mineral resources
Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

# BASIC ASSESSMENT REPORT

# And

# ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

SUBMITTED FOR ENVIRONMENTAL AUTHORISATIONS IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 AND THE NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT, 2008 IN RESPECT OF LISTED ACTIVITIES THAT HAVE BEEN TRIGGERED BY APPLICATIONS IN TERMS OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (MPRDA) (AS AMENDED)

| | | | |
|---|---|---|---|
| Project applicant: | Aurora Marble (Pty) Ltd | | |
| Registration no (if any): | 1988/006623/07 | | |
| Trading name (if any): | Aurora Marble (Pty) Ltd | | |
| Responsible Person, (e.g. Director, CEO, etc).: | Judy Strachan | | |
| Physical address: | 21A Impala Road, Chislehurston, Sandton | | |
| Postal address: | P O Box 650043, Benmore | | |
| Postal code: | 2010 | Cell: | 083 678 1807 |
| Telephone: | 011 775 5000 | Fax: | 011 883 2079 |
| E-mail: | jks@finstone.net | | |
| DMR REF | WC 30/5/1/1/2/10519PR | | |

## Important Notice

In terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002 as amended), the Minister must grant a prospecting or mining right if among others the mining "will not result in unacceptable pollution, ecological degradation or damage to the environment".

Unless an Environmental Authorisation can be granted following the evaluation of an Environmental Impact Assessment and an Environmental Management Programme report in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA), it cannot be concluded that the said activities will not result in unacceptable pollution, ecological degradation or damage to the environment.

In terms of section 16(3)(b) of the EIA Regulations, 2014, any report submitted as part of an application must be prepared in a format that may be determined by the Competent Authority and in terms of section 17 (1) (c) the competent Authority must check whether the application has taken into account any minimum requirements applicable or instructions or guidance provided by the competent authority to the submission of applications.

## Objective of the basic assessment process

The objective of the basic assessment process is to, through a consultative process—

(a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;

(b) identify the alternatives considered, including the activity, location, and technology alternatives;

(c) describe the need and desirability of the proposed alternatives,

(d) through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage , and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on the these aspects to determine:

(i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and

(ii) the degree to which these impacts—

**It is therefore an instruction that** the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or a permit are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulation and will lead to the Environmental Authorisation being refused.

**It is furthermore an instruction that** the Environmental Assessment Practitioner must process and interpret his/her research and analysis and use the findings thereof to compile the information required herein. (Unprocessed supporting information may be attached as appendices). The EAP must ensure that the information required is placed correctly in the relevant sections of the Report, in the order, and under the provided headings as set out below, and ensure that the report is not cluttered with un-interpreted information and that it unambiguously represents the interpretation of the applicant.

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## Glossary of terms and abbreviations

***"activity"*** means an activity identified in any notice published by the Minister or MEC in terms of section 24D(1)(a) of the Act as a listed activity or specified activity.

***"application"*** means an application for an environmental authorisation in terms of Chapter 4 of the GNR 982 Environmental Impact Assessment Regulation, 2014.

***"application area"*** The area covering 2051.2360 Ha ha, which includes a part of Welverdiend 511, portion 3 and the remaining portion of the farm Welverdiend 511.

***"CA"*** Competent Authority

***"DMR"*** Department of Mineral Resources

***"EAP"*** means an environmental assessment practitioner as defined in Section 1 of the Act.

***"EMPr"*** means an environmental management programme contemplated in regulation 19 and 23 of the Environmental Impact Assessment Regulations published under GN 326 of 2017 as amdned GN 517 11 June 2021.

***"Environmental Impact Assessment"*** means a systematic process of identifying, assessing, and reporting environmental impacts associated with an activity, including basic assessment and S&EIR.

***"prospecting"*** means intentionally searching for any mineral by means of any method-

(a) which disturbs the surface or subsurface of the earth, including any portion of the earth that is under the sea or under other water; or

(b) in or on any residue stockpile or residue deposit, in order to establish the existence of any mineral and to determine the extent and economic value thereof; or

(c) in the sea or other water on land;

***"prospecting area"*** means the area of land which is the subject of any prospecting right;

***"prospecting right"*** means a right granted in terms of section 84 of the Mineral and Petroleum Resources Development Act 28 of 2002

***"mitigation"*** means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.

***"NEMA"*** means the National Environmental Management Act 107 of 1998 (as amended).

***"NEMA EIA Regulations"*** means the Environmental Impact Assessment Regulations published under GN R326 of 2017 as amdned GN 517 of 11 June 2021.

***"public participation process"*** - in relation to the assessment of the environmental impact of any application for an environmental authorisation, means a process by which potential interested and affected parties are given opportunity to comment on, or raise issues relevant to, the application;

***"registered interested and affected party"*** in relation to an application, means an interested and affected party whose name is recorded in the register opened for that application in terms of regulation 42 of the Environmental Impact Assessment Regulations published under GN R983 of 2014.

***"SCC"*** – Species of Conservational Concern

***"S&EIR"*** means the scoping and environmental impact reporting process contemplated in Regulation 21 to Regulation 24 of the Environmental Impact Assessment Regulations published under GN R983 of 2014.

***"specialist"*** means a person that is generally recognised within the scientific community as having the capability of undertaking, in conformance with generally recognised scientific principles, specialist studies or preparing specialist reports, including due diligence studies and socio-economic studies.

***"study area"*** Covers an extent of 3495.79 ha. This includes the application area (Welverdiend 511, portion 3, and the remaining portion of the farm Welverdiend 511.

# BASIC ASSESSMENT REPORT

## 1 CONTACT PERSON AND CORRESPONDENCE ADDRESS.

| | | | |
|---|---|---|---|
| EAP: | Kobus (JLJ) Smit | | |
| Professional affiliation/registration: | EAPSA 2019/1631 | | |
| Contact person (if different from EAP): | Kobus Smit | | |
| Company: | Aquovadiseoc | | |
| Physical address: | 8 6th Avenue | | |
| Postal address: | Lichtenburg | | |
| Postal code: | 2740 | Cell: | 083 680 1032 |
| Telephone: | 018 000 5532 | Fax: | 086 658 0637 |
| E-mail: | kabous@aquovadis.co.za | | |

## 2 EXPERTISE OF THE EAP.

Pursuing an MPhil degree in Environmental Law and Governance

Master's Degree: Environmental Management with Waste Management

BA Honours: Environmental Management

A degree in Labour Relations Management

National Diploma in Commercial Practice

### 2.1 SUMMARY OF THE EAP'S PAST EXPERIENCE

(Curriculum vitae uploaded on SAMRAD. Annexure 1)

Kobus Smit has served as an environmental consultant for 18 years, working on numerous EIA and Section 24G rectification applications.

He has acted as an environmental consultant on several EIA applications, Section 24G reports, and Visual Impact Assessments, all of which have resulted in Authorisations approving the applications. He is consulting on several EIAs and 24G applications in the North-West province. In addition, EAP developed and implemented an ISO 14000 certification program for a well-known motor dealership.

Therefore, the EAP served as an Environmental Control Officer across various processes. Various Annual Environmental Performance Assessments were conducted, mostly on marble mines. The EAP is registered as an Environmental Assessment Practitioner with the Environmental Assessment Practitioner Association of South Africa, registration no. 2019/1631

# 3 LOCATION OF THE OVERALL ACTIVITY

*Table 1 Details of the locality of the application*

| | |
|---|---|
| Farm name: | Farm Portion 3, and a portion of the remaining portion of the Farm Welverdiend 511 |
| Application area (Ha): | 2051.2360 Ha |
| Magisterial district: | West Coast Magisterial District |
| Distance and direction from the nearest town: | 15 Km from Vanrhynsdorp, Western Cape |
| 21 Digit surveyor general code for each farm portion: | C07800000000051100003; & C07800000000051100000 |

## 3.1 LOCALITY MAP (SHOW THE NEAREST TOWN, SCALE NOT SMALLER THAN )

The Locality map is attached as

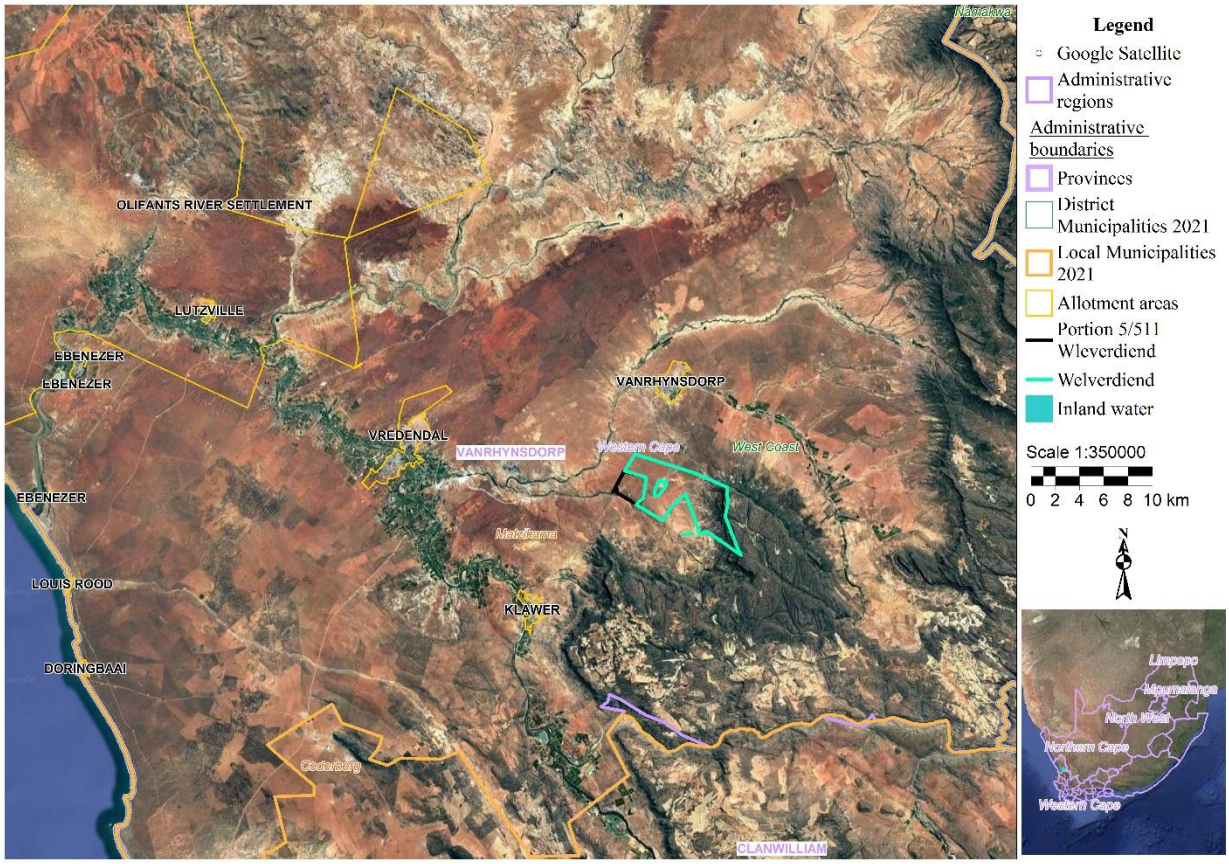


Figure 1 Proposed Prospecting Area

## 3.2 SITE LOCATION

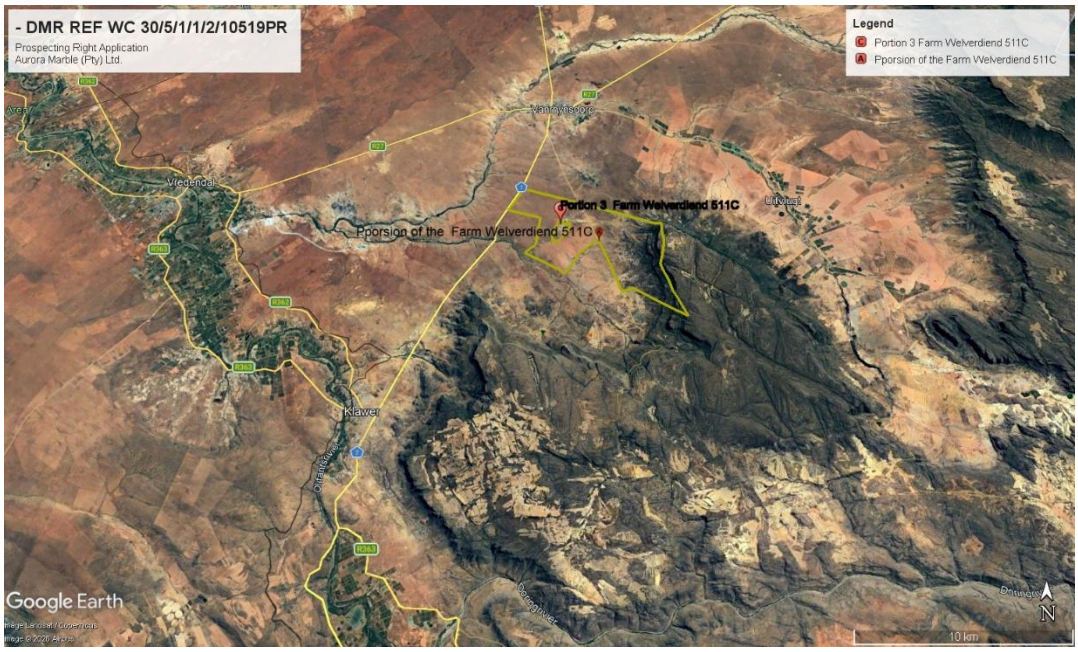


*Figure 2 Site location.*

## 4 DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY.

The prospecting application involves marble. Prospecting activities will primarily involve exploration drilling to confirm the stone's colour consistency at depth. In addition to non-invasive prospecting activities, the applicant plans to drill 3-5 diamond core holes to a depth of up to 40 metres to confirm the continuity of the marble stone deposit.

## 4.1 LISTED AND SPECIFIED ACTIVITIES

*Table 2 Activities and extent of proposed activities*

| ACTIVITY<br>**E.g., for mining – excavations, blasting, stockpiles, discard dumps or dams, loading, hauling and transport, water supply dams and boreholes, accommodation, offices, ablution, stores, workshop, processing plant, stormwater control, berms, roads,** pipelines, power lines, conveyors, etc.) | AERIAL EXTENT OF ACTIVITY (Ha) | LISTED ACTIVITY (mark with X where applicable or affected) | APPLICABLE LISTING NOTICE (GN R983, GN R984, GN R985 of 2014) |
|---|---|---|---|
| Any activity, including the operation of that activity, which requires a prospecting right in terms of section 16 of the MPRDA, 2002, including associated infrastructure, structures and earthworks, directly related to the prospecting of a mineral resource | 2030 Ha | Activity 20(a) | GNR 327 (2017) |
| | | | |
| Blasting | NA | Not triggered | Not triggered |
| Soil and stock overburden | Not yet determined | Not triggered | Not triggered |
| Waste Rock Dumps & and Residue stockpiles. | Not yet determined | Not triggered | GNR 921 as amended |

| ACTIVITY<br>**E.g., for mining – excavations, blasting, stockpiles, discard dumps or dams, loading, hauling and transport, water supply dams and boreholes, accommodation, offices, ablution, stores, workshop, processing plant, stormwater control, berms, roads,** pipelines, power lines, conveyors, etc.) | AERIAL EXTENT OF ACTIVITY (Ha) | LISTED ACTIVITY (mark with X where applicable or affected) | APPLICABLE LISTING NOTICE (GN R983, GN R984, GN R985 of 2014) |
|---|---|---|---|
| | | | (Category A - activity 15) |
| Roads | Existing roads will be used. Historical activities have transformed the site. | Not triggered | Not triggered |
| Loading, Hauling & Transport | NA | Not triggered | Not triggered |
| Construction of workshops, Offices & Stores | Temporary structures are planned for the initial phases | Not triggered | Not triggered |
| Dress yards -Processing (dressing of blocks and slabs via diamond wire saws, circular saws, black | Not yet determined | Not triggered | Not triggered |

| ACTIVITY<br>**E.g., for mining – excavations, blasting, stockpiles, discard dumps or dams, loading, hauling and transport, water supply dams and boreholes, accommodation, offices, ablution, stores, workshop, processing plant, stormwater control, berms, roads,** pipelines, power lines, conveyors, etc.) | AERIAL EXTENT OF ACTIVITY (Ha) | LISTED ACTIVITY (mark with X where applicable or affected) | APPLICABLE LISTING NOTICE (GN R983, GN R984, GN R985 of 2014) |
|---|---|---|---|
| powder, plugs, and feathers or expansion cement) | | | |
| Explosives magazines | Not yet determined | Not triggered | Not triggered |
| Workshop and related structures | Not yet determined (See footprints of previously disturbed areas) | Not triggered | Not triggered |
| Powerlines (11 kva) | Not yet determined | Not triggered | Not triggered |
| Above-ground (temporary) compressed air pipeline (150mm in diameter) | NA | Not triggered | Not triggered |
| Evaporation ponds in the close vicinity of diamond wire saws | 6 m² - 9m² | Not triggered | Not triggered |

# 5 DESCRIPTION OF THE ACTIVITIES TO BE UNDERTAKEN

The application involves a Prospecting Right Application for Marble on a site where mining has previously occurred.

As recent aerial photographs show, access roads to the site and haul roads between the historical quarry benches already exist (See Site Plan—Annexure 3).

Ultimately, the planned exploration activities aim to identify economically viable marble deposits in the developed and partly developed sections of Portion 3 and the remaining portion of the Welverdiend C farm.

To produce a credible Mining Works Programme (which will follow the prospecting phase), Aurora Quarries (Pty) Ltd. is planning the execution of the following prospecting activities over a period which is unlikely to exceed 12 months:

## 5.1 NON–INVASIVE PROSPECTING METHODS:

- Investigate all sources for historical data.
- Mapping of surface outcrops

## 5.2 INVASIVE PROSPECTING METHODS:

- Logging and sampling of boreholes with specific reference to colour consistency
- Geological resource estimation based on drilling results.
- Feasibility Study
- Application for Mining Right/Permit

## 5.3 INVASIVE PROSPECTING:

Drilling at least six diamond vertical drill holes (or eight vertical drill holes) to a maximum depth of 40 m. Invasive prospecting may also include drilling two inclined holes to an approximate depth of 50m.

**Main specifications Diamec 232**

| Basic data | | |
|---|---|---|
| Max depth | 120 m (A) | 400 ft (A) |
| Diameter | 50 mm | 2" |
| Max speed | 2 200 rpm | |
| Max torque | 250 Nm | 180 lbf ft |
| Feed force | 20 kN | 4 500 lbf |
| Feed length | 850 mm | 33 1/2" |
| **Modules** | | |
| Flush pump | Trido 45 | |
| Power unit* | PU 20E or PU 20D | |

* *Electric (E) or diesel (D)*

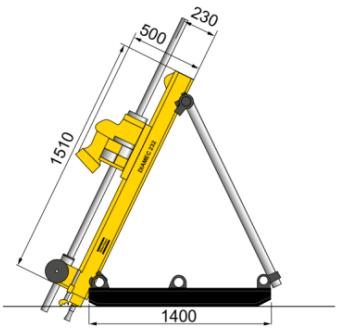


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*Figure 3 This is an example of a small drilling rig required for marble stone core drilling (Source: Exploration Drilling, Atlas Copco, p. 78, 2010). This specific drill rig occupies a footprint of less than two metres.*

*Figure 4 Example of marble stone exploration drill. In this case, drilling takes place on an exposed rocky outcrop, minimising surface disturbances associated with site clearing.*

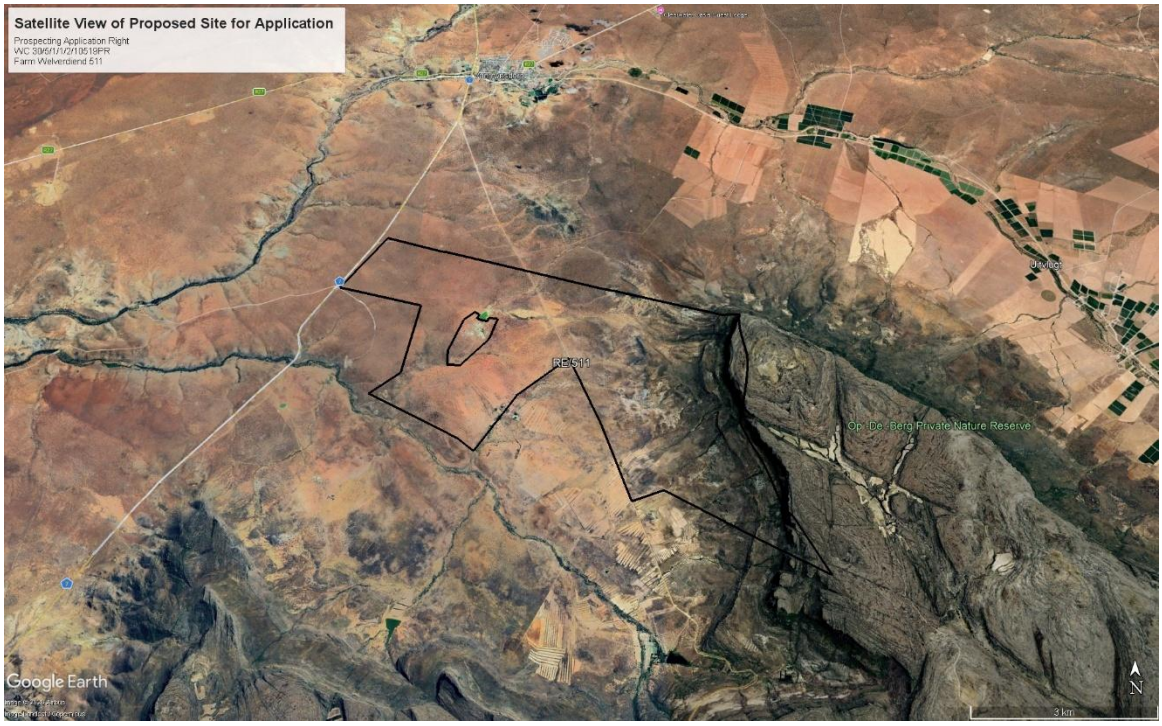


Figure 5 The study area is located near Vanrhynsdorp.

# 6 POLICY AND LEGISLATIVE CONTEXT

*Table 3 Policy and legislative context*

| APPLICABLE LEGISLATION AND GUIDELINES TO COMPILE THE REPORT | REFERENCE WHERE APPLIED | HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT |
|---|---|---|
| National Environmental Management Act (Act 107 of 1998) and the Environmental Impact Assessment Regulations published under GN R327 of 2017 | GNR 327(20) | Environmental authorisation has been applied for bulk sampling, waste rock disposal, and related activities. |

| APPLICABLE LEGISLATION AND GUIDELINES TO COMPILE THE REPORT | REFERENCE WHERE APPLIED | HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT |
|---|---|---|
| National Environmental Management: Waste Act (Act 59 of 2008) ("**Waste Act**") | Regulations Regarding the Planning and Management of Residue Stockpiles and Residue Deposits (GN R632). | Design methodologies for residue stockpiles (waste rock dumps) and mitigation measures should be implemented to manage the impacts of these structures. |
| National Environmental Management: Waste Act, 59 of 2008 ("Waste Act"), read with MEMLA Act 2 of 2022 ` | The List of Waste Management Activities under the Waste Act (GN R921) - Amended by GN R633 of 2015. | "The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a prospecting right or mining permit, in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)" |
| Mine Health and Safety Act of 1996 (Act 29 of 1996) | Controlling of airborne particles<br>High-wall – quarry safety<br>Noise generation | These measures are included in the EMPR |
| Mandatory Code of Practice for an Occupational Health Programme on Personal Exposure to Airborne Pollutants | Controlling of airborne particles | Dust suppression will be applied when required. |

| APPLICABLE LEGISLATION AND GUIDELINES TO COMPILE THE REPORT | REFERENCE WHERE APPLIED | HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT |
|---|---|---|
| Environmental Impact Assessment Regulations, published under GN R983 of 2014, as amended by GNR 326 of 2017 | Regulation 34 of the Environmental Impact Assessment Regulations published under GN R326 of 2017 - Auditing of compliance with environmental authorisation and EMPR. | To be determined after EA I (Environmental Authorisation ) is issued by CA (Competent Authority) |
| Regulations Relating to Surveying, Mapping and Mine Plans published under the Mine Health and Safety Act 1996 (Act No 29 of 1996) | Mine Surveying & Planning Regulations applicable to the mining pillar and prospecting boundaries. | The Group Surveyor drafted the Regulation 2.2 plan. |
| National Environmental Management Act (Act 107 of 1998) – 2015 Financial Provision Regulations (GN R1147 of 2015) | Financial Provisioning Regulations | Aquovadiseco will determine the financial provision required based on the extent of disturbances and the proposed mitigation or rehabilitation measures applicable to marble stone prospecting activities. |

| APPLICABLE LEGISLATION AND GUIDELINES TO COMPILE THE REPORT | REFERENCE WHERE APPLIED | HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT |
|---|---|---|
| DEA Notice 891 of 2014 Guideline on Need and Desirability, Integrated Environmental Management Guideline Series 9, Department of Environmental Affairs | Need and desirability as described in the section. | Compliance with DEA Notice 891 of 2014 Guideline on Need and Desirability, Integrated Environmental Management |
| Department of Water Affairs and Forestry, 2006. Best Practice Guideline G1 Storm Water Management. | Stormwater management (EMPR) | Guidelines used for control measures in the EMPR. |

# 7 NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES.

(A motivation for the need and desirability of the proposed development, including the activity's importance within the context of the preferred location. This activity is necessary to determine proven, indicated, and inferred granite/Gabbronorite reserves within an area that has been significantly modified by current and historical mining. Core drilling is the most invasive activity in prospecting and is among the primary activities required for accurate resource estimation.

The concepts of 'need' and 'desirability' relate to the nature, scale, and location of the proposed development and the efficient use of land. The DEA (2010 & 2013 & 2017) Guideline on Need and Desirability, part of the Integrated Environmental Management Guideline Series 9, offers questions to consider when assessing the need and desirability of the proposed activities. The questions below are therefore adapted from the DEA (2010 & 2013). In the Need and Desirability Guidelines, the first

set of questions addresses the activity's ecological sustainability, and the second addresses the need for social and economic development.

# 8 MOTIVATION FOR THE OVERALL PREFERRED SITE, ACTIVITIES AND TECHNOLOGY ALTERNATIVES.

The identification of prospecting sites is directly linked to the geographical location of the target mineral, which is marble

The general area and the site are known to contain pockets of viable marble reserves. The prospecting site falls within the ambit of an already disturbed/transformed area. The proposed prospecting activities will cause no significant cumulative impacts. Less than 500 $m^2$ of additional permanent infrastructure is required. Access roads and haul roads have already been constructed over large portions of the farm Wel and the adjacent properties. Thus, the site has been identified as the most viable based on its overall environmental impact and potential as a marble stone mining option. For drilling purposes, the proponent also considered the availability of water, which is available in decommissioned/ abandoned depressions situated on the farm Welverdiend portion 3 and the remaining portion of the farm Welverdiend 511

# 9 HOW WILL THIS DEVELOPMENT DISTURB OR ENHANCE:

## 9.1 ECOSYSTEMS AND/OR RESULT IN THE LOSS OR PROTECTION OF BIOLOGICAL DIVERSITY?

Historical and ongoing mining have already disturbed the proposed site. It borders existing marble and other stone quarries and adjoins open areas used for low-intensity agriculture and grazing. Aerial imagery shows vegetation clearance, track networks, and disturbed ground associated with current and surrounding land uses, indicating that local biological diversity has already been affected prior to this prospecting/mining proposal. Other stone types commonly quarried in the West Coast/Namaqualand area that may occur nearby include limestone/dolomite, sandstone, quartzite, flagstone/roof slate and general dimension stone/aggregate; site-specific confirmation should be obtained from a local geological survey or regional mining records.

## 9.2 WHAT MEASURES WERE EXPLORED TO AVOID THESE NEGATIVE IMPACTS? WHERE THESE NEGATIVE IMPACTS COULD NOT BE AVOIDED ALTOGETHER, WHAT MEASURES WERE EXPLORED TO MINIMISE AND REMEDY (INCLUDING OFFSETTING) THE IMPACTS? WHAT MEASURES WERE EXPLORED TO ENHANCE POSITIVE IMPACTS?

The applicant plans to prospect, remove, and dispose of bulk marble samples from existing disturbed areas that were part of historical mines, thereby minimising new disturbance of undisturbed vegetation where possible. The prospecting will include assessing the economic viability of recovering historically disposed waste rock from legacy waste dumps to reduce the need for new extraction. Changes in the marble market necessitate cost-effective extraction within a management framework designed to minimise environmental impacts. Results from the prospecting phase will determine whether specific designated areas are progressed under a mining right, including the potential recovery of waste rock from historical dumps.

The applicant proposes to prospect, remove and dispose of bulk marble samples from existing disturbed areas of historical mines, limiting new disturbance by restricting sampling to prior mine footprints and established access routes. The prospecting phase will assess the economic feasibility of recovering historically disposed waste rock from legacy dumps to reduce the need for new extraction. Targeted, small-scale bulk sampling and confined works in mapped disturbed zones are the primary avoidance and minimisation measures to limit habitat loss, dust, erosion and spread of invasive species. A management framework will control extraction methods, site demarcation, dust and erosion control, and monitoring; progressive rehabilitation and reuse of salvaged topsoil are intended where practicable. If irreversible losses are identified, compensatory measures (rehabilitation or offsets) will be considered. All activities that could cause disturbance will only commence after approval from the competent authority and after required specialist studies and permits. If any additional sites of heritage or cultural significance are discovered during prospecting or bulk sampling, all potentially disturbing activities will cease immediately and the South African Heritage Resources Agency (SAHRA) and other

### 9.3 HERITAGE AND CULTURAL ASSESSMENTS WERE CONCLUDED; NO EVIDENCE INDICATED A HERITAGE OR CULTURAL ASSESSMENT. RELEVANT AUTHORITIES WILL BE NOTIFIED FOR GUIDANCE.

### 9.4 HOW WILL THIS DEVELOPMENT POLLUTE AND/OR DEGRADE THE BIOPHYSICAL AND CULTURAL ENVIRONMENT

What measures were explored to firstly prevent these impacts, and where impacts could not be entirely avoided, what measures were examined to minimise and remedy (including offsetting) the impacts?

The main effects of the proposed development include changes to the landscape's topography and landforms, as well as a loss or modification of biodiversity. Visual impacts are directly linked to these topographic changes. Previously, historical opencast mining has already changed the area's character and sense of place. The proposed activities are expected to amplify these landscape, landform, and ecological impacts further.

The principal positive effects are increased local employment and economic stimulus for surrounding communities and the regional economy through direct jobs, indirect supply-chain opportunities and increased local spending.

### 9.5 DOES THE PROPOSED DEVELOPMENT EXACERBATE THE INCREASED DEPENDENCY ON THE INCREASED USE OF RESOURCES TO MAINTAIN ECONOMIC GROWTH, OR DOES IT REDUCE RESOURCE DEPENDENCY

(i.e. de-materialised growth) (Note: Sustainability requires that developments reduce their ecological footprint by using less material and energy, and reducing the amount of waste they generate without compromising their quest to improve their quality of life)

The proposed development is likely to increase reliance on resource use to sustain economic growth. The expected recovery rate of marketable marble blocks from a quarry is generally low, typically ranging between 20% and 50% of the total rock mass extracted. The expectation for expanding the product range of marble stone operators.

Most marble and stone mining operators are opting for additional stone-saw facilities to utilise lower-grade materials. The demand for marble in Southern Africa is increasing. The market is supported

by the rising popularity and demand for sustainable and luxury materials, as well as by local beneficiation opportunities, and is expected to produce less waste rock at marble quarries in the future. Global demand for marble is increasing, and market value is projected to rise from over USD 70 billion in 2024 to nearly USD 111 billion by 2034.

One should consider utilising marble offcuts to produce construction materials such as curbstones, window sills, paving, etc. The developer has expressed a desire to rework or recover existing rock dumps and convert this previously worthless, discarded material into sellable products if the prospecting phase yields the desired results.

## 9.6 DOES THE PROPOSED USE OF NATURAL RESOURCES CONSTITUTE THE BEST USE THEREOF?

Is the use justifiable when considering *intra- and intergenerational equity, and are there more important priorities for which the resources should be used?

The proposed use of marble, particularly for selling natural stone slabs to both domestic and export markets, directly addresses a vital need in the construction industry, which is the primary application of dimension stone worldwide. Approximately 80% of dimension stone is utilised in construction, 15% in the funerary and monumental sectors, and about 5% in various specialised applications, creating a significant market opportunity. for development.

Furthermore, exploring alternative uses for marble—such as utilising marble powder and sludge as eco-friendly fillers in composites or for innovative applications in cement and brick manufacturing—offers an exciting and largely unexplored path to enhance resource sustainability. Adopting these practices is not only beneficial but also vital for strengthening the local economy, generating jobs, and promoting efficient resource management.

Despite these prospects, South Africa's current approach to downstream value chains and circular-economy practices for marble remains relatively underdeveloped. This is evident in the modest 2023 exports of processed marble reported by WITS/Comtrade, underscoring an urgent need for strategic investment and innovative initiatives. By capitalising on these opportunities, South Africa could greatly enhance its standing in both domestic and international marble markets, paving the way for sustainable growth and development.

## 9.7 HOW WAS A RISK-AVERSE AND CAUTIOUS APPROACH APPLIED REGARDING ECOLOGICAL IMPACTS?

`The proposed marble-mining activities adopt a risk-averse, precautionary approach by focusing operations within an area that has previously been disturbed by dimension-stone extraction rather than expanding into natural, undisturbed habitats. The study area is situated near Vanrhynsdorp, where the current degraded condition and its history of mining and other extractive uses diminish the feasibility and ecological appeal of alternative land uses; therefore, siting activities here help prevent the conversion or further degradation of higher-value, pristine land ecosystems. To further minimise ecological risk, the project will implement the following measures: avoidance of any remaining intact habitat patches and established ecological corridors; pre-construction surveys for protected or locally important species and timing restrictions where necessary; strict erosion-and-sediment-control measures to prevent off-site impacts; progressive rehabilitation of worked areas using native species and geomorphic recontouring; containment and management of surface runoff and contaminated material; and a monitoring and adaptive management programme with clear ecological performance indicators and corrective actions. Together, these measures ensure that impacts are limited, reversible where possible, and managed conservatively, consistent with the EIA principle of avoiding harm to undisturbed ecosystems and prioritising the use of already-degraded lands for new mining activity

# 10 HOW WILL THE ECOLOGICAL IMPACTS RESULTING FROM THIS DEVELOPMENT IMPACT PEOPLE'S ENVIRONMENTAL RIGHTS IN TERMS OF THE FOLLOWING:

(Negative impacts: e.g. access to resources, opportunity costs, loss of amenity (e.g. open space), air and water quality impacts, nuisance (noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to avoid negative impacts, firstly, but if avoidance is not possible, to minimise, manage and remedy negative impacts?)

Ecological impacts resulting from the proposed development on people's environmental rights will be lower than expected because the area has already been mined.

*Table 4 Ecological Impacts resulting from proposed activities on people's environmental rights*

| **Environmental Rights** | **Pre–mining (if left undeveloped)** | **Current/Present status** | **Future status (to be dictated by rehabilitation conditions, the closure plan)** |
|---|---|---|---|
| Access to resources | Access to land for agricultural use and grazing. Access to water in water-filled quarry pits | Access to land for agricultural use and grazing. Access to water in water-filled quarry pits. | Impaired by mining-related disturbances and/or possible light industrial or stone processing facilities on site, should prospecting activities prove to be successful. Access to water in certain water-filled quarry pits. |
| Opportunity costs | Opportunities in terms of agricultural benefits and possibly the tourism/hospitality industry. | Opportunities in terms of agricultural activities. | Grazing is to be impaired by mining-related disturbances. Cultivation of crops will not be impaired. |

| Environmental Rights | Pre–mining (if left undeveloped) | Current/Present status | Future status (to be dictated by rehabilitation conditions, the closure plan) |
|---|---|---|---|
| Loss of amenity | Topographic impacts from previous operations on certain sections of the application area persist, and historical impacts are still visible. However, natural recolonisation of plants has occurred over the years, and the significance & severity of some of the impacts have been reduced compared to previous years. | Topographical impacts from previous operations on certain sections of the application area persist, and historical impacts remain visible. However, Natural restoration has occurred, and the impact's significance has been reduced compared to previous years. | The impact will persist, but effective rehabilitation measures can improve the land's current condition if waste rock is managed more effectively. |
| Air Quality impacts | None | None | If dust suppression is not applied on site, air quality issues may affect health and safety. |
| Water quality impacts | Undetermined | Undetermined | No significant impact is expected |

| Environmental Rights | Pre–mining (if left undeveloped) | Current/Present status | Future status (to be dictated by rehabilitation conditions, the closure plan) |
|---|---|---|---|
| Health impacts | Undetermined | Undetermined | No significant impact envisaged due to the chemical composition of the mineral. |
| Visual Impacts (supplementary to loss of amenity) | Visual impacts remain from previous mining-related activities on the site. However, the impact significance has decreased due to natural restoration in some areas of the study area | Visual impacts remain from previous mining-related activities on the site. However, the impact significance has decreased due to natural restoration in some areas of the study area | The visual impact of geological material extraction and waste rock disposal is clear, as the activities permanently alter the topography and geomorphology. |

Note: Since historical mining activities transformed the area, the value of the pre–mining environment (as a "pristine" environment) has already been compromised.

Water-filled quarry pits, which result from mining, are often used by locals as a water source for cattle and as a reservoir for irrigating cultivated fields. Sloping access (enhancing access and safety measures) to these quarry pits, if not backfilled, is a measure to prevent the potential negative effects of these depressions. Air quality will be monitored, and dust suppression will be implemented

regularly to reduce vehicle-generated dust. (See full list of mitigation measures for potential impacts in Table 9 and Table 10.)

## 11 POSITIVE IMPACTS: E.G. IMPROVED ACCESS TO RESOURCES, IMPROVED AMENITIES, IMPROVED AIR OR WATER QUALITY, ETC. WHAT MEASURES WERE TAKEN TO ENHANCE POSITIVE IMPACTS?

Positive impacts are mainly limited to job creation and opportunities. Additional socio-economic benefits are anticipated if the prospecting phase achieves the necessary results. Other positive effects include the potential recovery of historical waste rock dumps and improved maintenance of communal dirt roads. Farmers and community members can also utilise water stored in water-filled quarries as a "reserve" water supply during dry periods.

## 12 DESCRIBE THE LINKAGES AND DEPENDENCIES BETWEEN HUMAN WELL-BEING, LIVELIHOODS, AND

### 12.1 ECOSYSTEM SERVICES APPLICABLE TO THE AREA IN QUESTION, AND HOW THE DEVELOPMENT'S ECOLOGICAL

### 12.2 IMPACTS WILL RESULT IN SOCIO-ECONOMIC IMPACTS

(e.g., livelihoods, loss of heritage site, opportunity costs, etc.)?

The extent of surface disturbances at the proposed site is best described as extensive, given that the area was previously mined. Considering the current environmental condition that will be impacted by prospecting and bulk sampling, as well as the recovery of blocks from historical waste rock dumps, it is assumed that prospecting, bulk sampling, and related activities are suitable land uses.

Employees will not reside on site, which implies that the risk of crime to third parties may be lower than when workers reside on site. The risk of hunting and trapping of animals is also lower.

## 13 BASED ON ALL OF THE ABOVE, HOW WILL THIS DEVELOPMENT POSITIVELY OR NEGATIVELY IMPACT THE

### 13.1 AREA'S ECOLOGICAL INTEGRITY OBJECTIVES/TARGETS/CONSIDERATIONS.

Table 9 documents positive and negative impacts, and the Environmental Impact Assessment outlines envisaged positive and negative impacts.

## 14 CONSIDERING THE NEED TO SECURE THE ECOLOGICAL INTEGRITY AND A HEALTHY BIOPHYSICAL ENVIRONMENT, DESCRIBE HOW THE ALTERNATIVES IDENTIFIED

(In terms of all the different elements of development and the various impacts being proposed), led to the selection of the "best practicable environmental option" regarding ecological considerations?

Land use and availability for marble exploration are limited to specific geological reserves within the Bushveld Complex.

Opencast marble stone quarrying is well-known in the Belfast region (Mpumalanga Province). The proposed site provides evidence of previous disturbances, and aerial photography traces disturbances in the proposed area that occurred years earlier during similar quarrying activities. Since the area is degraded, the impacts of proposed activities on the environment are expected to be less significant than those on a pristine landscape.

The preferred site was identified as the most suitable location as no feasible alternatives that met the same criteria as the preferred site were identified. The criteria required are as follows:

- Large sections of land forming part of the preferred site are owned by a subsidiary of the applicant.
- Infrastructure and roads associated with quarrying activities already exist on site.
- Previous mining operations at this location indicated that there is a high probability that the applicant will find viable gabbro-norite material.
- Previous mining activities have disturbed the preferred area and are not considered a pristine site.

- Many mine residue deposits exist on the site. Waste rock produced during excavation will be disposed of on these existing waste rock dumps.
- Waste rock produced during the excavation process will also be used to partially of completely backfill decommissioned quarry sections.
- The potential to recover saleable blocks from historical waste rock dumps is high.
- The only alternatives considered are minor revisions to the proposed development footprint design.
- Promoting justifiable economic and social development.

## 15 WHAT IS THE SOCIO-ECONOMIC CONTEXT OF THE AREA, BASED ON, AMONGST OTHER CONSIDERATIONS, THE FOLLOWING:

The IDP (and its sector plans' vision, objectives, strategies, indicators and targets) and any other strategic plans, frameworks of policies applicable to the area**.**

The West Coast District Municipality, located in the Western Cape Province, is a Category C municipality spanning 31,229 km², accounting for 24% of the province's total area yet accommodating only 6.8% of its population. This district shares borders with the Namakwa District to the north and northeast, the City of Cape Town to the south, and the Cape Winelands District to the southeast.

Comprising five local municipalities—Swartland (administrative centre: Malmesbury), Bergrivier (Piketberg), Matzikama (Vredendal), Cederberg (Clanwilliam), and Saldanha Bay (Vredenburg)—the district's administrative seat is in Moorreesburg.

A distinctive feature of the West Coast District is its approximately 350 km of Atlantic Ocean coastline, which extends across all five local municipalities. This coastal access presents unique socio-economic opportunities and challenges, affecting both development and environmental management in the area. Given its large land area relative to population density, the district aims to balance economic growth with environmental sustainability in its socio-economic planning.

*Table 5 Municipalities within the West Coast District Municipality*

| Local municipality | Population<br>% | | Capital | Dominant language |
|---|---|---|---|---|
| Bergrivier | 70276 | 14% | Piketberg | Afrikaans |
| Cederberg | 55108 | 11% | Clanwilliam | Afrikaans |
| Saldanha Bay | 154635 | 31% | Vredenburg | Afrikaans |
| Swartland | 148331 | 30% | Malmesbury | Afrikaans |
| Matzikama | 69043 | 14% | Vredendal | Afrikaans |
| | | | | |
| Total Population | 497393 | 100% | | |

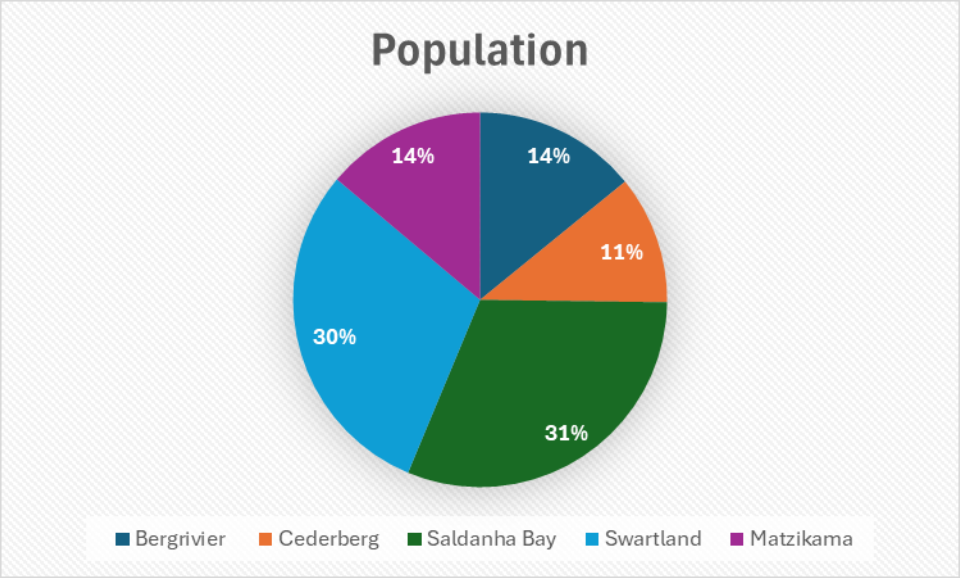


*Figure 6 Population portions of municipalities within the West Coast Municipality District*

The proposed development is situated in the Matzikama Local Municipality, the northernmost municipality in the West Coast District of the Western Cape. It covers approximately 12,981 km² and comprises 18 towns and villages, including Doring Bay (Doringbaai), Strandfontein, Papendorp, Ebenhaeser, Lutzville (and Lutzville West), Koekenaap, Olifantsrivier Settlement, Vredendal (the administrative centre), Klawer, Vanrhynsdorp, Nuwerus, Bitterfontein, Kliprand, Putse-Kloof, Rietpoort, Molsvlei, and Stofkraal. The municipal area stretches from the N7 corridor and Olifants River valley to the Atlantic coast, predominantly rural and arid, with irrigated agriculture focused along the Olifants River canal system.


*Figure 7 Map of Matzikama Municipality*

The population of the municipality recorded in the 2022 census was 69,043. The demographic profile is dominated by those identifying as Coloured, with Afrikaans the predominant first language. Population growth has been modest over recent decades, rising from smaller base populations in the late 20th century to the current level, and planning for incremental growth is appropriate when assessing long-term socio-economic impacts. Population structure indicators relevant to regional and planning comparisons show the following:

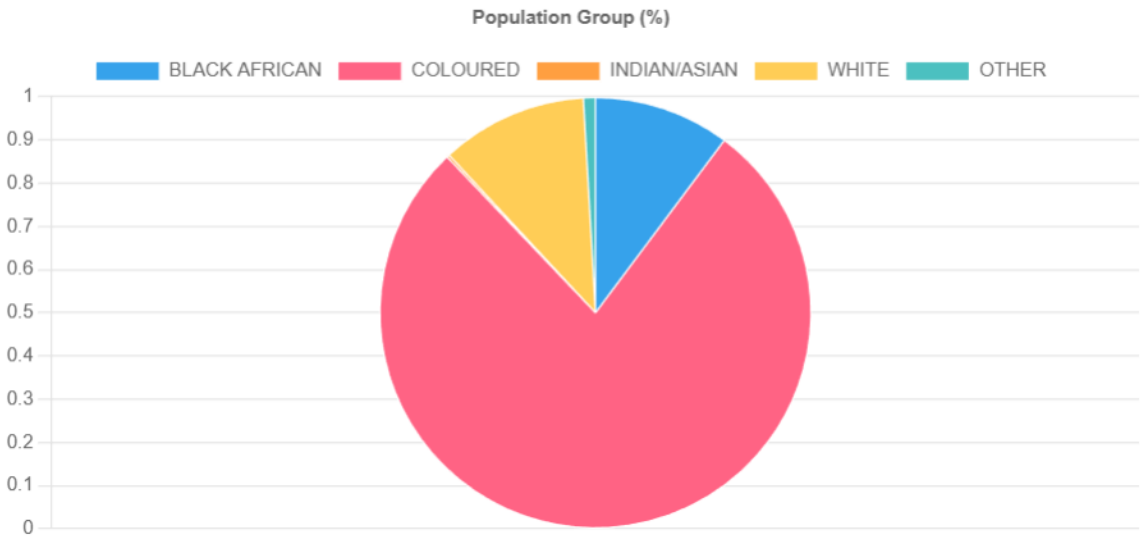


*Figure 8 Populaion Matzikama*

| Name | Frequency | % |
|---|---|---|
| BLACK AFRICAN | 7 029 | 10,2% |
| COLOURED | 53 658 | 77,7% |
| INDIAN/ASIAN | 112 | 0,2% |
| WHITE | 7 581 | 11,0% |
| OTHER | 653 | 0,9% |

The educational levels of the Matzikama Local Municipality are crucial for shaping the community's economic future and development prospects. With 2.6% of the population lacking formal education and 10.1% having only some primary schooling, many residents face significant barriers to entering the labour market and advancing professionally. The majority, comprising 42.1% with some secondary education and 30.8% who have completed Grade 12/Std 10, highlights an urgent need for educational programmes to improve qualifications and skill levels. The relatively small figure of 6.6% pursuing higher education emphasises the difficulty in attracting and retaining skilled professionals within the municipality. This pattern of educational attainment is closely linked to the prevalence of low- and semi-skilled jobs, which can sustain cycles of poverty and restrict opportunities for economic progress. Furthermore, these educational statistics underline the importance of addressing existing gaps—such as limited access to quality education and vocational training—if the municipality aims to enhance employability and foster economic growth. Investments in education and skill development programmes will be vital for empowering residents, enabling them to effectively engage in the local labour market, and supporting the transition to higher-value economic activities. Improving educational outcomes is therefore essential for developing a more skilled workforce and promoting sustainable community development in Matzikama.

*Table 6 Attendance at an educational institution (5-24 years)*

| Name | Frequency | % |
|---|---|---|
| No Schooling | 1 124 | 2,6% |
| Some Primary | 4 373 | 10,1% |
| Completed Primary | 3 089 | 7,1% |
| Some Secondary | 18 223 | 42,1% |
| Grade 12/Std10 | 13 320 | 30,8% |
| Higher Education | 2 837 | 6,6% |
| Other | 345 | 0,8% |

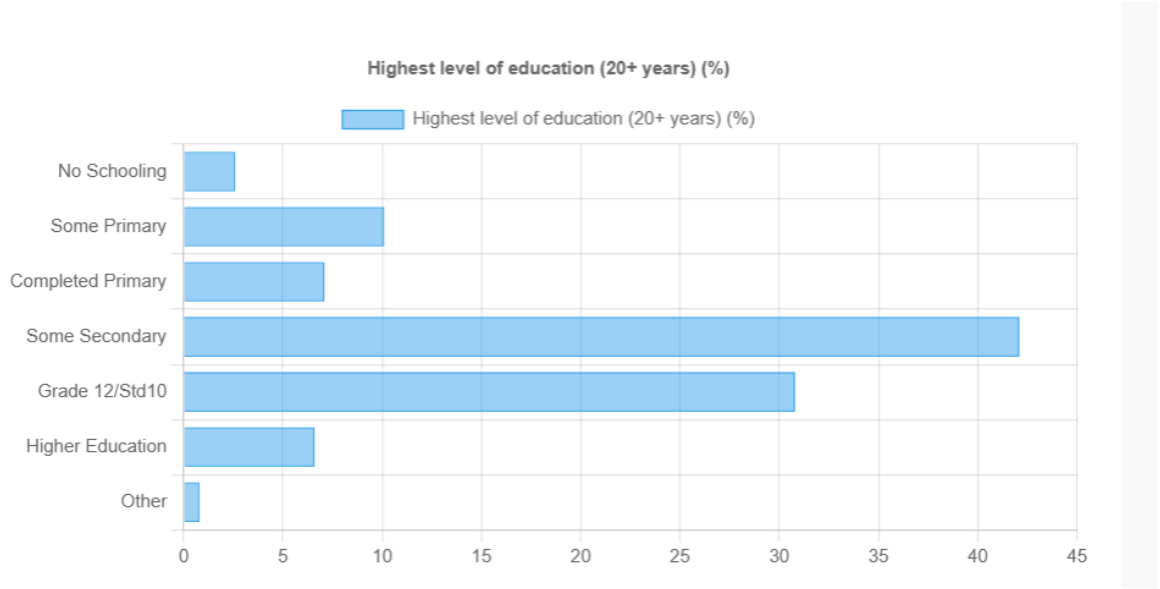


*Figure 9 Highest level of education (20+ years(%)*

Economically, the municipal economy recorded output of approximately R5.7 billion in 2021. Agriculture is the leading sector, with perennial crop production—particularly table and wine grapes—forming the backbone of the local formal economy and agri-processing value chains. Agricultural output in the baseline municipal economic review was reported at R1.2 billion, and irrigated viticulture and associated packing and winemaking account for a large share of local

employment. Coastal aquaculture is an important supplementary industry, with the Doring Bay abalone operation producing approximately ten of tonnes annually and involving significant community ownership participation that supports local employment and economic benefits. Mining-related activity, including mineral sands extraction and processing, together with local metal fabrication and structural steel businesses, further diversifies the municipal economic base. Public administration and services provide a stabilising employment component in the local labour market.

The labour market in the Matzikama Local Municipality comprises both formal and informal sectors, with a significant share of workers employed in low- or semi-skilled jobs, particularly in agriculture, forestry, and fishing, which account for 27.5% of the economy. This is accompanied by the finance, insurance, real estate, and business services sector contributing 14.4%, and community, social, and personal services contributing 13.7%. Recent developments in the labour market indicate some improvement in participation and employment, alongside a moderation of unemployment rates relative to earlier peaks. However, the persistent concentration of lower-skilled employment continues to pose a structural constraint on income growth and hinders the municipality's capacity to attract higher-skilled professionals.

*Table 7 Main Economic Sectors*

| Sector | % |
|---|---|
| Agriculture | 27,50% |
| Finance, insurance, real estate and business services | 14,40% |
| Community, social and personal services | 13,70% |

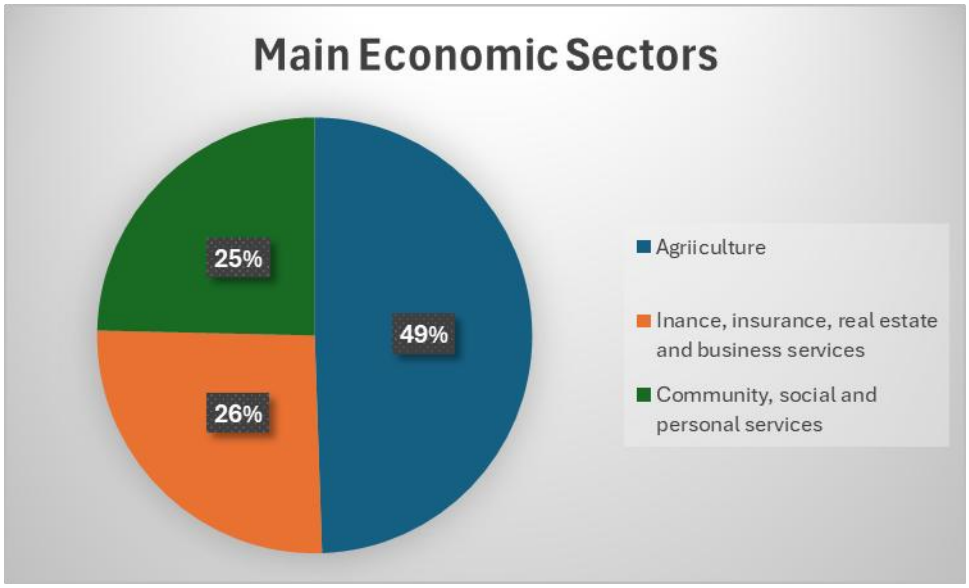


*Figure 10 Main Economics Sectors*

Additionally, significant infrastructure gaps, especially the lack of private healthcare options and limited schooling choices in certain areas, weaken the economy's attractiveness to skilled workers. These issues prevent diversification into higher-value economic activities and emphasise the need for strategic investments in education and infrastructure. Closing these gaps can enhance the municipality's appeal to skilled professionals and foster economic growth, ultimately cultivating a more resilient and sustainable local economy. From a socio-economic and environmental standpoint, Matzikama's strengths include a diverse base centred on irrigated agriculture, aquaculture, and complementary industrial activities, which together reduce dependence on a single sector and create opportunities for local value addition. Vulnerabilities include reliance on water in arid environments, environmental sensitivities linked to coastal mining and aquaculture, and the risk that a predominantly low-skilled employment profile will impede local income growth without targeted skills development and local enterprise support. Community ownership models in local aquaculture and other enterprises offer pathways for inclusive benefit sharing, but they require strong governance, capacity building, and environmental oversight to ensure long-term community resilience.

In conclusion, Vanrhynsdorp, situated in the Matzikama Local Municipality of the Western Cape, has a distinctive socio-economic profile, particularly with respect to proposed development projects in the area. With a population of approximately 6,272 in 2011, the town is predominantly Afrikaans-speaking, with about 70% white residents, 13.79% Black African, and 12.99% Coloured. This diversity enriches the community's cultural fabric and incorporates historical connections to the indigenous Khoisan peoples.

The socio-economic landscape of Vanrhynsdorp is largely dependent on agriculture, particularly in low- and semi-skilled roles. Situated in a predominantly agricultural region, it benefits from proximity to key sectors such as agriculture, forestry, and fishing, as well as emerging industries such as finance and business services. However, the dominance of lower-skilled jobs impedes income growth and makes it difficult to attract higher-skilled professionals.

The proposed development in Vanrhynsdorp offers an opportunity to tackle existing socio-economic challenges. By enhancing local infrastructure—such as healthcare and education—and creating new employment prospects, the project can help reduce unemployment and underemployment, which have previously hindered economic progress. This growth, in turn, could foster greater social unity and an improved quality of life for residents.

## 16 CONSIDERING THE SOCIO-ECONOMIC CONTEXT, WHAT WILL THE SOCIO-ECONOMIC IMPACTS BE OF THE DEVELOPMENT

The proposed development in the Matzikama Local Municipality is expected to generate numerous positive socio-economic impacts, significantly enhancing the community's overall well-being. One primary outcome will be the creation of new job opportunities across various sectors, including construction, services, and agriculture. This rise in employment will help reduce unemployment and underemployment, enabling residents to improve their economic situation and quality of life. As development progresses, it is likely to increase demand for vocational training and educational programmes, thereby fostering skills development within the local workforce. By investing in training initiatives, the project can equip residents with relevant skills, address existing educational gaps, and boost their employability for higher-skilled roles. Additionally, the development will enhance local infrastructure, particularly in sectors such as healthcare and education. Improved access to

quality healthcare can lead to better health outcomes for the community, while upgraded educational facilities will encourage higher academic achievement, ultimately supporting long-term economic stability. The introduction of new businesses and industries will foster economic diversification, reducing the area's dependence on agriculture and low-skilled jobs. This diversification will create a more resilient economy, less vulnerable to fluctuations in agricultural output, and stimulate growth in sectors like tourism, retail, and services. Furthermore, the development is likely to promote community engagement and social cohesion by involving local residents in decision-making processes and ensuring that benefits are shared throughout the community. This sense of ownership can strengthen community bonds and contribute to a more stable and unified society. While the socio-economic benefits are substantial, it is important to approach the development with awareness of potential environmental impacts. Careful planning will be required to minimise any negative effects on local resources, especially in coastal and water-sensitive areas, to ensure that the development remains sustainable and advantageous for future generations. Additionally, as new economic opportunities emerge, the municipality may experience an influx of job seekers, leading to population growth. This growth will necessitate meticulous planning for housing, services, and infrastructure to adequately support the expanding community. In summary, the proposed development in Matzikama has the potential to bring significant socio-economic improvements, positively affecting employment, skills, infrastructure, and community cohesion. By prioritising careful planning and stakeholder participation, the municipality can maximise these benefits while addressing challenges related to environmental sustainability and infrastructure needs.

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## 17 HOW WILL THE SOCIO-ECONOMIC IMPACTS RESULTING FROM THIS DEVELOPMENT IMPACT PEOPLE'S ENVIRONMENTAL RIGHTS IN TERMS OF THE FOLLOWING:

### 17.1 NEGATIVE IMPACTS: E.G. HEALTH (E.G. HIV-AIDS), SAFETY, SOCIAL ILLS, ETC. WHAT MEASURES WERE TAKEN TO AVOID NEGATIVE IMPACTS? IF AVOIDANCE IS NOT POSSIBLE, WHAT MEASURES WERE TAKEN TO MINIMISE, MANAGE, AND REMEDY NEGATIVE IMPACTS?

The proposed development in Matzikama Local Municipality is likely to have several negative socio-economic impacts that could affect people's environmental rights, particularly with respect to health, safety, and social well-being. Potential concerns include health risks such as an increase in issues like HIV/AIDS, respiratory diseases related to construction dust, and exposure to pollutants from heightened agricultural or industrial activities. Additionally, the influx of job seekers could strain local healthcare services, limiting community access to essential health resources.

Safety might also become a significant concern due to increased traffic, construction activities, and potential accidents linked with expanding industries. The larger population could lead to heightened social issues, including crime and substance abuse, especially if employment opportunities fall short of the expectations of newcomers. Additionally, economic disparities between skilled and unskilled workers could worsen feelings of social exclusion, increasing tensions within the community and making vulnerable populations more susceptible to discrimination when seeking new opportunities. To address these challenges, various proactive measures can be implemented. Health education programmes can raise awareness about HIV/AIDS prevention and treatment while ensuring that access to health services is available to all, particularly vulnerable groups. Establishing regular health screenings and outreach programmes will assist in monitoring and managing health concerns stemming from development. Safety protocols should be established for construction and industrial activities, including traffic management plans and safety training for workers. Engaging the community in these safety initiatives can foster local awareness and participation. Furthermore,

creating social support services will help tackle substance abuse, prevent crime, and strengthen community cohesion. Partnering with local organisations and NGOs can supply valuable resources and support for affected individuals and families. Involving community members in decision-making processes ensures that development goals align with local needs, fostering trust and accountability through regular consultations and feedback mechanisms. Continuous monitoring and evaluation of the socio-economic impacts of development will enable the municipality to identify emerging issues and deliver timely interventions to mitigate adverse effects. Emphasising sustainability practices in construction and industry will further reduce environmental degradation, by adhering to environmental impact assessments and utilising green technologies to mitigate health and environmental risks. In summary, although the proposed development in Matzikama presents potential socio-economic challenges that could affect environmental rights, adopting a comprehensive approach centred on health, safety, community engagement, and sustainability will help minimise these negative impacts. By prioritising the well-being of all residents and addressing social disparities, the development can positively contribute to the community's health, safety, and overall environmental rights.

## 17.2 DESCRIBE HOW THE DEVELOPMENT WILL IMPACT JOB CREATION IN TERMS OF, AMONGST OTHER ASPECTS:

The proposed granite prospecting development in the Matzikama Local Municipality is expected to significantly impact job creation, bringing both immediate and long-term benefits to the community. Initially, the prospecting phase is likely to generate direct employment opportunities, providing essential income sources for residents, especially in areas where jobs are scarce. Additionally, the prospecting phase can stimulate indirect job creation in supporting sectors such as transportation and logistics. Although some specialised tools and equipment might not be locally accessible, local businesses involved in transporting materials and supplies are likely to benefit from increased demand, which could lead to job growth in transport services and related industries supporting the prospecting efforts. While the prospecting phase is temporary, it offers prospects for long-term economic gains. If granite deposits are verified and commercial mining commences, the foundation laid during this phase could sustain employment in ongoing mining operations. This presents the

community with the chance for stable jobs if the project advances. Moreover, job creation associated with prospecting can strengthen the local economy by increasing residents' disposable income. As new jobs develop, local businesses may see increased customer spending, fostering a vibrant economic environment that benefits all community members. Although the initial focus is on prospecting, continuous community engagement will be vital to keep residents informed and involved. Transparency and communication regarding potential job opportunities and the prospecting timeline can help manage expectations and foster trust within the community. In conclusion, granite prospecting in Matzikama is anticipated to generate meaningful direct and indirect employment opportunities and establish a foundation for long-term employment should mining activities proceed. By promoting skills development and involving local residents, the prospecting phase can positively influence the area's economic landscape, ultimately benefiting the entire community.

# 18 WHAT MEASURES WERE TAKEN TO ENSURE:

## 18.1 THERE WAS INTERGOVERNMENTAL COORDINATION AND HARMONISATION OF POLICIES, LEGISLATION AND ACTIONS RELATING TO THE ENVIRONMENT.

All relevant governmental bodies were notified of the proposed development. However, the primary authorities likely to influence decisions on mining activities are the Department of Mineral Resources, the Department of Agriculture, Forestry and Fisheries, the Department of Land Administration, and the Western Cape Department of Water and Sanitation.

## 18.2 WHAT MEASURES WERE TAKEN TO ENSURE THAT THE ENVIRONMENT WILL BE HELD IN PUBLIC TRUST FOR THE PEOPLE, THAT THE BENEFICIAL USE OF ENVIRONMENTAL RESOURCES WILL SERVE THE PUBLIC INTEREST, AND THAT THE ENVIRONMENT WILL BE PROTECTED AS THE PEOPLE'S COMMON HERITAGE?

The applicant plans to submit a prospecting right application for an area that has previously been impacted by mining activities. This site has experienced considerable disturbance from past

extraction operations, which may have modified both the landscape and ecosystem. In contrast to "natural, undisturbed" or "pristine" areas, which are considered more environmentally sensitive, this section includes quarry floors, depressions, waste rock dumps, access roads, and mildly disturbed zones that closely resemble natural environments. No invasive prospecting activities are planned beyond this designated area.

## 18.3 ARE THE MITIGATION MEASURES PROPOSED REALISTIC, AND WHAT LONG-TERM ENVIRONMENTAL LEGACY AND MANAGED BURDEN WILL BE LEFT?

Mitigation measures are adapted from other EMPRs where similar activities and impacts occur. Based on experience dealing with similar mining activities and methods resulting in similar impacts, these mitigation measures, described in Tables 10 and 11, are realistic if executed effectively and monitored regularly.

The proposed project includes chip sampling, core drilling, the bulk extraction and disposal of natural stone, and the extraction of saleable blocks from existing historical waste rock dumps, which form part of the activities documented in the environmental impacts assessment and environmental management programme report.

The long-term environmental legacy is thus not possible to determine at this stage of development since the prospecting phase may lead to full-scale mining in the future. The impacts of full-scale mining are thus not considered, especially because bulk sampling is limited to 1600 cubic metres of saleable material over the allowed prospecting period.

## 18.4 WHAT MEASURES WERE TAKEN TO ENSURE THAT THE COSTS OF REMEDYING POLLUTION, ENVIRONMENTAL DEGRADATION AND CONSEQUENT ADVERSE HEALTH EFFECTS AND OF PREVENTING, CONTROLLING OR MINIMISING FURTHER POLLUTION, ENVIRONMENTAL DAMAGE OR ADVERSE HEALTH EFFECTS WILL BE PAID FOR BY THOSE RESPONSIBLE FOR HARMING THE ENVIRONMENT?

A rehabilitation plan is developed with the landowners over whom the application has been lodged. The cost for rehabilitation/mitigation will be calculated as part of the financial provision requirements set out in Section 44 of the National Environmental Management Act—1998 (Act No. 107 of 1998). The purpose of the Financial Provision in terms of Section 41 of the MPRDA (Mineral and Petroleum Resources Development Act of 2002) and regulations 53 and 54 promulgated in terms of the MPRDA deal with financial provision for mine rehabilitation and closures that is associated with the undertaking of management, rehabilitation and remediation of environmental impacts resultant from prospecting, exploration, mining or production operations through the lifespan of such operations as well as residual impacts that may become known in the future.

## 18.5 DESCRIBE THE POSITIVE AND NEGATIVE CUMULATIVE SOCIO-ECONOMIC AND ECOLOGICAL BIOPHYSICAL IMPACTS, BEARING IN MIND THE PROJECT'S SIZE, SCALE, SCOPE AND NATURE IN RELATION TO ITS LOCATION AND OTHER PLANNED DEVELOPMENTS IN THE AREA.

The DEA&DP guidelines on need and desirability (2011) define cumulative impacts as follows:

***Additive:*** the simple sum of all the impacts (e.g. the accumulation of ground water pollution from various developments over time leading to a decrease in the economic potential of the resource).

***Synergistic effects*** occur where impacts interact with each other to produce a total effect greater than the sum of individual effects. These effects often happen as habitats or resources approach capacity (e.g. the accumulation of water, air and land degradation over time leading to a decrease in the economic potential of an area).

***Time crowding effects*** occur when frequent, repetitive impacts occur on a particular resource simultaneously (e.g. boreholes decreasing the value of water resources).

***Spatial croding effects*** occur where we have a high spatial density of impacts on a particular ecosystem (e.g. rapid informal settlement)

The following potential positive and negative cumulative impacts can be anticipated as a result of this development.

*Table 8 Cumulative Positive and Negative Socio-economic Impacts*

| Cumulative positive impacts | Cumulative negative impacts |
|---|---|
| A decrease in unemployment within surrounding communities. | Land use and land capability: Grazing and other agricultural uses will be restricted to designated areas outside the physical development areas. |
| Possible communal water uses of water contained in water-filled quarry depressions. (such as the extraction of water for agricultural activities during droughts) | Traffic Safety due to the existence of a communal/public gravel road used by mining companies and members of the community |
| | Air quality during operational phases |

*Table 9 Positive and negative cumulative biophysical/ecological impacts*

| Positive Cumulative Impacts | Negative Cumulative impacts |
|---|---|
| Waste rock dumps will provide natural crevices to accommodate bats and reptiles as well as rock hyrax. | The overall loss of floral diversity and land cover. |
| The increase in surface water accessibility (for wildlife) as quarry pits/depressions may contain useful volumes of water. | The cumulative impact on the visual appearance and the decrease in appeal of the area |
| | Cumulative impacts on the air quality. |
| | Cumulative impacts on hydrological modifications and stormwater; |

| Positive Cumulative Impacts | Negative Cumulative impacts |
|---|---|
| | Cumulative impacts on natural migratory routes and faunal dispersal patterns. |

## 19 PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED

The applicant applied for a 5-year prospecting right. This implies that the environmental authorisation is proposed for a minimum of 5 years since the applicant may request a renewal of the right. Should the development's future footprint and the extent of activities remain similar to those of the EIA or EMPR, the environmental authorisation may be extended for a period as determined by the competent authority.

## 20 FULL DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED ALTERNATIVES WITHIN THE SITE.

The preferred site was identified as the most suitable location as no feasible alternatives were identified which meet the same following criteria as the preferred site:

The applicant owns certain portions of the preferred site:

Infrastructure and roads associated with quarrying activities already exist on the site.

Earlier mining operations at this location indicated that there is an opportunity to extract viable gabbro-norite material.

The preferred area is already disturbed due to previous mining activities and, therefore not pristine.

Existing historical waste rock dumps within the application area are earmarked for recovery/recycling purposes.

A more detailed study of why no other alternatives were considered is attached as Annexure 12

The applicant proposed prospecting and removing bulk samples from existing disturbed areas that formed part of historical dimenstone  stone mining activities. In order to reduce the impact of the proposed activities on the environment, the activities will be limited to the disturbed area, as indicated in Figure 11.

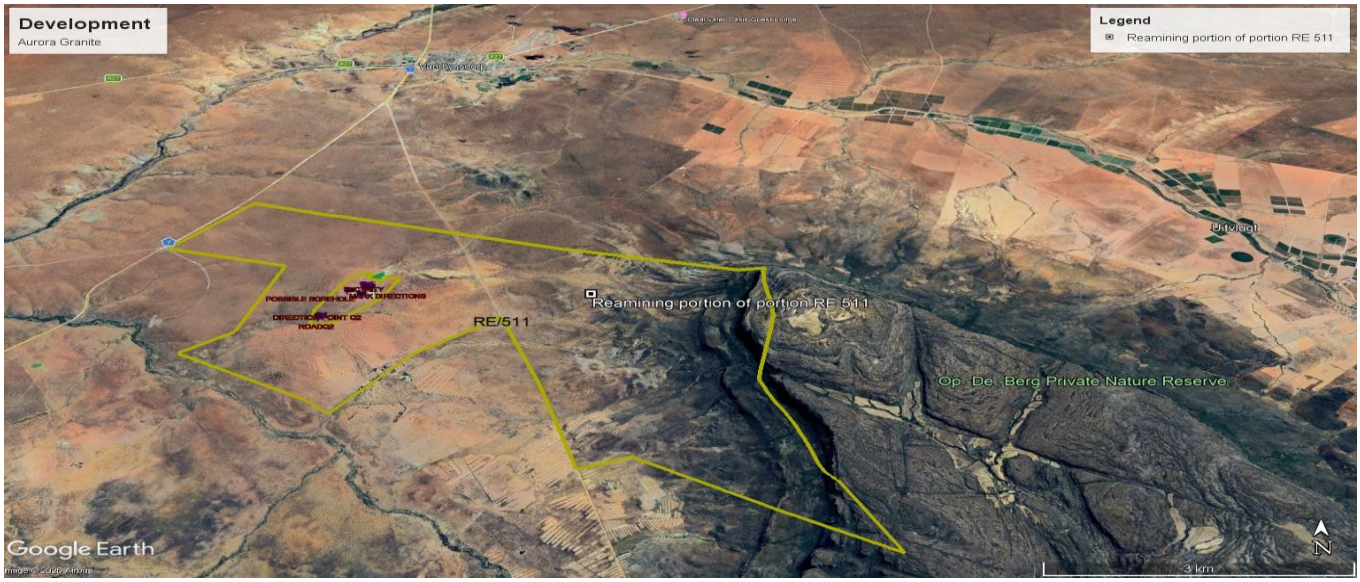


*Figure 11 Distrubed area*

Although the central section of the application area is excluded from invasive prospecting activities, such as core drilling and bulk sampling, "chip sampling," which involves the collection of surface rock chips and grab samples by field personnel using a hammer and chisels, will be included. The "chip samples" collection is done on foot to avoid any significant environmental impacts. The applicant will utilise no roads other than existing roads in the middle section of the application area.

During the prospecting phase, the applicant will also explore the economic viability of recovering historically disposed waste rock. Changes in the marble  stone market sector necessitate improved cost-effective extraction methods within a management framework that minimises environmental impacts.

Positive results obtained during the prospecting phase will thus determine whether designated areas will be further developed under a mining right and whether the results will validate the potential establishment of a stone processing facility that will reduce the volume of waste rock produced from

mining areas. This facility could also potentially utilise existing waste rock disposed of during previous and historic mining activities.

Existing access and haul roads will be utilised should the proposed development commence. Most of these roads are still in a condition where they can be used and will provide adequate access to all the areas within the proposed development. Landowners and other lawful occupiers from the surrounding communities also use many of the access roads, which is likely the reason why they have remained in a usable condition.

### 20.1 DETAILS OF THE DEVELOPMENT FOOTPRINT ALTERNATIVES CONSIDERED.

The property on which the proposed activity will be undertaken is on the Farm Welverdiend 511 C, Portion 3, and the remainder of Welverdiend 511 , Western Cape. No alternatives to this site will be considered since "prospecting" is specific to the geological resources on the property mentioned above.

The main activity of this development triggers activity 20 of GNR 327, the NEMA EIA Regulations of 2017 , as amended in GN No. 517 of 11 June 2021 *"Any activity, including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), as well as any other applicable activity as contained in this Listing Notice or in Listing Notice 3 of 2014, is required to exercise the prospecting right*

No main alternative activities triggered in this Government Notice have been considered. This is because they do not align with the fundamental purpose of this development, which is to engage in prospecting activities— a baseline requirement for assessing the feasibility and viability of a potential mining operation.

The design and layout of the activities are not yet of primary importance, as the impacts of the prospecting activities are likely to be insignificant. Therefore, no alternative layout or designs have been considered. However, The applicant has already confirmed that prospecting will only occur within areas that have already been disturbed or have already been transformed by activities that preceded the prospecting application.

Most of the technologies and required infrastructure that will be utilised during this small-scale prospecting operation are proven. The core drilling equipment is of such design that the development footprint will be minimised. As a result, no alternative technologies and/ or infrastructure have been considered. The applicant will, however, consider improved technologies if and when they are available.

The entire operational process of the prospecting activities is documented in section 1. The prospecting application **excludes** trenching and the extraction of bulk samples (marble stone blocks), which minimises potential impacts on the environment. In addition to the exclusion of the above, core drilling will take place within a solid rock formation. The depth of drilling will not exceed 40 metres.

The option of not implementing this activity defies the reason for the application in the first place and is therefore not considered. The site has, to some extent, already been transformed by preceding mining activities.

## 21 DETAILS OF THE PUBLIC PARTICIPATION PROCESS FOLLOWED

The consultation guidelines as provided by the Department of Mineral Resources, are utilised to perform the public participation process. All potential interested and affected parties were identified and formally notified (Annexure 4.)

Annexure 6 includes proof of notices sent and successful delivery, proving that the potentially interested and affected parties were notified. EIM Sustainability Solutions has not yet received acknowledgement of receipt of emailed notifications. No Correspondence from interested and affected parties was received.

*Table 10 Details of the public participation process*

### 21.1 NAME THE COMMUNITIES INVOLVED:

No known traditional councils or communities have been identified. The only community that has been involved is the farming community that borders and forms part of the policy and legislative context in some cases.

### 21.2 STATE WHETHER THE COMMUNITY IS ALSO THE LANDOWNER:

#### 21.2.1 STATE WHETHER OR NOT THE DEPARTMENT OF LAND AFFAIRS WAS IDENTIFIED AS AN INTERESTED AND AFFECTED PARTY.

Department of Rural Development and Land Reform has been notified; however, no correspondence has been received from this department. (See Annexure 4, which contains evidence of emails and registered mail that was sent).

#### 21.2.2 LIST THE LAWFUL OCCUPIERS OF THE LAND CONCERNED.

Provide evidence confirming that the landowner or lawful occupier of the land in question and any other interested and affected parties, including all those listed above, were notified and attached such evidence hereto.

Evidence that the landowners have been notified is attached under Annexcure 4. Evidence includes signatures of notice letter recipients and corresponding emails from notified parties that were successfully delivered(Annexure 9). Comments and concerns from registered interested and affected parties included in this report also serve as evidence that they have been notified.

Photographic evidence of notices that were signposted at the two site entrances (Figure 11) and at two (2) public places (annexure 8 and Newspaper advertisements in the Rekord Annexure 5. The attachment contains scanned images of the notification advertisements placed in the Record newspaper on the 15th of February 2026 and the 15 of March 2026, which was extened to 4 May 2026. Site notices were also placed on the site ( site entrances) and in the local municipality. See photographs of site notices attached under Annexure 7. Summary of issues raised by I&Aps

Since the notification process commenced, no issues, concerns, or objections from any other party, including the local municipal authority, Traditional Authorities, or Provincial State Departments, have been received.

| *Department* | *Name* | *Contact details* | *Date Send* | *Registered* | *Comments* | *Respond* | *Email send extension granted.* | *Comments* |
|---|---|---|---|---|---|---|---|---|
| *MM West Coast District* | *DC Joubert* | *mm@wcdm.co.za* | *2026/02/15* | | | | | |
| ***Administration & Community Services West Coast*** | *W Markus* | ***wmarkus@wcdm.co.za*** | *2026/02/15* | | | | | |
| ***Municipality Manager Matzikama Municipality*** | ***Mr. L. Phillips*** | ***lionelp@matzikama.gov.za*** | *2026/02/15* | | | | | |
| ***Corporate Services Matzikama Municipality*** | ***Mr M Baajies*** | ***mariob@matzikama.gov.za*** | *2026/02/15* | | | | | |
| ***Community Development Services Matzikama Municipality*** | ***Mr. R. Saul*** | ***rubens@matzikama.gov.za*** | *2026/02/15* | | | | | |
| ***Infrastructure Services Matzikama Municipality*** | ***Mr. I. Smith*** | ***immanuels@matzikama.gov.za*** | *2026/02/15* | | | | | |
| *Social Development (West Coast Regional Office)* | *Dr W. Du Toit* | *DSDWestCoast@westerncape.gov.za* | *2026/02/15* | | | | | |

| *Department* | *Name* | *Contact details* | *Date Send* | *Registered* | *Comments* | *Respond* | *Email send extension granted.* | *Comments* |
|---|---|---|---|---|---|---|---|---|
| | | *Janice.Mahoney@westerncape.gov.za Abraham.Smith@westerncape.gov.za* | | | | | | |
| *Infrastructure (Department of Infrastructure)* | *HOD* | *service@westerncape.gov.za* | *2026/02/15* | | | | | |
| *Economic Development & Tourism* | *Jo-Ann Johnston* | *ecohead@westerncape.gov.za.* | *2026/02/15* | | | | | |
| *Environmental Affairs & Development Planning* | *Dale.Wakefield* | *enquiries.eadp@westerncape.gov.za* | *2026/02/15* | *Yes 2026/02/16* | No | *2026/02/17* | | |
| *Afrimat Aggregates (Operation) Pty Ltd* | *Siphumelelo Mbali* | *siphumelelo.mbali@afrimat.co.za* | *2026/02/15* | | | | | |
| *Tourism, Trade & Sector and Economic Planning* | ***Ilse van Schalkwyk*** | ***Honjiswa.Malawu@westerncape.gov.za*** | *2026/02/15* | | | | | |
| *Integrated Economic Development Services* | ***John Peters*** | ***John.Peters@westerncape.gov.za*** | *2026/02/15* | | | | | |

| *Department* | *Name* | *Contact details* | *Date Send* | *Registered* | *Comments* | *Respond* | *Email send extension granted.* | *Comments* |
|---|---|---|---|---|---|---|---|---|
| *Skills Development and Innovation* | ***Nezaam Josephs*** | ***Delcia.Moses@westerncape.gov.za*** | *2026/02/15* | | | | | |
| ***Department of Local Government*** | *Mr Graham Paulse* | *service@westerncape.gov.za* | *2026/02/15* | | | | | |
| *Cobus van Der Westhuizen* | *Cobus van Der Westhuizen* | *cobusmaskam@mylan.co.za* | *2026/02/17* | *Yes 2026/02/27* | *Loss of grazing land due to machines operating pn site* | *2026/03/28* | | |
| *CapeNature* | *Ismat Adams* | *iadams@capenature.co.za* | *2026/03/10* | *Yes* | *See Attched comments* | *Respond with letter see attached 2026/03/15* | | |
| *Heritage Western Cape,* | ***Michael Janse van Rensburg*** | *Michael.JansevanRensburg@westerncape.gov.za / ceoheritage@westerncape.gov.za* | *2026/02/15* | | | | | |
| *WC Department of Agriculture* | *Dr. Mogale Sebopetsa.* | *Mogale.Sebopetsa@westerncape.gov.za* | *2026/02/15* | | | | | |

| *Department* | *Name* | *Contact details* | *Date Send* | *Registered* | *Comments* | *Respond* | *Email send extension granted.* | *Comments* |
|---|---|---|---|---|---|---|---|---|
| | | MogaleS@elsenburg.com | | | | | | |
| *Department of Water and Sanitation (DWS)* | ***Ms. Ntombizanele (Zanele) Bila-Mupariwa*** | *Bila-MupariwaN@dws.gov.za* | *2026/02/15* | | | | | |

03 Rekord
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## LEGAL NOTICE - APPLICATION FOR ENVIRONMENTAL AUTHORISATION: MARBLE PROSPECTING RIGHT - DMR REF WC 30/5/1/1/2/10519PR

Notice is hereby given that Aurora Marble (Pty) Ltd. has formally submitted an application to the Regional Manager, Department of Mineral Resources, Western Cape Region, seeking Environmental Authorisation for a Prospecting Right within the West Coast Magisterial District, situated in the Western Cape Province. The proposed prospecting activities will mainly involve core drilling and will exclude bulk extraction of dimension stone blocks and trenching. Historical mining operations have already affected the site. The purpose of the planned prospecting activities is to assess the potential and feasibility of establishing a sustainable mining operation.

In accordance with the specific geological conditions related to this prospecting application, no alternative site selections or activity modifications have been identified. This legal notice complies with the requirements established in the Mineral and Petroleum Resources Development Act (Act No. 28 of 2002) and the National Environmental Management Act (NEMA), as amended (Act No. 107 of 1998), and forms an integral part of the public participation process. The Basic Assessment Procedure will be carried out after identifying activities listed under the NEMA Environmental Impact Assessment Regulations of 2014 (as amended), namely:

1. Activity No. 20 (a) of Listing Notice 1 GNR 327: (a) associated infrastructure, structures and earthworks, directly related to prospecting of a mineral resource; or including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).

2. A water use license in terms of section 21 (a) of the Water Act 36 of 1998 for the taking of water from a water resource;

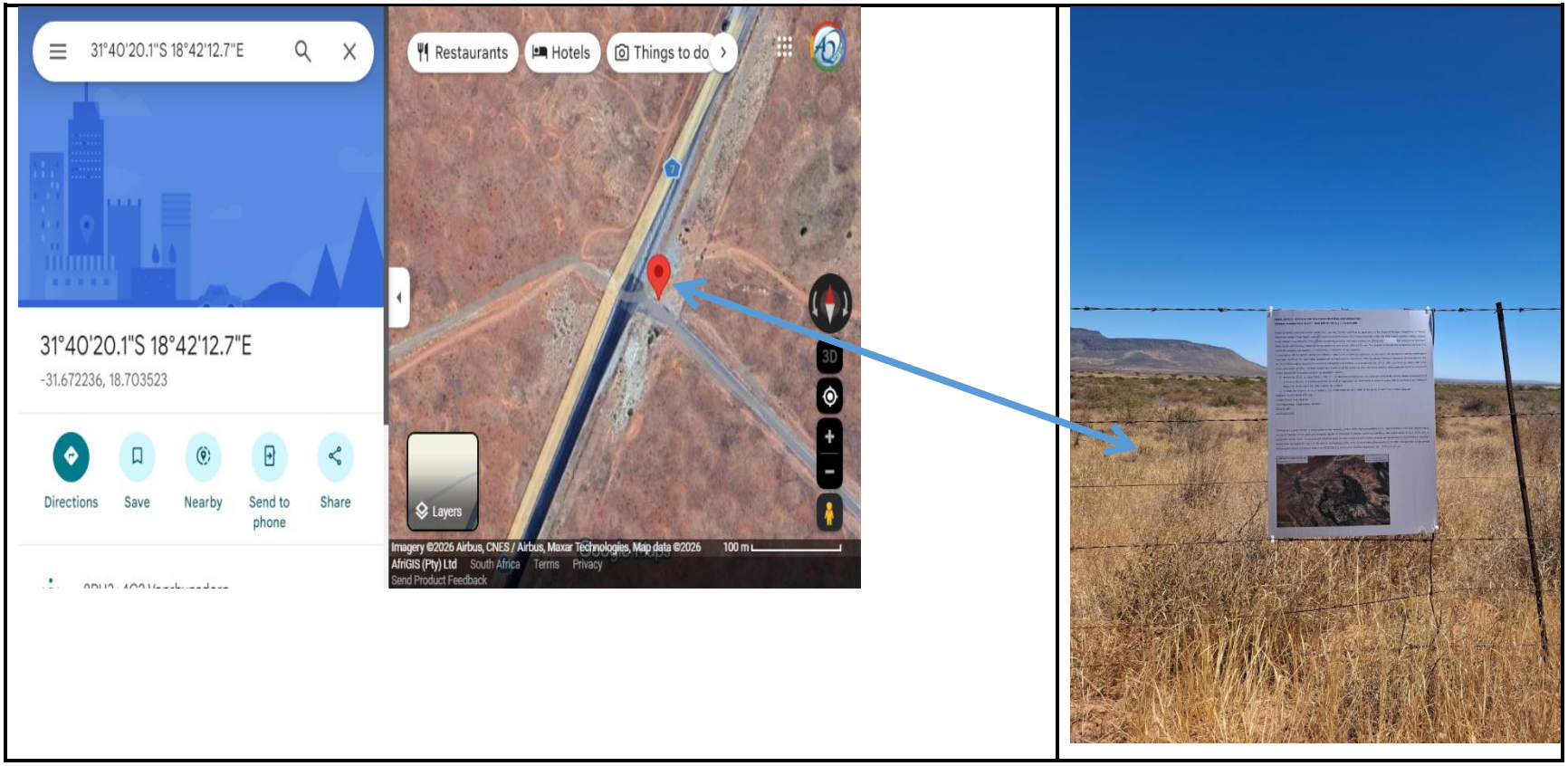
**Applicant: Aurora Marble (Pty) Ltd**
**Contact Person: Judy Strachan**
**21A Impala Road, Chislehurston, Sandton**
**083 678 1807**
**jks@finstone.net**

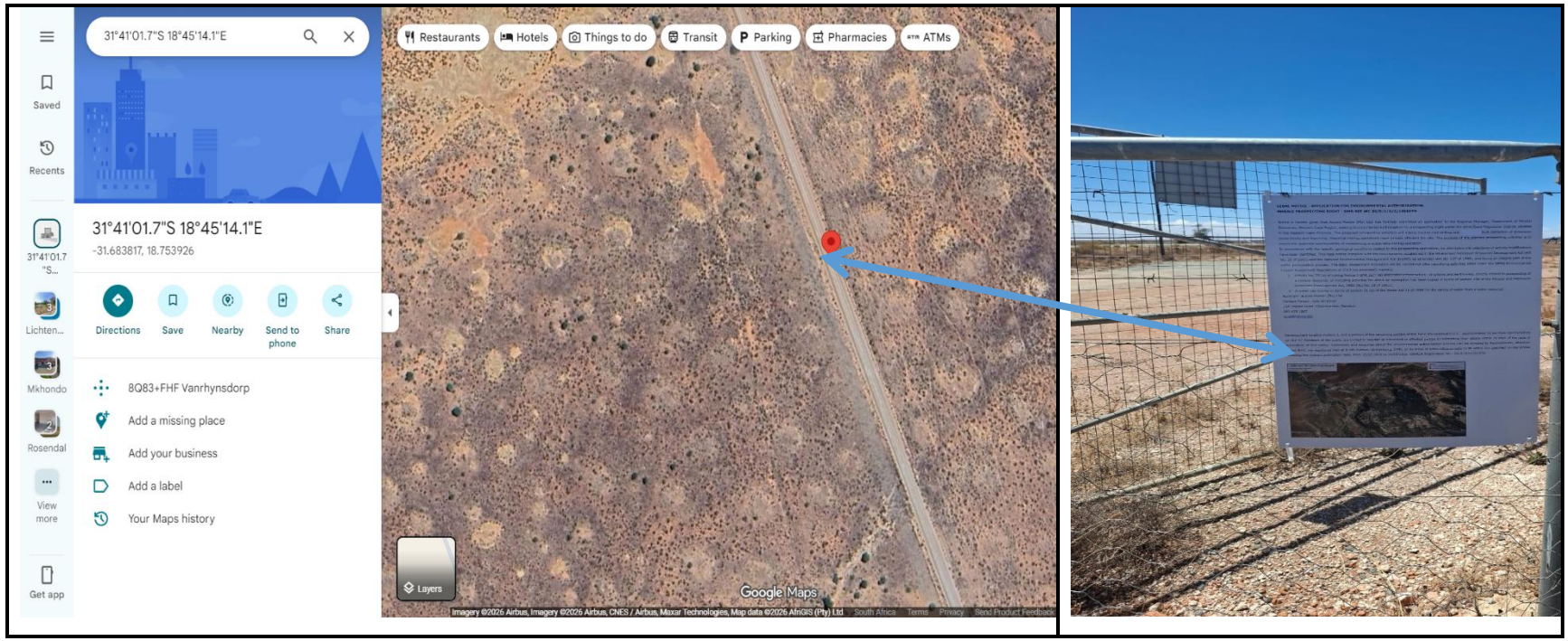
**Development location** Portion 3, and a portion of the remaining portion of the Farm Welverdiend 511 C , approximately 10 km from Vanrhynsdorp on the N7

Members of the public are invited to register as interested or affected parties by submitting their details within 30 days of the date of publication of this notice. Comments and enquiries about the environmental authorisation process can be directed to Aquovadiseco, attention Kobus Smit, via registered mail at 8 6th Avenue, Lichtenburg, 2740, or by email at kabous@aquovadis.co.za within the specified 30-day period following the notice's publication date, from 15/02/2026 to 14/03/2026. EAPASA Registration No.: 2019/1631

*Figure 12 News Paper Notice*

**Site and public notice**

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Directions
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Nearby
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Add a missing place
Add your business
Add a label
Your Maps history
Get app
Restaurants
Hotels
Things to do
Transit
Parking
Pharmacies
ATMs
Layers
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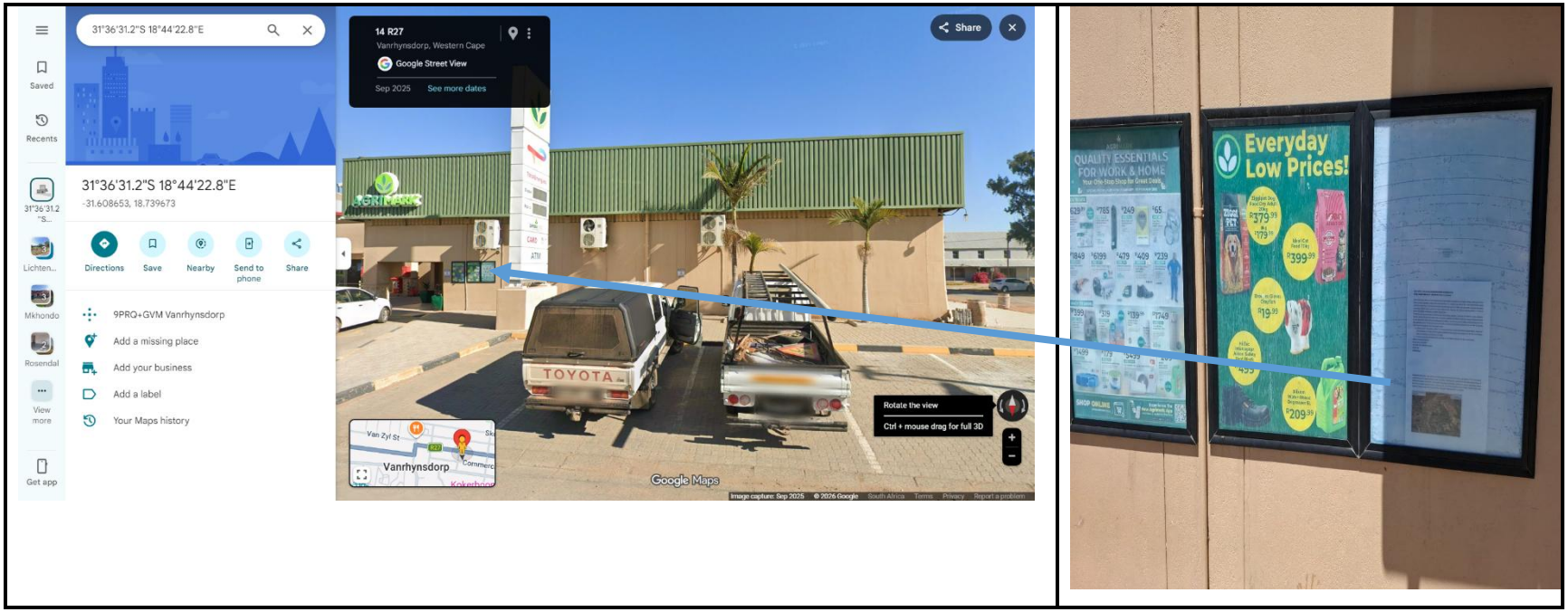
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Share
9PRQ+GVM Vanrhynsdorp
Add a missing place
Add your business
Add a label
Your Maps history
Get app
14 R27
Vanrhynsdorp, Western Cape
Google Street View
Sep 2025
See more dates
Share
TOYOTA
Rotate the view
Ctrl + mouse drag for full 3D
Vanrhynsdorp
Google Maps
Everyday Low Prices!

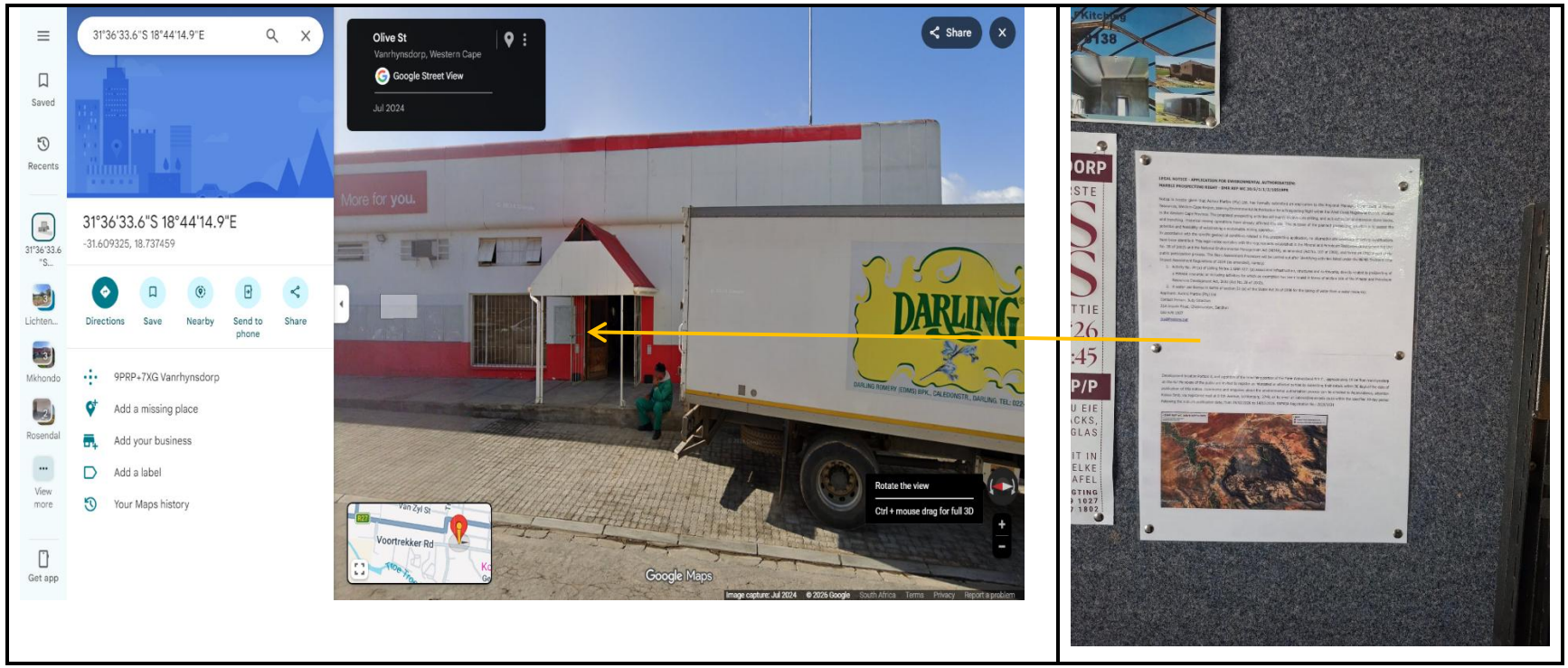


*Figure 13 Location of site notices*

## 22 THE ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE ALTERNATIVES.

(The Environmental attributes described must include socio-economic, social, heritage, cultural, geographical, physical and biological aspects)

The proposed prospecting activities, including limited bulk sampling, are confined to previously disturbed areas associated with historical marble and stone mining on the property. As a result, the activities will mainly occur within an already altered environment, thereby reducing potential impacts on undisturbed natural areas.

To further minimise potential environmental impacts, higher-impact activities such as extensive trenching and large-scale bulk sampling have been excluded from the current application. The proposed scope is therefore considered low-impact and site-specific.

Since the activities are limited to existing disturbed footprints and depend on the known presence of marble within these areas, no feasible alternative locations are considered viable, as relocating outside these zones would either:

fall outside the established mineral resource area, or

lead to an increased disturbance of previously undisturbed environments.

### 22.1 GEOLOGY

The study area near Vanrhynsdorp is located within the Namaqua-Natal Metamorphic Province, characterised by metamorphic rocks of the Namaqua Metamorphic Complex and associated granitoid intrusions. The marble found in this area occurs as metamorphosed carbonate lenses and bands embedded within gneisses and schists.

This marble mainly comprises calcite and/or dolomite, with minor accessory minerals such as quartz, feldspar, and mica. Variations in mineral composition influence the colour, texture, and overall quality of the stone, which is especially important for its use as dimension stone.

The marble deposit is influenced by structural features such as foliation, folding, and faulting, showing a predominant northwest-southeast trend. The marble bodies are generally discontinuous

and vary in thickness, affecting both the resource extent and the spatial considerations for mining. activities.

The rock mass features jointing and fracturing, which are important in environmental and operational factors. The spacing of joints directly influences the recoverability of sellable material, the amount of waste rock generated, and the stability of quarry slopes.

Near-surface weathering has resulted in a weathered zone consisting of fractured and partially altered marble. This material will need to be removed during quarry development and may cause increased erosion risk and temporary dust production during the initial mining phases. Deeper marble is generally stronger and more suitable for extraction.

Localized geological features, such as quartz veins, pegmatite intrusions, and minor fault zones, may adversely affect stone quality and increase fracturing, thereby elevating waste generation and the level of disturbance.

From an environmental perspective, the geological conditions support quarry development within a specified and controlled area. However, the generally limited soil cover increases the site's vulnerability to erosion if disturbed. Overall, the potential impacts related to the geological setting are expected to be localised and manageable, provided that suitable mitigation measures are put in place.

Geology Maps

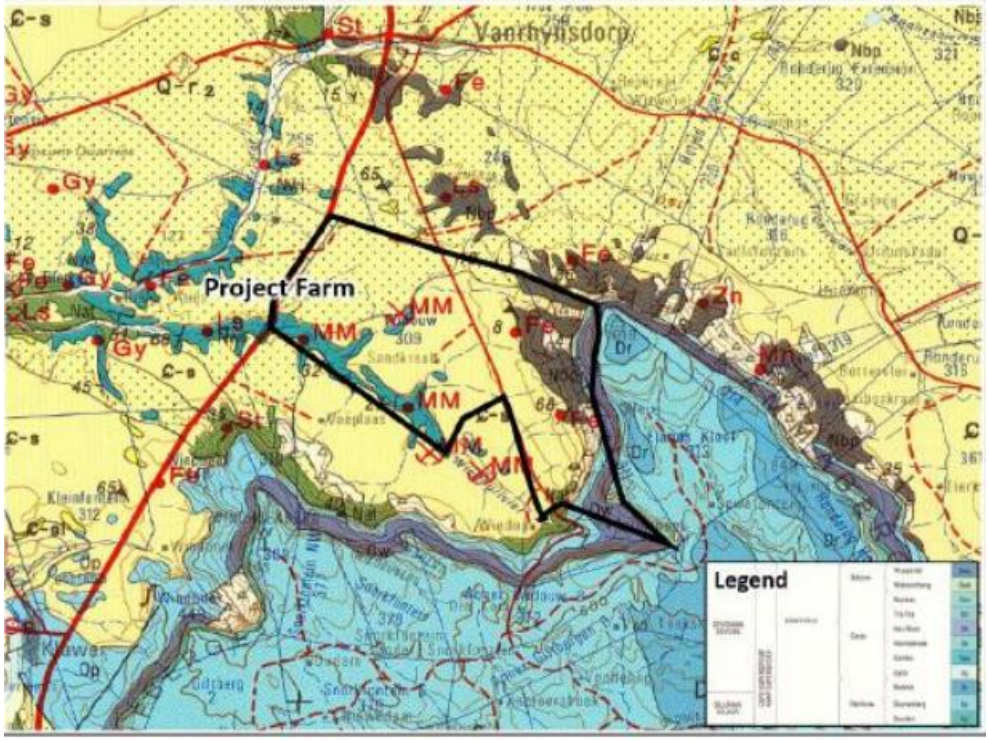


*Figure 14 Geology of the study area is located near Vanrhynsdorp.*

## 22.2 SOIL CHARACTERISTICS

The study area is located near Vanrhynsdorp and is characterised by shallow, poorly developed soils typical of semi-arid environments. These soils originate from the underlying metamorphic bedrock of the Namaqua Metamorphic Complex and are generally skeletal in nature, featuring a high proportion of surface rock and limited horizon development.

Soil cover across the site is thin and discontinuous, with frequent rock outcrops and exposed bedrock. In areas previously disturbed, particularly within historical mining footprints, natural soil profiles have been significantly altered or completely removed, leading to minimal topsoil availability.

The soils in the study area, located near Vanrhynsdorp, have low agricultural potential due to their shallow depth and limited moisture retention capacity. When disturbed, they are moderately susceptible to erosion, especially on sloping terrain where vegetation cover is sparse. Additionally, the degraded condition of these soils restricts their natural recovery potential, making successful rehabilitation dependent on appropriate soil management measures.

Due to disturbances from historical mining and grazing activities, large portions of the site have already been transformed. Consequently, the sensitivity of soils within the proposed development footprint is considered reduced at a local scale.

## 22.3 TOPOGRAPHY AND GEOMORPHOLOGY

The study area is located near Vanrhynsdorp and is characterised by gently undulating to moderately uneven terrain, which is typical of the Vanrhynsdorp region. The landscape consists of low hills, rock outcrops, and areas previously disturbed by quarrying activities.

Topography within the site has been locally modified by historical marble and dimension stone mining. This has resulted in excavated areas, shallow depressions, irregular quarry faces, and scattered waste-rock dumps and mine-residue deposits. Additionally, evidence of informal or selective extraction, commonly referred to as "boulder hopping," is present, where easily accessible material was historically removed, contributing to uneven terrain and localised disturbances.

These existing disturbances have altered the natural geomorphological integrity of the site. However, they also create areas where further mining activities can occur with limited additional impact, as parts of the landscape are already transformed.

From an environmental perspective, disturbed slopes may be susceptible to erosion if not properly managed, while existing depressions can accumulate stormwater runoff during rainfall events. Waste rock dumps contribute to both visual impacts and physical landscape alteration. With appropriate management and rehabilitation measures, these impacts can be contained and mitigated.

## 22.4 CLIMATE: REGIONAL CLIMATOLOGY

The study area is located near Vanrhynsdorp, and experiences a semi-arid Mediterranean-type climate characterised by hot, dry summers and mild to cool winters. This temperature regime is typical of the western regions of South Africa influenced by winter rainfall patterns.

Summer temperatures are generally high, with average maximum temperatures frequently exceeding 30°C, and occasional extreme temperatures surpassing 40°C during peak summer months. Night-time temperatures remain moderate, contributing to high evaporation rates during this period.

During winter, temperatures are significantly lower, with average minimum temperatures ranging between approximately 5°C and 10°C. Cold fronts may periodically result in further drops in temperature, although frost occurrence is relatively uncommon.

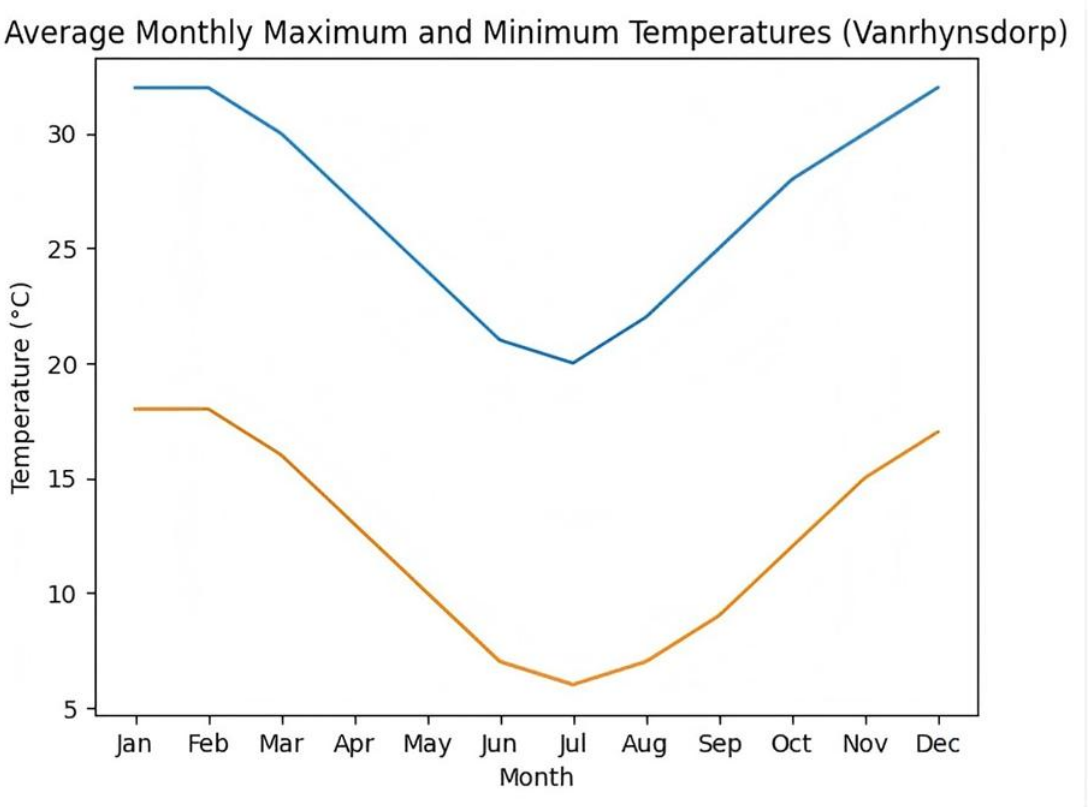


*Figure 15 Average monthly maximum and minimum temperatures.*

*Table 11 Average Monthly Maximum and Minimum Temperatures*

| Month | Avg Max Temp (°C) | Avg Min Temp (°C) | Mean Temp (°C) |
|---|---|---|---|
| Jan | 32 | 18 | 25 |
| Feb | 32 | 18 | 25 |
| Mar | 30 | 16 | 23 |
| Apr | 27 | 13 | 20 |
| May | 24 | 10 | 17 |
| Jun | 21 | 7 | 14 |
| Jul | 20 | 6 | 13 |
| Aug | 22 | 7 | 14,5 |
| Sep | 25 | 9 | 17 |
| Oct | 28 | 12 | 20 |
| Nov | 30 | 15 | 22,5 |
| Dec | 32 | 17 | 24,5 |
| | | | |
| Annual Average | | | 19,6 |

## 22.5 RAINFALL

Rainfall in the developing area is generally low and highly seasonal, peaking during the winter months from May to August. Rainfall outside this period is limited and usually consists of isolated events. The rainfall patterns are characterised by variability and unpredictability, with precipitation often falling during short bursts that can cause localised surface runoff. Due to the semi-arid nature of the region, overall rainfall totals are low, and extended wet conditions are rare.

From an environmental perspective, the limited and seasonal nature of rainfall reduces the likelihood of long-term surface-water impacts. However, heavy rainfall events can cause localised erosion and sediment movement, especially in areas previously disturbed by mining. While these effects are usually short-term, they can lead to temporary deterioration of soil and surface conditions if not properly managed.

*Table 12 Average Monthly Rainfall*

| Month | Avg Rainfall (mm) | Rain Days (>0.1 mm) |
|---|---|---|
| **Jan** | 5 – 10 | 1 – 2 |
| **Feb** | 5 – 10 | 1 – 2 |
| **Mar** | 5 – 10 | 1 – 2 |
| **Apr** | 10 – 20 | 2 – 3 |
| **May** | 20 – 40 | 4 – 6 |
| **Jun** | 30 – 60 | 6 – 8 |
| **Jul** | 40 – 70 | 7 – 9 |
| **Aug** | 30 – 60 | 6 – 8 |
| **Sep** | 10 – 30 | 3 – 5 |
| **Oct** | 5 – 15 | 1 – 3 |
| **Nov** | 5 – 10 | 1 – 2 |
| **Dec** | 5 – 10 | 1 – 2 |

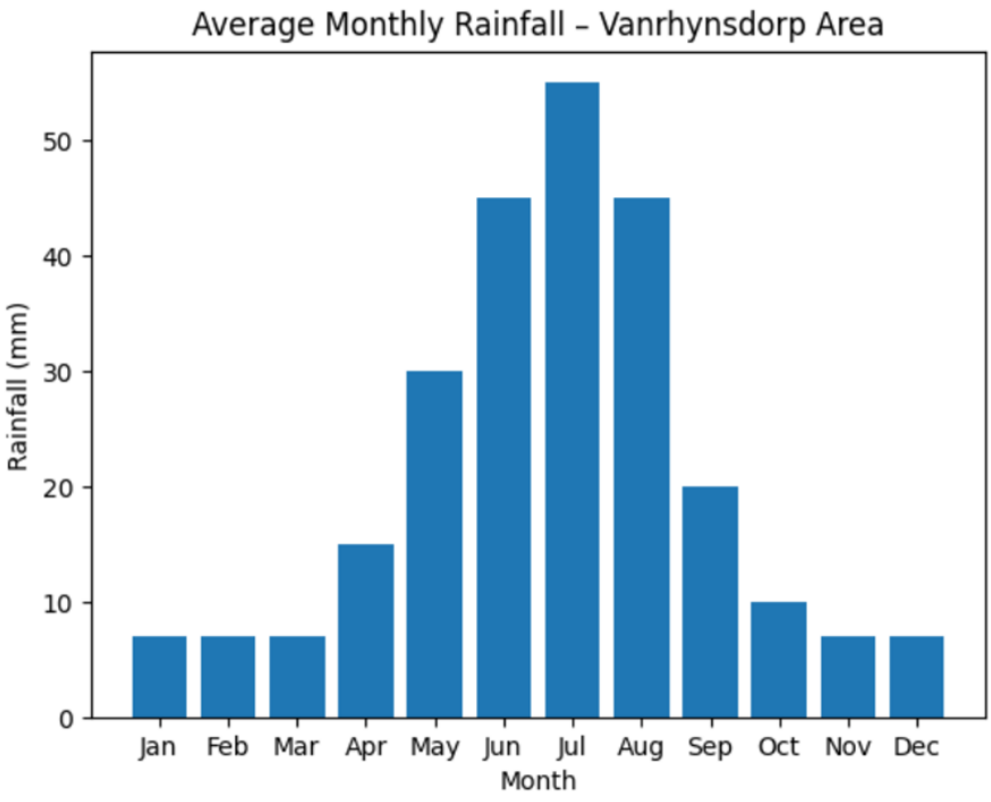


*Figure 16 Graphic showing the average monthly rainfall*

## 22.6 TERRESTRIAL BIODIVERSITY

### 22.6.1 VEGETATION (FLORA)

The study area, located near Vanrhynsdorp, is characterised by significantly disturbed ground conditions due to historical mining activities. These disturbances have altered the natural structure and composition of the vegetation, resulting in a landscape with extremely sparse vegetation cover. During the site assessment, very few plant species were observed, indicating low overall diversity within the immediate footprint.

The current vegetation is primarily dominated by hardy, disturbance-tolerant species that can survive in degraded soil and environmental conditions. Typical species expected in such areas include Galenia africana (kraalbos), various Salsola species (saltbush), and Lycium cinereum (wolfberry), which are commonly found in disturbed and overgrazed regions of arid environments. Additionally, pioneer succulent species such as Mesembryanthemum and Ruschia may occur in isolated patches, particularly where microhabitats offer slightly more favourable conditions. Sparse grasses, such as Stipagrostis species, may also be present, while ephemeral annuals are likely to emerge only after rainfall and might not have been visible during the site visit.

It is important to note that the species mentioned above are typical flora found in disturbed areas of the Succulent Karoo Biome and do not constitute a comprehensive list of all species present on-site. The limited observations from the site assessment reflect the area's disturbed nature and the timing of the survey.

Despite the degraded condition of the vegetation within the immediate study area, the site remains part of the Succulent Karoo Biome, which is internationally recognized for its high levels of plant endemism and ecological sensitivity. Therefore, the potential for Species of Conservation Concern to occur within less disturbed microhabitats or in the surrounding landscape cannot be ruled out. A precautionary approach is warranted when assessing potential impacts on flora.

The proposed development is expected to result in minimal additional loss of vegetation at the local scale, given the site's already disturbed condition and the limited plant cover present. However, some impacts may still occur, including further soil disturbance and the removal of remaining

vegetation, although this vegetation is of low ecological value. The significance of these impacts is considered low at the site-specific level but should be viewed in the broader context of the Succulent Karoo Biome's sensitivity.

Mitigation measures should concentrate on minimising disturbances to the current footprint, applying basic restoration measures where possible, and preventing the introduction or spread of invasive species. Through these actions, negative impacts on already degraded vegetation can be effectively reduced.

*Table 13 Limited Observed and Likely Disturbance-Associated Flora*

| GROUP | SCIENTIFIC NAME | COMMON NAME | COMMENT |
|---|---|---|---|
| **Shrubs** | *Galenia africana* | Kraalbos | Common in disturbed and overgrazed areas |
| **Shrubs** | *Salsola spp.* | Saltbush | Indicator of degraded soils |
| **Succulents** | *Mesembryanthemum spp.* | Ice plants | Pioneer species in disturbed areas |
| **Succulents** | *Ruschia spp.* | Vygies | May occur in isolated patches |
| **Shrubs** | *Lycium cinereum* | Wolfberry | Hardy species in arid disturbed landscapes |
| **Grasses** | *Stipagrostis spp.* | Karoo grasses | Sparse occurrence in arid environments |
| **Annuals** | Various spp. | Seasonal herbs | May emerge after rainfall events |

*Table 14 Plant Species of Conservation Concern Potentially Occurring in the Study*

| GROUP | SCIENTIFIC NAME | COMMON NAME | CONSERVATION STATUS | COMMENT |
|---|---|---|---|---|
| **Succulents** | *Conophytum spp.* | Button plants | Endangered / Critically Endangered (many spp.) | Highly endemic to Knersvlakte; extremely sensitive to disturbance |
| **Succulents** | *Lithops spp.* | Living stones | Vulnerable to Endangered (species-dependent) | Occur in quartz fields; cryptic and easily overlooked |
| **Succulents** | *Argyroderma spp.* | Silver succulents | Vulnerable / Endangered | Restricted distribution in Namaqualand |
| **Succulents** | *Oophytum spp.* | Stone plants | Vulnerable | Occur in arid quartz habitats |
| **Geophytes** | *Brunsvigia spp.* | Candelabra lilies | Protected (NEMBA/National) | Seasonal species; important ecological indicators |

| GROUP | SCIENTIFIC NAME | COMMON NAME | CONSERVATION STATUS | COMMENT |
|---|---|---|---|---|
| **Shrubs** | *Tylecodon spp.* | Succulent shrubs | Some spp. Near Threatened | Sensitive to habitat disturbance and illegal collection |
| **Quartz flora** | Various endemic spp. | Knersvlakte endemics | Data Deficient / Sensitive | Extremely high local endemism; poorly documented |

## 22.7 FAUNA

### 22.7.1 ANIMAL LIFE (FAUNA)

The faunal assessment for the study area is located near Vanrhynsdorp, and relies on desktop data and observations made during a site visit. Because of the heavily disturbed condition of the site, caused by historical mining activities, the presence of fauna within the immediate footprint is likely limited. No fauna were observed during the site assessment, reflecting limited habitat availability and diminished ecological function in the area.

The disturbed state of the site is marked by sparse vegetation and altered substrate conditions, which offer limited shelter, foraging opportunities, and habitat connectivity for wildlife. Consequently, the area is unlikely to support a high diversity or number of species within the development footprint. Any faunal activity that does occur is more likely to be found in surrounding areas that retain relatively intact natural vegetation.

Within the broader Vanrhynsdorp region, part of the Succulent Karoo Biome, faunal communities are usually adapted to arid and semi-arid conditions. These include small mammals like rodents and hares, as well as reptiles and bird species linked to open shrubland habitats. Although these species might inhabit the wider area, their presence within the disturbed footprint is likely to be minimal.

It is important to note that the absence of observed fauna during the site visit does not confirm the absence of all species, particularly mobile or nocturnal ones. Additionally, the potential presence of Species of Conservation Concern in the broader area cannot be ruled out, although the likelihood of such species occurring within the disturbed footprint is considered low.

The proposed development is anticipated to have a limited additional impact on local fauna, as the site is already significantly altered and provides low-quality habitat. Potential impacts are likely to be restricted to minor disturbances and the displacement of any species opportunistically utilising

the area. These impacts are assessed as low in significance, provided the disturbance remains confined to the existing footprint.

Mitigation measures should focus on reducing unnecessary disturbance, limiting activities to designated areas, and preventing encroachment on surrounding natural habitats. Implementing these measures can effectively manage the impacts on fauna.

*Table 15 Representative Fauna Species Likely to Occur in the Succulent Karoo (Vanrhynsdorp Area)*

| GROUP | SCIENTIFIC NAME | COMMON NAME |
|---|---|---|
| **Mammals** | *Canis mesomelas* | Black-backed jackal |
| | *Vulpes chama* | Cape fox |
| | *Felis lybica* | African wild cat |
| | *Caracal caracal* | Caracal |
| | *Suricata suricata* | Meerkat |
| | *Cynictis penicillata* | Yellow mongoose |
| | *Aethomys namaquensis* | Namaqua rock mouse |
| | *Gerbillurus paeba* | Hairy-footed gerbil |
| | *Lepus capensis* | Cape hare |
| | *Orycteropus afer* | Aardvark |
| **Birds** | *Eupodotis afra* | Southern black korhaan |
| | *Chlamydotis macqueenii* (regional analogue often replaced by Ludwig's bustard *Neotis ludwigii*) | Ludwig's bustard |
| | *Gyps coprotheres* | Cape vulture (regional occurrence) |
| | *Falco rupicolus* | Rock kestrel |
| | *Alaemon alaudipes* | Karoo lark |
| | *Certhilauda albescens* | Karoo long-billed lark |
| **Reptiles** | *Bitis atropoides* | Namaqua puff adder |
| | *Psammophis notostictus* | Karoo sand snake |
| | *Trachylepis sulcata* | Western rock skink |
| | *Agama atra* | Southern rock agama |
| | Various spp. | Tortoises (e.g. angulate tortoise) |
| **Invertebrates** | Various spp. | Scorpions (e.g. *Parabuthus* spp.) |
| | Various spp. | Tenebrionid beetles |

*Table 16 Species of Conservation Concern Potentially Occurring in the Study Area*

| GROUP | SCIENTIFIC NAME | COMMON NAME | CONSERVATION STATUS | COMMENT |
|---|---|---|---|---|
| **Birds** | *Gyps coprotheres* | Cape vulture | Endangered | Regional occurrence; associated with cliffs and large foraging ranges |
| **Birds** | *Neotis ludwigii* | Ludwig's bustard | Endangered | Occurs in Karoo environments; sensitive to disturbance |
| **Birds** | *Eupodotis afra* | Southern black korhaan | Near Threatened | Ground-nesting; vulnerable to habitat disturbance |
| **Mammals** | *Felis nigripes* | Black-footed cat | Vulnerable | Occurs in arid regions; rarely observed but sensitive |
| **Reptiles** | Various endemic spp. | Succulent Karoo reptiles | Data Deficient / Sensitive | High local endemism; sensitivity to habitat disturbance |

# 23 HYDROLOGY

## 23.1 SURFACE WATER

The study area, located near Vanrhynsdorp, is characterised by limited surface water resources, which are typical of semi-arid environments. The region's surface water features are generally non-perennial, consisting mainly of ephemeral drainage lines that flow primarily in response to winter rainfall.

Due to low and variable rainfall, surface water flow is infrequent and typically short-lived. Consequently, these systems are highly sensitive to disturbance and play an essential ecological role despite their limited extent.

The site itself does not appear to have any significant permanent surface water features, largely due to its disturbed nature and historical mining activities. Surface runoff is expected to be minimal and episodic, mostly occurring during rainfall events.

Water quality in the broader area may be affected by natural sediment transport during rainfall and by limited agricultural activity in the surrounding areas. However, no major industrial or mining-related water quality impacts have been identified in the immediate vicinity.

### 23.2 GROUNDWATER

The study area is located near Vanrhynsdorp in a region where groundwater is an important, albeit limited, water resource due to the scarcity of surface water. Groundwater is typically found in fractured rock formations and weathered zones within the underlying geology.

Groundwater recharge is generally low and episodic, occurring in response to rainfall events and limited by high evaporation rates typical of the region. As a result, groundwater availability is constrained and should be considered a sensitive resource.

The proposed development is unlikely to significantly affect groundwater availability, flow direction, or quality, as activities will take place within an already disturbed footprint and are not expected to intersect the groundwater table.

## 24 LAND USES

The study area, located on near Vanrhynsdorp, is situated within a predominantly rural landscape characterised by low-intensity agricultural activities and areas of natural vegetation associated with the Succulent Karoo Biome. The broader region's land use is heavily influenced by its semi-arid climate, with extensive livestock grazing being the dominant activity, supported by limited dryland agriculture where conditions allow.

The project site has been heavily disturbed by historical mining activities, making it unrepresentative of the surrounding natural or agricultural lands. Its current state features altered land with minimal vegetation, limited ecological function, and decreased suitability for farming or grazing. Consequently, the site is classified as previously impacted and degraded, with low current land use value.

Surrounding land uses primarily consist of extensive grazing areas and pockets of relatively undisturbed natural vegetation. These surrounding areas have greater ecological and agricultural value than the project footprint and contribute to the region's overall environmental sensitivity.

The proposed development continues mining-related land use within an already disturbed area and is largely compatible with the site's current condition at the local level. Due to the degraded state of the land, the activities are not expected to cause significant additional loss of productive agricultural land or natural habitat within the footprint.

Potential land-use impacts are expected to be localised and limited, possibly including additional soil disturbance, minor expansion of degraded areas, and temporary visual impacts. However, these effects are unlikely to significantly alter broader land-use patterns in the area, provided that activities remain confined to the existing disturbed footprint.

To mitigate potential impacts, appropriate management measures should be implemented to ensure that disturbances do not extend into surrounding undisturbed areas. This should include restricting activities to defined zones, maintaining buffer areas where necessary, and implementing rehabilitation measures following any disturbance. With these measures in place, the proposed development is not expected to cause significant land-use conflict within the surrounding rural landscape.

Potential risks to groundwater mainly stem from accidental hydrocarbon spills or contamination caused by operational activities. These risks can be effectively reduced by implementing suitable management measures, such as using bunded areas, ensuring the proper storage of hazardous substances, and establishing spill prevention and response procedures.

# 25 DESCRIPTION OF SPECIFIC ENVIRONMENTAL FEATURES AND INFRASTRUCTURE ON THE SITE.

The study area, located near Vanrhynsdorp, has been significantly disturbed by historical mining activities. Despite this disturbance, several environmental features remain evident within the site. These include hills and rocky outcrops, shallow valleys, natural drainage areas, and water-filled quarry depressions resulting from previous excavation activities.

These features contribute to the local topography and hydrology of the site and should be considered during planning and operational phases to ensure that potential impacts are appropriately managed.

An environmental and current land use map has been compiled to illustrate the spatial distribution of these features, including areas of disturbance, drainage patterns, and surrounding land uses.

## 25.1 ENVIRONMENTAL FEATURES OF THE STUDY AREA

Although the area over which Aurora Marble Quarries (Pty) Ltd has applied has been disturbed by previous mining activities, several environmental features remain evident within the study area. These include hills and rocky outcrops, shallow valleys, natural drainage areas, and water-filled quarry depressions resulting from historical excavation activities.

These features contribute to the local topographical and hydrological characteristics of the site and must be considered during planning and operational phases to ensure that potential impacts are appropriately managed.

An environmental and current land use map has been prepared to illustrate the spatial distribution of these features, including existing disturbances, drainage patterns, and surrounding land uses.

## 25.2 METHODOLOGY FOR IMPACT ASSESSMENT

The preferred site was identified as the most suitable location for the proposed development based on a combination of environmental, technical, and economic considerations. No feasible alternative sites were identified that meet the same criteria.

The selection of the preferred site is supported by the following:

- ✓ The applicant owns portions of the proposed development area;
- ✓ Existing infrastructure and access roads associated with previous quarrying activities are present;
- ✓ Previous mining operations confirmed the presence of viable gabbro-norite material;
- ✓ The site is already disturbed and is therefore not considered pristine;
- ✓ Saleable material can be recovered from existing historical waste rock dumps within the development footprint.

Although no alternative sites are proposed, the layout of the development may be adjusted within the application boundary to minimise environmental impacts and avoid sensitive features where possible.

Core drilling and associated prospecting activities were used to identify potential impacts across environmental aspects. Each impact is assessed and presented in tabulated form, describing conditions during the operational, decommissioning, and post-closure phases. The assessment takes into account the fact that previous mining activities have already transformed the site, which influences the baseline condition and overall impact significance.

## 25.3 IMPACT ASSESSMENT CRITERIA AND RATING SYSTEM

In accordance with the Environmental Impact Assessment Regulations, 2017 as amended , a significant impact is defined as an impact that may have a notable effect on one or more aspects of the environment, or may result in non-compliance with accepted environmental quality standards, thresholds, or targets.

Each identified impact is assessed based on its nature, extent, duration, intensity (significance), and probability of occurrence. These criteria are applied using a standardised rating system to ensure consistency and objectivity.

## 25.4 NATURE OF IMPACT

Positive: Impact is beneficial to the environment

Negative: Impact is detrimental to the environment

*Table 17 Significance (Intensity of Impact)*

| Rating | Description |
|---|---|
| **1 – Minor** | Low intensity; <20% chance of environmental damage |
| **2 – Low** | Low intensity; 20–40% chance of damage |
| **3 – Moderate** | Moderate intensity; 40–60% chance of damage |
| **4 – Significant** | High intensity; 60–80% chance of damage |
| **5 – Severe** | Very high intensity; >80% chance of damage |

*Table 18 Probability of Occurrence*

| Rating | Description |
|---|---|
| **1 – Unlikely** | Low likelihood of occurrence |
| **2 – Possible** | Reasonable expectation based on similar activities |
| **3 – Probable** | Likely to occur under current conditions |
| **4 – Highly Likely** | Very likely to occur |
| **5 – Definite** | Will occur |

*Table 19 Duration of Impact*

| Rating | Description |
|---|---|
| **1 – Short** | Limited to construction phase |
| **2 – Short-Medium** | Up to 5 years |
| **3 – Medium** | 5–15 years |
| **4 – Long** | Operational lifespan |
| **5 – Permanent** | Irreversible impact |

*Table 20 Extent of Impact*

| Rating | Description |
|---|---|
| **1 – Site** | Limited to the site |
| **2 – Local** | Surrounding area |
| **3 – Regional** | Provincial scale |
| **4 – National** | National scale |
| **5 – International** | Cross-border impact |

## 25.5 DEGREE TO WHICH POTENTIAL IMPACTS CAN:

The degree to which a potential impact may result in irreplaceable (permanent) loss or damage to the natural and/or human environment is assessed using the following scale:

| Rating | Description |
|---|---|
| **0 – Impossible** | No chance of causing permanent loss or damage |
| **1 – Unlikely** | Less than 25% chance of causing permanent loss |
| **2 – Possible** | Approximately 50% chance of causing permanent loss |
| **3 – Highly Likely** | Approximately 75% chance of causing permanent loss |
| **4 – Definite** | Impact will definitely cause permanent loss |

| Rating | Description |
|---|---|
| **0 – Irreversible** | Impact cannot be reversed under any circumstances |
| **-1 – Unlikely** | ~25% chance of reversal |
| **-2 – Possible** | ~50% chance of reversal |
| **-3 – Highly Likely** | ~75% chance of reversal |
| **-4 – Reversible** | Fully reversible to pre-impact condition |

### 25.5.1 DEGREE TO WHICH IMPACTS CAN BE MITIGATED OR MANAGED

The extent to which impacts can be avoided, mitigated, or managed is assessed using the following scale:

| Rating | Description |
|---|---|
| **1 – Minor** | Negligible impact; minimal or no mitigation required |
| **2 – Low** | Limited impact; mitigation easily achievable |
| **3 – Moderate** | Noticeable impact; mitigation practical |
| **4 – Significant** | High impact; mitigation challenging |
| **5 – Severe** | Very high impact; no effective mitigation possible |

### 25.5.2 MAGNITUDE OF IMPACT

The magnitude of each impact is determined as follows:

| Rating | Description |
|---|---|
| **1 – Minor** | Negligible impact; minimal or no mitigation required |
| **2 – Low** | Limited impact; mitigation easily achievable |
| **3 – Moderate** | Noticeable impact; mitigation practical |
| **4 – Significant** | High impact; mitigation challenging |
| **5 – Severe** | Very high impact; no effective mitigation possible |

## 25.6 IMPACT SCORING METHODOLOGY

Each impact is assessed by assigning numerical values to the following criteria:

- ✓ Duration
- ✓ Probability
- ✓ Significance (intensity)
- ✓ Extent
- ✓ The degree to which impact may cause irreplaceable loss
- ✓ The degree to which the impact can be reversed
- ✓ The degree to which the impact can be mitigated
- ✓ The total impact score is calculated using the following formula:

**Total Impact Score = (Duration + Probability + Significance + Extent + Irreplaceable Loss – Reversibility – Mitigation) × Magnitude**

The reversibility and mitigation components are subtracted, as they reduce the overall severity of the impact.

### 25.6.1 IMPACT SIGNIFICANCE CLASSIFICATION

The calculated total score is used to classify impacts into five categories:

| Score Range | Impact Significance |
|---|---|
| **1 – 11** | Minor / Insignificant |
| **12 – 30** | Low |
| **31 – 50** | Moderate |
| **51 – 90** | Significant |
| **91 – 125** | Severe |

### 25.6.2 CONSEQUENCE OF IMPACTS

The consequence of each impact is determined by the combined effect of its nature, significance, extent, duration, and probability of occurrence. These factors may interact to produce cumulative impacts over time.

For example, vegetation clearance may lead to cumulative changes in land cover, increased surface reflectivity (albedo), and visual impacts within the landscape. Such cumulative effects are considered in the overall impact assessment.

*Table 21 Ranking, magnitude, and the total score of the given aspects of each impact.*

| Rating | Significance | Probability | Duration | Extent | Irreplaceable Loss | Reversibility | Mitigation | Magnitude | Total Impact Score | Impact Class |
|---|---|---|---|---|---|---|---|---|---|---|
| **1** | Minor | Unlikely | Short | Site | Impossible (0) | Irreversible (0) | Unavoidable (0) | Minor (1) | 1 – 11 | Minor / Insignificant |
| **2** | Low | Possible | Short-Medium | Local | Unlikely (1) | Unlikely (-1) | Unlikely (-1) | Low (2) | 12 – 30 | Low |
| **3** | Moderate | Probable | Medium | Regional | Possible (2) | Possible (-2) | Possible (-2) | Moderate (3) | 31 – 50 | Moderate |
| **4** | Significant | Highly Likely | Long | National | Highly Likely (3) | Highly Likely (-3) | Highly Likely (-3) | Significant (4) | 51 – 90 | Significant |
| **5** | Severe | Definite | Permanent | International | Definite (4) | Reversible (-4) | Definitely Avoidable (-4) | Severe (5) | 91 – 125 | Severe |

Table 22 Potential Impacts of activities to be undertaken and the potential consequences of these impacts.

| Activity | Potential Impact | Potential Consequence |
|---|---|---|
| **Prospecting and bulk sampling** | Disturbance of land surface and vegetation | Localised loss of vegetation cover and disturbance of habitat within the development footprint |
| **Excavation and quarrying** | Modification of topography and geomorphology | Permanent alteration of landforms and visual character of the area |
| **Haul roads and vehicle movement** | Dust generation | Reduced air quality and nuisance conditions, particularly during dry and windy periods |
| **Operation of machinery and equipment** | Noise generation | Temporary disturbance to surrounding environment and fauna |
| **Soil disturbance and clearing** | Increased erosion potential | Soil loss and sediment movement during rainfall events |
| **Waste rock handling and stockpiling** | Visual impact and land disturbance | Alteration of landscape aesthetics and expansion of disturbed footprint |
| **Water use and stormwater runoff** | Potential contamination of surface runoff | Localised deterioration of water quality if not properly managed |
| **General site activities (fuel handling, maintenance)** | Hydrocarbon spills and waste generation | Soil contamination and environmental degradation if not properly controlled |

## 25.7 IMPACT ASSESSMENT

The impact assessment presented below accounts for the already disturbed nature of the study area resulting from historical mining activities. As a result, the baseline environmental sensitivity within the development footprint is considered to be reduced for certain aspects, particularly vegetation, fauna, and soils. However, regional environmental sensitivity, including the presence of the Succulent Karoo Biome, has been taken into account when determining the overall significance of the impact.

Table 23 Environmental Impact Assessment Summary

| Potential Impact | Nature | Sig | Prob | Dur | Ext | Loss | Rev | Mit | Subtotal | Mag | Total | Class | Consequence |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Geology** | | | | | | | | | | | | | |
| **Removal of geological resources** | Negative | 5 | 5 | 5 | 1 | 0 | 0 | -2 | 14 | 5 | 70 | Significant | High visual impact and permanent alteration of geological features |
| **Topography & Geomorphology** | | | | | | | | | | | | | |
| **Changes to natural topography** | Negative | 5 | 5 | 5 | 1 | 4 | -1 | -1 | 18 | 5 | 90 | Significant | Further modification of |

| Potential Impact | Nature | Sig | Prob | Dur | Ext | Loss | Rev | Mit | Subtotal | Mag | Total | Class | Consequence |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | already disturbed landforms |
| **Changes in geomorphology** | Negative | 5 | 5 | 5 | 1 | 3 | -1 | -1 | 17 | 5 | 85 | Significant | Alteration of natural landforms and surface stability |
| **Soils** | | | | | | | | | | | | | |
| **Loss of soil structure** | Negative | 4 | 5 | 3 | 1 | 2 | -2 | -2 | 11 | 4 | 44 | Moderate | Reduced soil productivity and stability |
| **Loss of soil nutrients** | Negative | 4 | 5 | 3 | 1 | 2 | -2 | -1 | 12 | 4 | 48 | Moderate | Reduced soil fertility |
| **Soil compaction** | Negative | 3 | 5 | 3 | 1 | 1 | -1 | -1 | 11 | 4 | 44 | Moderate | Reduced infiltration and plant growth |
| **Soil contamination** | Negative | 4 | 3 | 4 | 1 | 2 | -3 | -3 | 8 | 3 | 24 | Low | Localised contamination risk |

| Potential Impact | Nature | Sig | Prob | Dur | Ext | Loss | Rev | Mit | Subtotal | Mag | Total | Class | Consequence |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Soil erosion** | Negative | 4 | 4 | 3 | 2 | 3 | -1 | -2 | 13 | 3 | 39 | Moderate | Increased erosion in disturbed areas |
| **Vegetation (Flora)** | | | | | | | | | | | | | |
| **Loss of vegetation (disturbed footprint)** | Negative | 5 | 5 | 4 | 1 | 3 | -2 | -1 | 15 | 4 | 60 | Significant | Further loss of already limited vegetation |
| **Invasion by alien species** | Negative | 3 | 5 | 4 | 1 | 3 | 0 | -3 | 13 | 3 | 39 | Moderate | Spread of invasive species |
| **Loss of floral SCC** | Negative | 5 | 5 | 4 | 1 | 3 | -2 | -1 | 15 | 4 | 60 | Significant | Potential loss of sensitive plant species |
| **Loss of floral diversity** | Negative | 4 | 4 | 4 | 2 | 3 | -2 | -2 | 13 | 3 | 39 | Moderate | Reduced biodiversity |

| Potential Impact | Nature | Sig | Prob | Dur | Ext | Loss | Rev | Mit | Subtotal | Mag | Total | Class | Consequence |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Fauna** | | | | | | | | | | | | | |
| **Disturbance to fauna (low presence)** | Negative | 3 | 5 | 4 | 1 | 3 | 0 | -3 | 13 | 3 | 39 | Moderate | Displacement of opportunistic species |
| **Faunal mortality (roads/operations)** | Negative | 4 | 3 | 3 | 2 | 0 | -4 | -3 | 5 | 4 | 20 | Low | Limited mortality risk |
| **Loss of faunal habitat** | Negative | 3 | 3 | 4 | 2 | 2 | -2 | -2 | 10 | 3 | 30 | Low | Loss of already degraded habitat |
| **Loss of faunal SCC** | Negative | 3 | 3 | 4 | 2 | 2 | -2 | -3 | 9 | 3 | 27 | Low | Possible regional impact on SCC |
| **Surface Water** | | | | | | | | | | | | | |

| Potential Impact | Nature | Sig | Prob | Dur | Ext | Loss | Rev | Mit | Subtotal | Mag | Total | Class | Consequence |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Increased suspended solids** | Negative | 3 | 5 | 3 | 2 | 2 | -1 | -1 | 13 | 3 | 39 | Moderate | Reduced water quality |
| **Hydrocarbon pollution** | Negative | 3 | 3 | 3 | 2 | 2 | -2 | -3 | 8 | 3 | 24 | Low | Localised contamination |
| **Increased erosion/run off** | Negative | 4 | 4 | 3 | 2 | 3 | -1 | -2 | 13 | 3 | 39 | Moderate | Sediment transport |
| **Changes to drainage patterns** | Negative | 4 | 5 | 5 | 2 | 3 | 0 | -2 | 17 | 4 | 68 | Significant | Altered hydrology |
| **Groundwater** | | | | | | | | | | | | | |
| **Groundwater contamination** | Negative | 5 | 1 | 4 | 1 | 3 | -2 | -3 | 9 | 3 | 27 | Low | Risk to water quality |

| Potential Impact | Nature | Sig | Prob | Dur | Ext | Loss | Rev | Mit | Subtotal | Mag | Total | Class | Consequence |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Groundwater quantity changes** | Negative | 5 | 1 | 4 | 1 | 3 | -2 | -3 | 9 | 3 | 27 | Low | Minimal impact expected |
| **Air Quality** | | | | | | | | | | | | | |
| **Dust generation** | Negative | 3 | 5 | 2 | 2 | 1 | -4 | -3 | 6 | 3 | 18 | Low | Health and nuisance impacts |
| **Air pollution (non-dust)** | Negative | 3 | 4 | 4 | 2 | 1 | -3 | -3 | 8 | 3 | 24 | Low | Minor emissions |
| **Noise** | | | | | | | | | | | | | |
| **Increased noise levels** | Negative | 3 | 4 | 2 | 2 | 0 | -4 | -1 | 6 | 3 | 18 | Low | Disturbance to fauna and workers |
| **Heritage** | | | | | | | | | | | | | |
| **Damage to heritage resources** | Negative | 5 | 2 | 5 | 1 | 4 | 0 | -4 | 13 | 5 | 65 | Significant | Loss of cultural heritage |

| Potential Impact | Nature | Sig | Prob | Dur | Ext | Loss | Rev | Mit | Subtotal | Mag | Total | Class | Consequence |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Visual / Aesthetics** | | | | | | | | | | | | | |
| **Visual impact of mining** | Negative | 4 | 5 | 5 | 2 | 3 | 0 | -1 | 18 | 4 | 72 | Significant | Landscape alteration |
| **Decreased aesthetic appeal** | Negative | 5 | 5 | 5 | 2 | 3 | 0 | -1 | 19 | 4 | 76 | Significant | Loss of sense of place |
| **Socio-economic** | | | | | | | | | | | | | |
| **Safety risks (pits, dumps)** | Negative | 5 | 5 | 4 | 1 | 3 | -2 | -1 | 15 | 4 | 60 | Significant | Risk to people |
| **Increased traffic** | Negative | 4 | 3 | 2 | 2 | 1 | -4 | -1 | 7 | 3 | 21 | Low | Road pressure |
| **Veld fires** | Negative | 4 | 3 | 2 | 2 | 1 | -4 | -2 | 6 | 3 | 18 | Low | Fire risk |

| Potential Impact | Nature | Sig | Prob | Dur | Ext | Loss | Rev | Mit | Subtotal | Mag | Total | Class | Consequence |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Land Use** | | | | | | | | | | | | | |
| **Loss of land use potential** | Negative | 5 | 5 | 4 | 1 | 4 | -1 | 0 | 18 | 3 | 54 | Significant | Reduced land use flexibility |
| **Reduced land capability** | Negative | 5 | 4 | 4 | 1 | 4 | -1 | 0 | 17 | 3 | 51 | Significant | Reduced future land use options |
| **Employment opportunities and local economic benefits** | Positive | 3 | 4 | 3 | 2 | 0 | -4 | -4 | 8 | 3 | 24 | Low | Temporary job creation and local economic stimulation |
| **Cumulative impact of vegetation loss, soil disturbance and land transformation** | Negative | 4 | 5 | 5 | 2 | 3 | -2 | -2 | 14 | 4 | 56 | Significant | Long-term alteration of landscape and ecosystem functioning |
| **Residual impacts after closure** | Negative | 4 | 3 | 5 | 1 | 3 | -2 | -2 | 11 | 3 | 33 | Moderate | Long-term visual and environmental impacts |

*Table 24 Mitigation Measures for Identified Impacts*

| Impact Category | Impact | Mitigation Measures | Residual Impact |
|---|---|---|---|
| **Geology** | Removal of geological resources | Limit extraction to approved footprint; optimise block recovery; manage waste rock dumps properly | Moderate |
| **Topography & Geomorphology** | Changes to landforms | Restrict excavation areas; stabilise slopes; design benches safely; rehabilitate disturbed areas progressively | Moderate |
| **Soils** | Loss of soil structure and nutrients | Strip and stockpile topsoil where present; minimise disturbance; reuse soil during rehabilitation | Low |
| | Soil compaction | Limit vehicle movement to designated routes; avoid unnecessary traffic | Low |
| | Soil contamination | Store fuels in bunded areas; implement spill response plan; regular inspections | Low |
| | Soil erosion | Install erosion control (berms, drainage channels); stabilise slopes; rehabilitate exposed areas | Low |
| **Vegetation (Flora)** | Loss of vegetation | Restrict clearing to footprint; avoid undisturbed patches; rehabilitate progressively | Low |
| | Loss of floral SCC | Conduct pre-clearance walkdowns where possible; avoid sensitive microhabitats | Low |
| | Invasive species | Monitor and remove alien vegetation; implement control programme | Low |
| **Fauna** | Disturbance to fauna | Limit activities to footprint; restrict unnecessary movement; avoid night-time disturbance where possible | Low |
| | Faunal mortality | Enforce speed limits; restrict access; raise awareness among workers | Low |

| Impact Category | Impact | Mitigation Measures | Residual Impact |
|---|---|---|---|
| | Loss of habitat | Minimise footprint; rehabilitate disturbed areas | Low |
| **Surface Water** | Increased sedimentation | Install stormwater controls; use silt traps; manage runoff | Low |
| | Hydrocarbon pollution | Bund fuel storage; regular maintenance of equipment; spill kits on site | Low |
| | Changes in drainage | Maintain natural drainage patterns where possible; avoid blocking channels | Moderate |
| **Groundwater** | Contamination | Use bunded storage; proper waste disposal; prevent leaks | Low |
| | Quantity changes | Avoid deep excavation below water table | Low |
| **Air Quality** | Dust generation | Water spraying on roads; limit vehicle speeds; cover stockpiles if necessary | Low |
| | Air pollution | Maintain equipment; minimise emissions | Low |
| **Noise** | Increased noise levels | Limit working hours; maintain machinery; provide PPE for workers | Low |
| **Heritage** | Damage to heritage resources | Stop work if artefacts found; notify authorities; implement chance find procedure | Low |
| **Visual / Aesthetic** | Visual impact | Limit disturbed footprint; rehabilitate progressively; shape waste dumps | Moderate |
| **Socio-economic** | Safety risks | Fence dangerous areas; install warning signage; control access | Low |
| | Traffic increase | Use designated routes; maintain roads; implement traffic management plan | Low |
| | Veld fires | Fire prevention plan; firebreaks; emergency response equipment | Low |
| **Land Use** | Loss of land use potential | Confine activities to disturbed areas; rehabilitate after closure | Moderate |

## 25.8 THE POSITIVE AND NEGATIVE IMPACTS THAT THE PROPOSED ACTIVITY (IN TERMS OF THE INITIAL SITE LAYOUT) AND ALTERNATIVES WILL HAVE ON THE ENVIRONMENT AND THE COMMUNITY THAT MAY BE AFFECTED

The preferred site (project study area) was identified as the most suitable location as no feasible alternatives were identified that meet the same following criteria as the preferred site:

- The applicant owns portions of the preferred site.
- Infrastructure and roads associated with prospecting and bulk sampling activities exist on-site.
- Previous mining operations at this location indicate the existence of viable gabbro-norite material.
- Therefore, the preferred area has been transformed due to historical mining activities and is not pristine.

However, the development footprint (e.g., quarry areas, waste rock dumps, workshops, and roads) within the application area boundaries will be designed to extract the maximum volume of viable material while minimising biophysical and socio-economic impacts.

## 25.9 POSSIBLE MITIGATION MEASURES THAT COULD BE APPLIED TO CONCERNS RAISED BY THE I&APS AND THE LEVEL OF RISK.

No environmental management, social or socio-party has yet raised economic concerns. This result is expected due to the low-level exploration activities planned on a site that mining activities have already impacted.

*Table 25 Possible concerns that could be raised by affected parties*

| Concerns raised by affected parties | Levels of risk | Possible mitigation measures |
|---|---|---|
| Possible heritage / grave sites | Medium | Avoid heritage sites and apply buffer zones and signpost-identified heritage sites. |
| The impact of access through the property to other areas if the prospecting right is approved | Medium | Traffic safety plan & dust control when required as well as road maintenance |
| Agricultural Activities | Low | Exclusion of land used for cultivation and cattle feedlots if applicable |
| Crime | Low | No workers will be allowed to reside on site. Working hours will be restricted 07:00 – 17:00 |

| Concerns raised by affected parties | Levels of risk | Possible mitigation measures |
|---|---|---|
| Traffic Safety (communal roads) | Medium | Traffic safety plan & dust control when required as well as road maintenance |
| Water Courses | Medium | The implementation of buffer zones for non-perennialm streams that must be avoided and buffered. |
| Blasting | Low | Blasting will be restricted to low velocity explosives when required since blasting tends to damage mineable stone deposits. |

*Table 26 Consequences of impacts and proposed mitigation measures*

| Impact Category | Impact | Consequence | Residual Risk | Mitigation Measures |
|---|---|---|---|---|
| **Geology** | Removal of geological resources | Loss of geological resources and visual impact due to excavation and benching | High | Apply BATNEEC; conduct proper planning and mapping; avoid unplanned extraction ("boulder hopping") |
| **Topography & Geomorphology** | Changes to natural topography | Further modification of already disturbed landforms and localised habitat loss | High | Backfill selected pits; use designated waste dump sites; terrace dumps >25 m; design stable slopes |
| | Changes in geomorphology | Alteration of natural landforms and surface stability | High | Control excavation footprint; stabilise disturbed areas; manage waste rock placement |
| **Soils** | Soil disturbance and structure loss | Reduced soil fertility and land use potential | Medium | Strip and stockpile topsoil; reuse during rehabilitation; restore nutrients |
| | Soil compaction | Reduced infiltration and plant growth | Medium | Restrict vehicle movement; use designated roads |
| | Soil erosion | Loss of soil through runoff | Medium | Install drainage controls; avoid steep road alignments; stabilise exposed areas |
| | Soil contamination | Localised contamination risk | Low | Use bunded storage; spill kits; drip trays; proper waste handling |
| **Vegetation (Flora)** | Loss of vegetation | Further loss of already limited vegetation | High | Restrict clearing to footprint; avoid unnecessary disturbance; rehabilitate progressively |

| Impact Category | Impact | Consequence | Residual Risk | Mitigation Measures |
|---|---|---|---|---|
| | Loss of floral SCC | Potential loss of sensitive species | Medium | Avoid sensitive areas; pre-clearance checks where possible |
| | Invasive species | Spread of alien vegetation | Medium | Implement alien control programme; monitor regularly |
| | Loss of floral diversity | Reduced biodiversity | Medium | Rehabilitate disturbed areas; promote natural regrowth |
| **Fauna** | Disturbance to fauna | Reduced faunal diversity | Medium | Prohibit hunting; remove snares; awareness training; minimise disturbance |
| | Faunal mortality | Roadkill and operational risks | Low | Enforce speed limits; restrict access; monitor activity |
| | Loss of habitat | Loss of already degraded habitat | Low | Minimise footprint; rehabilitate areas |
| | Loss of faunal SCC | Potential regional impact | Low | Relocate SCC where encountered; avoid sensitive zones |
| **Surface Water** | Sedimentation and runoff | Reduced water quality | Medium | Stormwater controls; silt traps; maintain drainage |
| | Hydrocarbon pollution | Localised contamination | Low | Bund fuel storage; spill prevention; equipment maintenance |
| | Changes in drainage | Altered hydrology | High | Maintain natural drainage; avoid blocking channels; buffer zones |
| **Groundwater** | Contamination | Water quality risk | Low | Bunded storage; prevent leaks; proper disposal |
| | Quantity changes | Minimal expected impact | Low | Avoid deep excavation; monitor where required |

| Impact Category | Impact | Consequence | Residual Risk | Mitigation Measures |
|---|---|---|---|---|
| **Air Quality** | Dust generation | Health and nuisance impacts | Low | Water spraying; speed limits; dust monitoring; PPE |
| | Air pollution | Minor emissions | Low | Maintain equipment; minimise emissions |
| **Noise** | Increased noise levels | Disturbance and hearing risks | Low | Noise dampening; PPE; restrict to daytime; monitoring |
| **Heritage** | Damage to heritage resources | Loss of cultural resources | Low | Chance find procedure; stop work if artefacts found; buffer zones |
| **Visual / Aesthetic** | Visual impact | Reduced aesthetic appeal | High | Consolidate dumps; terrace; revegetate; rock shading; backfilling |
| | Decreased aesthetic value | Loss of sense of place | Medium | Progressive rehabilitation; limit disturbance footprint |
| **Socio-economic** | Safety risks | Danger to workers and public | High | Fence hazardous areas; signage; safety compliance |
| | Traffic impacts | Road pressure and dust | Low | Traffic management plan; maintain roads |
| | Veld fires | Fire risk | Low | Firebreaks; no open fires; emergency preparedness |
| **Land Use** | Loss of land use potential | Reduced future land use options | Medium | Rehabilitate site; restore vegetation; ensure post-mining usability |
| | Reduced land capability | Lower agricultural/grazing potential | Medium | Restore soil and vegetation; monitor water quality |

# 26 THE OUTCOME OF THE SITE SELECTION MATRIX: FINAL SITE LAYOUT PLAN. (PROVIDE A FINAL SITE LAYOUT PLAN AS INFORMED BY THE PROCESS OF CONSULTATION WITH INTERESTED AND AFFECTED PARTIES

## 26.1 OUTCOME OF THE SITE SELECTION MATRIX AND FINAL SITE LAYOUT PLAN

The final layout of the proposed activities has been developed within the application boundaries, taking into account input from landowners, the Ecological Specialist Study, and the environmental assessment process.

During the Ecological Specialist Study, no wetlands were identified within the study area. However, non-perennial drainage lines are present throughout the broader region, typical of a semi-arid environment. We will avoid these features where possible and implement appropriate buffer zones to minimise potential impacts, in line with specialist recommendations and regulatory requirements.

The site is classified as a Critical Biodiversity Area (CBA) and an Ecological Support Area (ESA). The Ecological Specialist Study has confirmed that the proposed activities will primarily occur in areas that have already been disturbed. We have prioritised avoiding sensitive features and have considered the ecological condition of the site in the final layout design.

The layout has been optimized to ensure that the extraction of viable materials occurs with minimal environmental and socio-economic impact. We will characterize stockpiles and residue deposits associated with the proposed prospecting activities to identify any potential risks to human health, safety, and the environment. A qualified individual will be appointed to classify residue stockpiles and deposits, and a detailed risk analysis will be conducted and documented.

In accordance with Regulation 6 of GN R623 of 2015 (Planning and Management of Residue Stockpiles and Residue Deposits), the following investigations have been considered to support the site selection:

Geotechnical considerations (based on existing site knowledge)

- ✓ Land use assessment
- ✓ Assessment of infrastructure and man-made features
- ✓ Climate assessment (based on available regional data)
- ✓ Ecological assessment (flora and fauna)
- ✓ Soil assessment (based on available data sources)
- ✓ Surface water considerations (limited to non-perennial systems)
- ✓ Groundwater considerations where applicable

A detailed hydrological investigation was not necessary due to the absence of wetlands and permanent water bodies within the study area.

We will implement monitoring and reporting systems to track potentially significant impacts identified during the Environmental Impact Assessment (EIA) process, which will be part of the conditions of environmental authorisation.

Dust management for residue stockpiles and deposits will be carried out in accordance with Regulation 11 of GN R623 of 2015, as well as the relevant provisions of the Mine Health and Safety Act (Act 29 of 1996) and the National Environmental Management: Air Quality Act.

### 26.2 MOTIVATION: WHERE NO ALTERNATIVE SITES WERE CONSIDERED

No feasible alternative sites were identified that meet the same criteria as the preferred site. The proposed activity is directly linked to existing and historical land uses, specifically previous mining operations within the area.

The preferred site offers advantages in terms of accessibility, existing infrastructure, and known mineral potential. Furthermore, the site has already been significantly disturbed and is therefore not considered pristine, reducing the potential for additional environmental impacts compared to developing a new, undisturbed site.

The proposed prospecting activities will be focused within already disturbed areas to minimise impacts on the natural environment.

## 26.3 MOTIVATION FOR THE PREFERRED DEVELOPMENT LOCATION WITHIN THE SITE

The selected development footprint within the broader property is justified by the extent of existing disturbance. The site is bordered by previously mined areas and agriculturally active properties.

The applicant proposes to prospect and remove bulk samples from areas that have already been transformed by historical mining activities. In addition, the recovery of material from existing waste rock dumps will be investigated as part of the resource utilisation strategy.

This approach reduces the need for new disturbance and promotes more efficient use of previously extracted material.

Should prospecting results prove favourable, future development may include establishing a processing facility to improve recovery rates and reduce waste generation, including the potential reprocessing of historical waste rock.

## 26.4 DESCRIPTION OF THE PROCESS TO IDENTIFY, ASSESS AND RANK IMPACTS

The process for identifying, assessing, and ranking environmental impacts and risks associated with the proposed activities involved a combination of field assessments, desktop studies, and professional judgment.

This process included:

- ✓ Initial site inspection by the Environmental Assessment Practitioner (EAP);
- ✓ Desktop studies and ecological specialist assessments (flora and fauna);
- ✓ Review of historical and current satellite imagery to determine land use changes and levels of disturbance;
- ✓ Consideration of previous experience from similar mining operations;
- ✓ Identification and evaluation of environmental aspects using a structured impact assessment methodology.
- ✓ All identified impacts and risks are summarised in the impact assessment tables included in this report.

## 26.5 ENVIRONMENTAL ISSUES AND RISKS IDENTIFIED

Environmental issues and risks identified during the assessment process are primarily associated with:

- ✓ Vegetation and habitat disturbance;
- ✓ Soil degradation and erosion;
- ✓ Changes to topography and landforms;
- ✓ Impacts on surface water drainage systems;
- ✓ Dust generation and air quality impacts;
- ✓ Noise impacts;
- ✓ Visual and aesthetic impacts;
- ✓ Socio-economic considerations, including safety and traffic.

These impacts are largely associated with site clearing, excavation, waste rock handling, and transportation activities.

## 26.6 ASSESSMENT OF IMPACT SIGNIFICANCE AND MITIGATION

The assessment of impact significance considered the extent, duration, intensity, probability, reversibility, and potential for irreplaceable loss associated with each identified impact.

Activities assessed include:

- ✓ Site establishment, workshops, and storage areas;
- ✓ Vegetation clearing and soil disturbance;
- ✓ Excavation and extraction of stone material;
- ✓ Construction and use of access roads;
- ✓ Waste rock dump development;
- ✓ Expansion of stockyards and working areas;
- ✓ Loading, hauling, and transportation of materials.

The significance of each impact was determined using the standardised rating methodology described in this section. The results of this assessment, together with mitigation measures, are presented in the impact assessment tables.

## 26.7 ASSESSMENT OF POTENTIALLY SIGNIFICANT IMPACTS

The assessment considered all known and typical impacts associated with the proposed activities, including those identified through professional expertise and not only those raised by interested and affected parties.

This includes consideration of:

- ✓ Cumulative impacts;
- ✓ The nature and consequence of impacts;
- ✓ The spatial extent and duration of impacts;
- ✓ The probability of occurrence;
- ✓ The degree to which impacts can be reversed.
- ✓ The potential for irreplaceable loss of resources.
- ✓ The effectiveness of mitigation measures.

Particular consideration was given to the extraction of material from existing waste rock dumps within the development footprint, which forms part of the overall resource recovery strategy.

*Table 27 Assessment of Potential Impacts and Mitigation Measures*

| Activity | Potential Impact | Environmental / Social Aspect | Phase | Significance (Unmitigated) | Mitigation Measures | Significance (Mitigated) |
|---|---|---|---|---|---|---|
| **Prospecting and Bulk Sampling** | Noise generation | Health and safety | Construction, Operational, Decommissioning | Moderate | Control through noise control measures | Low |
| | Dust generation | Air quality, Visual | Operational, Decommissioning | Moderate | Dust suppression (watering of roads, speed control) | Low |
| | Topographic alteration | Land capability, Visual, Safety | Operational, Decommissioning | Severe | Rehabilitation and design measures | Significant |
| | Drainage alteration | Water quality / flow | Operational, Decommissioning | Significant | Stormwater control and rehabilitation | Significant |
| | Disturbance to fauna | Biodiversity | All phases | Significant | Restrict access, awareness training, enforce a no-hunting policy | Moderate |
| **Vegetation Clearance** | Loss of vegetation and habitat | Biodiversity, Visual | Operational | Significant | Limit clearing, rehabilitate disturbed areas | Significant |
| | Invasive species spread | Flora and fauna | Operational, Decommissioning | Moderate | Alien vegetation control programme | Moderate |
| | Drainage impacts | Water quality | Operational, Decommissioning | Significant | Erosion control and rehabilitation | Significant |
| | Soil erosion | Soil | Operational, Decommissioning | Significant | Rehabilitation and erosion control | Moderate |
| **Clearing in Critically Endangered Vegetation** | Loss of sensitive vegetation | Biodiversity, Visual | Operational, Decommissioning | Severe | Rehabilitation and revegetation | Significant |

| Activity | Potential Impact | Environmental / Social Aspect | Phase | Significance (Unmitigated) | Mitigation Measures | Significance (Mitigated) |
|---|---|---|---|---|---|---|
| | Invasive species | Flora and fauna | Operational | Moderate | Alien eradication programme | Moderate |
| | Drainage impacts | Water quality | Operational, Decommissioning | Significant | Rehabilitation and erosion control | Significant |
| **Blasting** | Noise and vibration | Noise, Safety | Operational | Moderate | Noise control measures | Low |
| | Dust generation | Air quality | Operational | Moderate | Dust suppression | Low |
| **Topsoil Removal & Stockpiling** | Loss of soil nutrients | Soil fertility, Land capability | Construction, Operational | Significant | Topsoil stockpiling and reuse | Moderate |
| | Erosion of stockpiles | Soil fertility | Operational, Decommissioning | Significant | Erosion control channels | Moderate |
| | Invasive species | Flora and fauna | Operational | Moderate | Alien control programme | Moderate |
| | Soil compaction | Soil fertility | Operational, Decommissioning | Moderate | Controlled access and rehabilitation | Moderate |
| **Waste Rock Dumps & Stockpiles** | Topographic alteration | Land capability, Visual, Safety | Operational, Decommissioning | Moderate | Controlled dump design and rehabilitation | Significant |
| | Noise | Noise, Safety | Operational, Decommissioning | Moderate | Noise control measures | Low |
| | Dust generation | Air quality | Operational, Decommissioning | Moderate | Dust suppression | Low |
| | Drainage impacts | Water quality | Operational, Decommissioning | Significant | Stormwater control and rehabilitation | Significant |
| **Loading, Hauling & Transport** | Soil compaction and erosion | Soil fertility | All phases | Significant | Controlled access and rehabilitation | Moderate |
| | Noise | Noise, Safety | All phases | Moderate | Noise control measures | Low |
| | Dust generation | Air quality | All phases | Moderate | Dust suppression | Low |

| Activity | Potential Impact | Environmental / Social Aspect | Phase | Significance (Unmitigated) | Mitigation Measures | Significance (Mitigated) |
|---|---|---|---|---|---|---|
| | Hydrocarbon spills | Soil and water quality | All phases | Significant | Spill prevention and containment | Low |
| | Drainage impacts | Water quality | All phases | Significant | Rehabilitation and drainage control | Significant |
| **Processing / Dressing Yards** | Noise | Noise | Operational, Decommissioning | Moderate | Noise control measures | Low |
| | Dust generation | Air quality | Operational, Decommissioning | Moderate | Dust suppression | Low |
| | Soil compaction | Soil fertility | Operational | Moderate | Rehabilitation measures | Moderate |
| | Vegetation disturbance | Vegetation | Operational | Moderate | Rehabilitation and limited clearing | Significant |
| **Roads & Transport of Blocks** | Soil compaction and erosion | Soil fertility | All phases | Significant | Rehabilitation and road maintenance | Moderate |
| | Noise | Health and safety | All phases | Moderate | Noise control measures | Low |
| | Dust generation | Air quality, Visual | All phases | Moderate | Dust suppression | Low |
| | Drainage impacts | Water quality | All phases | Significant | Stormwater control | Significant |
| | Hydrocarbon spills | Soil and water quality | All phases | Significant | Spill control and management | Low |
| | Faunal mortality | Biodiversity | All phases | Moderate | Enforce speed limits | Low |
| **Workshops & Daily Activities** | Waste generation | Visual | Operational, Decommissioning | Low | Waste management and regular removal | Low |
| | Hydrocarbon spills | Soil and water quality | All phases | Significant | Spill prevention and bunding | Low |
| | Veld fires | Biodiversity, Safety, Air quality | All phases | Significant | Fire prevention plan and controls | Low |

# 27 ENVIRONMENTAL IMPACT STATEMENT

## 27.1 SUMMARY OF KEY FINDINGS OF THE ENVIRONMENTAL IMPACT ASSESSMENT

### 27.1.1 FLORA

The findings of the ecological assessment show that the vegetation within the study area, located near Vanrhynsdorp, has been largely disturbed due to historical mining activities. Vegetation cover within the proposed development footprint is sparse, with limited species diversity observed during the field assessment. The remaining vegetation mainly consists of hardy, disturbance-tolerant species typical of degraded areas within the Succulent Karoo Biome.

Although the broader region is known for its high levels of plant endemism and ecological sensitivity, the site itself is considered to have reduced floral sensitivity locally due to previous disturbance. The possible presence of Species of Conservation Concern (SCC) in surrounding areas cannot be ruled out, and precautionary mitigation measures are therefore required.

### 27.1.2 FAUNA

The faunal habitat within the study area, located near Vanrhynsdorp, is similarly impacted by historical disturbance. No fauna were observed during the site assessment, which aligns with the limited vegetation cover and altered habitat conditions. The site is therefore regarded as having low faunal sensitivity within the development footprint, although the surrounding areas may support species typical of the Succulent Karoo region. Potential impacts are likely to be limited to disturbance or displacement of opportunistic species.

### 27.1.3 HYDROLOGY

No wetlands or permanent water bodies were found within the study area. The site features non-perennial drainage lines, which are typical of semi-arid environments and only flow during rainfall events. These features are considered sensitive on a local scale and will be avoided where possible. appropriate buffer zones implemented to minimise potential impacts.

### 27.2 CONCLUSION

The proposed prospecting and bulk sampling activities will take place within an area that has already been significantly transformed by historical mining activities. As a result, the baseline environmental sensitivity of the site is considered reduced in several respects, including vegetation, fauna, and soils.

However, the broader region remains environmentally sensitive, particularly due to its location within the Succulent Karoo Biome and the presence of Critical Biodiversity Areas (CBA) and Ecological Support Areas (ESA).

Prudent planning, avoidance of sensitive features, and implementation of appropriate mitigation measures will be essential to minimise potential impacts. The identified impacts are generally localised and can be effectively managed.

Refer to the impact assessment tables for a detailed evaluation of potential impacts and to the mitigation measures table for proposed management actions.

## 28 FINAL SITE MAP

A final site layout map, illustrating the proposed activity footprint in relation to environmental sensitivities and areas to be avoided (including buffers), is provided in **Annexure 3**.

## 29 SUMMARY OF POSITIVE AND NEGATIVE IMPLICATIONS AND RISKS

### 29.1 SUMMARY OF THE POSITIVE AND NEGATIVE IMPLICATIONS AND RISKS OF THE PROPOSED ACTIVITY AND IDENTIFIED ALTERNATIVES;

*Table 28 Summary of the positive and negative implications of the proposed activity*

| Positive Implications | Negative Implications |
|---|---|
| Extraction of viable material will contribute to local and regional economic activity. | Alteration of local topography and visual character of the area. |
| Employment opportunities will be created during prospecting activities. | Removal of already limited vegetation within the development footprint. |
| Skills development and short-term economic benefits to local communities. | Disturbance to fauna and displacement of opportunistic species. |
| Utilisation of previously disturbed areas and existing waste rock reduces the need for new disturbance. | Soil degradation, including compaction, erosion, and loss of nutrients. |

| | |
|---|---|
| Existing quarry depressions may provide limited water sources for livestock. | Dust generation during operational activities may affect air quality and visibility. |
| Rehabilitation of disturbed areas may improve long-term land usability. | Safety risks associated with open pits, highwalls, and operational activities. |

## 29.2 PROPOSED IMPACT MANAGEMENT OBJECTIVES AND OUTCOMES

The objectives of impact management are to ensure that all mitigation measures identified in this report are effectively implemented and monitored. This includes establishing suitable systems and procedures, monitoring the effectiveness of mitigation measures, and taking corrective action where unforeseen impacts occur. Annual environmental performance assessments will be conducted to ensure that the impact management objectives are met and that compliance with the Environmental Management Programme Report (EMPr) is maintained. The impact management outcomes are to:

- ✓ Minimise environmental impacts to the lowest practicable level;
- ✓ Ensure that prospecting, bulk sampling, and waste rock recovery activities do not hinder the ability of indigenous fauna and flora to recolonise the site;
- ✓ Ensure that the land retains the capacity to be rehabilitated to an ecologically sustainable state following closure.

## 29.3 ASPECTS FOR INCLUSION AS CONDITIONS OF ENVIRONMENTAL AUTHORISATION

All identified environmental aspects and mitigation measures have been incorporated into the Environmental Management Programme Report (EMPr). No additional aspects outside of the EMPr need to be included as separate conditions of authorisation.

## 29.4 ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE

The mitigation measures proposed in this report are based on existing literature, established practices, and the Environmental Assessment Practitioner's experience with similar marble and dimension stone operations.

It is assumed that the impacts associated with the proposed activities will be comparable to those historically observed on the site, as previous gabbro-norite extraction has already resulted in similar disturbances. Many of the environmental impacts typically associated with mining activities are therefore already evident within the study area.

No significant gaps in knowledge were identified that would materially affect the outcome of the assessment. However, it is acknowledged that site-specific conditions may vary during implementation, and adaptive management measures will be applied where necessary.

# 30 REASONED OPINION ON AUTHORISATION

The Environmental Assessment Practitioner (EAP) believes that the proposed prospecting and bulk sampling activities can be authorised, provided that the applicant adheres to the approved Environmental Management Programme Report (EMPr) and all conditions of environmental authorisation. This view is based on the fact that the development will occur within an area that has already been extensively disturbed by historical mining activities. Therefore, the expected environmental impacts are deemed to be localised and manageable through the implementation of suitable mitigation measures.

## 30.1 CONDITIONS TO BE INCLUDED IN THE AUTHORISATION

The following conditions are recommended for inclusion in the Environmental Authorisation:

- ✓ Annual water quality monitoring must be undertaken where applicable;
- ✓ Dust suppression measures must be implemented in accordance with occupational hygiene requirements;
- ✓ Interested and Affected Parties (I&APs) must be notified of activities such as loading and hauling outside normal working hours;
- ✓ Annual environmental performance assessments must be conducted to ensure compliance with the EMPr;
- ✓ If any archaeological resources or graves are uncovered, work must cease immediately, and a qualified heritage practitioner must be notified;
- ✓ All activities must be confined to the approved development footprint.

## 30.2 PERIOD FOR WHICH AUTHORISATION IS REQUIRED

A prospecting right, including bulk sampling and waste rock disposal, as well as the recovery of waste rock dumps, is required for the maximum period permitted in terms of the Mineral and Petroleum Resources Development Act (MPRDA).

An undertaking confirming compliance with the requirements of both the Environmental Impact Assessment Report and the Environmental Management Programme Report is included in the final submission.

## 30.3 FINANCIAL PROVISION

The financial provision required for rehabilitation and environmental management is detailed in Table 6 of the EMPr.

This amount has been calculated based on anticipated rehabilitation requirements and is expected to be provided as part of the project's operational expenditure, in accordance with regulatory requirements.

## 30.4 DEVIATIONS FROM THE IMPACT ASSESSMENT METHODOLOGY

No deviations were made from the approved methodology used in determining the significance of potential environmental impacts and risks.

## 30.5 COMPLIANCE WITH NEMA REQUIREMENTS

### 30.5.1 SOCIO-ECONOMIC IMPACTS

The proposed development is expected to generate a positive socio-economic impact by creating employment opportunities and utilising land that is currently underused. Potential negative effects are limited and mainly pertain to low-intensity grazing activities presently taking place on the site. No formal claims or land restitution processes have been identified at this stage. The Department of Rural Development and Land Reform was consulted to verify if any land claims are registered on the relevant farm portions; however, no response has been received date.

# 31 PART B ENVIRONMENTAL MANAGEMENT PROGRAMME

## 1 CONTACT PERSON AND CORRESPONDENCE ADDRESS

### 1.1 DETAILS OF THE EAP

Aquovadiseco

| | |
|---|---|
| Name of the Practitioner: | Kobus Smit |
| Tel No: | 079 899 2569 |
| Fax No: | 086 6192 129 |
| E-mail address: | kabous@aquovadis.co.za |
| Postal Address: | 8 6th Avenue |
| | Kieserville |
| | Lichtenburg |
| | 2740 |

### 1.2 EXPERTISE OF THE EAP.

## 2 DESCRIPTION OF THE ASPECTS OF THE ACTIVITY

(Confirm that the aspects are covered and included in Part A)

Details are documented in Part A no 5

## 3 COMPOSITE MAP

See the Map Attached under Annexure 3

## 4 DESCRIPTION OF IMPACT MANAGEMENT OBJECTIVES, INCLUDING MANAGEMENT STATEMENTS

The Environmental Impact Assessment already covers the description of the aspects of the activity in part A, Section 1 par.5

## 4.1 DETERMINATION OF CLOSURE OBJECTIVES

See the closure Plan attached as Annexure 10

## 4.2 THE PROCESS OF MANAGING ANY ENVIRONMENTAL DAMAGE, POLLUTION

### 4.2.1 PUMPING AND TREATMENT OF EXTRANEOUS WATER AND ECOLOGICAL DEGRADATION

The proposed activities on site include non-invasive prospecting, core drilling, bulk sampling by extracting test blocks, and the recovery of material from existing historical waste rock dumps.

Environmental disturbance related to these activities will mainly be limited to areas already altered by historical dimension stone mining operations. Any open-cast disturbances caused during bulk sampling will be confined to these previously disturbed zones. Historical quarry pits that are no longer economically viable for further extraction will be partly or fully backfilled with waste rock and overburden.

The proposed operation is small-scale and will utilise limited equipment, including one track excavator, one dumper truck, and one front-end loader, during the bulk sampling and waste rock recovery phases. A maximum of 25 employees will be on site during the prospecting phase, and no on-site accommodation will be provided. Measures will be implemented to manage environmental impacts related to runoff and erosion. These include controlling surface water flow to minimise sediment transport and prevent potential contamination of downstream drainage features. Given the semi-arid conditions and the lack of permanent water bodies, the risk of significant water-related impacts is considered low.

### 4.2.2 POTENTIAL RISK OF ACID MINE DRAINAGE

The proposed prospecting and bulk sampling activities involve extracting dimension stone (gabbro-norite), which is used in its natural form and does not require beneficiation or chemical processing. Unlike metal mining operations, which may produce acid mine drainage (AMD) through the oxidation of sulphide minerals, the extraction of dimension stone generally does not lead to such processes. Based on the nature of the material and the mining method, the potential for acid mine drainage is considered negligible.

## 4.3 ENGINEERING OR MINE DESIGN MEASURES TO ADDRESS ACID MINE DRAINAGE

No specific engineering or mine design measures are required to address acid mine drainage, as the proposed activities are not expected to generate AMD.

However, general good housekeeping and environmental management practices will be implemented to prevent any form of contamination, including:

- Proper storage and handling of fuels and hydrocarbons;
- Immediate clean-up of spills;
- Use of designated maintenance areas with appropriate containment measures.

### 4.3.1 RESIDUAL OR CUMULATIVE IMPACTS RELATED TO ACID MINE DRAINAGE

Since acid mine drainage is not anticipated, no specific mitigation measures are necessary for AMD. Nonetheless, general environmental management measures will be implemented to ensure that any unforeseen issues are addressed. contamination risks are appropriately managed.

### 4.3.2 WATER USE AND REQUIREMENTS

The expected water use for the prospecting and bulk sampling operation is approximately 15 cubic metres per operational day. Water use will be sporadic, as the test quarry will only be active during specific operational periods. Water will be sourced from existing water-filled quarry pits on site and will be used for the following purposes.

*Table 29 Water Balance Summary – Aurora Marble*

| Water Source | Water Use | Volume per Operational Day |
|---|---|---|
| **Water-filled quarry pits** | Diamond wire saw cutting | 10 000 L (10 m³) |
| | Dust suppression | 3 000 L (3 m³) |
| | Domestic use | 500 L (0.5 m³) |
| | Drilling | 1 500 L (1.5 m³) |

### 4.3.3 HAS A WATER USE LICENCE BEEN APPLIED FOR?

#### 4.3.3.1 WATER USE AUTHORISATION

Water use is not yet licensed and will be applied for prior to commencement.

The proposed water use includes:

Abstraction of water from water-filled quarry pits;

Use of water for dust suppression, drilling, and cutting operations;

Potential impacts on non-perennial drainage features.

A determination will be made in consultation with the Department of Water and Sanitation (DWS) to confirm whether the water use falls under:

A General Authorisation; or

A requirement for a full Water Use Licence Application.

No water use will commence until the necessary authorisation has been obtained from the relevant authority.

## 4.4 IMPACTS TO BE MITIGATED IN THEIR RESPECTIVE PHASES.

*Table 30 Impacts to be mitigated in their respective phases*

| Activity | Phase | Size / Scale of Disturbance | Mitigation Measures | Compliance with Standards | Timeframe |
|---|---|---|---|---|---|
| **Prospecting and Bulk Sampling** | Operational | Surface disturbances within previously disturbed areas | Apply BATNEEC principles; proper planning and mapping to avoid "boulder hopping"; extract in phases; partial or full backfilling of quarry sections; slope stabilisation | Best Available Technology principles; EMPr requirements | Ongoing during operation; rehabilitation concurrent with activities |
| **Vegetation Clearance (>20 ha)** | Operational | >20 ha (disturbed and limited natural areas) | Restrict clearing to approved footprint; avoid sensitive areas and drainage lines; use existing roads; implement concurrent rehabilitation; revegetate using indigenous species; environmental awareness training; prohibit hunting and trapping; protect nests and shelters | National Forests Act (Act 84 of 1998); EMPr; specialist recommendations | Ongoing rehabilitation throughout mine life |
| **Clearing in Critically Endangered Vegetation** | Operational | >300 m² | Avoid sensitive areas where possible; limit disturbance; implement rehabilitation and revegetation; control alien species | Specialist recommendations; EMPr | Throughout operational phase |

| Activity | Phase | Size / Scale of Disturbance | Mitigation Measures | Compliance with Standards | Timeframe |
|---|---|---|---|---|---|
| **Soil and Overburden Removal** | Construction & Operational | Site-specific (limited soils available) | Strip and stockpile topsoil separately (<2.5 m height); reuse for rehabilitation; prevent erosion; restore soil nutrients; separate topsoil and subsoil; use subsoil for dump construction | EMPr; Soil management best practice | Construction, operation, and closure |
| **Waste Rock Dumps & Stockpiles** | Construction & Operational | Site-specific | Use designated dump areas; terrace dumps >25 m; slope angles ≤6°; consolidate dumps; apply rock shading where needed; implement erosion control; comply with COP for stability | Mine Health and Safety Act (Act 29 of 1996); GN R623; COPs | Entire operational phase |
| **Loading, Hauling & Transport** | All phases | Existing roads | Use existing roads; avoid steep slopes; dust suppression (water carts); enforce speed limits (20–30 km/h); vehicle maintenance; noise control; complaints register; road maintenance plan; spill response procedures | Mine Health and Safety Act; Air Quality Act | Continuous throughout project |
| **Roads & Transport of Blocks** | Operational | Existing roads | Maintain roads; dust suppression; noise control; enforce speed limits; manage stormwater; | Mine Health and Safety Act | Ongoing |

| Activity | Phase | Size / Scale of Disturbance | Mitigation Measures | Compliance with Standards | Timeframe |
|---|---|---|---|---|---|
| | | | prevent hydrocarbon spills; minimise fauna collisions | | |
| **Workshops, Offices & Stores** | Construction & Operational | <1 ha | Use impermeable surfaces; bund fuel storage; spill kits; drip trays; soil remediation (soil farms); hazardous waste disposal at licensed facilities; environmental awareness training; regular maintenance | Mine Health and Safety Act; NEM: Waste Act (Act 59 of 2008) | Entire project duration |
| **Processing / Dressing Yard** | Operational | <1.5 ha | Noise control measures; PPE for workers; restrict working hours (07:00–17:00); dust suppression; monitoring and reporting; complaints register | Mine Health and Safety Act | Operational phase |

## 4.5 IMPACT MANAGEMENT OUTCOMES

(A description of impact management outcomes, identifying the standard of impact management required for the aspects contemplated in paragraph (d);

*Table 31 Impact Management Standards and Outcomes*

| Activity | Potential Impact | Aspect Affected | Phase | Mitigation Type | Standard to be Achieved |
|---|---|---|---|---|---|
| **Prospecting and Bulk Sampling** | Noise increase | Ambient noise | Operational, Decommissioning | Control through noise control measures | Noise levels reduced to acceptable limits; minimal disturbance to surrounding environment |
| | Dust generation | Air quality | Operational, Decommissioning | Control through dust suppression | Dust levels reduced and maintained within acceptable limits |
| | Topographical alterations | Visual, Safety | Operational, Decommissioning | Modify through rehabilitation and design measures | Disturbed areas rehabilitated and stabilised; safety risks reduced |
| | Drainage alterations | Surface hydrology | Operational, Decommissioning | Remediate through rehabilitation and stormwater control | Surface water flow maintained; erosion and sedimentation minimised |
| | Faunal disturbance | Biodiversity | All phases | Control through restrictions and awareness measures | Faunal disturbance minimised; no hunting or trapping allowed |

| Activity | Potential Impact | Aspect Affected | Phase | Mitigation Type | Standard to be Achieved |
|---|---|---|---|---|---|
| **Vegetation Clearance** | Loss of vegetation | Vegetation | Operational, Decommissioning | Rehabilitation and revegetation | Vegetation restored over time; natural recolonisation promoted |
| | Visual impact | Visual | Operational, Decommissioning | Rehabilitation and design measures | Visual impact minimised through rehabilitation |
| | Dust generation | Air quality | Operational, Decommissioning, Closure | Dust suppression | Dust levels controlled |
| | Increased runoff | Soil, Hydrology | Operational, Decommissioning | Rehabilitation and erosion control | Surface runoff controlled; erosion reduced |
| **Clearing in Critically Endangered Vegetation** | Loss of sensitive ecosystems | Vegetation, Fauna | Operational, Decommissioning | Rehabilitation and avoidance | Disturbance minimised; ecological recovery supported |
| **Soil and Overburden Removal** | Loss of soil structure and nutrients | Soil, Vegetation | Operational, Decommissioning | Topsoil management and rehabilitation | Soil preserved and reused for rehabilitation |
| **Waste Rock Dumps & Stockpiles** | Topographic changes | Land use | Operational, Closure | Rehabilitation and design measures | Stable landforms; safety risks minimised |
| | Soil loss | Land capability | Operational, Decommissioning | Topsoil preservation and rehabilitation | Soil retained and reused |
| | Vegetation loss | Biodiversity | Operational | Rehabilitation and control of clearing | Vegetation re-established |

| Activity | Potential Impact | Aspect Affected | Phase | Mitigation Type | Standard to be Achieved |
|---|---|---|---|---|---|
| | Visual impact | Visual | Operational, Decommissioning | Rehabilitation, terracing, rock shading | Visual impacts reduced |
| **Loading, Hauling & Transport** | Soil compaction and erosion | Soil | All phases | Rehabilitation and controlled movement | Soil impacts reduced |
| | Hydrology changes | Surface water | All phases | Rehabilitation and drainage control | Natural drainage maintained |
| | Noise | Health & safety | All phases | Noise control measures | Noise impacts minimised |
| | Dust generation | Air quality | All phases | Dust suppression | Dust controlled |
| **Workshops, Offices & Stores** | Dust generation | Air quality | All phases | Dust control measures | Dust reduced |
| | Waste generation | Visual | Operational, Decommissioning | Waste management | Clean site maintained |
| | Petrochemical spills | Soil, Groundwater | All phases | Spill prevention and containment | No contamination of soil or water |
| | Veld fires | Flora, Fauna, Safety | All phases | Fire prevention measures | Fire risk minimised |
| **Processing / Dressing Yard** | Noise and dust | Air quality | Operational, Decommissioning | Dust and noise control | Reduced emissions and noise levels |
| **Blasting** | Noise and vibration | Noise | Operational | Controlled blasting and communication | Safety maintained; impacts minimised |
| | Heritage disturbance | Heritage | Operational | Chance find procedure and buffer zones | Protection of heritage resources |

*Table 32 Mitigation Measures, Timeframes and Compliance Standards*

| Activity | Potential Impact | Mitigation Measures | Time Period for Implementation | Compliance with Standards |
|---|---|---|---|---|
| **Prospecting and Bulk Sampling** | Noise increase | Noise dampening on vehicles; provision of PPE (earplugs/muffs) | Entire operational life | Mine Health and Safety Act (Act 29 of 1996); Dust Control Regulations |
| | Dust generation | Dust suppression (water spraying, speed control) | Entire operational life | Dust Control Regulations; Air Quality Act |
| | Topographic alterations | Rehabilitation and design measures; partial backfilling; terracing; rock shading | Concurrent rehabilitation | EMPr; Closure objectives |
| | Drainage alterations | Erosion control berms/trenches; rehabilitation | Concurrent with cessation of activities in affected areas | Stormwater Management Guidelines (DWAF, 2006) |
| | Faunal disturbance | Weekly inspections; removal of snares/traps; prohibition of hunting | Entire operational life | EMPr; Biodiversity protection principles |
| | Heritage disturbance | Cease work if artefacts or graves are found; implement buffer zones | Entire operational life | National Heritage Resources Act (Act 25 of 1999) |

| Activity | Potential Impact | Mitigation Measures | Time Period for Implementation | Compliance with Standards |
|---|---|---|---|---|
| **Vegetation Clearance (>20 ha)** | Loss of vegetation | Restrict clearing; rehabilitate and revegetate; prohibit unauthorised removal of vegetation | Concurrent rehabilitation | NEM: Biodiversity Act (Act 10 of 2004) |
| | Visual impact | Replace topsoil; revegetate; partial backfilling; alien control | Concurrent rehabilitation | EMPr |
| | Dust generation | Dust suppression measures | Entire operational life | Dust Control Regulations |
| | Increased runoff | Erosion control berms, trenches; revegetation | Concurrent rehabilitation | Stormwater Management Guidelines |
| **Clearing in Critically Endangered Vegetation** | Loss of sensitive ecosystems | Avoid where possible; revegetation; prohibit unauthorised tree removal | Entire operational life | NEM: Biodiversity Act (Act 10 of 2004) |
| **Soil and Overburden Removal** | Loss of soil structure and nutrients | Strip and stockpile topsoil; treat with organic material; reuse in rehabilitation | Entire operational life | EMPr |
| | Soil erosion | Rehabilitate and revegetate disturbed areas | Concurrent rehabilitation | EMPr |
| **Waste Rock Dumps & Stockpiles** | Topographic changes | Partial backfilling, terracing of dumps, stabilisation | Concurrent rehabilitation | GN R623; Mine Health and Safety Act |
| | Soil loss | Remove and preserve topsoil; reuse during rehabilitation | Throughout project | EMPr |
| | Vegetation loss | Revegetate topsoil-covered areas | Concurrent rehabilitation | EMPr |

| Activity | Potential Impact | Mitigation Measures | Time Period for Implementation | Compliance with Standards |
|---|---|---|---|---|
| | Visual impact | Rock shading (ferric chloride); shaping of dumps | Concurrent rehabilitation | EMPr |
| **Roads, Loading, Hauling & Transport** | Soil compaction and erosion | Rip compacted soil; replace topsoil; revegetate | Concurrent rehabilitation | Dust Control Regulations; MHSA |
| | Surface runoff changes | Earthworks to manage gullies; restore drainage | Concurrent rehabilitation | Stormwater Guidelines |
| | Noise | Noise control measures; PPE | Entire operational life | MHSA |
| | Dust generation | Dust suppression; speed limits | Entire operational life | Air Quality Act |
| **Workshops, Offices & Stores** | Noise | Noise control measures; PPE | Entire operational life | MHSA |
| | Dust generation | Dust suppression | Entire operational life | Air Quality Act |
| | Domestic waste | Waste collection; disposal at licensed facilities | Entire operational life | NEM: Waste Act (Act 59 of 2008) |
| | Petrochemical spills | Bunding; spill kits; proper handling and disposal | Entire operational life | NEM: Waste Act; EMPr |
| **Processing / Dressing Yard** | Noise and dust | Dust suppression; noise control; PPE | Entire operational life | MHSA; Air Quality Act |
| **Blasting (Occasional)** | Noise and vibration | Notify neighbouring landowners; controlled blasting procedures | As required | MHSA |
| | Heritage disturbance | Cease work if artefacts found; implement buffer zones | Entire operational life | National Heritage Resources Act |

# 5 FINANCIAL PROVISION

## 5.1 DETERMINATION OF THE AMOUNT FOR FINANCIAL PROVISION.

Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under Regulation 22 (2)(d) as described in 2.4 herein.

Determination of the Amount for Financial Provision

The financial provision required for rehabilitation has been determined based on the anticipated disturbance associated with the proposed prospecting and bulk sampling activities, as well as the site's closure objectives.

The primary closure objective is to obtain a closure certificate at the end of the mine life, ensuring that the site is safe, stable, and suitable for post-closure land use.

Closure Objectives and Alignment with Baseline Environment

The closure objectives have been aligned with the baseline environmental conditions described in this section, taking into account that the site has already been significantly disturbed by historical mining activities.

The objectives focus on the rehabilitation of disturbed areas and the management of residual impacts associated with:

| Closure Component | Objective |
|---|---|
| **Vegetation and topsoil** | Restore vegetation cover using indigenous species where feasible and stabilise soils to prevent erosion |
| **Infrastructure areas** | Remove infrastructure (workshops, offices, etc.) and rehabilitate affected areas |
| **Waste rock dumps and stockpiles** | Reshape, stabilise, and revegetate to reduce visual and erosion impacts |
| **Quarry areas and pits** | Backfill or partially rehabilitate where feasible; ensure safety and stability of remaining features |
| **General surface areas** | Promote natural regeneration and stabilisation of disturbed areas |
| **Roads and transport routes** | Rip compacted surfaces and rehabilitate to support vegetation recovery |

| | |
|---|---|
| **Monitoring and maintenance** | Implement post-closure monitoring to ensure rehabilitation success |

## 5.2 PROVIDE A REHABILITATION PLAN THAT DESCRIBES AND SHOWS THE SCALE AND AERIAL EXTENT OF THE MAIN MINING ACTIVITIES, INCLUDING THE ANTICIPATED MINING AREA AT THE TIME OF CLOSURE.

## 6 EXPLAIN WHY IT CAN BE CONFIRMED THAT THE REHABILITATION PLAN IS COMPATIBLE WITH THE CLOSURE OBJECTIVES. CONSULTATION ON CLOSURE OBJECTIVES

Environmental objectives in relation to closure have been discussed with the landowner. The landowner which is affiliated with the applicant, has been provided with the opportunity to review and comment on the closure objectives as part of the assessment process.

The draft report also provides an opportunity for interested and affected parties to submit comments and input on closure and rehabilitation measures.

## 7 REHABILITATION PLAN

A detailed rehabilitation plan outlining the scale and spatial extent of mining activities, as well as the expected disturbance footprint at closure, is included in the Closure Plan attached as Annexure 10.

## 8

## 9 COMPATIBILITY OF REHABILITATION PLAN WITH CLOSURE OBJECTIVES

The rehabilitation plan is deemed compatible with the closure objectives, as it outlines a systematic approach to rehabilitate all disturbed areas associated with the proposed activities.

Rehabilitation measures will ensure that:

- Disturbed areas are stabilised and made safe;

- Soil resources are conserved and reused;

- Vegetation is re-established where feasible;

- Erosion and runoff are controlled.

- The site is restored to conditions supporting sustainable post-mining land use.

It is acknowledged that certain impacts, such as changes to topography and geomorphology resulting from quarrying activities, may be permanent. However, these will be managed to ensure stability and safety, and their visual impact will be minimised through rehabilitation measures.

**Closure Components for Financial Provision**

The table below summarises the closure components considered in determining the financial provision, in accordance with the DME (2004) Guideline Document:

| Closure Component | Applicable to Project | Description |
|---|---|---|
| **Site clearance** | Yes | Removal of infrastructure and rehabilitation of disturbed areas |
| **Topsoil and vegetation** | Yes | Stockpiling, replacement, and revegetation |
| **Waste rock dumps** | Yes | Reshaping, stabilisation, and rehabilitation |
| **Quarry pits** | Yes | Partial backfilling and safety measures |
| **Roads** | Yes | Rehabilitation and erosion control |
| **Pollution control** | Yes | Remediation of contaminated areas (if required) |
| **Monitoring** | Yes | Post-closure monitoring and maintenance |

*Table 33 Closure Components for Financial Provision*

| No. | Closure Component | Applicability | Comment / Motivation |
|---|---|---|---|
| **1** | Dismantling of processing plant and related structures | Not Applicable | No processing plant forms part of the proposed development |

| No. | Closure Component | Applicability | Comment / Motivation |
|---|---|---|---|
| **2(A)** | Demolition of steel buildings and structures | Applicable | Temporary containers will be used for storage and office facilities and will be removed at closure |
| **2(B)** | Demolition of reinforced concrete structures | Not Applicable | No permanent concrete structures will be constructed |
| **3** | Rehabilitation of access roads | Applicable | Any new access roads will be rehabilitated upon closure |
| **4(A)** | Electrified railway lines | Not Applicable | No railway infrastructure exists on site |
| **4(B)** | Non-electrified railway lines | Not Applicable | No railway infrastructure exists on site |
| **5** | Demolition of housing/admin facilities | Not Applicable | No on-site housing will be provided; off-site facilities will be used |
| **6** | Opencast rehabilitation (voids and ramps) | Applicable | Limited excavation (test pits/quarrying) will be rehabilitated through backfilling and slope stabilisation |
| **7** | Sealing of boreholes | Applicable | All drill holes will be sealed/capped in accordance with best practice |
| **8(A)** | Rehabilitation of overburden and spoils | Applicable | Limited overburden will be managed and used for rehabilitation purposes |
| **8(B)** | Rehabilitation of processing waste deposits (non-acidic) | Not Applicable | No processing waste will be generated |
| **8(C)** | Rehabilitation of processing waste deposits (acidic) | Not Applicable | No processing or chemical waste will be generated |
| **9** | Rehabilitation of subsided areas | Not Applicable | No underground mining activities are proposed |
| **10** | General surface rehabilitation | Applicable | Includes erosion control, reshaping, ripping, and revegetation |
| **11** | River diversions | Not Applicable | No river diversions are proposed; only non-perennial drainage lines present |
| **12** | Fencing | Not Applicable | No permanent fencing required for closure |
| **13** | Water management | Applicable | Stormwater and erosion control measures will be implemented where required |
| **14** | Maintenance and aftercare (3 years) | Applicable | Monitoring and maintenance will be conducted to ensure rehabilitation success |
| **15** | Specialist studies | Applicable (if required) | Site-specific studies may be undertaken if rehabilitation challenges arise |

Calculate and state the quantum of the financial provision required to manage and rehabilitate the environment.**Financial Provision Regulations and Methodology**

The determination of financial provision for the proposed prospecting activities has been undertaken in accordance with the Financial Provisioning Regulations (2015), promulgated under the National Environmental Management Act (NEMA).

The purpose of these regulations is to ensure that adequate financial provision is made for the management, rehabilitation, and remediation of environmental impacts associated with prospecting and mining activities, including any latent or residual impacts that may arise.

In accordance with the regulations, financial provision has been determined for the following:

- **Annual rehabilitation**, to address ongoing disturbances during the operational phase;
- **Final rehabilitation and closure**, to ensure that the site is stabilised and suitable for post-closure land use;
- **Remediation of residual and latent impacts**, including any unforeseen environmental impacts that may arise in the future.

The adequacy of the financial provision will be reviewed on an annual basis, and any required adjustments will be made in line with regulatory requirements.

**Approach to Determining Financial Provision**

The financial provision has been calculated based on:

- Identification of disturbance types and their spatial extent;
- Determination of appropriate mitigation and rehabilitation measures;
- Estimation of implementation costs associated with these measures;
- Inclusion of costs for maintenance, monitoring, and aftercare;
- Application of contingency, preliminary and general costs, and value-added tax;

- Consideration of annual cost escalation.

Given the presence of historical disturbances on site, it is recognised that full rehabilitation to pre-disturbance conditions may not be feasible in all areas. In such cases, the focus will be on mitigation, including stabilisation of slopes, ensuring safety, and promoting natural ecological recovery.

**Distinction Between Rehabilitation and Mitigation**

A distinction is made between rehabilitation and mitigation:

- **Rehabilitation** refers to restoring disturbed areas to a condition that is ecologically stable and sustainable;
- **Mitigation** refers to managing impacts to ensure that disturbed areas are safe and environmental degradation is minimised.

Due to the nature of dimension stone quarrying, certain impacts, such as changes to topography, may be permanent. In these instances, mitigation measures will be applied to ensure long-term stability and safety.

## 9.1 TABLE 34 FINANCIAL PROVISION ESTIMATE- AURORA GRANITE

**Financial Provision Note**

The financial provision has been calculated on an application-stage basis using an anticipated disturbance footprint of approximately 1 hectare, with an estimated 1 500 m² allocated to access and haul roads. The proposed activity has not yet commenced, and the quantities used in the calculation are therefore provisional. These values will be refined as the prospecting layout and disturbance footprint are confirmed, and the financial provision will be reviewed and updated annually in accordance with the applicable legal requirements.

The estimate also does not include the rehabilitation/ mitigation cost of historical disturbances.

## 10 CONFIRM THAT THE FINANCIAL PROVISION WILL BE PROVIDED AS DETERMINED.

The availability of financial provision for rehabilitation is usually a condition that the applicant must meet before the competent authority grants environmental authorisation. Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including;

- Monitoring of Impact Management Actions
- Monitoring and reporting frequency
- Responsible persons
- Time period for implementing impact management actions
- Mechanism for monitoring compliance

*Table 35 Mechanisms for monitoring compliance*

| Source Activity | Impacts Requiring Monitoring | Functional Requirements for Monitoring | Roles & Responsibilities | Monitoring & Reporting Frequency |
|---|---|---|---|---|
| **Vegetation clearance and topsoil handling** | Dust generation; Erosion; Invasive plants; Protection of any remaining flora | Visual inspections for erosion and vegetation establishment; Photographic monitoring; Removal of invasive species | Mine Manager | Dust: Quarterly; Erosion & vegetation: Ongoing with annual reporting |
| **Workshops, offices and storage areas** | Hydrocarbon spills; Soil and water contamination; Water use | Daily inspection of machinery; Spill kits in place; Record water use; Manage contaminated soil appropriately | Mine Manager | Daily monitoring; Annual reporting |
| **Prospecting, bulk sampling and excavation activities** | Topographical changes; Erosion; Noise; Dust | Monitor slopes and excavation stability; Ensure no expansion beyond the approved footprint; maintain a photographic record | Mine Manager | Ongoing monitoring; Dust & noise quarterly; Annual reporting |
| **Roads, hauling and transport** | Dust; Noise; Traffic safety | Maintain roads; Enforce speed limits; Inspect vehicles; Ensure signage is in place | Mine Manager | Daily inspections; Dust & noise quarterly; Annual reporting |
| **Waste rock handling (limited)** | Visual impact; Erosion; Stability | Ensure dumping within approved footprint; Monitor slopes and stability; Apply rehabilitation where required | Mine Manager | Ongoing monitoring; Annual reporting |
| **Excavations and quarry areas** | Safety; Visual impact; Localised erosion | Barricade unsafe areas; Install signage; Partial backfilling where required | Mine Manager | Ongoing monitoring; Annual reporting |

| Source Activity | Impacts Requiring Monitoring | Functional Requirements for Monitoring | Roles & Responsibilities | Monitoring & Reporting Frequency |
|---|---|---|---|---|
| **Stockpile / working areas** | Dust; Soil compaction; Visual impact | Dust suppression; Limit disturbance; Rehabilitate areas after use | Mine Manager | Ongoing monitoring; Quarterly dust reporting |
| **Water use (quarry water)** | Water abstraction; Potential contamination | Monitor water use volumes; Inspect for contamination; Maintain records | Mine Manager | Annual reporting |
| **General site activities** | Waste generation; Fire risk | Waste collection and disposal; Fire prevention measures; No open fires | Mine Manager | Ongoing monitoring; Annual reporting |

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# 11 SUMMARY OF MANAGEMENT AND MONITORING COMMITMENTS

| Management Activity | Action Frequency |
|---|---|
| **Dust suppression on haul roads** | Weekly or more frequently during dry and windy conditions, as required |
| **Dust suppression on access and communal roads** | As required and in consultation with landowners and I&APs |
| **Gravimetric dust sampling** | Quarterly monitoring by a qualified occupational hygienist; results to be included in the Annual Environmental Performance Assessment |
| **Ambient noise monitoring** | Quarterly monitoring by a qualified occupational hygienist; results to be included in the Annual Environmental Performance Assessment |
| **Erosion control and monitoring** | Ongoing monitoring during operations; corrective measures implemented as required |
| **Weed and invasive species control** | Ongoing monitoring and control by the Mine Manager; status reported annually in the Environmental Performance Assessment |
| **Surface and groundwater quality monitoring** | Annual monitoring or more frequently if contamination is suspected; results included in annual reporting |
| **Soil quality monitoring** | Ongoing visual monitoring; soil testing conducted on an ad hoc basis if contamination is suspected |
| **Waste management** | Continuous management; hazardous waste removed by licensed contractors; domestic waste removed regularly to a registered landfill site |
| **Rehabilitation (including rock shading, shaping, topsoil replacement and revegetation)** | Concurrent rehabilitation during operations; progress reported annually |
| **Environmental awareness training** | Conducted during induction for all new employees and refreshed periodically (every 2 years) |
| **Updating of site / mine layout plans (including rehabilitation areas, roads, quarry areas, and disturbed areas)** | Updated annually by a competent person (e.g. surveyor) |
| **Environmental Performance Assessment** | Conducted annually by an independent Environmental Assessment Practitioner / Environmental Control Officer |
| **Annual Rehabilitation Plan** | Reviewed and updated annually by an independent Environmental Assessment Practitioner / Environmental Control Officer |
| **I&AP engagement and complaints register** | Maintained continuously on site; complaints recorded and addressed as they arise |

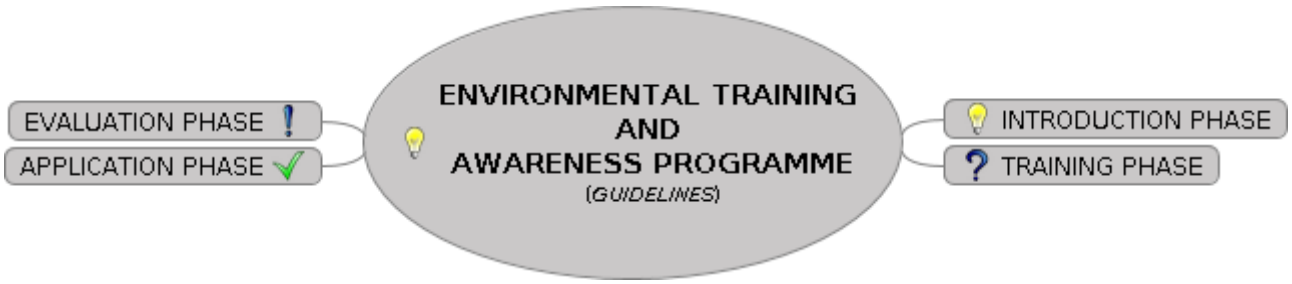
## 12 INDICATE THE FREQUENCY OF THE SUBMISSION OF THE PERFORMANCE ASSESSMENT REPORT.

The environmental performance assessment report will be submitted to the DMR annually or as specifically instructed by the competent authority.

## 13 ENVIRONMENTAL AWARENESS PLAN

### 13.1 MANNER IN WHICH THE APPLICANT INTENDS TO INFORM HIS/HER EMPLOYEES OF ANY ENVIRONMENTAL RISK WHICH MAY RESULT FROM THEIR WORK.

The mine operator commits to foster environmental awareness in employees of the mine through induction training and other training programmes required by the Mine Health and Safety Act.




This programme can very effectively be used for the following purposes:

- Analysing information,
- Training and / or induction.

For training purposes, the facilitator or trainer should keep the following guidelines in mind:

- Any training session is a planned meeting where the trainer guides the trainees to master the content and
- Use it as a vehicle to reach the envisaged outcomes of environmental awareness.

Keep in mind that most trainees view the trainer is their most important resource of knowledge. Guide them in understanding that they also gain knowledge. The trainer is not a reservoir of knowledge but a conveyor of knowledge.

## 13.2 INTRODUCTION PHASE

It is of utmost importance to initially focus the trainee's attention by making an interesting statement or asking an interesting question. The trainer could also use the data projector to flash an interesting or applicable visual sensory or write a word on a writing board to focus the trainee's attention.

By doing the above mentioned the trainer/facilitator can determine the trainee's prior – knowledge. It is also of utmost importance to place the particular session in context within the broader purpose of environmental awareness. This statement or question should create a conducive atmosphere for the training session. All the above-mentioned actions (in cursive) should motivate and convince the trainees to participate in this session.

## 13.3 TRAINING PHASE

Remember, the training phase and the application phase are interwoven, but for the purpose of this accompanying addendum, these phases are discussed separately.

Linking to the introduction phase, where the trainee's prior knowledge was determined. New knowledge to achieve the envisaged outcomes is created through training, facilitation, or mediation.

To align the new content with its envisaged outcomes, the new information is introduced and structured by building on the trainees' previous answers.

New concepts are analysed, compared, and synthesised. While facilitating these aspects, it is important to keep the trainee's attention by monitoring and evaluating their answers.

By doing this, the trainer is busy consolidating the prior and new knowledge as a conveyor of the envisaged outcomes.

## 13.4 APPLICATION PHASE

While the trainees are applying the new information by means of practical and or theoretical exercises, the trainer accompanies the trainees by means of guiding them to monitor, evaluate and correct themselves. When necessary, the trainer mediates the trainees who find it difficult to synthesise, integrate, or assimilate the new information into knowledge.

Mediation is carried out through corrective "training" or "retraining". Remember, practice makes perfect. The trainees are also guided to manage their time effectively during training sessions.

## 13.5 EVALUATION PHASE

During this phase, the trainer evaluates the practical work completed during the application phase.

Quality feedback is then given. Where and when necessary, the learners who made mistakes are given the opportunity to correct them. This phase allows the trainees and the trainer to determine if the envisaged outcomes or aims of the training session have been reached and whether it was of value.

### 13.5.1 ENVIRONMENTAL TRAINING AND AWARENESS PLAN:

Section 39 (3) c of the Minerals and Petroleum Resources Development Act (Act 28 of 2002) states the following:

"*Develop an environmental awareness plan describing the manner in which the applicant intends to inform his or her employees of any environmental risks which may result from their work and the manner in which the risks must be dealt with in order to avoid pollution or the degradation of the environment"*

The main aim of this basic environmental awareness plan is to indicate how employees (and other affected parties) will be informed of the different environmental measures so that significant negative impacts are prevented, managed or minimized.

All workers will need to undergo induction training in order to be able to work in the quarry. During induction training, all workers will receive environmental awareness training. The person responsible for this will be the appointed mine manager or training officer. Environmental training will also be provided on an on-going basis as part of the general meetings with the workers. The mine manager will be in a position to request additional training should he feel that this is needed to increase environmental awareness.

It is important to inform all affected parties that the quarry will affect the immediate environment through the creation of quarry excavations, mine residue deposits (waste rock dumps), mine infrastructure and quarry related operations and how the workers (and other affected parties) can

contribute to minimising the impact. It is important to indicate to the workers that the way in which they operate on the quarry can have a positive or negative impact on the affected environment.

In order to achieve this objective, a broad list is to be provided of how the quarry will affect various aspects of the environment, which is taken from the executive summary of the environmental impact assessment. This will ensure that the training has relevance to the actual quarry and does not become a generic type document.

Since the training will be provided by way of lectures it must be realised that the following pages form the basis of the lecture notes used for the induction training and also as part of the on-going training. It is thus difficult within the context of this plan to provide the exact details of what will be said within the training, but as a minimum, these notes form the framework of the training that will be provided for growing environmental awareness and associated responsibilities within the mining environment.

To ensure that the training is relevant and practical, the summary of impacts has been translated into the points outlined after the impacts are provided, so that workers can ensure they contribute positively to reducing them. It is essential to realise that the outline of the training notes provided below will ensure that the above impacts are kept to a minimum.

It should also be noted that all mitigation measures proposed for each aspect within the EMPR document and its addenda will form part of the environmental awareness plan.

### 13.5.2 TRAINING SECTION

An example of general environmental awareness aspects that will form part of the awareness programme follows:

An easy example of how our planet should be managed can be explained by the following comparison:



In order for a vehicle to run efficiently, it needs certain resources and maintenance from its owner, like fuel, oil, water and maintenance services.

If the owner fuels his vehicle with dirty fuel, water and oil, and does not maintain it, the vehicle will break down and the owner will be stationary.

In order for our planet to run efficiently like a maintained vehicle, it needs certain resources and maintenance from its owners/custodians.

For our planet to function optimally, we need to look after our natural resources like soil, water and air. If we as the custodians of this earth and do not look after it, the earth will die and so will we.

**This means:** It is our responsibility to keep the water on our earth clean and healthy and it is our responsibility to keep the air and soil clean in order for our planet to function efficiently and not break down.

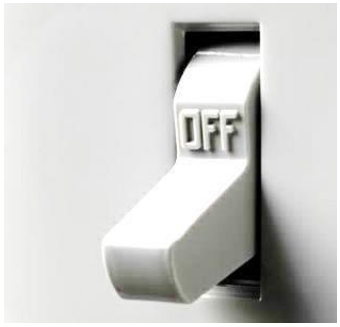
The aim is to provide a beautiful and healthy planet to our future generations to come.

The question would be: what can i, as an employee of aurora marble quarries, do to improve the environmental status of my surroundings?

In the interest of preservation of our environment at the mine the following must be taken into consideration during mining operations:

*Table 36 Actions, related impacts and mitigation measures*

| Action taken by the Individual | Related Impact and Mitigation measure |
|---|---|
| 1) Do not litter<br>  | Litter could pollute soil, water and air. Illegal waste disposal sites also cause disease and disturb the visual sense of place. Proper housekeeping on site needs to be strictly enforced. Make use of waste bins to manage domestic waste. |
| 2) Do not overgraze<br>  | It destroys natural vegetation, invites invader / alien plants species to grow, and it leads to an increase in soil erosion and desertification. |
| 3) Do not waste water or pollute water resources<br>  | Water is an essential resource for human survival. Keep the rivers clean from any litter or other forms of pollution. If waste is dumped into a river it will change its biological structure, which could kill off many living organisms within the river's ecosystem.<br><br>Water taps should be properly closed after use. Water from water-filled voids should be used where possible for mining processes. |
| 4) Do not pollute the air that we breathe | Service your vehicle regularly to reduce exhaust fumes. Do not destroy trees deliberately. If a tree was used for firewood, it is crucial that another is planted. |

| Action taken by the Individual | Related Impact and Mitigation measure |
|---|---|
|  | Trees serve as habitats, aesthetically it has great value, reduces erosion and act as the lungs of our planet. The water bowsers need to be operating on a continual basis to reduce the general dust pollution on site. Speed limits are there to reduce dust pollution and to provide a safer environment for all. |
| 5) Petrochemical spillages<br>  | Any spillages including wasted oil, diesel or chemical must be reported to the mine manager, including spillages at workshop fuel facilities.<br><br>If these areas are not properly rehabilitated the soil will not be able to provide the necessary germination for hydroseeding during the implementation of the rehabilitation programme. |
| 6) Protect wild animals and their habitats<br>  | When dangerous animals are encountered the mine manager needs to be informed, where a specialist will be contacted to remove and reallocate the animal.<br><br>Animal snares and traps are not permitted on site. The mine manager must be informed of any dead animals on the mine, including fish. |
| 7) Reduce electricity usage<br>  | No electrical appliance including lights is allowed to consume electricity if not in use. The last person to leaf a building or premises needs to switch off all the lights if not agreed otherwise. |

| Action taken by the Individual | Related Impact and Mitigation measure |
|---|---|
| | |
| 8)Historical / cultural sites<br>  | No grave sites or sites of historical/cultural interest may be damaged or disturbed. The mine manager must immediately be informed if such a site has been discovered. |
| 9) No tree felling<br>  | No trees, apart from invasive trees such as Black Wattle, Yellow Bell, Wild Tobacco, Seringa and Blue Gum trees are allowed to be felled. Do not destroy trees deliberately.<br><br>Operators of earth moving machines are not to uproot any tree or other forms of vegetation without specific authorization from the mine manager. If a tree was used for firewood, it is crucial that another is planted.<br><br>Protected trees identified in the mining area may not be damaged, removed or relocated without legally required permits/authorisations. (Should any protected tree need to be removed for the mining operation than a permit must first be obtained from the Department of Forestry). |

| Action taken by the Individual | Related Impact and Mitigation measure |
|---|---|
| 10) Uncontrolled veld fires  | Only fires at designated areas situated at least 50 metres from vegetation, as determined by the mine manager on the mine are allowed. No employee is allowed to burn grass or starts any fire outside the designated areas for this purpose without authorization from the mine manager.<br><br>Uncontrolled and unauthorized burning of the veldt could lead to the loss of animal life and vegetation and it could pose a safety risk to communities. |

Environmental Responsibilities

Quarry Men and Block Dressers:

Minimize mistakes. By making fewer mistakes like using wrong explosives or by using the wrong quantity of explosives, damage could be caused to the formation or block. This will be a waste of time, natural resources, the mined product and fuel, which is fast becoming very expensive.

Other environmental management measures include the following:

- Domestic waste management – bins
- Industrial waste management – bins – Scrapyard for recycling
- Conservation of indigenous plants/trees – no tree felling is allowed
- Conservation of animals – no hunting or trapping is allowed.
- Water preservation - All workers must aim to recycle water for mining purposes.
- Soil pollution prevention. No diesel, oil or lubricants may be spilled on soil or water

Earthmoving Machine Operators:

Operators of heavy machinery are required to be very cautious of their actions. The reason for this is that operators can cause extensive environmental damage, especially to vegetation by being ignorant or lazy.

An aspect such as the removal of waste rock to decommissioned pits or depressions (that might pose a safety risk for people or animals) might seem like a normal task for a dumper or loader operator, but by backfilling a pit or depression created by mining, the operator is actually actively involved in concurrent rehabilitation.

The removal of topsoil or any other growth medium in front of advancing waste rock dumps and stockpiling it at a designated site. The operator is now actively involved in the conservation of a non-renewable resource. The stockpiled soil will be used for rehabilitation during the decommissioning phase of the mine.

Grader operators are in addition to their other tasks responsible for road maintenance. By effectively maintaining roads, the operator is actually reducing soil erosion. By reducing soil erosion, the operator is conserving soil which is a non-renewable resource.

The cost associated with earthmoving is a costly item during the rehabilitation process. It is therefore of the utmost important to use loaders and dumpers for concurrent rehabilitation in order to save on rehabilitation costs after mining has ceased.

- Operators must be sure of their tasks, especially when operating in undisturbed areas.
- No vegetation may be removed without the specific instruction of the manager.
- No new haul or access roads may be cleared without the specific instruction of the manager.
- No waste rock or any other waste material may be dumped on undisturbed soil and vegetation.
- All earth moving machines must be checked for oil leaks in addition to workshop inspections.
- All earthmoving machines must have emergency spillage kits on board that should be used to contain spillages that might occur when hydraulic pipes bursts.
- The code of practice for petrochemical pollution prevention must be followed during the occurrence of a spillage.
- Small things such as by driving more sensible, the operator is already reducing the impact he/she would have had on the environment. For example, vehicle emissions into the atmosphere are reduced and by driving slower, less fuel is burned which means that fewer fossil fuels (natural resource) are consumed. This point is applicable to all employees.

Workshop Personnel:

Apart from everyday environmental management tasks like domestic waste management, workshop personal work as everyday activities with petrochemical substances. Therefore, the handling of these substances is considered very important.

Administrative and Cleaning Personnel:

Administrative personnel should give attention to the management of used paper. First of all, do not waste paper. Instead of using a new sheet of paper to make temporary notes on, rather use the clean side of used sheets.

All waste paper must be separated from domestic waste and selected for recycling. The same applies to printer and copier cartridges and toners, which can be refurbished.

Responsibilities of managers:

Managers are responsible for complying with environmental legislation and the company's environmental policy. It is also the responsibility of managers to act as examples for other employees is this regard.

Mine managers and directors are usually responsible for signing the undertaking in an Environmental Management Programme Report (which is legally binding). This means that directors and mine managers are legally responsible when the EMP is not followed as stated.

Managers must ensure they are familiar with all environmental-related commitments stated in the EMPR, as they are ultimately responsible for their environment.

Environmental Management in South Africa

The responsibility to regulate environmental management belongs to state departments such as:

- Department of Mineral Resources (DMR)
- Department Water and Sanitation (DWS)
- Department of Agriculture, Forestry and Fisheries, Environmental and Land Affairs and on regional level, the Parks board, and National Botanical Institute

Why should the environment be managed?

- 20 % SA households live in poverty. The more poor people there are – the more difficult it is to keep the balance between the natural environment and its resources.
- To sustain its Biological Diversity
- Because of SA's unique mix of tropical and temperate climates and habitats,
- SA Ranks as the third most biologically diverse country in the world
- 18000 vascular plant species occur within SA's Boundaries of which 80% occur nowhere else.
- Hosts 5.8 % of the world's total mammal species.
- 8% Birds
- 4.6% reptile species

- 5.5% of the worlds described insect species.
- 6000 species of spiders
- 175 species of scorpion
- 7 terrestrial biomes in SA (68 vegetation types)

Preserving Genetic Diversity:

Humans have been changing SA ecosystems for thousands of years, but the change and extent have rapidly increased with agricultural and industrial development.

Which factors contribute to the loss of genetic diversity?

- Habitat loss and degradation
- Over-exploitation of certain species
- Introduction of exotic species
- Pollution and toxification of soil, water and atmosphere.
- Currently, 15% of plant species, 14% of bird species, 24 % of reptile species, 18 % of amphibian species, 37% of mammal species, 58 % of indigenous freshwater species and 22% butterfly species are listed as threatened in the SA red data Book, indicating how frail our environment in South Africa is, and the more reasons there are to manage our environment in a responsible manner.

The earth does not belong to us. We belong to the earth."

"We do not inherit the earth from our ancestors; we borrow it from our children" — Chief Seattle

Attachment of specialist reports, technical and supporting information.

SECTION 39 (4) (a) (iii), Capacity to manage and rehabilitate the environment

Concurrent rehabilitation that includes the terracing of waste rock dumps, re – allocation of topsoil or any other growth mediums, backfilling of depressions, the safe making of high walls, erosion control, rock shading and revegetation of disturbed areas will form part of everyday mining activities, once the mine has been developed.

The capacity to manage and rehabilitate the environment is thus not currently possible to determine accurately since the mine is still in a development phase (prospecting phase). No "real" rehabilitation areas have therefore been identified. Good indicators for establishing whether the applicant has the capacity to manage and rehabilitate the affected environment, comprises the following:

1. The ability to plan effectively and minimise boulder hopping practices.

2. The ability to provide the financial backing required to mitigate or rehabilitate areas disturbed by mining related activities.
3. The ability to provide statements or proof of the amount spent on environmental management, concurrent rehabilitation, and reporting.
4. The ability to comply with the conditions documented in the EMPR.

## 14 MANNER IN WHICH RISKS WILL BE DEALT WITH IN ORDER TO AVOID POLLUTION OR THE DEGRADATION OF THE ENVIRONMENT.

The action plan for environmental-related risks outlines practical procedures required for all personnel (i.e. Aurora Marble Quarries quarry employees, contractors and suppliers) to reduce or eliminate the potential environmental effects associated with the mining operation throughout all phases, including the post-operational phase.

Major disasters have negative environmental impacts, some of which may threaten human life and welfare. An important part of the effective humanitarian response is identifying these environmental impacts and taking steps to mitigate them. Some impacts are severe and must be addressed immediately; others are longer-term and could be addressed during the recovery and rehabilitation phases. Complex emergencies present a unique set of environmental challenges.

In most environmental emergencies, like releasing or potentially releasing hazardous materials into the environment, immediate action is required to minimize or mitigate the impact on air, land, water, and population.

# 15 UNDERTAKINGS

## 15.1 UNDERTAKING REGARDING THE CORRECTNESS OF INFORMATION

I, JLJ Smit herewith undertake in relation to the-

(i) The information provided in the report should be correct based on the information at my disposal.

(ii) Inclusion of received comments and inputs from stakeholders and interested and affected parties

(iii) The inclusion of inputs and recommendations from the specialist reports where relevant

(iv) The project's acceptability in relation to the finding of the assessment and level of mitigation proposed.

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Signature of the EAP (EPASA 2019/1631)

Date: 2026/03-/

APPROVAL BY DMR

Approved in terms of Section 39(4) of the Minerals and Petroleum Resources Development Act, 2002 (Act 29 of 2002), the National Environmental Management Act, Act 107 of 1998 and the Environmental Impact Assessment Regulations, 2014.

Signed at……this.....day of …….. 2017

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REGIAL MANAGER

MPUMALANGA REGION