Low-Med	Negative	0.4	8.8	Low	Limit the operational activities to only the development area Regulate the speed of vehicles on site Implement dust suppression activities	Implement a suitable speed limit of construction vehicles Implement dust suppression activities on the relevant areas

				Category Rating													
Activity	**Aspect**	**Impact**	**Phase**	**Extent**	**Severity**	**Durations**	**Probability**	**Weighting Factor**	**+/-**	**Significance without mitigation**		**+/-**	**Mitigation efficiency**	**Significance with mitigation**		**Mitigation measures**	**Action Plan**
Mining activity	Night lighting	Light pollution at night on the identified sensitive receptors	Operational Phase	3	3	4	2	2	Negative	24	Low-Med	Negative	0.4	9.6	Low	Reduce spill light and glare Only focus lighting to where it is needed	Choose lighting types which reduce spill light and glare Only focus lighting to where it is needed
Backfilling of open pit	Movement of construction vehicles and heavy machinery	Dust creation and change in visual/landscape character due to an increased number of vehicles	Decommissioning Phase	2	3	3	2	2	Negative	20	Low-Med	Negative	0.4	8	Low	Regulate the speed of vehicles on site Implement dust suppression activities	Implement a suitable speed limit of construction vehicles Implement dust suppression activities on the relevant areas
Decommissioning, rehabilitation, and post-closure	Revegetation of the site Post-Closure Phase rehabilitation	Change in landscape character	Decommissioning/Rehabilitation Phase Post-Closure Phase	2	3	3	2	2	Negative	20	Low-Med	Negative	0.2	4	Low	Revegetate areas/slopes with suitable indigenous vegetation Where possible, reshape the area so that it resembles the pre-construction landscape Remove as much infrastructure as possible Ensure that any residual infrastructure remains in good condition where possible	Consult a botanist/landscape architect if needed Implement monitoring programmes to monitor any rehabilitated areas for at least a year after closure

8.1 Summary of The Visual Impact Assessment

The impact assessment in Table 8-5 above indicates that during the pre-construction and construction phases of the proposed mining activity, the identified sensitive receptors are expected to experience a low negative visual impact. These low negative impacts can be lowered further after the recommended mitigation measures are implemented.

For the operational phase of the mining activity, the identified visual impacts are expected to be of low to medium significance. These impacts can be lowered to a low significance if the recommended mitigation measures are adhered to. The reasons for the expected low level of visual impacts can be attributed to the high VAC of the study area along with the low density of sensitive receptors and the results of the viewshed and visual exposure analysis.

During the decommissioning, rehabilitation, and post-closure phases of the mining project, all low to medium negative visual impacts can be lowered to a low significance if the mitigation measures are implemented. This can be attributed to the rehabilitated mining areas being more visually appealing to the surrounding sensitive receptors.

Overall, the potential visual impacts of the proposed opencast pit expansion is expected to be low, during each phase of the activity, after the implementation of the recommended mitigation measures. The low impacts are mainly due to the ability of the existing land uses within the surrounding area being able to visually absorb the proposed mining activity.

8.2 Cumulative Impacts

Cumulative visual impacts can result from additional changes to the landscape/visual amenity caused by the proposed development in conjunction with other existing developments (associated with or separate to it), or by actions that occurred in the past, present or are likely to occur in the foreseeable future. They may also affect the way in which the landscape is experienced. Cumulative effects may be positive or negative. Where they comprise of a range of benefits, they may be considered to form part of the mitigation measures.

Cumulative effects can also arise from the inter-visibility (visibility) of a range of developments and/or the combined effects of individual components of the proposed development occurring in different locations or over a period of time. The separate effects of such individual components or developments may not be significant, but together they may create an unacceptable degree of adverse effects on visual receptors within their combined visual envelopes. Inter-visibility depends upon general topography, aspect, tree cover, elevation and distance, as this affects visual acuity, which is also influenced by weather and light conditions. (Institute of Environmental Assessment and The Landscape Institute, 1996).

The opencast pit expansion is expected to increase the cumulative visual impact on the surrounding sensitive receptors. It is important to note that the identified sensitive receptors expected to experience some level of visual impact, as determined by the visual exposure analysis, are currently exposed to and familiar with the existing visual landscape i.e., the existing mining, industrial and agricultural activities. The proposed mining activities are also expected not to contrast with the areas existing sense of place. However, notwithstanding these factors and notwithstanding the study area's ability to visually absorb the proposed activity, it is recommended that the recommended mitigation measures are implemented to help reduce potential cumulative visual impacts on the surrounding sensitive receptors. It is further recommended that the environmental authorities consider the overall cumulative impact on the areas sense of place before a final decision is made with regard to the optimal number of mining activities within the area.

8.3 MITIGATION MEASURES

Mitigation measures may be considered in two categories:

- Primary measures that intrinsically comprise part of the development design through an iterative process. Mitigation measures are more effective if they are implemented from project inception when alternatives are being considered.
- Secondary measures designed to specifically address the remaining negative effects of the final development proposals.

Primary measures that will be implemented will mainly be measures that will minimise the potential visual impact by softening the visibility of the structures by "blending" with the surrounding areas. Such measures will include rehabilitation of the structures by re-vegetation. Secondary measures will include final rehabilitation, after care and maintenance of the vegetation and to ensure that the final landform is maintained.

9. CONCLUSION

The proposed opencast pit expansion is expected to create low negative visual impacts on the surrounding sensitive receptors during the pre-construction and construction phases of the activity. Low to medium negative visual impacts on the surrounding sensitive receptors are expected during the operational, decommissioning, rehabilitation, and post-closure phases. However, these identified impacts can be reduced to a low negative impact provided that the recommended mitigation measures are implemented. The low impacts are mainly due to the ability of the existing land uses within the surrounding area being able to visually absorb the proposed mining activity. Furthermore, the proposed opencast pit expansion is expected to increase the cumulative visual impact on the surrounding sensitive receptors. It is important to note that the identified sensitive receptors expected to experience some level of visual impact, as determined by the visual exposure analysis, are currently exposed to and familiar with the existing visual landscape i.e., the existing mining, industrial and agricultural activities. The proposed activity is also expected not to contrast with the areas existing sense of place. However, notwithstanding these factors and notwithstanding the study area's ability to visually absorb the proposed activity, it is still recommended that the recommended mitigation measures are implemented to help reduce potential cumulative visual impacts on the surrounding sensitive receptors.

Overall, considering the results of the VIA and from a visual perspective, the proposed opencast pit expansion may proceed provided that the recommended mitigation measures are implemented.

10. REFERENCES

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