



**PROPOSED DEVELOPMENT OF THE GKC QUARRY ON PORTION 31
OF THE FARM DRIEFONTEINEN NO. 243, MOSSEL BAY, WESTERN
CAPE PROVINCE**

Desktop Visual Impact Assessment

August 2020

Prepared for:



Prepared by:

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Today's Impact | Tomorrow's Legacy

QUALITY AND REVISION RECORD

1.1 QUALITY APPROVAL

	Capacity	Name	Signature	Date
Author	Visual Specialist	Christoff du Plessis		18/08/2020
Reviewer	Quality Check Officer	Elbi Bredenkamp		19/08/2020

This report has been prepared in accordance with Enviroworks Quality Management System.

1.2 REVISION RECORD

Revision Number	Objective	Change	Date
Version 1	-	-	19/08/2020

1.3 DISCLAIMER

Even though every care is taken to ensure the accuracy of this report, environmental assessment studies are limited in scope, time and budget. Discussions are to some extent made on reasonable and informed assumptions built on bona fide information sources, as well as deductive reasoning. Since environmental impact studies deal with dynamic natural systems additional information may come to light at a later stage during the impact assessment phase. The author does not accept responsibility for conclusions made in good faith based on own databases or on the information provided. Although the author exercised due care and diligence in rendering services and preparing documents, he accepts no liability, and the client, by receiving this document, indemnifies the author against all actions, claims, demands, losses, liabilities, costs, damages and expenses arising from or in connection with services rendered, directly or indirectly by the authors and by the use of this document. This report should therefore be viewed and acted upon with these limitations in mind."

2 EXECUTIVE SUMMARY

Enviroworks has been appointed by Greenmined Environmental to compile the Desktop Visual Impact Assessment (VIA) for the proposed GKC Mossel Bay Quarry in order to determine the Visual Impact of the proposed quarry. This VIA Report was compiled in accordance with the Guidelines for involving a Visual and Aesthetic Specialist in the EIA process (DEA&DP, 2005). This Guideline was developed by the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP) to be implemented as best practise.

2.1 PROJECT DESCRIPTION

Haw and Inglis Civil Engineering re-applied for the mining of quartzite/aggregate on Portion 31 of the Farm Driefonteinen No. 243, Western Cape Province. Portion 31 of the Farm Driefonteinen No. 243, is situated approximately twenty two and a half kilometres (22.5 km) west of Mossel Bay. The area earmarked for the proposed mining falls on a section of the farm that was previously used as an existing quarry which commenced in 1997.

The proposed mining site will be an extension of the existing quarry pit previously distributed by stone aggregate mining activities. The mining methods will make use of blasting by means of explosives in order to loosen the hard rock, material is then loaded and hauled out of the excavation to the static crushing and screening plants. The quartzite/aggregate will be stockpiled and transported to Clients via trucks and trailers. All activities will be contained within the boundaries of the site.

The proposed mining area is approximately five hectares (5 ha) in extent and the Applicant (Haw and Inglis Engineering) intends to win material from the area for at least two (2) years with a possible extension of another three (3) years. The quartzite/aggregate to be removed from the quarry will be used for road construction in the vicinity. The proposed quarry will therefore contribute to the upgrading/maintenance of road infrastructure and building contracts in and around the Mossel Bay area.

The mining activities will consist out of the following:

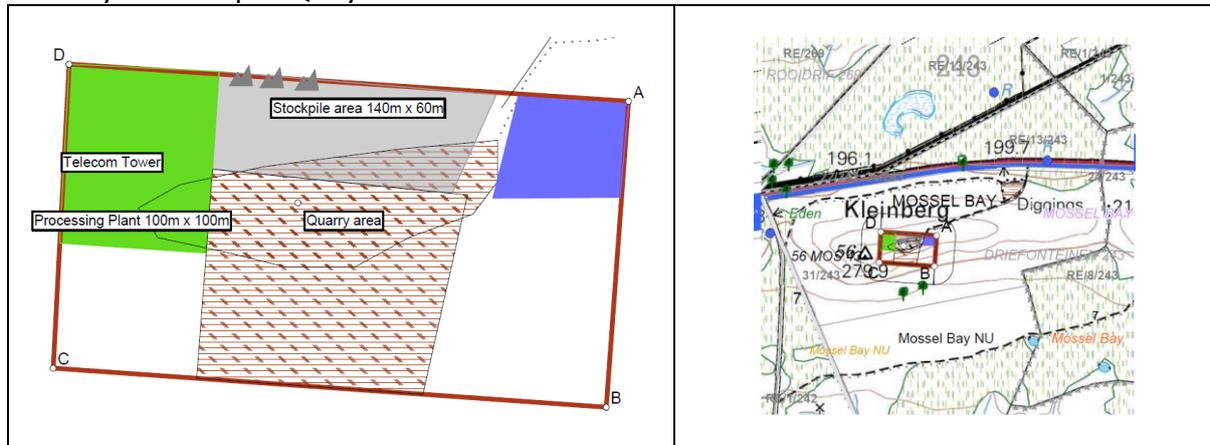
- Stripping and stockpiling of topsoil;
- Blasting;
- Excavating;
- Crushing;
- Stockpiling and transporting;
- Sloping and landscaping upon closure of the site; and,
- Replacing of topsoil and vegetation on the disturbed areas.

The mining site will contain the following:

- Drilling equipment;
- Excavating equipment;
- Earth moving equipment;
- Static crushing and screening plants;
- Access Roads;
- Site Office;

- Security gates;
- Site Vehicles;
- Parking area for visitors and site vehicles;
- Workshop;
- Washbay;
- Salvage Yard;
- Bunded diesel (20 000 litre tank) and oil storage facilities;
- Generator and bunded area;
- Weighbridge;
- Workshop; and,
- Ablution Facilities (container with septic tank).

Table 1: Layout of the Proposed Quarry.



2.2 ALTERNATIVES

As the proposed quarry has been mined in the past, no site alternatives have been investigated during this Desktop Visual Impact Assessment.

2.3 CONCLUSION AND RECOMMENDATIONS

The following conclusion is drawn from the Desktop Visual Impact Assessment in that the highest visual impact will occur from the four (4) farmsteads situated within the short to medium distance zone as well as from Kleinberg from where the visual impact will be moderate and permanent. The proposed development will be visible from certain sections of National Route 2 (N2) as well as internal farm roads from where the visual impact will vary between moderate, low and no visual impact. From these vantage points the impact will be temporary as wheel traffic will only traverse through the area. The majority of the study area consist of agricultural farmland from where the visual impact will be temporary as farm workers will reside within this area for a limited time seasonally. No places of heritage significance could be identified by the Desktop Assessment. If the mitigation measures as listed below are implemented on site the visual impact will be moderate within the mining phase and low within the rehabilitation phase. From a visual perspective the proposed development will be acceptable within the receiving environment if mitigation measures are implemented.

Mining Phase:

- Access roads are to be kept clean;
- Site offices and structures should be limited to one location and carefully situated to reduce visual intrusions. Roofs should be grey and non-reflective;
- The stockpile area must be fenced and screened with green (resembling the natural vegetation) netting;
- Dust suppression must be conducted as stated within the Ecological Impact Assessment;
- Vegetation clearance must be limited to the development footprint;
- The slopes of the “koppie” and internal walls of the quarry must remain intact if feasible;
- A speed limit of 40 km/h must be enforced on the access road;
- Adequate fire prevention measures must be enforced on site to ensure vegetation remain intact;
- Lights within the mining area should face directly down (angle of 90°);
- Litter should be strictly controlled, as the spread thereof through wind could have a very negative visual impact;
- All areas disturbed by mining activities must be subject to landscaping and rehabilitation;
- All spoil and waste will be disposed to a registered waste site and certificates of disposal provided;
- Litter should be strictly controlled, as the spread thereof through wind could have a very negative visual impact;
- Signage, if essential, should be discrete and confined to entrance gates. No corporate or advertising signage should be permitted; and,
- Avoid shiny materials in structures. Where possible shiny metal structures should be darkened or screened to prevent glare.

Rehabilitation Phase:

- On completion of a section of works, the area must be rehabilitated by suitable landscaping, levelling, topsoil dressing, land preparation, alien plant eradication and where ascribed for by the ECO, vegetation establishment;
- Clear and completely remove from site all construction structures and temporary infrastructure;
- All permanent infrastructure must be returned to a useable state.

- Remove all inert waste and rubble, such as excess rock, any structural foundations and remaining aggregates. Only once this material has been removed, the site shall be re-instated and rehabilitated.
- Domestic waste must be completely removed from the site and disposed of at a landfill site.
- The reinstatement of disturbed areas must follow immediately after the removal of structures and temporary infrastructure;
- Topsoil backfilling must be undertaken when the soil is dry, and not following any recent rainfall events;
- The replacement of topsoil must be sought in situ with construction where possible, or as soon as construction in an area has been completed;
- All stockpiled topsoil together with herbaceous vegetation must be replaced and redistributed over a disturbed area such as temporary access roads;
- Topsoil must be returned to the same site from where it was stripped;
- When insufficient topsoil remains, soil of a similar quality can be obtained from a nearby area within the construction area which was disturbed;
- Once topsoil has been returned to the ground, stripped vegetation must be randomly spread by hand over the area.
- All re-growth of invasive vegetative material will be monitored by the Developer for one year;
- All areas under rehabilitation are to be treated as no-go areas using danger tape and steel droppers/fencing and cordoned off, to prevent vehicular, pedestrian and livestock access.
- Any re-vegetation must be done using plant species in occurrence on site;
- Control invasive plant species and weeds using approved methods of manual or chemical intervention;
- The re-establishment of vegetation must be allowed several rainy seasons, given the arid nature of the climate and region.

3 DECLARATION OF THE SPECIALIST

I, **Christoff du Plessis, ID 911126 5012 084**, declare that I:

- am an Environmental Specialist at Enviroworks;
- act as an independent Specialist Consultant in the field of Visual Impacts;
- am assigned as Specialist Consultant by Greenmined Environmental for this proposed project;
- I do not have or will not have any financial interest in the undertaking of the activity other than remuneration for work as stipulated in the terms of reference;
- remuneration for services by the proponent in relation to this proposal is not linked to approval by decision-making Authorities responsible for permitting this proposal;
- the consultancy has no interest in secondary or downstream developments as a result of Authorisation of this project.
- have no and will not engage in conflicting interests in the undertaking of the Activity;
- undertake to disclose to the Client and the Competent Authority any material, information that have or may have the potential to influence the decision of the Competent Authority required in terms of the Environmental Impact Assessment Regulations 2017; and,
- will provide the Client and Competent Authority with access to all information at my disposal, regarding this project, whether favourable or not.

Christoff du Plessis

051 436 0793



4 SPECIALIST CV AND DETAILS

Business name of Specialist:	Enviroworks
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Christoff du Plessis

Relevant Qualifications

Baccalaureus Scientiae (B.Sc) in Environmental Geography: University of the Free State (2014)

Work Experience

January 2015 – Present: Environmental Specialist at Enviroworks

Key Specialist Experience

Visual Impact Assessment (VIA):

- Phalaborwa Wildlife Activity Hub, Kruger National Park, Limpopo Province (SANParks).
- 4.9ha Sand Mine on Portion 5 of the Farm Doornekraal No. 830, Western Cape Province (Greenmined).
- Proposed development of the Harvard Powerline, Bloemfontein, Free State Province (Centlec).
- Proposed development of the 35 m Buffeljagsrivier Monopole Mast, Buffeljagsrivier, Western Cape Province (Coast to Coast Towers).
- Proposed development of the 25 m Robertson Monopole Mast, Robertson, Western Cape Province (Coast to Coast Towers).
- Proposed development of the Klein Mooimaak Rest Camp Facility, West Coast National Park (SANParks).
- Proposed development of a Sand Mine near Malmesbury, Western Cape Province (Greenmined).
- Proposed upgrade of the R27 Gate and Geelbek Restaurant, West Coast National Park, Western Cape Province (SANParks).
- Proposed development of the 25 m Roodekrans Monopole Mast, Krugersdorp, Gauteng Province (Coast to Coast Towers).
- Proposed development of a 25 m Monopole Mast on Portion 25 of the Farm Klein Bottelary No. 17, Brackenfell, Western Cape Province (Coast to Coast Towers).

- Proposed development of a Landfill Site on Portion 3 of the Farm Katbosch No. 93, Sasolburg, Free State Province (Metsimaholo Landfill).
- Proposed development of numerous visitor information centres at Schroda and Mapungubwe Hill, Mapungubwe National Park, Limpopo Province (SANParks).
- Proposed development of a 35 m Monopole Mast on Portion 13 of the Farm Van Aries Kraal No. 455, Grabouw, Western Cape Province (Coast to Coast Towers).
- Proposed development of a 25 m Monopole Mast on Erf 532, Gansbaai, Western Cape Province (Coast to Coast Towers).
- Proposed development of a 35 m Lattice Mast on Portion 7 of the Farm Jagersvlakte No. 292, Grabouw, Western Cape Province (Warren Petterson Planning).
- Proposed development of a 35 m Lattice Mast on Erf 532, Stanford, Western Cape Province (Warren Petterson Planning).
- Proposed development of a 15 m Lattice Mast on Portion 4 of the Farm No. 53, Genadendal, Western Cape Province (Warren Petterson Planning).
- Proposed development of a 25 m Monopole Mast on Portion 8 of the Farm Delta No. 1003, Groot Drakenstein, Western Cape Province (Coast to Coast Towers).
- Proposed development of a 30 m Tree Mast on Portion 87 of the Farm Langverwacht No. 241, Kuils River, Western Cape Province (Warren Petterson Planning).
- Proposed development of a 20 m Tree Mast on Erf 679, Gouda, Western Cape Province (Atlas Towers).
- Proposed development of an IPP 400kV Power Line from Grommis to Aggeneys, Northern Cape Province (Eskom).
- Proposed development of a 30 m Lattice Mast on Erf 2819, Caledon, Western Cape Province (Atlas Towers).
- Proposed development of a 54 m Lattice Mast on Portion 7 of the Farm Haane Kuil No. 335, Beaufort West, Western Cape Province (Star Towers).
- Proposed development of a 25 m Monopole Mast on Erf 1035, Caledon, Western Cape Province (Atlas Towers).
- Proposed development of a 25 m Tree Mast on Erf 47, Birkenhead, Western Cape Province (Atlas Towers).
- Proposed development of a 25 m Monopole Mast on Erf 1201, Van Dyks Bay, Western Cape Province (Atlas Towers).
- Proposed development of a 20 m Tree Mast on Erf 1671, Melkbosstrand, Western Cape Province (Atlas Towers).
- Proposed development of a 15 m Tree Mast on Erf 740, Klein Brak River, Western Cape Province (Atlas Towers).
- Proposed Upgrades to the Alpha 1 Recreational Lounge, Robben Island, Western Cape Province (Robben Island Museum).
- Proposed development of a 25 m Tree Mast on Erf 969, Picaltsdorp, Western Cape Province (Atlas Towers).

- Proposed development of a 25 m Tree Mast on Erf 20601, George, Western Cape Province (Atlas Towers).
- Proposed development of a 25 m Monopole Mast on Erf 571, Dellville Park, Western Cape Province (Atlas Towers).
- Proposed development of a 15 m Tree Mast on Portion 113 of the Farm Ruygte Vally No. 205, Sedgefield, Western Cape Province (Atlas Towers).
- Proposed development of a 15 m Dome Mast on Erf 8281, Mossel Bay, Western Cape Province (Atlas Towers).
- Proposed development of a 35 m Tree Mast on Portion 42 of the Farm Harkerville No. 428, Plettenberg Bay, Western Cape Province (Atlas Towers).
- Proposed development of a 25 m Monopole Mast on the Remaining Extent of the Farm No. 790, Philippi, Western Cape Province (Atlas Towers).

Wetland Delineation Studies:

- Wetlands Delineation study for the development of 13 borrow pits along National Road 8, Ladybrand, Free State Province (SANRAL).
- Wetland Delineation study for the development of a 12.5ha cemetery on Erf 4233, Western Cape Province (Theewaterskloof Local Municipality).
- Wetland Delineation study for the proposed development of an Agri-Hub near Cederville, Eastern Cape Province (Femplan).
- Wetland Delineation study for the proposed development of an Agri-Hub near Lambasi, Eastern Cape Province (Femplan).
- Wetland Delineation study for the proposed development of the Blue Hills Curro Castle, Midrand, Gauteng Province (Curro Holdings).

Stormwater Management Plans:

- Stormwater Management Plan for the Agri-World Recycling Plant, Swellendam, Western Cape Province (Agri-World Recycling Plant).
- Stormwater Management Plan for the Klaasvoogds Granite Mine, Springbok, Northern Cape Province (Greenmined Environmental).
- Stormwater Management Plan for the Moreson Poultry Project, Brandfort, Free State Province (Moreson Poultry).
- Stormwater Management Plan for the Sintier Poultry Project, Bronkhorstspuit, Gauteng Province (Sintier Poultry).
- Stormwater Management Plan for the maintenance and extending of a canal near Karatera, Western Cape Province (Eden Municipality).
- Stormwater Management Plan for Layer Hen Houses on the Remaining Extent of Portion 1 of the Farm Elandsfontein No. 21, Moloti City, North West Province (Bramakama Poultry).

5 ABBREVIATIONS

CBA	-	Critical Biodiversity Area
DEA	-	Department of Environmental Affairs
DEA&DP	-	Department of Environmental Affairs & Development Planning
DEM	-	Digital Elevation Model
DTM	-	Digital Terrain Model
EIA	-	Environmental Impact Assessment
ESA	-	Ecological Support Area
GIS	-	Geographical Information System
Km	-	Kilometre
M	-	Metre
MAP	-	Mean Annual Precipitation
MAT	-	Mean Annual Temperature
USGS	-	United States Geological Survey
UTM	-	Universal Transverse Mercator
VAC	-	Visual Absorption Capacity
VIA	-	Visual Impact Assessment

6 REQUIREMENTS OF A SPECIALIST REPORT

Appendix 6 of Government Notice Regulation 326 of 7 April 2017 outlines the basic requirements of a Specialist Report. Please refer to Table 1 below of all requirements.

Table 2: Requirements of a Specialist Report as set out in GN R. 326 of 07 April 2017.

REQUIREMENTS	YES/NO
A Specialist report prepared in terms of these Regulations must contain –	
a. Details of –	Yes
i. The Specialist who prepared the report; and,	
ii. The expertise of that Specialist to compile a specialist report including a curriculum vitae;	
b. A declaration that the Specialist is independent in a form as may be specified by the Competent Authority;	Yes
c. An indication of the scope of, and the purpose for which, the report was prepared;	
i. An indication of the quality and age of base data used for the Specialist Report;	Yes
ii. A description of existing impacts on site, cumulative impacts of the proposed development and levels of acceptable change;	
d. The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Yes
e. A description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Yes
f. Details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Yes
g. An identification of any areas to be avoided, including buffers;	Yes
h. A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Yes
i. A description of any assumptions made and any uncertainties or gaps in knowledge;	Yes
j. A description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	Yes
k. Any mitigation measures for inclusion in the EMP'r	Yes
l. Any conditions for inclusion in the Environmental Authorisation;	Yes
m. Any monitoring requirements for inclusion in the EMP'r or Environmental Authorisation;	Yes
n. A reasoned opinion –	
i. Whether the proposed activity, activities or portions thereof should be authorised;	Yes
ii. If the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMP'r, and where applicable, the closure plan;	
o. A description of any consultation process that was undertaken during the course of preparing the specialist report;	N/A
p. A summary and copies of any comments received during any consultation process and where applicable all responses thereto; and,	N/A
q. Any other information requested by the Competent Authority.	Yes

7 VISUAL IMPACT EVALUATION CRITERIA CHECKLIST

As per the Provincial Government of the Western Cape Guideline for involving Visual and Aesthetic Specialists in the EIA Process (DEA&DP, 2005), a high quality visual assessment should include the following criteria:

Table 3: Requirements of a Visual Impact Assessment.

REQUIREMENTS	YES/NO
Meet the minimum requirements for a visual assessment;	Yes
Is appropriate to the nature and scale of the proposed development;	Yes
Provides a full description of the environment and the project;	Yes
Considers the project within its wider context;	Yes
Provides a clear methodology using accepted conventions for visual assessment;	Yes
All sources of information and references are given;	Yes
Graphics, including maps and visual simulations, are clear;	Yes
Include both quantitative and qualitative criteria;	Yes
Cumulative visual impacts have been considered;	Yes
An evaluation of alternatives has been made;	No – Site is an existing one.
An explanation of significance ratings, related to bench-marks, is given;	Yes
Recommendations for visual mitigation are sensible and practical;	Yes
Recommendations for monitoring programmes have been outlined;	Yes
The best practical environmental option has been considered;	Yes
All the visual issues raised in the scoping have been addressed;	Yes
A clear summary of mitigation measures, including essential and optional measures, is given.	Yes

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8 STUDY APPROACH

8.1 Methodology

The study was undertaken using Geographical Information System (GIS) software as a tool to generate a viewshed analyses and to apply relevant spatial criteria to the proposed development. A detailed Digital Elevation Model (DEM) for the study area (S34E21, S34E22, S35E21 & S35E22) was obtained from the National Aeronautic Space Administration (NASA). The methodology utilised to identify issues to the visual impact include the following activities:

- The creation of a detailed digital terrain model of the potentially affected environment;
- The identification of sensitive environments upon which the proposed Quarry could have a potential impact on; and,
- The creation of viewshed analyses from the proposed GKC Mossel Bay Quarry in order to determine the visual exposure and the topography's potential to absorb the potential visual impact. The viewshed analysis takes into account the dimension of the proposed GKC Quarry and was calculated at a height of seven meters (7 m).

This Report (Desktop Visual Impact Assessment) sets out to identify and quantify the possible visual impacts related to the proposed Quarry, as well as offer potential mitigation measures where required. The following methodology has been adopted for the assessment of the Visual Impact Assessment:

- **Determine the Potential Visual Exposure**
The visibility or visual exposure of any structure or activity is the point of departure for the VIA. It stands to reason that if the proposed infrastructure was not visible, no impact will occur. Viewshed analyses of the proposed structures indicate the potential visibility.
- **Determine Visual Distance/Observer Proximity to the facility**
In order to refine the visual exposure of the proposed Quarry on surrounding areas/receptors, the principle of reduced impact over distance is applied in order to determine the core area of visual influence for the structures.

Proximity radii for the proposed facility are created in order to indicate the scale and viewing distance of the structures and to determine the prominence of the structures in relation to their environment. The visual distance theory and the observer's proximity to the Quarry are closely related, and especially relevant, when considered from areas with a high viewer incidence and a predominantly negative visual perception of the proposed infrastructure.
- **Determine Viewer Incidence/Viewer Perception**
The number of observers and their perception of a structure determine the concept of visual impact. If there are no observers, then there would be no visual impact. If the visual perception of the structure is favourable to all observers, the visual impact would be positive.

It is therefore necessary to identify areas of high viewer incidence and to classify certain areas according to the observer's visual sensitivity towards the proposed infrastructure. It would be impossible not to generalise the viewer incidence and sensitivity to some degree, as there are many variables when trying to determine the perception of the observer; regularity of sighting, cultural background, state of mind,

and purpose of sighting which would create a myriad of options. As this is a Desktop Report, observers will not be listed in great detail; however, reference will be made.

➤ **Determine the Visual Impact Index**

The results of the above analyses are merged in order to determine where the areas of likely visual impact would occur. These areas are further analysed in terms of the previously mentioned issues (related to the visual impact) and in order to judge the magnitude of each impact.

➤ **Determine the Impact Significance**

The potential visual impacts identified and described are quantified in their respective geographical locations in order to determine the significance of the anticipated impact. Significance is determined as a function of the extent, duration, magnitude and probability.

8.2 Projections

Projected coordinate systems are defined by ArcGIS Resource Centre (The developers) as *“a flat, two dimensional surface. Unlike a geographical coordinate system, a projected coordinate system has constant lengths, angles, and areas across the two dimensions. A projected coordinate system is always based on a geographic coordinate system that is based on a sphere or spheroid”*. Projected Coordinates systems are world based and thus the larger the area the larger the distortion. To minimise the distortion the Universal Transverse Mercator (UTM) coordinate reference system divides the Earth into 60 equal zones that are all 6 degrees wide in longitude from East to West. Mossel Bay is situated within the thirty four degree (34°) UTM Zone, thus the WGS84/UTM S34 (32734) was used as projection.

9 ASSUMPTIONS AND LIMITATIONS

- Information is assumed to be the latest available information.
- Visual impact studies and assessments depend, to some extent, on subjective judgements. The subjectivity, of the analysis relates to the value driven nature of VIA. However, to deal with subjectivity, the methodology of this VIA is explained and rating categories clearly defined.
- No Site Alternatives have been investigated as the proposed quarry was already mined in 1997.

10 SCOPE OF WORK

The determination of the potential visual impacts is undertaken in terms of nature, extent, duration, magnitude, probability and significance of the construction and operation phases of the proposed project. The study area for the visual assessment encompasses a geographical area of 130 km² (extent of the maps) and includes a ten kilometre (10 km) buffer zone from the proposed GKC Quarry. The study area constitutes of local tourist attractions, Mossdustria, agriculture and natural environments. The proposed development will be situated approximately twenty two and a half kilometres (22.5 km) towards the west of Mossel Bay.

Anticipated issues related to the potential visual impact of the proposed GKC Quarry include the following:

- The visibility of the quarry to, and potential visual impact on, observers travelling along National Road 2 (N2), R327, R325 and internal farm roads;
- The visibility of the facility to, and potential visual impacts on tourists visiting tourist attraction near Mossel Bay (Springerbaai Coastal ECO Estate, Nautilus Bay, Moquini Coastal Estate, Kleinberg Train Station, Oystercatcher Trail, Boggoms Bay and Indalu Game Reserve);
- The visibility of the facility to, and potential visual impact on observers residing within Springerbaai Coastal ECO Estate, Nautilus Bay, Moquini Coastal Estate and Boggoms Bay);
- The visual absorption capacity of natural or planted vegetation as well as man-made topographical features;
- Potential visual impacts associated with the construction- and operational phase; and,
- The potential to mitigate visual impacts.

It is anticipated that the issues listed above may constitute a visual impact at a local scale.

11 THE AFFECTED ENVIRONMENT

The proposed GKC Quarry will be situated on Portion 31 of the Farm Driefonteinen No. 243, Mossel Bay, Western Cape Province. The study area constitutes of local tourist attractions, Mossdustria, agriculture and natural environments.

11.1 Topography, vegetation and hydrology

11.1.1 Vegetation

The Northern Langeberg Sandstone Fynbos (FFs 15) vegetation type dominates the vegetation of the project site. The northern mid and footslope of the Kleinberg ridge is covered by a renosterveld type of vegetation. It is dominated by species such as *Dicerotheramnus rinocerotis*, *Bobartia robusta*, *Helichrysum rutilans*. Along the crest larger shrubs occur among the renosterveld species namely the exotic *Acacia cyclops*, *A. longifolia*, the indigenous *Searsia laevigata*, *S. glauca*, *Erica densifolia*, and *Aspalathus hirta* (Du Preez, 2019).

In the old quarry is a stand of *Erica densifolia*, *Psoralea azurea* and *Aspalathus hirta*. The rocky outcrop and cliff-face on the southern side of the quarry is dominated by *Aloe arborescens*, *Searsia laevigata*, *Ficus burtt-davey*, *Pterocelastrus tricuspidatus* and *Diospyros dichrophylla* (Du Preez, 2019).

11.1.2 Geology

The geology consists of layers of acidic lithosol soils derived from Ordivician sandstones of the Table Mountain Group. The soils vary from deep aeolian sand deposits to shallow rocky form of Mispah and Glenrosa (Du Preez, 2019).

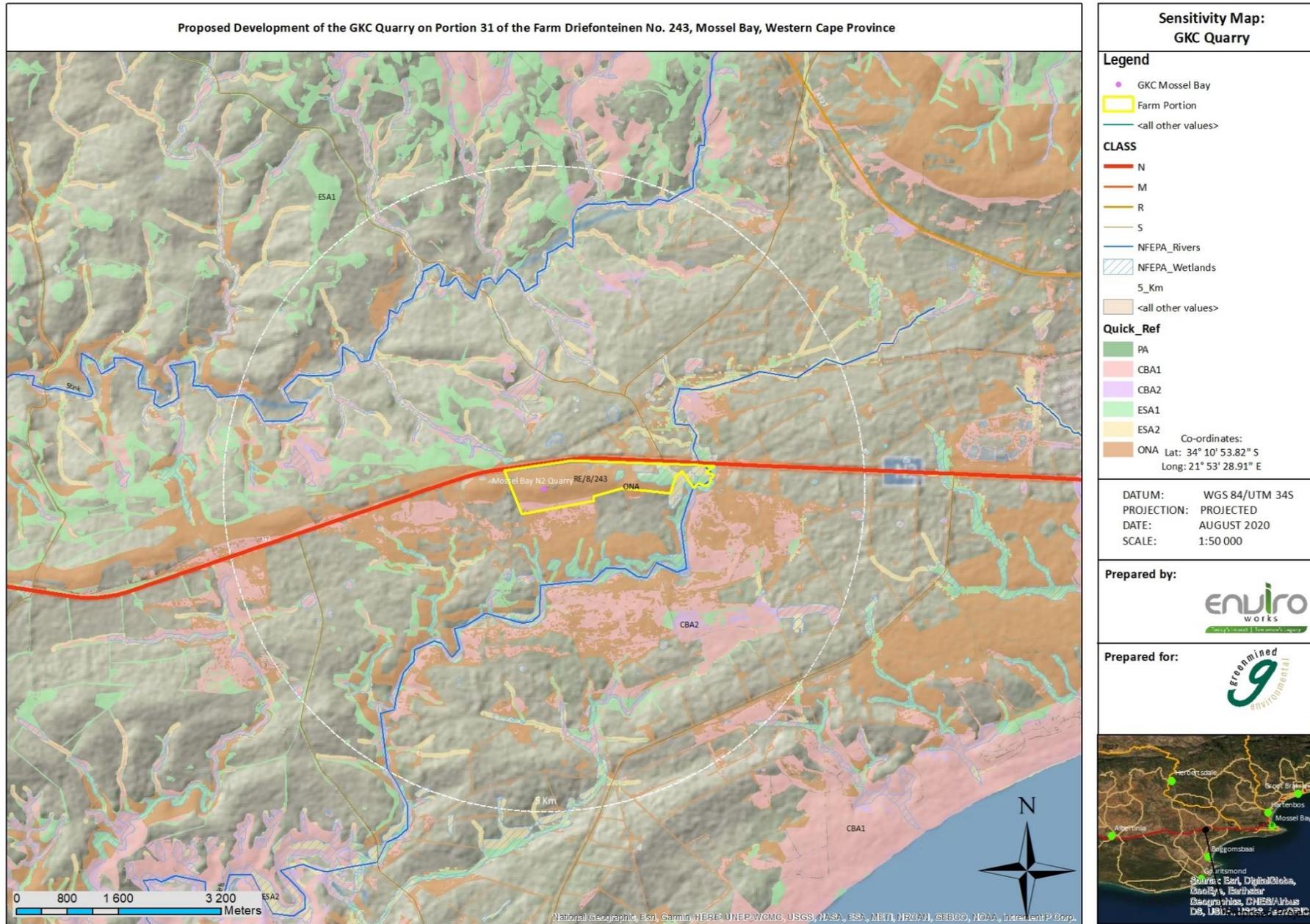


Figure 2: Sensitivity Map of the Study Area.

11.1.3 Climate

The proposed project will be situated within the North Langeberg Sandstone Fynbos bio-region. The Mean Annual Precipitation (MAP) of the study area is five hundred and eighty one millimeters (581 mm) occurring in the winter months with the highest rainfall measured between the months of May and August (Mucina & Rutherford, 2006). The Mean Annual Temperature (MAT) recorded for the study area is fifteen degrees Celsius (14.7° C) with summer temperatures averaging at twenty five degrees Celsius (25° C).

FFs 15 North Langeberg Sandstone Fynbos

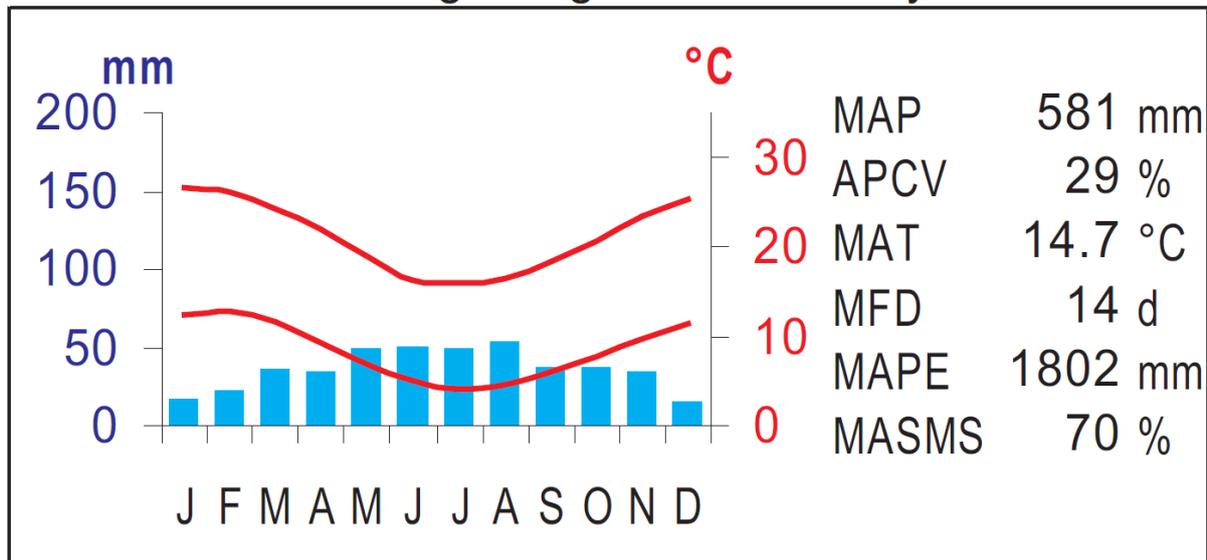


Figure 3: Climate Diagram for the North Langeberg Sandstone Fynbos.

12 RELEVANT LEGISLATION AND GUIDELINES

The following legislation and guidelines have been considered in the preparation of this report:

- This Desktop Visual Impact Assessment was undertaken in accordance with the Guidelines for Involving Visual and Aesthetic Specialists in EIA Processes, as issued by the Department of Environmental Affairs and Development Planning (DEA&DP).
- The Environmental Impact Assessment Regulation as outlined in Government Notice Regulation 326 of 7 April 2017.

13 DEVELOPMENT CATEGORY

As per the Guidelines for Involving Visual and Aesthetic Specialists in EIA Processes, the development categories are as follow:

Table 4: Development Categories.

Category 1	Items listed in this category include: <ul style="list-style-type: none"> ➤ Nature reserves; ➤ Nature related recreation; ➤ Camping; ➤ Picnicking; and, ➤ Trails and minimal visitor facilities.
Category 2	Items listed in this category include: <ul style="list-style-type: none"> ➤ Low-key recreation/resort/residential type developments;

	<ul style="list-style-type: none"> ➤ Small scale agriculture/nurseries/narrow roads; and, ➤ Small scale infrastructure
Category 3	<p>Items listed in this category include:</p> <ul style="list-style-type: none"> ➤ Low density residential/resort type development; ➤ Golf or polo estates; and, ➤ Low to medium-scale infrastructure.
Category 4	<p>These include:</p> <ul style="list-style-type: none"> ➤ Medium density residential development; ➤ Sport facilities; ➤ Small-scale commercial facilities/office parks; ➤ One-stop petrol stations; ➤ Light industry; ➤ Medium scale infrastructure.
Category 5	<p>These include:</p> <ul style="list-style-type: none"> ➤ High density township/residential developments; ➤ Retail and office complexes; ➤ Industrial facilities; ➤ Refineries; ➤ Treatment plants; ➤ Power stations; ➤ Wind energy farms; ➤ Powerlines; ➤ Freeways; ➤ Toll roads; ➤ Large scale infrastructure generally; ➤ Large scale development of agriculture land and commercial tree plantations; ➤ Quarrying and mining activities with related processing plants.

Derived from Table 4, the proposed project falls within Category 5 (Quarrying and Mining Activities). From the aforementioned Table 5 was compiled in order to determine the Visual Impact of any proposed development.

Table 5: Expected Visual Impact of the Proposed Development.

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

Areas or routes of medium scenic, cultural or historical significance.	Little or no visual impact expected	Minimal visual impact expected.	Moderate visual impact expected	High visual impact expected	High visual impact expected
Areas or routes of low scenic, cultural or historical significance/disturbed.	Little or no visual impact expected	Little or no visual impact expected	Minimal visual impact expected.	Moderate visual impact expected	High visual impact expected
Disturbed or degraded sites/run-down urban areas/wasteland.	Little or no visual impact expected	Little or no visual impact expected	Little or no visual impact expected	Minimal visual impact expected.	Moderate visual impact expected

From the table above, it is anticipated that the proposed GKC Quarry will have a high visual impact on the surrounding areas.

14 DESCRIPTION OF THE RECEIVING ENVIRONMENT

Landscape character is defined by the U.K Institute of Environmental Management and Assessment (IEMA) as the “*distinct and recognizable pattern of elements that occurs consistently in a particular type of landscape, and how this is perceived by people. It reflects particular combinations of geology, land form, soil, vegetation, land use and human settlement*” (GLVIA, 2002). According to DEA&DP Guideline Section 9.2, information describing the current state of the affected environment, as well as trends in the area, is required for visual input into the EIA process. The receiving environment was determined using the 2013-2014 South African National Land-Cover data as provided by the National Department of Environmental Affairs (DEA). As this is only a desktop study no site visit was undertaken.

14.1 Sense of Place

The term sense of place captures the identity of places we recognize. It embraces natural and cultural features, the distinctive sights, sounds and experiences to the people residing in or nearby that place. Places with a strong sense of place have a clear identity and character that is recognisable by inhabitants and visitors alike.

Sense of place differs from place attachment by considering the social geographical context of place bonds and the sensing of place, such as aesthetic and a feeling of dwelling. An impact on the sense of place is one that alters the visual landscape to such an extent that the user experiences the environment differently, and more specifically, in a less appealing or less positive light.

Mossel Bay was first discovered by the explorer Bartolomeu Dias who arrived on 3 February 1488; however, the area had already been inhabited by the Khoi-San. The Khoi-San resided within the caves which is today known as the Point of Human Origins. The first trade on African soil took place when Vasco De Gama landed in Mossel Bay in November 1497 on-route to India. Mossel Bay oldest Municipal Landmark is the tree that was used as a post office by Sailors passing through the area in the 1500's. Letters were left within the tree warning all sailors of the dangers that lie ahead of them (Lewis, 2017).

Mossel Bay owes its origin to the Sea Fearing Trade; however, foreigners started to move inland and a farming community started coupled with Granary in town the economy started to develop. The Granary was responsible

for the upgrade of the harbour which resulted in fishing contributing to the economy. Today Mossel Bay's economy is dependent on Tourism, Agriculture, Fishery and the Natural Gas Plant which is converted into liquid fuel (SA Places). As per Figure 6 the area within a five kilometre (5 km) from the proposed quarry consist of commercial agricultural field, drainage lines and natural areas.

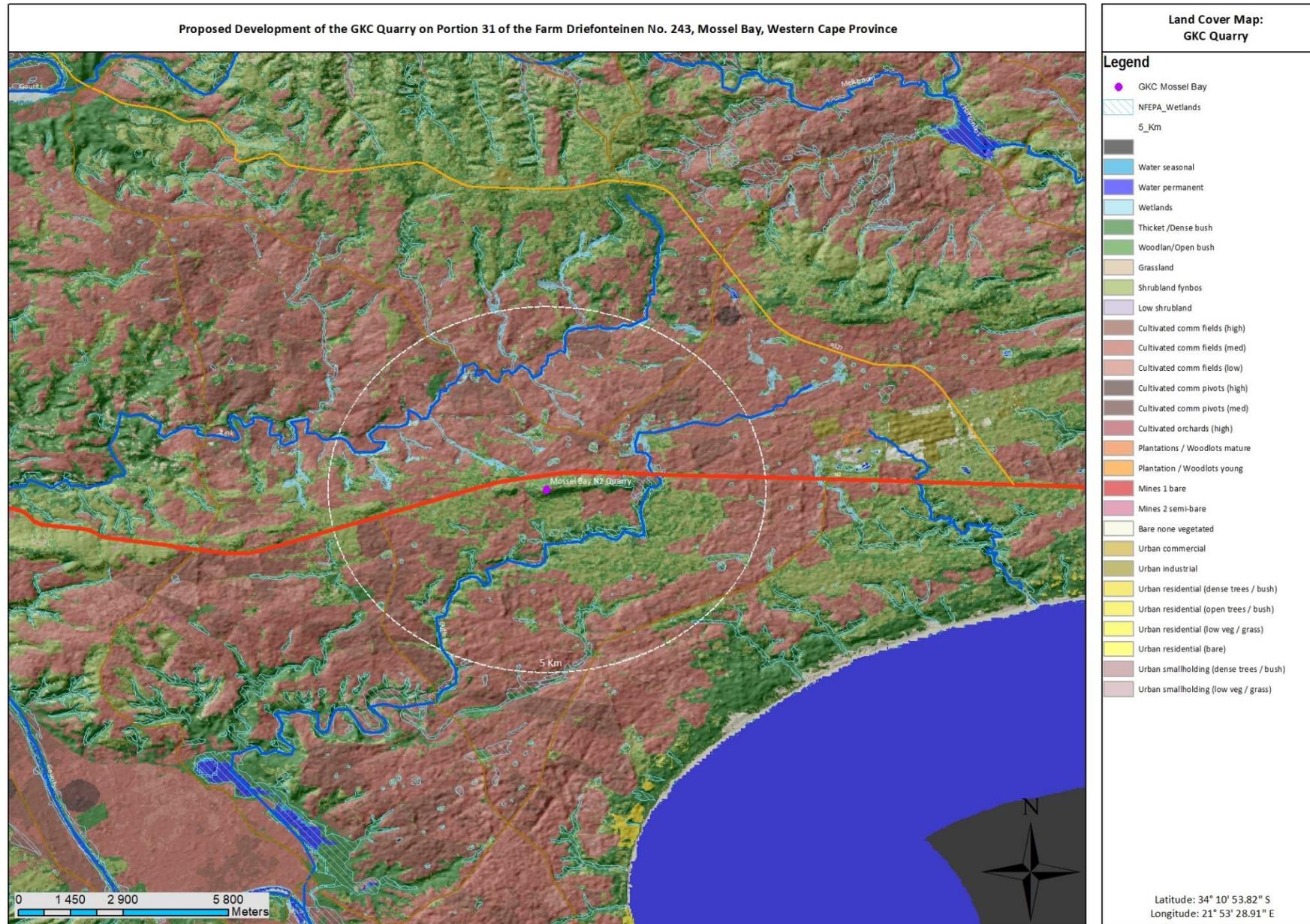


Figure 4: Land Cover Map of the Area.

15 RESULTS

15.1 Potential Visual Exposure (Preferred Quarry Position)

The combined result of the viewshed analysis for the proposed GKC Quarry is displayed on the map below (Figure 5). The visibility analysis was undertaken at the height of the associated infrastructure measuring in at seven metres (7 m), in order to simulate the view from the quarry and to indicate prominence of the structures within the landscape. Furthermore; Figure 5 indicates proximity radii from the proposed GKC Quarry as a reference to determine the Visual Absorption Capacity. It must be noted that the Digital Terrain Model (DTM) utilised from the viewshed analysis does not include the effect of vegetation cover and built structures. These features may influence the visual exposure to some degree.

15.2 GKC Quarry Preferred Position

15.2.1 0-1km (short distance)

Within the short distance zone the proposed quarry will be visible from the north west and south east. Within the short distance zone the visual impact will not have a permanent impact. All points of observation within the short distance zone will be temporary as observers will only reside within the area for a certain amount of time or effectively travel through the area. However, although the impact will be temporary it will be high due to the short distance between the observer and the proposed development. The highest visual impact will occur from National Route 2 between metre six hundred and seventy nine (m 679) and kilometre one (km 1) towards the north west. The high visual impact within this area is assigned due to the high volumes of wheel traffic making use of the National Route 2 (N2). Beside for National Route 2 (N2) one secondary farm road traverse through the short distance zone; however, the visual impact will be moderate as the quarry will only be visible over a distance of one hundred metres (100 m). Within the short distance zone the proposed quarry is surrounded by agricultural farmland with no sign of permanent residence, and as such, the visual impact will be moderate and temporary as farm workers will only be in the field during working hours and certain seasons of the year.

15.2.2 1-2km (short to medium distance)

The highest visual impact within the short to medium distance zone will occur from four (4) farmsteads the closest one (1) situated one point six kilometres (1.6 km) towards the north west. The second situated one point seven kilometres (1.7 km) towards the south west and the third and fourth situated one point nine kilometres (1.9 km) towards the east. Although a kilometre can be placed between the observer and the development the visual impact will be moderate due to the higher elevation of the development. From these farmsteads the visual impact will be permanent as observers reside within these areas. The proposed development will be visible over three hundred and fifty three metres (353 m) from National Route 2 (N2) situated one point three kilometres (1.3 km) towards the east from the proposed development from where the visual impact will be temporary and moderate. Furthermore, the proposed development will be visible from a secondary farm road situated one point seven kilometres (1.7 km) between north and east from where the visual impact will be low and temporary. The remaining areas within the short to medium distance zone consist of agricultural farmland and natural areas from where the visual impact will be moderate and temporary as observers will only reside within the area for a certain amount time and seasonally.

15.2.3 2-5km (medium to long distance)

Due to the elevation of the proposed development it will be visible within the medium to long distance zone from numerous points within the landscape. However, given the distance between the proposed development and the observer visual distortion will occur. The proposed development will especially be visible from Kleinberg situated two kilometres (2 km) towards the north east from where the visual impact will be permanent and permanent. The proposed development will be visible from three (3) farm roads situated two and a half kilometres (2.5 km) towards the north east, three and a half kilometres (3.5 km) towards the north and four kilometres (4 km) towards the south from where the visual impact will be low and temporary. The landscape within this distance zone predominantly consist of agricultural farmlands from where the visual impact will be low and temporary as workers will reside within the area for a certain amount of time. It must be noted that the visual impact will be influenced by the undulating topography of the study area and as such the low visual impact is assigned.

15.2.4 Greater than 5km (long distance)

Visibility beyond five kilometres (5km) from the proposed GKC Quarry is expected to be negligible due to the distance between the object and the observer. As per the viewshed analysis the proposed development will be visible within the long distance zone from certain elevated vantage points. However, if all mitigation measures are implemented there will be no visual impact within the long distance zone.

15.2.5 Conclusion

The following conclusion is drawn from the Desktop Visual Impact Assessment in that the highest visual impact will occur from the four (4) farmsteads situated within the short to medium distance zone as well as from Kleinberg from where the visual impact will be moderate and permanent. The proposed development will be visible from certain sections of National Route 2 (N2) as well as internal farm roads from where the visual impact will vary between moderate, low and no visual impact. From these vantage points the impact will be temporary as wheel traffic will only traverse through the area. The majority of the study area consist of agricultural farmland from where the visual impact will be temporary as farm workers will reside within this area for a limited time seasonally. No places of heritage significance could be identified by the Desktop Assessment. If the mitigation measures as listed below are implemented on site the visual impact will be moderate within the mining phase and low within the rehabilitation phase. From a visual perspective the proposed development will be acceptable within the receiving environment if mitigation measures are implemented.

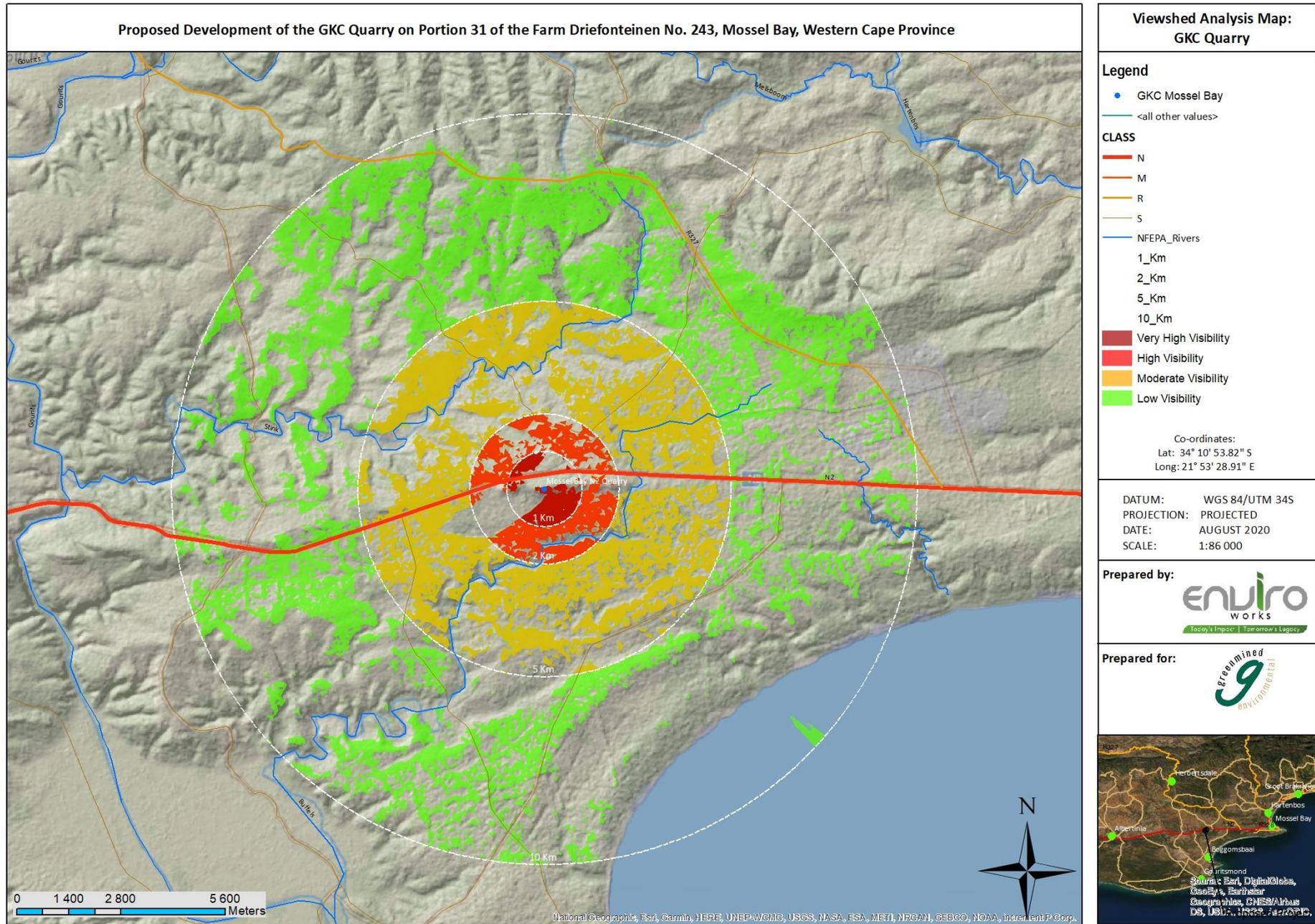


Figure 5: Viewshed Analysis of the proposed GKC Quarry.

16 ELEVATION OF THE STUDY AREA

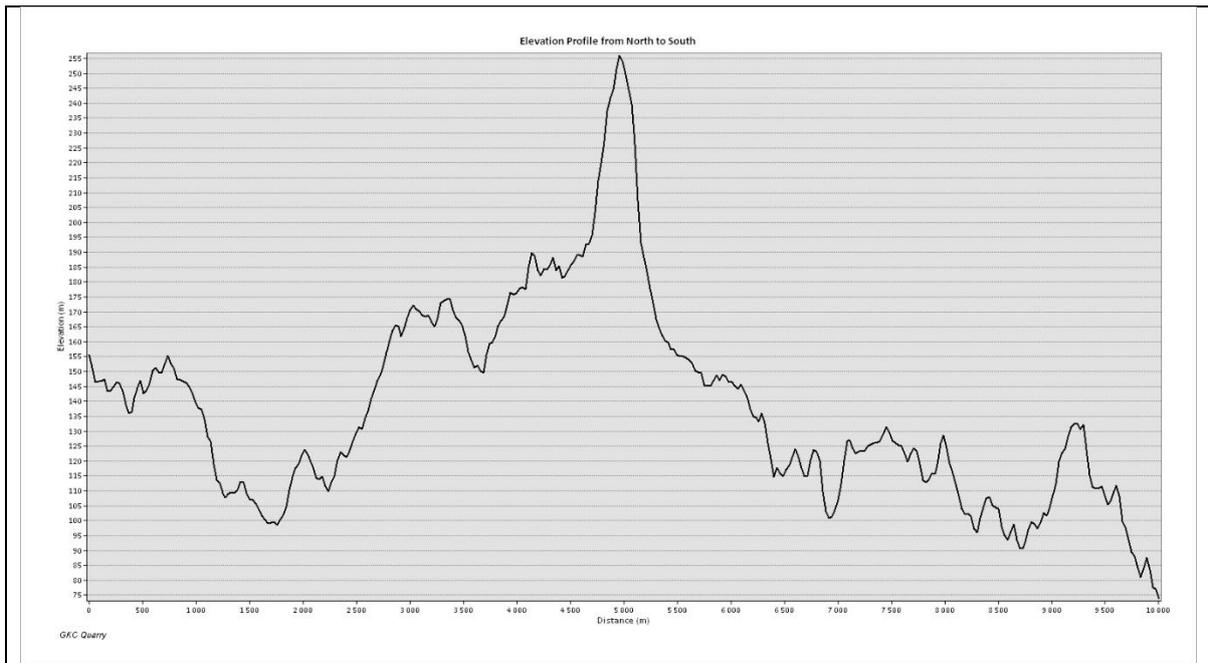


Figure 6: Elevation Profile from North to South.

As evident within Figure 6 the proposed GKC Quarry is situated at an elevation of two hundred and fifty five metres (255 m) where it is expected that thirty metres (30 m) will be mined. The surrounding landscape varies between one hundred and ninety metres (190 m) and seventy metres (70 m).

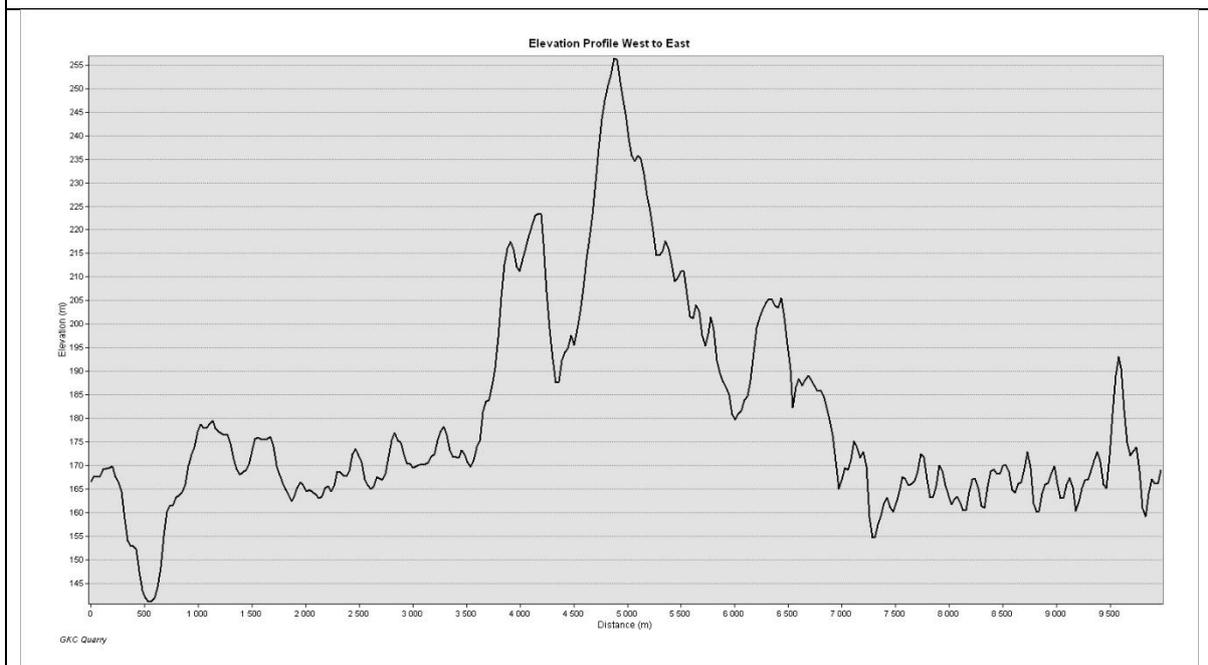


Figure 7: Elevation Profile West to East.

The elevation of the study area from west to east varies between two hundred and twenty metres (220 m) and one hundred and forty metres (140 m) with the highest point of the quarry situated at two hundred and fifty five metres (255 m).

17 VISUAL IMPACT ASSESSMENT: IMPACT RATING METHODOLOGY

The previous section outlines all areas visible from the GKC Quarry (viewshed analysis). This section will attempt to quantify these potential visual impacts in their respective geographical locations and in terms of the identified

issues related to the visual impact. The methodology for the assessment of potential visual impacts states the nature of the potential visual impact (e.g. the visual impact on individuals who travel along National Road 2 (N2), R327, R325 and internal farm roads as well as those residing within and visiting the project extent) and includes a table quantifying the potential significance of visual impact according to the following criteria:

- Duration of the impact (time scale);
- Extent of the impact (spatial scale);
- Degree to which the impact may cause irreplaceable loss of resources;
- Degree to which the impact can be reversed;
- Magnitude (or nature) of negative or positive impacts;
- Probability of the impact occurring;
- Cumulative Impacts; and the,
- Degree to which the impact can be mitigated.

The scales to be used to assess these variables and to define the rating categories are tabulated in the tables below.

Table 6: Evaluation components, ranking scales and descriptions (criteria).

Evaluation component	Ranking scale and description (criteria)
DURATION	5 - Permanent 4 - Long term: Impact ceases after operational phase/life of the activity (> 20 years). 3 - Medium term: Impact might occur during the operational phase/life of the activity (5 to 20 years). 2 - Short term: Impact might occur during the construction phase (< 5 years). 1 - Immediate
EXTENT (or spatial scale / influence of impact)	0 - None 5 - International: Beyond National boundaries. 4 - National: Beyond Provincial boundaries and within National boundaries. 3 - Regional: Beyond 5 km of the proposed development and within Provincial boundaries. 2 - Local: Within 5 km of the proposed development. 1 - Site-specific: On site or within 100 m of the site boundary.
IRREPLACEABLE loss of resources	5 - Definite loss of irreplaceable resources. 4 - High potential for loss of irreplaceable resources. 3 - Moderate potential for loss of irreplaceable resources. 2 - Low potential for loss of irreplaceable resources. 1 - Very low potential for loss of irreplaceable resources. 0 - None
REVERSIBILITY of impact	5 - Impact cannot be reversed. 4 - Low potential that impact might be reversed. 3 - Moderate potential that impact might be reversed. 2 - High potential that impact might be reversed. 1 - Impact will be reversible. 0 - No impact.

Evaluation component	Ranking scale and description (criteria)
MAGNITUDE of <u>negative</u> impact (at the indicated spatial scale)	<p>10 - Very high: Bio-physical and/or social functions and/or processes might be <i>severely</i> altered.</p> <p>8 - High: Bio-physical and/or social functions and/or processes might be <i>considerably</i> altered.</p> <p>6 - Medium: Bio-physical and/or social functions and/or processes might be <i>notably</i> altered.</p> <p>4 - Low : Bio-physical and/or social functions and/or processes might be <i>slightly</i> altered.</p> <p>2 - Very Low: Bio-physical and/or social functions and/or processes might be <i>negligibly</i> altered.</p> <p>0 - Zero: Bio-physical and/or social functions and/or processes will remain <i>unaltered</i>.</p>
MAGNITUDE of <u>POSITIVE</u> IMPACT (at the indicated spatial scale)	<p>10 - Very high (positive): Bio-physical and/or social functions and/or processes might be <i>substantially</i> enhanced.</p> <p>8 - High (positive): Bio-physical and/or social functions and/or processes might be <i>considerably</i> enhanced.</p> <p>6 - Medium (positive): Bio-physical and/or social functions and/or processes might be <i>notably</i> enhanced.</p> <p>4 - Low (positive): Bio-physical and/or social functions and/or processes might be <i>slightly</i> enhanced.</p> <p>2 - Very Low (positive): Bio-physical and/or social functions and/or processes might be <i>negligibly</i> enhanced.</p> <p>0 - Zero (positive): Bio-physical and/or social functions and/or processes will remain <i>unaltered</i>.</p>
PROBABILITY (of occurrence)	<p>5 - Definite: >95% chance of the potential impact occurring.</p> <p>4 - High probability: 75% - 95% chance of the potential impact occurring.</p> <p>3 - Medium probability: 25% - 75% chance of the potential impact occurring</p> <p>2 - Low probability: 5% - 25% chance of the potential impact occurring.</p> <p>1 - Improbable: <5% chance of the potential impact occurring.</p>
CUMULATIVE impacts	<p>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.</p> <p>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.</p> <p>Low: The activity is localised and might have a negligible cumulative impact.</p> <p>None: No cumulative impact on the environment.</p>

Once the evaluation components have been ranked for each potential impact, the significance of each potential impact will be assessed (or calculated) using the following formula:

$$\text{SP (Significance Points)} = (\text{Duration} + \text{Extent} + \text{Irreplaceability} + \text{Reversibility} + \text{Magnitude}) \times \text{Probability}$$

The maximum value is 150 significance points (SP). The unmitigated and mitigated scenarios for each potential environmental impact should be rated as per the table below.

Table 7: Definition of significance ratings (positive and negative).

Significance Points	Environmental Significance	Description
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.
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.

18 VISUAL IMPACT ASSESSMENT

The primary visual impacts of the proposed GKC Mossel Bay Quarry are further assessed as follow:

18.1 Potential visual impact on sensitive visual receptors, located within a 5 km radii of the GKC Quarry.

The Operational Phase of the GKC Mossel Bay Quarry could have a moderate high visual impact (significance rating= 45) on observers within a five kilometer (5 km) radius should mitigation measures not be implemented.

Table 8: Impact Ratings of the Mining Phase within a 5 km radius.

Planning, design and construction phase	ALTERNATIVE 1	ALTERNATIVE 1	No-Go Alternative
	Before Mitigation	After Mitigation	
POTENTIAL VISUAL IMPACTS:			
Nature of impact: Impact on the sense of place for surrounding users.	Activity: The movement of mining vehicles, machinery and personnel on site shall result in a visual impact on surrounding users. Furthermore to this, the storage of materials and excavation shall result in disturbance and an unsightly character.		No construction phase impacts are associated with the no-go alternative thus no assessment has been undertaken.
Magnitude:	6	4	-
Duration:	3	3	-
Extent:	3	2	-
Irreplaceable:	4	3	-
Reversibility:	3	3	-
Probability:	4	3	-
Total SP:	76	45	-
Significance rating:	MH	M	-
Cumulative impact:	-	-	-
Proposed Mitigation:	<ul style="list-style-type: none"> • Access roads are to be kept clean; • Site offices and structures should be limited to one location and carefully situated to reduce visual intrusions. Roofs should be grey and non-reflective; • The stockpile area must be fenced and screened with green (resembling the natural vegetation) netting; • Dust suppression must be conducted as stated within the Ecological Impact Assessment; • Vegetation clearance must be limited to the development footprint; • The slopes of the “koppie” and internal walls of the quarry must remain intact if feasible; • A speed limit of 40 km/h must be enforced on the access road; • Adequate fire prevention measures must be enforced on site to ensure vegetation remain intact; • Lights within the mining area should face directly down (angle of 90°); 		N/A

Planning, design and construction phase	ALTERNATIVE 1	ALTERNATIVE 1	No-Go Alternative
	Before Mitigation	After Mitigation	
	<ul style="list-style-type: none"> Litter should be strictly controlled, as the spread thereof through wind could have a very negative visual impact; All areas disturbed by mining activities must be subject to landscaping and rehabilitation; All spoil and waste will be disposed to a registered waste site and certificates of disposal provided; Litter should be strictly controlled, as the spread thereof through wind could have a very negative visual impact; Signage, if essential, should be discrete and confined to entrance gates. No corporate or advertising signage should be permitted; and, Avoid shiny materials in structures. Where possible shiny metal structures should be darkened or screened to prevent glare. 		

Table 9: Impact Ratings of the Rehabilitation Phase within a 5 km radius.

Operational Phase	ALTERNATIVE 1	ALTERNATIVE 1	No-Go Alternative
	Before Mitigation	After Mitigation	
POTENTIAL VISUAL IMPACTS:			
Nature of impact: Impact on the sense of place for surrounding users.	Activity: The proposed area can cause a visual intrusion once the mining activities have been completed if not properly rehabilitated. It must be ensured that the area is rehabilitated as stated within the mitigation measures.		No construction phase impacts are associated with the no-go alternative thus no assessment has been undertaken.
Magnitude:	6	2	-
Duration:	5	5	-
Extent:	3	1	-
Irreplaceable:	3	3	-
Reversibility:	3	3	-
Probability:	3	2	-
Total SP:	60	28	-
Significance rating:	M	L	-
Cumulative impact:	-	-	-

Operational Phase	ALTERNATIVE 1	ALTERNATIVE 1	No-Go Alternative
	Before Mitigation	After Mitigation	
<p>Proposed Mitigation:</p>	<ul style="list-style-type: none"> • On completion of a section of works, the area must be rehabilitated by suitable landscaping, levelling, topsoil dressing, land preparation, alien plant eradication and where ascribed for by the ECO, vegetation establishment; • Clear and completely remove from site all construction structures and temporary infrastructure; • All permanent infrastructure must be returned to a useable state. • Remove all inert waste and rubble, such as excess rock, any structural foundations and remaining aggregates. Only once this material has been removed, the site shall be re-instated and rehabilitated. • Domestic waste must be completely removed from the site and disposed of at a landfill site. • The reinstatement of disturbed areas must follow immediately after the removal of structures and temporary infrastructure; • Topsoil backfilling must be undertaken when the soil is dry, and not following any recent rainfall events; • The replacement of topsoil must be sought in situ with construction where possible, or as soon as construction in an area has be completed; • All stockpiled topsoil together with herbaceous vegetation must be replaced and redistributed over a disturbed area such as temporary access roads; • Topsoil must be returned to the same site from where it was stripped; • When insufficient topsoil remains, soil of a similar quality can be obtained from a nearby area within the construction area which was disturbed; • Once topsoil has been returned to the ground, stripped vegetation must be randomly spread by hand over the area. • All re-growth of invasive vegetative material will be monitored by the Developer for one year; • All areas under rehabilitation are to be treated as no-go areas using danger tape and steel droppers/fencing and cordoned off, to prevent vehicular, pedestrian and livestock access. • Any re-vegetation must be done using plant species in occurrence on site; 		N/A

Operational Phase	ALTERNATIVE 1	ALTERNATIVE 1	No-Go Alternative
	Before Mitigation	After Mitigation	
	<ul style="list-style-type: none"> Control invasive plant species and weeds using approved methods of manual or chemical intervention; The re-establishment of vegetation must be allowed several rainy seasons, given the arid nature of the climate and region. 		

19 CONCLUSION AND RECOMMENDATIONS

The following conclusion is drawn from the Desktop Visual Impact Assessment in that the highest visual impact will occur from the four (4) farmsteads situated within the short to medium distance zone as well as from Kleinberg from where the visual impact will be moderate and permanent. The proposed development will be visible from certain sections of National Route 2 (N2) as well as internal farm roads from where the visual impact will vary between moderate, low and no visual impact. From these vantage points the impact will be temporary as wheel traffic will only traverse through the area. The majority of the study area consist of agricultural farmland from where the visual impact will be temporary as farm workers will reside within this area for a limited time seasonally. No places of heritage significance could be identified by the Desktop Assessment. If the mitigation measures as listed below are implemented on site the visual impact will be moderate within the mining phase and low within the rehabilitation phase. From a visual perspective the proposed development will be acceptable within the receiving environment if mitigation measures are implemented.

Mining Phase:

- Access roads are to be kept clean;
- Site offices and structures should be limited to one location and carefully situated to reduce visual intrusions. Roofs should be grey and non-reflective;
- The stockpile area must be fenced and screened with green (resembling the natural vegetation) netting;
- Dust suppression must be conducted as stated within the Ecological Impact Assessment;
- Vegetation clearance must be limited to the development footprint;
- The slopes of the “koppie” and internal walls of the quarry must remain intact if feasible;
- A speed limit of 40 km/h must be enforced on the access road;
- Adequate fire prevention measures must be enforced on site to ensure vegetation remain intact;
- Lights within the mining area should face directly down (angle of 90°);
- Litter should be strictly controlled, as the spread thereof through wind could have a very negative visual impact;
- All areas disturbed by mining activities must be subject to landscaping and rehabilitation;
- All spoil and waste will be disposed to a registered waste site and certificates of disposal provided;
- Litter should be strictly controlled, as the spread thereof through wind could have a very negative visual impact;
- Signage, if essential, should be discrete and confined to entrance gates. No corporate or advertising signage should be permitted; and,
- Avoid shiny materials in structures. Where possible shiny metal structures should be darkened or screened to prevent glare.

Rehabilitation Phase:

- On completion of a section of works, the area must be rehabilitated by suitable landscaping, levelling, topsoil dressing, land preparation, alien plant eradication and where ascribed for by the ECO, vegetation establishment;
- Clear and completely remove from site all construction structures and temporary infrastructure;
- All permanent infrastructure must be returned to a useable state.

- Remove all inert waste and rubble, such as excess rock, any structural foundations and remaining aggregates. Only once this material has been removed, the site shall be re-instated and rehabilitated.
- Domestic waste must be completely removed from the site and disposed of at a landfill site.
- The reinstatement of disturbed areas must follow immediately after the removal of structures and temporary infrastructure;
- Topsoil backfilling must be undertaken when the soil is dry, and not following any recent rainfall events;
- The replacement of topsoil must be sought in situ with construction where possible, or as soon as construction in an area has been completed;
- All stockpiled topsoil together with herbaceous vegetation must be replaced and redistributed over a disturbed area such as temporary access roads;
- Topsoil must be returned to the same site from where it was stripped;
- When insufficient topsoil remains, soil of a similar quality can be obtained from a nearby area within the construction area which was disturbed;
- Once topsoil has been returned to the ground, stripped vegetation must be randomly spread by hand over the area.

- All re-growth of invasive vegetative material will be monitored by the Developer for one year;
- All areas under rehabilitation are to be treated as no-go areas using danger tape and steel droppers/fencing and cordoned off, to prevent vehicular, pedestrian and livestock access.
- Any re-vegetation must be done using plant species in occurrence on site;
- Control invasive plant species and weeds using approved methods of manual or chemical intervention;
- The re-establishment of vegetation must be allowed several rainy seasons, given the arid nature of the climate and region.

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