PROPOSED MINING PERMIT ON A PORTION OF PORTION 3 OF THE FARM WELVERDIEND NO 511 MAGISTERIAL DISTRICT OF VANRHYNSDORP WESTERN CAPE PROVINCE

DRAFT BASIC ASSESSMENT REPORT

OCTOBER 2021

REFERENCE NUMBER: *WC 30/5/1/3/2/10284 MP*

PREPARED FOR:	**PREPARED BY:**
Seboway (Pty) Ltd 6 Lingfield Close Milnerton Ridge Cape Town 7441 Tel: 072 809 1949 Email: btnnamibia@gmail.com	Greenmined Environmental Consultant: Sonette Smit Tel: 021 851 2673 Cell: 084 585 5706 Fax: 086 546 0579 E -mail: sonette.s@greenmined.co.za

EXECUTIVE SUMMARY

Seboway (Pty) Ltd (“hereinafter referred to as “the Applicant”), applied for environmental authorisation (EA) and a mining permit for all forms of Limestone, Dimension stone and Marble on a Portion of Portion 3 of the farm Welverdiend no 511 magisterial district of Vanrhynsdorp Western Cape province.

The proposed mining footprint is approximately 4.9 ha over the above mentioned property and the mining method will entail an open-pit quarry with diamond wire cutting, loading and hauling of the mined material. The quarry is dug on a pit with face walls of sub-vertical inclination, benching is not required due to the shallow nature of the deposit. A system of ramps is to be excavated within the pit to provide access to all face wall sides. The angle of the pit face wall is determined carefully to prevent and minimize damage and danger from rock falls and/or safety hazards.

Waste and mineralisation on a scale of a few hundred to thousands tons per day may be drilled and blasted to break off from the pit face in blocks. The material is then loaded and hauled to various stockpiles and/or waste dumps. Waste rock is hauled to a waste dump. Waste dumps can be piled at the surface of the active pit, or in previously mined pits. Mineralised material is stockpiled in a separate location.

Access to the proposed mining area will be via the N7, making use of the existing internal/haul roads to access the mining permit area. Existing water authorisation is in place should water be required for the implementation of the project.

The proposed project will not require any additional electricity connections, as power existing power connection is in place and will be supported, when needed, by generators.

Site Alternative 1 (Preferred and Only Site Alternative):

Site Alternative 1 (S1) (Preferred Alternative and only site viable alternative): The Applicant, applied for a mining permit for the mining of all forms of Limestone, Dimension stone and Marble on a Portion of Portion 3 of the farm Welverdiend no 511 magisterial district of Vanrhynsdorp Western Cape province. The proposed mining footprint will be 4.9 ha and will be developed over a disturbed area previously used for the mining of Marble. Comments were received by Cape Nature for a Prospecting Right application on the said property regarding the sensitivity of the area, it is therefore recommended based on these comments that any future invasive activities and or mining should be limited to existing mining and already disturbed areas in order to prevent the loss of natural vegetation or disturbance to water courses. In light of this, S1 was identified during the assessment phase of the environmental impact assessment, by the Applicant and project team as the only possible alternative.

As per the Plant Species and Terrestrial Biodiversity Theme Compliance Statement dated October 2021 compiled by Enviroworks (see appendix N) both proposed development footprints are located in Ecological Support Areas (ESAs). Alternative one is located in an ESA Category 1 (Terrestrial) and Alternative two is located in an ESA Category 2 (Terrestrial) and ESA Category 1 (Aquatic). The immediate surrounding area is located in an ESA Category 2 (Terrestrial), and an ESA Category 1 (Aquatic and Terrestrial)

During the site visit, both development footprint alternatives were verified to be an old quarry (not in use) with a workshop to the west. The majority of each footprint had either been completely transformed by the quarry or degraded by stockpiles of large marble stones. Only small corridors of vegetation remain between the stockpiles. Within these corridors, the vegetation is dominated by alien invasive species such *Prosopis glandulosa* (NEM:BA Category 1A), grass species such as *Stipellula capensis, Briza maxima*, and *Ornithogolum sp*. Other alien invasive species such *Atriplex lindleyi* (NEM:BA Category 1A) are also present on the footprints. This grassland type appearance of the vegetation may be a sign of the seasonal change in vegetation dominance in the landscape which is common for Vanrhynsdorp Gannabosveld. However, it is highly likely that this grassland appearance is rather a sign of degradation or disturbance. This is echoed by the high abundance of alien invasive species such as *Prosoposis galndulosa* (NEM:BA Category 1A) and the presence of the annual succulent, *Mesembryanthemum nodiflorum*, a disturbance indicator.

In terms of the areas of the footprints included in the Ecological Support Areas (ESAs), these areas have either been lost via mining or are severely degraded by stockpiles. There is one intact area on the footprint that is classified as an ESA and has not been mined in the western area of Alternative one. This area is degraded and consists of little indigenous vegetation cover and is infested.

Based on the aforementioned, both Alterative one and two should be classified as Low Sensitivity for the Plant Species and Terrestrial Biodiversity Themes. Therefore, it is recommended that either Alternative one or two can be developed and used for mining purposes given that the impact management outcomes are adhered to

As per the Water Use Risk Matrix date October 2021 and compiled by Enviroworks (refer to Appendix P) two location alternatives were provided for the proposed mine. A berm, adjoining an artificial dam wall to the north of the proposed mine, has been constructed around the eastern boundary of the old mine, and it effectively divert surface water that would have flown through the non-perennial watercourse. For this reason, choosing the preferred alternative will not differ significantly from the second alternative in terms of impacts on watercourses; as the watercourse indicates on GIS databases have been transformed by mining. Using the preferred alternative could however provide opportunity in the future to restore the transformed watercourses and could re-establish the more

natural and meandering flow path, as opposed to the more rigid and straightened path created by the berm's diversion. The second alternative was thus deemed as not preferred.

Site Alternative 2:

Site Alternative 2, which also entails the mining area over a disturbed portion of portion 3 of the farm Welverdiend no 511 magisterial district of Vanrhynsdorp Western Cape province.

Site Alternative 2 (S2) was assessed for the proposed mining but found not environmentally and practically suitable. Ground truthing, by the specialists, however confirmed in terms of local-level biodiversity, the selected site is similar to S1 however as mentioned above using site alternative 1 could however provide opportunity in the future to restore the transformed watercourses and could re-establish the more natural and meandering flow path, as opposed to the more rigid and straightened path created by the berm's diversion. The second alternative was thus deemed as not preferred.

Site alternative 1, was deemed the only viable site alternative as this is area is regarded to be already disturbed and will not impact on the sensitivity of the area.

No-go Alternative:

The no-go alternative was not deemed to be the preferred alternative as:

- The Applicant could not utilise the mineral resource on this property and the surrounding area will not benefit from diversification of mineral sources which will escalating product costs;
- The application, if approved, would allow the applicant to determine the available mineral resource as well as provide possible future employment opportunities to local employees. Should the no-go alternative be followed these opportunities will be lost to the applicant, potential employees and clients; and
- The applicant will not be able to diversify the income of the property.

The no-go alternative entails no change to the *status quo* and is therefore a real alternative that needs to be considered.

Not proceeding with the proposed operation will entail that a mineral that could contribute towards the local and provincial social and economic structures of the area, will not be mined, and that this opportunity will be lost.

Public Participation Process:

In accordance with the timeframes stipulated in the EIA Regulations, as amended, the Draft Basic Assessment Report was compiled and will be distributed for comment and perusal to the I&AP's and stakeholders. A 30-day commenting period, ending 26 November 2021, will be allowed for perusal

of the documentation and submission of comments. The comments received on the DBAR will be incorporated into the Final Basic Assessment Report (FBAR) to be submitted for decision making to DMRE.

During this public participation process the stakeholders and I&AP's will be informed of the project by means an advertisement that will be placed in Ons Kontrei on the 21th of October 2021, and four on-site notices were placed one at the entrance to the farm, one at the local Spar in town, one at the public library and one at Vanrhynsdorp Magistrates Court.

Basic Assessment Report:

The Basic Assessment Report identifies the potential positive and negative impacts that the proposed activity will have on the environment and the community as well as the aspects that may impact on the socio-economic conditions of directly affected persons, and proposes possible mitigation measure that could be applied to modify / remedy / control / stop the identified impacts.

The key finding of the environmental impact assessment entail the following:

Topography:

The project area is mainly flat or only slightly undulating by superficial sediments of Late Cenozoic age. The thickness of the superficial sediment overburden overlying Precambrian bedrocks here varies from between 0 – 2 meters. A small area in the east is covered by fine-grained aeolian sands (Q-s) that cover large portions of the coastal plain to the north and south of Vanrhynsdorp, where they are often underlain by older calcareous or loamy soils, and that often appear distinctly orange on satellite images. The reddish sands are derived from pale alluvial sands that were accumulated near the coast by the palaeo-Olifants River system and then blown inland by prevailing south-westerly winds. They are mainly of Pleistocene to Recent age. The majority of the study area is mantled by calcareous and gypsiferous soils (Q-r2) that cover large areas of the Knersvlake region around Vanrhynsdorp and are often capped by a reddish, well-consolidated calcareous or siliceous hardpan or dorbank. The soils comprise a spectrum of gravally conglomerates, grit, sand and finer sediment showing a variable degree of calcretisation (i.e. pedogenic limestone formation typical of semi-arid climates). Pleistocene to Holocene alluvial deposits such as silts and gravels occur along the Widouw River but these are small in extent. The altitude varies between 113-134 m.

Visual Characteristics:

The viewshed analysis showed that the visual impact of the proposed mining operation will be of low significance. The project area is located in the jurisdiction of the Matzikama Local Municipality, with Vanrhynsdorp being the nearest town. The land use of the earmarked property was previously used

for mining marble, thus its already a disturbed area. The surrounding properties are mainly used for a variety of mixed agricultural purposes as well as mining and industrial purposes. The proposed mining area will be reached via the N7, making use of the existing internal/haul.

Air and Noise Quality:

The proposed activity will contribute the emissions mechanical mining equipment to the receiving environment for the duration of the operational phase. Should the permit holder implement the mitigation measures proposed in this document and the EMPR the impact on the air quality of the surrounding environment is deemed to be of low significance and compatible with the current land use. The potential impact on the noise ambiance of the receiving environment is expected to be of low significance and representative of the traffic of the surrounding area.

Geology and Soil:

The project area is largely underlain by superficial sediments of Late Cenozoic age. The thickness of the superficial sediment overburden overlying Precambrian bedrocks here varies from between 0 – 2 meters. A small area in the east is covered by fine-grained aeolian sands (Q-s) that cover large portions of the coastal plain to the north and south of Vanrhynsdorp, where they are often underlain by older calcareous or loamy soils, and that often appear distinctly orange on satellite images. The reddish sands are derived from pale alluvial sands that were accumulated near the coast by the palaeo-Olifants River system and then blown inland by prevailing south-westerly winds. They are mainly of Pleistocene to Recent age. The majority of the study area is mantled by calcareous and gypsiferous soils (Q-r2) that cover large areas of the Knersvlake region around Vanrhynsdorp and are often capped by a reddish, well-consolidated calcareous or siliceous hardpan or dorbank. The soils comprise a spectrum of gravally conglomerates, grit, sand and finer sediment showing a variable degree of calcretisation (i.e. pedogenic limestone formation typical of semi-arid climates). Pleistocene to Holocene alluvial deposits such as silts and gravels occur along the Widouw River but these are small in extent.

Hydrology:

The proposed site falls within the Olifants/ Doorn Water Management Area, in the E33G quaternary catchment area. The proposed project does not require a Water Use Authorisation in terms of Section 39 of the National Water Act, 1998 (Act No 36 of 1998). No activity will take place in or within 100m radius of any water bodies. Any water required for the implementation of the project will be bought from a registered source and transported to on site. The use of potable water for dust suppression should be avoided.

As per the Water Use Risk Matrix date October 2021 and compiled by Enviroworks (refer to Appendix P), the proposed mining footprint is situated adjacent to and old marble mine. The surface area of the proposed mining permit is currently used as a stockpile for the marble. The mining footprint thus has been affected by the marble mine's activities across the surface area.

Due to the arid nature of the area, there were no surface water visible in the natural watercourses that were encountered. Surface flow through the drainage features and watercourses are considered to be limited to flood or precipitation events. No natural perennial watercourses occur in the study area and watercourses within 500m from the proposed footprint are all classified as ephemeral that flow during heavy rainfall and run-off events. There is an artificial dam upstream from the mine footprint which had water in at the time of the site visit, but from historical satellite imagery from Google Earth, the dam has been empty at times, and is thus not perennial.

Mining, Biodiversity and Groundcover:

The project area is located in the jurisdiction of the Matzikama Local Municipality, with Vanrhynsdorp being the nearest town. The land use of the earmarked property was previously used for mining marble, thus its already a disturbed area. The surrounding properties are mainly used for a variety of mixed agricultural purposes as well as mining and industrial purposes. The proposed mining area will be reached via the N7, making use of the existing internal/haul.

Based on the aforementioned, the impact on Biodiversity was assessed as part of the EIA. It is highly unlikely that this development will have an impact on the status of the Ecosystem and Vegetation Types due to the limited extent of the mine as well as the extent of natural vegetation surrounding the mining area. Furthermore, this mine will not have a significant impact on the services and functions provided by the surrounding natural habitats and development within this area is regarded as acceptable. As per the Plant Species and Terrestrial Biodiversity Theme Compliance Statement dated October 2021 compiled by Enviroworks (see appendix N) It is anticipated that the proposed development (Alternative one and two) will have negligible impact on the biodiversity and botanical features identified by the screening tool as the development footprint is extensively disturbed and does not represent likely habitat for any plant species that may be threatened with extinction.

Fauna:

Various small mammals and reptiles occur are likely to on the property. Larger herbivore species are very scares or absent due to the conflicting land use. Small mammals, reptiles and insects will occur in the area. The fauna at the site will not be impacted by the proposed mining activity as they will be able to move away or through the site, without being harmed. Workers should be educated and managed to ensure that no fauna at the site is harmed. At this stage no resident protected or red data

faunal species were identified within the earmarked footprint, and the project is expected to have a negligible impact in this regard as mining activities will be done by non-invasive activities.

HUMAN ENVIRONMENT:

Cultural and Heritage Environment:

Heritage Western Cape were contacted for their perusal and commenting. Archaeological resources (Including archaeological sites and material, rock art, battlefields & wrecks):

As per the Notice of Intent to develop conducted by Jonathan Kaplan (ACRM) (Refer to Appendix O). Later Stone Age (LSA) and Middle Stone Age (MSA) tools have been recorded on portions of Farm 511 (Kaplan 2010, 2017), but the impact of proposed mining on heritage resources will be low, as proposed mining will take place within the footprint of the existing mine.

However, should artefacts archaeological items be observed during the mining activities, then all activity should cease immediately, the area marked off activity and a specialists consulted prior to any further activity. This also includes if any graves are observed on site during activity progress then all activity should have ceased and the area demarcated as a no-go zone

According to consulting palaeontologist John Pether (email correspondence dated 08 October, 2021), `The quarry exploits the limestone, dolomite and marble of the Widouw Formation (Gariep Supergroup, Gifberg Group) which date from ~770 to 700 million years ago. The earliest microfossils and tiny sponges had appeared by this time, but the quarrying will not impact on this cryptic fossil resource. The palaeontological sensitivity is LOW (SAHRIS)

Only FFP required in case of fossil finds in the overlying coversands'.

The South African Heritage Resources Agency (SAHRA) compiled the Palaeontological (fossil) Sensitivity Map (PSM) to guide developers, heritage officers and practitioners in screening paleontologically sensitive areas at the onset of a project. When the footprint of the earmarked mining area is placed on the PSM, it shows the study area to extend over an area of low insignificant concern.

Site Specific Infrastructure:

The mining site will contain the following:

- Drill and blast rigs – used to drill small diameter holes into the material
- Excavators – moving heavy stone blocks
- Front End Loaders – ramp/road building and material shifting
- Plant operations (to be confirmed)

- Light Domestic Vehicles (LDVs)
- Flatbed/Low-bed and Ore transport trucks

During the Environmental Impact Assessment process the feasibility of the proposed site was assessed to identify fatal flaws that are deemed as severe as to prevent the activity continuing, or warrant a site or project alternative. The outcome of the assessment showed that should the mitigation measures and monitoring programmes proposed in this document be implemented, no fatal flaws could be identified that prevents the activity continuing.

Environmental Management Programme (EMPR)

The EMPR provides a description of the impact management outcomes and closure objectives. It presents the impacts to be mitigated in their respective phases as well as stipulates the mitigation measures to be applied on site.

The financial provision amount that will be necessary for the rehabilitation of damages caused by the operation, both sudden closures during the normal operation of the project and at final, planned closure gives a sum total of R 368031.26.

LIST OF ABBREVIATIONS

BID	Background Information Document
BGIS	Biodiversity GIS
CARA	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)
CBA	Critical Biodiversity Area
DBAR	Draft Basic Assessment Report
DMRE	Department of Mineral and Resources and Energy
DoT	Department of Transport
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIA Regulations	Environmental Impact Assessment Regulations, 2014 (as amended 2017)
EISC	Ecological Importance and Sensitivity Category
EMPR	Environmental Management Programme
FBAR	Final Basic Assessment Report
WCDARD	Western Cape Department of Agricultural and Rural Development
GDP	Gross Domestic Product
WCBSP	Western Cape Biodiversity Spatial Plan
GNR	Government Notice
I&AP's	Interested and Affected Parties
MHSA	Mine Health and Safety Act, 1996 (Act No. 29 of 1996)
MPRDA	Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
Mineral Resource	All forms of Limestone $CaCO_3$ and $MgCO_3$, Dimension stone and Marble
MP	Mining Permit
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEM:AQA	National Environmental Management: Air Quality Control Act, 2004 (Act No. 39 of 2004)
NEM:BA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NEM:WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NFEPA	National Freshwater Ecosystem Priority Areas
NHRA	National Heritage Resources Act, 1999 (Act No 25 of 1999)
NRTA	National Road Traffic Act, 1996 (Act No. 93 of 1996)

NWA	National Water Act, 1998 (Act No. 36 of 1998)
PCB's	Polychlorinated Biphenyl
PCO	Pest Control Officer
PES	Present Ecological State
PPE	Personal Protective Equipment
PSM	Palaeontological Sensitivity Map
RA	Risk Assessment
S1	Site Alternative 1
S2	Site Alternative 2
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SAMBF	South African Mining and Biodiversity Forum
WMA	Water Management Area
WULA	Water Use Licence Application

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mineral resources
Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

BASIC ASSESSMENT REPORT

And

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

SUBMITTED FOR ENVIRONMENTAL AUTHORIZATION IN TERMS OF THE NATIONAL ENVIRONMENTAL 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).

NAME OF APPLICANT:	Seboway (Pty) Ltd
TEL NO:	072 809 1949
FAX NO:	N/A
POSTAL ADDRESS:	6 Lingfield Close, Milnerton Ridge, Cape Town, 7441
FILE REFERENCE NUMBER SAMRAD:	WC 30/5/1/3/2/10284 MP

IMPORTANT NOTICE

In terms of the Mineral and Petroleum Resources Development Act (Act 29 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 can 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.

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.

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 these aspects to determine:

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

  (ii) the degree to which these impacts –

    (aa) can be reversed;

    (bb) may cause irreplaceable loss of resources; and

    (cc) can be managed, avoided or mitigated;

(e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to –

  (i) identify and motivate a preferred site, activity and technology alternative;

  (ii) identify suitable measures to manage, avoid or mitigate identified impacts; and

  (iii) identify residual risks that need to be managed and monitored.

PART A

SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

1. CONTACT PERSON AND CORRESPONDENCE ADDRESS

a) Details of: Greenmined Environmental

In terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) the proponent must appoint an independent Environmental Assessment Practitioner (EAP) to undertake the environmental impact assessment (EIA) of any activities regulated in terms of the aforementioned Act. Seboway (Pty) Ltd appointed Greenmined Environmental to undertake the study needed. Greenmined Environmental has no vested interest in Seboway (Pty) Ltd or the proposed project and declares its independence as required by the Environmental Impact Assessment Regulations, 2014 (as amended April 2017) (EIA Regulations).

i) Details of the EAP

Name of the Practitioner:	Mrs Sonette Smit (Senior Environmental Specialist)
Tel No.:	021 851 2673
Fax No.:	086 546 0579
E-mail address:	sonette.s@greenmined.co.za

ii) Expertise of the EAP.

(1) The qualifications of the EAP
(with evidence).

Mrs. S Smit has fourteen years of experience in environmental legal compliance audits, (GIS) geographic information system, mining right and permit applications and applications for environmental authorisations & Water use applications.. Please find full CV attached in Appendix M.

(2) Summary of the EAP's past experience.
(In carrying out the Environmental Impact Assessment Procedure)

Sonette Smit is an Environmental Consultant with 14 years' experience in the environmental sector. She specialized the last 8 years in the mining sector where she conducted the mining related report and programs. She has also been involved in a number of other environmental and water use application projects where she compiled environmental management plans, environmental impact assessments, environmental audits, IWULA's/IWWMP's.

b) Location of the overall Activity.

Table 1: Location of the proposed project.

Farm Name:	A portion of Portion 3 of the farm Welverdiend no 511
Application area (Ha)	4.9 ha
Magisterial district:	Vanrhynsdorp
Distance and direction from the nearest town	A portion of Portion 3 of the farm Welverdiend no 511 is situated approximately 8 km South of Vanrhynsdorp.
21 digit Surveyor General Code for each farm portion	C07800000000051100003

c) Locality map

(show nearest town, scale not smaller than 1:250000).

The requested map is attached as Appendix F.

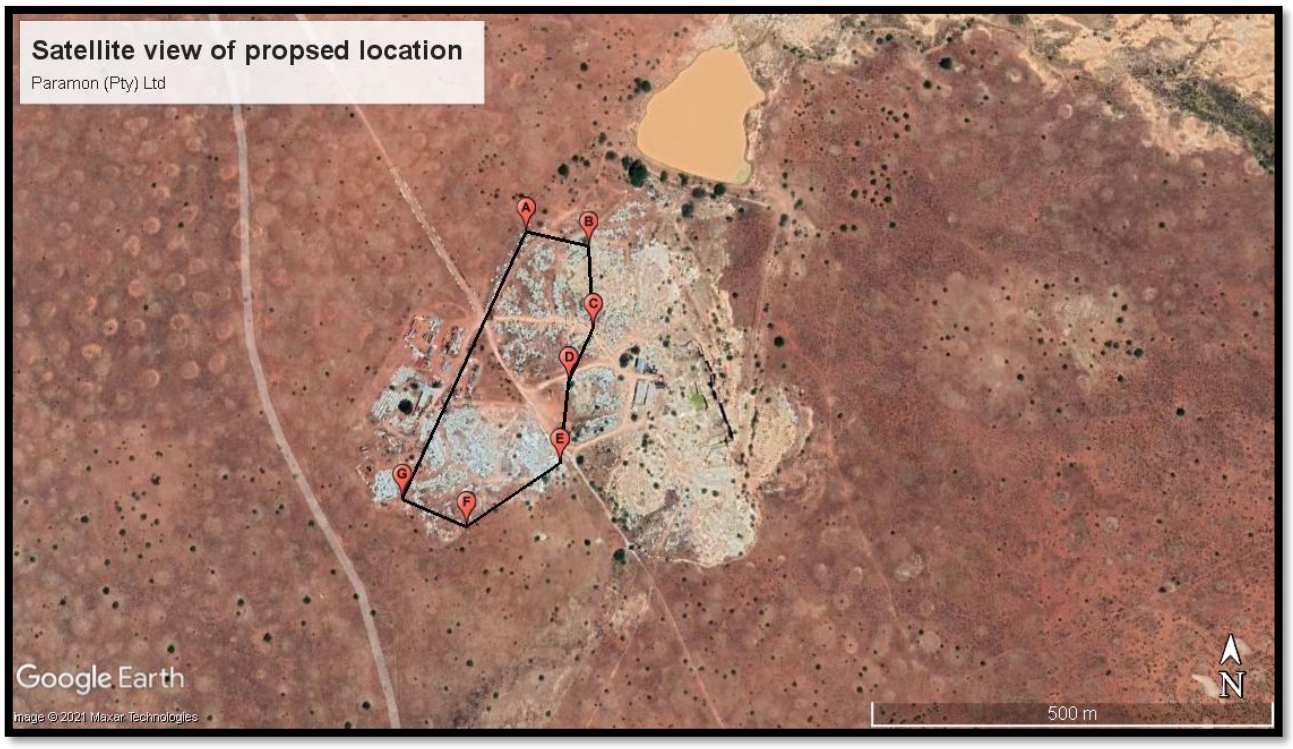


Figure 1: Satellite view of the proposed mining permit area of Seboway (Pty) Ltd (image obtained from Google Earth).

d) Description of the scope of the proposed overall activity.

Provide a plan drawn to a scale acceptable to the competent authority but not less than 1:10 000 that shows the location, and area (hectares) of all aforesaid main and listed activities, and infrastructure to be placed on site

Seboway (Pty) Ltd (hereafter referred to as the applicant) applied for a mining permit for Limestone, Dimension Stone and Marble on a Portion of Portion 3 of the farm Welverdiend No 511 magisterial district of Vanrhynsdorp Western Cape Province.

The proposed mining footprint is approximately 4.9 ha over the above mentioned property and the mining method will entail an open-pit quarry with diamond wire cutting, loading and hauling of the mined material. The quarry is dug on a pit with face walls of sub-vertical inclination, benching is not required due to the shallow nature of the deposit. A system of ramps is to be excavated within the pit to provide access to all face wall sides. The angle of the pit face wall is determined carefully to prevent and minimize damage and danger from rock falls and/or safety hazards.

Waste and mineralisation on a scale of a few hundred to thousands tons per day may be drilled and blasted to break off from the pit face in blocks. The material is then loaded and hauled to various stockpiles and/or waste dumps. Waste rock is hauled to a waste dump. Waste dumps can be piled at the surface of the active pit, or in previously mined pits. Mineralised material is stockpiled in a separate location. The land surface rights are owned by the applicant of this application area.

Access to the proposed mining area will be via the N7, making use of the existing internal/haul roads to access the mining permit area. Existing water authorisation is in place should water be required for the implementation of the project.

The proposed project will not require any additional electricity connections, as power existing power connection is in place and will be supported, when needed, by generators.

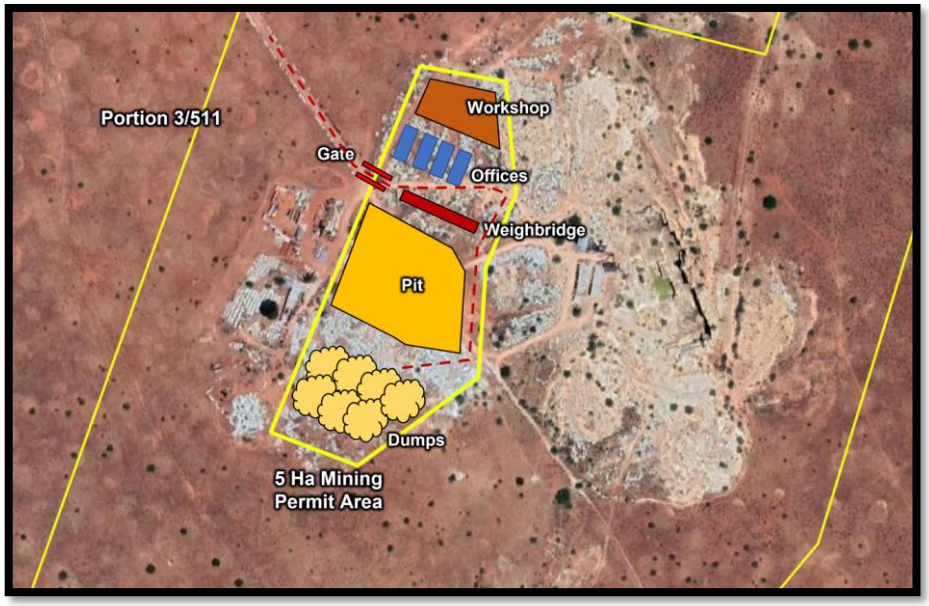


Figure 2: Site Layout Plan of the proposed Quarry.

See attached as Appendix C a copy of the site activities map for the proposed project.

i) Listed and specified activities

Table 2: Listed and specified activities triggered by the associated mining activities

NAME OF ACTIVITY **(E.g. For prospecting -** drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **E.g. for mining**,- excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.)	**Aerial extent of the Activity. Ha or m²** 	**LISTED ACTIVITY** (Mark with an **X** where applicable or affected).	**APPLICABLE LISTING NOTICE** ***(GNR 544, GNR 545 or GNR 546)***	**WASTE MANAGEMENT AUTHORISATION** (Indicate whether an authorisation is required in terms of the Waste Management Act). **(Mark with an X)**
Demarcation of site with visible beacons.	4.9 ha	N/A	Not listed	N/A
Site establishment - Stripping and stockpiling of topsoil	±4.9 ha	X	GNR 324 LN 3 Activity 12 GNR 327 LN 1 Activity 27,	N/A

- GNR 324 Listing Notice 3 Activity 12:

  The clearance of an area of 300 square meters or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.

  i. Western Cape

  ii. Within critical biodiversity areas identified in bioregional plans.

- GNR 327 Listing Notice 1 Activity 21:

  Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity as contained in this Listing Notice or in Listing Notice 3 of 2014, required to exercise the mining permit.

- GNR 327 Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 27:

The clearance of an area of 1 hectares or more, but less than 20 hectares of

indigenous vegetation, except where such clearance of indigenous vegetation is

required for—

(i) the undertaking of a linear activity; or

(ii) maintenance purposes undertaken in accordance with a maintenance management plan.

Mining of all forms of Limestone, Dimension Stone and Marble	±4 ha	**X**	GNR 327 LN 1 Activity 21, 28.	N/A

- GNR Environmental Impact Assessment Regulations 327 Listing Notice 1 of 2017 Activity 21:

Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including —

(a) associated infrastructure, structures and earthworks, directly related to the extraction 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)]

(b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing; but excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in Listing Notice 2 applies

- GNR 327 Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 28:

Residential, mixed, retail, commercial, industrial or institutional developments where

such land was used for agriculture, game farming, equestrian purposes or afforestation

on or after 01 April 1998 and where such development:

(i) will occur inside an urban area, where the total land to be developed is bigger

than 5 hectares; or

(ii) will occur outside an urban area, where the total land to be developed is bigger

than 1 hectare; excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.

Operations Phase: Drilling and blasting.	±4 ha	**X**	GNR 327 LN 1 Activity 21, 28.	N/A

- GNR Environmental Impact Assessment Regulations 327 Listing Notice 1 of 2017 Activity 21:

Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including —

(a) associated infrastructure, structures and earthworks, directly related to the extraction 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)]

(b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing; but excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in Listing Notice 2 applies

- GNR 327 Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 28:

Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development: (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare; excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.				
Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site	±0.9 ha	**X**	GNR 327 LN 1 Activity 21, 28.	N/A
• GNR Environmental Impact Assessment Regulations 327 Listing Notice 1 of 2017 Activity 21: *Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including —* *(a) associated infrastructure, structures and earthworks, directly related to the extraction 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)]* *(b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing; but excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in Listing Notice 2 applies* • GNR 327 Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 28: *Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development: (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare; excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.*				
Sloping and landscaping upon closure of the mining area.	4.9 ha	**X**	N/A	N/A

ii) Description of the activities to be undertaken

(Describe Methodology or technology to be employed, including the type of commodity to the prospected/mined and for a linear activity, a description of the rout of the activity)

Portion of Portion 3 of the farm Welverdiend no 511 magisterial district of Vanrhynsdorp Western Cape province is situated approximately ±8km south of the town of Vanrhynsdorp along the N7 national road The GPS coordinates of the proposed mining area are as follows

Table 3: GPS Coordinates of the proposed mining footprint.

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
A	31°40'51.272"	18°44'4.682"	-31.68090923°;	18.734634°
B	31°40'51.809"	18°44'7.76"	-31.68105775º	18.73548888º
C	31°40'55.265"	18°44'8.052"	-31.68201846º	18.73556951º
D	31°40'57.504"	18°44'6.911"	-31.68264037º	18.73525287º
E	31°41'0.91"	18°44'6.554"	-31.68358612º	18.73515361º
F	31°41'3.552"	18°44'2.119"	-31.68432032º	18.73392223º
G	31°41'2.468"	18°43'59.002"	-31.68401916 º	18.73305574º

Table 4: GPS Coordinates of the proposed mining footprint – Site Alternative 2

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
a	31°40'51.452"	18°44'4.618 "	-31.680959°	18.734616°
b	31°40'51.895"	18°44'7.58"	-31.681082°	18.735439º
c	31°40'55.866"	18°44'13.301"	-31.682185°	18.737028º
d	31°40'59.351"	18°44'14.96"	-31.683153°	18.737489º
e	31°41'2.206"	18°44'12.386"	-31.683946°	18.736774°
f	31°40'54.588"	18°44'2.954"	-31.68183°	18.734154º

Project Proposal:

The proposed mining site will be over a disturbed area of the farm previously used for mining on a portion of Portion 3 of the farm Welverdiend No 511 magisterial district of Vanrhynsdorp Western Cape Province. The mining method will entail an open-pit quarry with diamond wire cutting, loading and hauling of the mined material. The quarry is dug on a pit with face walls of sub-vertical inclination, benching is not required due to the shallow nature of the deposit. A system of ramps is to be excavated within the pit to provide access to all face wall sides. The angle of the pit face wall is determined carefully to prevent and minimize damage and danger from rock falls and/or safety hazards.

Waste and mineralisation on a scale of a few hundred to thousands tons per day may be drilled and blasted to break off from the pit face in blocks. The material is then loaded and hauled to various stockpiles and/or waste dumps. Waste rock is hauled to a waste dump. Waste dumps can be piled at the surface of the active pit, or in previously mined pits. Mineralised material is stockpiled in a separate location.

The proposed mining area is approximately 4.9 ha is extent and the applicant, intents to win material from the area for at least 2 years with a possible extension of another 3 years. The mineral to be removed from the quarry will be used for building materials and countertops, furnishings etc. The depth of the quarry will be approximately 10m.The proposed quarry will therefore contribute to the building and construction industry in and around the application area.

The mining site will contain the following:

- Drill and blast rigs – used to drill small diameter holes into the material
- Excavators – moving heavy stone blocks
- Front End Loaders – ramp/road building and material shifting
- Plant operations (to be confirmed)
- Light Domestic Vehicles (LDVs)
- Flatbed/Low-bed and Ore transport trucks

See attached as Appendix C a copy of the site activities map for the proposed project.

Should the MP be issued and the mining of all forms of Limestone, Dimension stone and Marble will be allowed, the proposed project will comprise of activities that can be divided into three key phases (discussed in more detail below) namely the:

(1) *Site establishment/construction phase which will involve the demarcation of the permitted mining area. Site establishment will also necessitate the clearing of vegetation, the stripping and stockpiling of topsoil, and the introduction of mining machinery and equipment.*

(2) *Operational phase that will involve the will entail an open-pit quarry with diamond wire cutting, loading and hauling of the mined material. The quarry is dug on a pit with face walls of sub-vertical inclination, benching is not required due to the shallow nature of the deposit. A system of ramps is to be excavated within the pit to provide access to all face wall sides. The angle of the pit face wall is determined carefully to prevent and minimize damage and danger from rock falls and/or safety hazards.*

Waste and mineralisation on a scale of a few hundred to thousands tons per day may be drilled and blasted to break off from the pit face in blocks. The material is then loaded and hauled to various stockpiles and/or waste dumps. Waste rock is hauled to a waste dump. Waste dumps can be piled at the surface of the active pit, or in previously mined pits. Mineralised material is stockpiled in a separate location, before it is sold and transported from site to clients.

(3) *Decommissioning phase which entails the rehabilitation of the affected environment prior to the submission of a closure application to the Department of Mineral Resources and Energy (DMRE). The permit holder will further be responsible for the seeding of all rehabilitated areas. Once the full mining area is*

rehabilitated, the mining permit holder will be required to submit a closure application to the DMRE in accordance with section 43(4) of the MPRDA, 2002. The Closure Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).

- Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required), and weed / alien clearing.
- All infrastructures, equipment, and other items used during the mining period will be removed from the site (section 44 of the MPRDA).
- Waste material of any description, including receptacles, scrap, rubble and tyres, will be removed entirely from the mining area and disposed of at a recognised landfill facility. It will not be permitted to be buried or burned on the site.
- Weed / Alien clearing will be done in a sporadic manner during the life of the mining activities. Species categorised as weeds according to the National Environmental Management: Biodiversity Act (Act No. 10 of 2004) [NEMBA] Alien and Invasive Species Regulation GNR 598 and 599 of 2014 Species regarded as need to be eradicated from the site on final closure.
- Final rehabilitation shall be completed within a period specified by the Regional Manager. Once the mining area was rehabilitated, the mining permit holder will submit a closure application to the DMRE in accordance with section 43(4) of the MPRDA, 2002. The Closure Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).

PHASES OF THE PROJECT

1. *Site Establishment Phase:*

Site establishment entails the demarcation of the mining boundaries, clearance of vegetation and stripping and stockpiling of topsoil (if needed) from the mining area, and the introduction of the mining equipment as detailed below:

- **Demarcation of Mining Boundaries:**

Pursuant to receipt of an Environmental Authorisation (EA) and Mining Permit (MP), and prior to site establishment, the boundaries of the mining area will be demarcated with visible beacons.

- **Access Road:**

The farm road has a formal entrance, and was also used by previous mining companies to transport the mineral from the existing quarry. No upgrading of the road is needed prior to commencement.

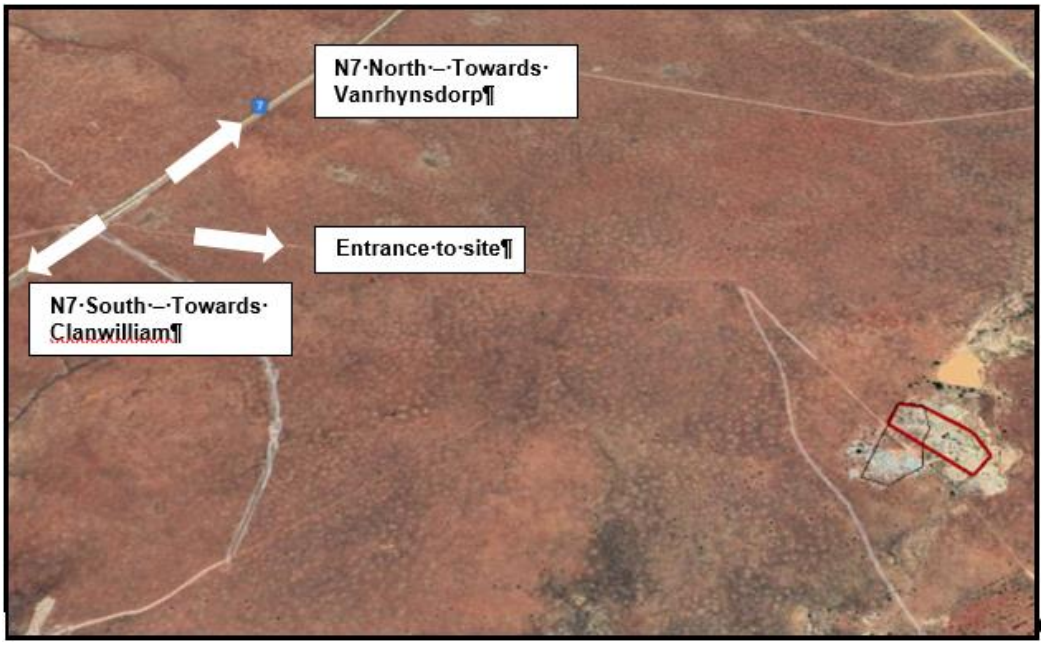


Figure 3: Satellite view showing the access road entrance (white arrow) to the proposed mining area site alternative 1(black polygon) as well as site alternative 2(red polygon).

Figure 4: Satellite view showing the access road (white line) to the proposed mining area site alternative 1(black polygon) as well as site alternative 2(red polygon).

Figure 5: Photo showing the existing entrance into the mining area.

- **Clearing of Vegetation:**

According to Mucina and Rutherford (2012) the proposed mining area for both site alternative 1 and 2 extends over two vegetation types known as the NKI 1 Gamka Karoo and the NKu 2 Upper Karoo Hardeveld. Both is classified as Least Threatened. According to the Western Cape Biodiversity Conservation Plan (WCBCP) – the area is classified as Other National Areas (ONA). To mitigate this, the clearing of vegetation

must be contained to the approved mining footprint, and no vegetation/bush clearance, outside the approved area, may be allowed.

- **Topsoil Stripping:**

It is proposed that topsoil removal will be restricted to the exact footprint of areas required during the operational phase of the activity. The topsoil will be stockpiled at a designated signposted area within the mining boundary to be replaced during the rehabilitation of the area. It will be part of the obligations of site management to prevent the mixing of topsoil heaps with overburden/other soil heaps. The complete A-horizon (the top 100 – 200 mm of soil which is generally darker coloured due to high organic matter content) will be removed. If it is unclear where the topsoil layer ends the top 300 mm of soil will be stripped. The topsoil berm will measure a maximum of 1.5 m in height in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.

- **Introduction of Mining Machinery:**

The mining site will contain the following:

  - Drill and blast rigs – used to drill small diameter holes into the material
  - Excavators – moving heavy stone blocks
  - Front End Loaders – ramp/road building and material shifting
  - Plant operations (to be confirmed)
  - Light Domestic Vehicles (LDVs)
  - Flatbed/Low-bed and Ore transport trucks

2. *Operational Phase:*

The operational phase will involve the will entail an open-pit quarry with diamond wire cutting, loading and hauling of the mined material. The quarry is dug on a pit with face walls of sub-vertical inclination, benching is not required due to the shallow nature of the deposit. A system of ramps is to be excavated within the pit to provide access to all face wall sides. The angle of the pit face wall is determined carefully to prevent and minimize damage and danger from rock falls and/or safety hazards.

Waste and mineralisation on a scale of a few hundred to thousands tons per day may be drilled and blasted to break off from the pit face in blocks. The material is then loaded and hauled to various stockpiles and/or waste dumps. Waste rock is hauled to a waste dump. Waste dumps can be piled at the surface of the active pit, or in previously mined pits. Mineralised material is stockpiled in a separate location.

Transportation of the final product will be from the stockpile area to the end point by means of trucks. The contractor will make use of permanent employees and any additional employees required will be sourced from the surrounding area and daily be transported to site. The mining activities will consist out of the following:

- Stripping and stockpiling of topsoil;
- Drilling and blasting
- Diamond wire cutting, loading and hauling of the mined material from site
- Sloping and landscaping upon closure of the site; and
- Replacing the topsoil and vegetation the disturbed area.

- Water Use:

As no mineral washing is proposed for this project, the Applicant will exclusively use water for dust suppression purposes on the access road when needed. As mentioned earlier, the contractor will strive to manage dust generation through alternative suppression methods to restrict water use to the absolute minimum. An existing water authorisation is in place should water be required for the implementation of the project and transported to the mining area in a water truck that will moisten the problem area.

Dust generated on the access road will, as far as possible, be managed through alternative dust suppression methods to restrict water use to the absolute minimum.

These measures will include a combination of the following:

- The speed of all mining equipment/vehicles will be restricted to 40 km/h on the internal farm road to minimize dust generation;
- When the truck leaves the mining area it will be covered (e.g. shade cloth material) to minimise windblown dust from the loads;

- The Applicant will attempt to lessen denuded areas (dust source) to the absolute minimum.

Under very windy/dusty conditions the permit holder might have to substitute the above mentioned dust suppression methods with the spraying of water, in which case an existing water authorisation is in place should water be required for the implementation of the project and transported to the mining area in a water truck that will moisten the problem area. The water truck driver will receive proper training to ensure effective use of the water on problem areas preventing water wastage.

- Electricity:

The proposed project will not require any additional electricity connections, as power existing power connection is in place and will be supported, when needed, by generators.

- Waste Handling:

Solid (general) waste, generated during the operational phase, will be contained in sealable refuse bins that will be placed at the office area until the waste is transported to a recognised general waste landfill site. A recognized contractor will service the chemical toilets that will serve as ablution facilities to the employees.

Due to the nature of the project, the small scale of the proposed operation, and the fact that no permanent infrastructure will be established, very little to no general waste will be generated as a direct result of the mining activities. Any waste generated during the operational phase, will be contained in a sealable refuse bin that will be removed from site and incorporated in an approved waste disposal system of the contractor.

Likewise, very little (if any) generation of hazardous waste is expected. Hazardous waste will mainly be the result of accidental spillages or breakdowns. Such contaminated areas will be cleaned up immediately (within two hours of the occurrence) and contaminated soil will be contained in designated hazardous waste containers to be removed daily to the hazardous waste storage area at a designated off-site workshop where it will be disposed of as part of the hazardous waste by a registered hazardous waste handling contractor.

The chemical toilet, to be placed on site, will be serviced by a registered contractor.

- Servicing and Maintenance:

A temporary workshop will be established on site where minor servicing and emergency repairs of mining related equipment/machinery will take place. This area bay will have an impermeable floor. No wash water will be allowed to drain into the surrounding environment. No bulk storing of fuel (>30 000 l) will take place on site, and any chemicals needed at the workshop will be stored in accordance with the product specific safety data sheet specifications in temporary containers/secured cages.

Regular vehicle maintenance, repairs and services may only take place in a demarcated service area. If emergency repairs are needed on equipment not able to move to the workshop / service area, drip trays must be present. All waste products must be disposed of in a 200 litre closed container/bin to be removed from the emergency service area to the workshop in order to ensure proper disposal. It will be undertaken on an impermeable surface to prevent contamination of soil and groundwater. Vehicles and equipment must be parked and stored on impermeable surfaces or make use of uPVC lining and drip trays when stationary

Decommissioning Phase:

The decommissioning phase will entail the reinstatement of the proposed mining footprint (4.9 ha).

The end objective is for the mining area to return to an existing rehabilitated quarry with some agricultural potential. No buildings/infrastructure, need to be demolished and the access road will remain intact.

The applicant will comply with the minimum closure objectives as prescribed DMRE and detailed below:

The decommissioning phase will entail the reinstatement of the processing area by removing the stockpiled material, and site infrastructure/equipment and landscaping the disturbed footprints. Due to the impracticality of importing large volumes of fill to restore the quarry area to its original topography, the rehabilitation option is to develop the quarry into a minor landscape feature. This will entail creating a series of irregular benches along the quarry faces, the top edges of each face being blasted away to form scree slopes on the benches below, thereby reducing the overall face angle. The benches will be top-dressed with topsoil and vegetated with an appropriate grass mix if vegetation does not naturally establish in the area within six months of the replacement of the topsoil (see Appendix E for the Closure Plan).

The decommissioning activities will therefore consist of the following:

- Removing all stockpiled material;
- Removing all mining machinery and equipment from site;
- Landscaping all disturbed areas and replacing the topsoil;
- Vegetating the reinstated area; and
- Controlling/monitoring the invasive plant species.

The future land use of the proposed area will be an existing rehabilitated quarry with some agricultural potential. Upon replacement of the topsoil, the area around the excavation will once again be available for grazing purposes, and the planting of the cover crop (to protect the topsoil) will tie in with the proposed land use.

The applicant will comply with the minimum closure objectives as prescribed by the DMRE and detailed below:

- Rehabilitation of the excavated area:

The excavated area must serve as a final depositing area for the placement of overburden. Rocks and coarse material removed from the excavation must be dumped into the excavation.

No waste may be permitted to be deposited in the excavations.

Once overburden, rocks and coarse natural materials has been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area.

The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within 6 months from closure of the site.

If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.

- Rehabilitation of general areas:

Stockpiles must be removed during the decommissioning phase, the area ripped and the topsoil returned to its original depth to provide a growth medium.

On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002):

- Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
- The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.

Photographs of the camp and office sites, before and during the mining operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the DMRE Regional Manager.

On completion of mining operations, the surface of these areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.

The area shall then be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local, adapted indigenous seed mix.

If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the DMRE Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a seed mix to his or her specification.

- Final rehabilitation:

Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required) and maintenance, and invasive plant species clearing.

All mining equipment, and other items used during the mining period must be removed from the site (section 44 of the MPRDA).

Waste material of any description, including receptacles, scrap, rubble and tyres, must be removed entirely from the mining area and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.

The management of invasive plant species must be done in a sporadic manner during the life of the mining activities. Species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto) will be eradicated from the site.

Final rehabilitation shall be completed within a period specified by the Regional Manager.

Once the mining area was rehabilitated the permit holder is required to submit a closure application to the Department of Mineral Resources and Energy in accordance with section 43(4) of the MPRDA, 2002 that states: *"An application for a closure certificate must be made to the Regional Manager in whose region the land in question is situated within 180 days of the occurrence of the lapsing, abandonment, cancellation, cessation, relinquishment or completion contemplated in subsection (3) and must be accompanied by the prescribed environmental risk report".* The Closure Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).

e) Policy and Legislative Context

Table 5: Policy and Legislative Context.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)	**REFERENCE WHERE APPLIED**	**HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.** (E.g. in terms of the National Water Act a Water Use License has/has not been applied for)
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983).	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity: *Physical Environment – Geology and Soil.* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Management of invader plant species*.	The mitigation measures proposed for the site includes specifications of the CARA, 1983.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)	**REFERENCE WHERE APPLIED**	**HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.** (E.g. in terms of the National Water Act a Water Use License has/has not been applied for)
Mine Health and Safety Act, 1996 (Act No 29 of 1996) read together with applicable amendments and regulations thereto including relevant OHSA regulations.	Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Management of Health and Safety Risks.*	The mitigation measures proposed for the site includes specifications of the MHSA, 1996
Mineral and Petroleum Resources Development Act, 2002, (Act No. 28 of 2002) read together with applicable amendments and regulations thereto. • Section 27	Part A(1)(d) Description of the scope of the proposed overall activity	Application for a mining permit submitted to DMRE-WC. Ref No: WC 30/5/1/3/2/10284 MP
National Environmental Management Act,1998 (Act No. 107 of 1998) and the Environmental Impact Assessment Regulations, 2014 (as amended by GNR 326 effective 7 April 2017) • GNR 324 Listing Notice 3 Activity 12 • GNR 327 Listing Notice 1 Activity 21 • GNR 327 Listing Notice 1 Activity 27 • GNR 327 Listing Notice 1 Activity 28	Part A(1)(d)(i) Listed and specified activities.	Application for environmental authorisation submitted to DMRE-WC. Ref No: WC 30/5/1/3/2/10284 MP
National Environmental Management: Air Quality Control Act, 2004 (Act No 39 of 2004) read together with applicable amendments and regulations thereto specifically the National Dust Control Regulations, GN No R827.	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – *Air and Noise Quality.* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Dust Handling*.	The mitigation measures proposed for the site take into account the NEM:AQA, 2004 and the National Dust Control Regulations.
National Environmental Management Act: Biodiversity Act, 2004 (Act No. 10 of 2004) read together with applicable amendments and regulations thereto.	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity - *Biological Environment* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Management of invader plant species*.	The mitigation measures proposed for the site includes specifications of the NEM:BA, 2004.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)	**REFERENCE WHERE APPLIED**	**HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.** (E.g. in terms of the National Water Act a Water Use License has/has not been applied for)
National Environmental Management: Waste Act, 2008 (Act No 59 of 2008) read together with applicable amendments and regulations thereto. NEM:WA, 2008: National norms and standards for the storage of waste (GN 926)	Part A(1)(d)(ii) Description of the activities to be undertaken	The mitigation measures proposed for the site take into account the NEM:WA.
National Dust Control Regulations (GN No. R. 827 of 1 November 2013) promulgated in terms of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004).	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity	The mitigation measures proposed for the site includes prohibit a person from conducting any activity in such a way as to give rise to dust in such quantities and concentrations that the dust, or dust fallout, has a detrimental effect on the environment, including human health.
Western Cape Noise Control Regulations (Provincial Notice 200/2013) of 20 June 2013	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity	The mitigation measures proposed for the site take into account the noise regulations
National Heritage Resources Act. 1999 (Act No 25 of 1999).	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – *Human Environment*	The mitigation measures proposed for the site includes specifications of the NHRA, 1999.
National Water Act, 1998 (Act No 36 of 1998) read together with applicable amendments and regulations thereto.	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – *Hydrology*. Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk.	The proposed project does not require a Water Use Authorisation in terms of Section 39 of the National Water Act, 1998 (Act No 36 of 1998). As mentioned earlier, no activity will take place in or within 1km radius of any water bodies. An existing water authorisation is in place should water be required for the implementation of the project and transported to the mining area in a water truck that will moisten the problem area. The mitigation measures proposed for the site includes specifications of the NWA, 1998.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)	**REFERENCE WHERE APPLIED**	**HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.** (E.g. in terms of the National Water Act a Water Use License has/has not been applied for)
Government Notice No 704 dated 4 June 2004	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – *Hydrology.* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk.	The mitigation measures proposed for the site take into account all requirements in the Regulations on use of water for mining and related activities aimed at the protection of water resources
Public Participation Guideline in terms of the NEMA EIA Regulations	Part A(1)(h)(ii) Details of the Public Participation Process Followed	Public participation was conducted in accordance with the guidelines published in terms of the NEMA EIA Regulations
The South African Constitution	Implied throughout the document	To be upheld throughout the EIA assessment, planning-, construction-, operational- and decommissioning phases.
Guideline on Need and Desirability	Part A(1)(f) Need and desirability of the proposed activities.	The need and desirability of the project was assessed in accordance with these guidelines.
Section 28 of the NEMA, 1998 which states that "*Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment*."	Implied throughout the document	The "*general duty of care towards the environment*" to be upheld throughout the EIA assessment, planning-, construction-, operational- and decommissioning phases.

f) Need and desirability of the proposed activities.

(Describe Methodology or technology to be employed, including the type of commodity to the prospected/mined and for a linear activity, a description of the rout of the activity)

The proposed mining operation will entail the removal of all forms of Limestone, Dimension Stone and Marble, from an existing quarry on the farm occasionally previously used for

the mining of Marble. The mining of the mineral was identified as a feasible business opportunity that will also bring about the diversification of activities on the property, extending it from dormant agricultural land to include small scale mining.

The project will contribute to the local economy, both directly and through the multiplier effect that its presence will create, as equipment and supplies are purchased locally, and wages are spent at local businesses, generating both jobs and income in the area.

The mineral mined from the earmarked area will be sold to the building and construction industry as building materials and countertops, furnishings etc in the vicinity of the property. The need and desirability of the proposed project was assessed in terms of the National Department of Environmental Affairs' Guideline on Need and Desirability (first version published in terms of section 24J of the NEMA in 2014, and second version in 2017)). The following table shows the questions that were considered in this regard.

Table 6: Need and desirability determination.

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
How were ecological integrity considerations taken into account? How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity?	As discussed under Part A(1)(g)(iv)(1)(a) Type of environment affected by the proposed activity, When the mining footprint is layered over the Mining and Biodiversity Map falls over and area of Highest biodiversity importance - highest risk for mining. The Mining and Biodiversity Guideline's describes areas of moderate risk biodiversity importance as: "*These areas are viewed as necessary to ensure protection of biodiversity, environmental sustainability, and human well-being"*. An EIA should include the strategic assessment of optimum, sustainable land use mining, as the area, the overall environmental and socio-economic costs and benefits of This assessment should fully take into account the environmental sensitivity of for a particular area and will determine the significance of the impact on biodiversity as well as the potential strategic importance of the minerals to the country. Authorisations may well not be granted. If granted, the authorisation may set limits on into licence agreements and/or authorisations. allowed activities and impacts, and may specify. Ground truthing, by the specialists, however confirmed in terms of local-level biodiversity, the selected site is not exceptional and is not highly sensitive in this regard as the boundaries of the selected site falls within and existing quarry, and there are no Species of Conservation Concern or unique and range restricted species present within the proposed mining area as well as no unique habitats which are not widely available in the wider landscape. As a result, the majority of impacts associated with the development of the site are likely to be local in nature and not of wider significance. Based on the aforementioned, the impact on Biodiversity was assessed as part of the EIA. It is highly unlikely that this development will have an impact on the status of the Ecosystem and Vegetation Types due to the limited extent of the mine as well as the extent of natural vegetation surrounding the mining area. Furthermore, this mine will not have a significant impact on the services and functions provided by the surrounding natural habitats and development within this area is regarded as acceptable. As per the Plant Species and Terrestrial Biodiversity Theme Compliance Statement dated October 2021 compiled by Enviroworks (see appendix N) It is anticipated that the proposed development (Alternative one and two) will have negligible	Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
	impact on the biodiversity and botanical features identified by the screening tool as the development footprint is extensively disturbed and does not represent likely habitat for any plant species that may be threatened with extinction. The project area is located in the jurisdiction of the Matzikama Local Municipality, with Vanrhynsdorp being the nearest town. The land use of the earmarked property was previously used for mining marble, thus its already a disturbed area. The surrounding properties are mainly used for a variety of mixed agricultural purposes as well as mining and industrial purposes. The proposed mining area will be reached via the N7, making use of the existing internal/haul. Also refer to: ᵡ Part A(1)(d)(ii) Description of the activities to be undertaken – Clearing of Vegetation; ᵡ Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Mining and Biodiversity; ᵡ Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Biodiversity Conservation Areas; ᵡ Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Groundcover; ᵡ Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Terrestrial Biodiversity, Conservation Areas and Groundcover, ᵡ Part A(1)(h)(viii) The possible mitigation measures that could be applied and the level of risk. As discussed under *Part A(1)(g)(iv)(1)(a)*. The Applicant will make use of the existing access point to the mining area. Should the Applicant implement the mitigation measures proposed in the EMPr the impact of the proposed activity on the vegetation and groundcover in general is deemed to be of low significance.	
How will this development pollute and/or degrade the biophysical environment?	Due of the nature of the proposed activity, it is inevitable that the present vegetation cover of the earmarked footprint will eventually be removed to allow access to the mineral resource, only to be replaced (to some extend) during the rehabilitation phase. Taking the above mentioned into consideration, the ground truthing concluded that the quarry will have relatively little	Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
	impact on the vegetation and fauna around it provided that the mitigation measures are adhered to. Therefore, should the permit holder adhere to the mitigation measures proposed in this report it is believed that the impact on the biophysical environment is of acceptable significance.	
What waste will be generated by this development?	The general waste to be generated at the mine will mainly consist of paper, plastic, tin, and/or glass from the office, workshop and processing area. All general waste will be contained in sealable refuse bins that will be placed at the office area until it is transported to a recognised general waste landfill site. A recognized contractor will service the chemical toilets and be responsible for the removal of the sewerage to a registered sewerage handling facility. As mentioned earlier, hazardous waste may result from accidental spillages/breakdowns. Such contaminated areas will immediately (within two hours of occurrence) be cleaned and the contaminated soil will be contained in a designated hazardous waste container that will be kept in a bunded area with impermeable surface until it is removed from site by a registered hazardous waste handling contractor to an approved facility. No waste will be disposed of, buried, burned or treated on the site.	Highly Desirable
How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage?	According to the Heritage Impact Assessment (see Appendix O), Heritage Western Cape were contacted for their perusal and commenting. Archaeological resources (Including archaeological sites and material, rock art, battlefields & wrecks): As per the Notice of Intent to develop conducted by Jonathan Kaplan (ACRM) (Refer to Appendix O). Later Stone Age (LSA) and Middle Stone Age (MSA) tools have been recorded on portions of Farm 511 (Kaplan 2010, 2017), but the impact of proposed mining on heritage resources will be low, as proposed mining will take place within the footprint of the existing mine.	Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
	However, should artefacts archaeological items be observed during the mining activities, then all activity should cease immediately, the area marked off activity and a specialists consulted prior to any further activity. This also includes if any graves are observed on site during activity progress then all activity should have ceased and the area demarcated as a no-go zone According to consulting palaeontologist John Pether (email correspondence dated 08 October, 2021), `The quarry exploits the limestone, dolomite and marble of the Widouw Formation (Gariep Supergroup, Gifberg Group) which date from ~770 to 700 million years ago. The earliest microfossils and tiny sponges had appeared by this time, but the quarrying will not impact on this cryptic fossil resource. The palaeontological sensitivity is LOW (SAHRIS) Only FFP required in case of fossil finds in the overlying coversands'. The South African Heritage Resources Agency (SAHRA) compiled the Palaeontological (fossil) Sensitivity Map (PSM) to guide developers, heritage officers and practitioners in screening paleontologically sensitive areas at the onset of a project. When the footprint of the earmarked mining area is placed on the PSM, it shows the study area to extend over an area of low insignificant concern.	
How will this development use and/or impact on non-renewable natural resources?	The potential life of mine of would be in the region of 10 years depending on the outcome of prospecting activities. In light of this, it is believed that the mining permit holder could responsibly consume the mineral resource on the property over a period of 5 years.	Desirable
How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part?	It is proposed that water will be needed during the dry months to manage dust emissions on access road when needed. As mentioned earlier, the contractor will strive to manage dust generation through alternative suppression methods to restrict water use to the absolute minimum. An existing water authorisation is in place should water be required for the implementation of	Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
	the project and transported to the mining area in a water truck that will moisten the problem area. The contractor will be encouraged to consider the use of non-potable water for mining related activities. The use of solar power should also be considered as an alternative power source to the offices and/or workshops.	
How were a risk-averse and cautious approach applied in terms of ecological impacts?	If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that ecological impacts should be fully mitigated.	Desirable
How will the ecological impacts resulting from this development impact on people's environmental right?	Should the mining activities be approved the potential visual-, dust-, and noise impacts associated with the proposed activity will be of low significance. If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that no environmental rights of the surrounding residents/public will be affected by the ecological impacts associated with the proposed activity.	Highly Desirable
Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts.	If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that the mining activities will not affect the physical, psychological, cultural or social needs of the community in a negative manner nor will the it impact negatively on the socio-economic status of the area.	Desirable
Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?		

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified, resulted in the selection of the "best practicable environmental option" in terms of ecological considerations		
2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
What is the socio-economic context of the area?	Please refer to Heading 1(h)(iv)(1)(a) Socio-economic Environment.	Highly Desirable
Considering the socio-economic context, what will the socio-economic impacts be of the development, and specifically also on the socio-economic objectives of the area?	As mentioned earlier, should this mining permit be approved the applicant will be able to, • Provide employment opportunities; • It will also diversify the income of the property as well as potential employees and clients.	

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?	If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that the mining activities will not affect the physical, psychological, cultural or social needs of the community in a negative manner nor will the it impact negatively on the socio-economic status of the area.	Highly Desirable
Will the development result in equitable impact distribution, in the short- and long-term?	The mining activities proposes to operate in a socially and economically sustainable manner during both the short- and long term.	Highly Desirable
In terms of location, describe how the placement of the proposed development will contribute to the area.	The project area is located in the jurisdiction of the Matzikama Local Municipality, with Vanrhynsdorp being the nearest town. The land use of the earmarked property was previously used for mining marble, thus its already a disturbed area. The surrounding properties are mainly used for a variety of mixed agricultural purposes as well as mining and industrial purposes. The proposed mining area will be reached via the N7, making use of the existing internal/haul. Ground-truthing showed that the proposed footprint of the mining area is a disturbed area. Should the Applicant implement the mitigation measures proposed in the EMPr the impact of the proposed activity on the visual characteristics in general is only deemed to improve. The Applicant will make use of the existing access point to the mining area. Should the Applicant implement the mitigation measures proposed in the EMPr the impact of the proposed activity on the surrounding area in general is deemed to be of low significance thereby keeping the impact on the receiving environment as low as possible.	Highly Desirable
How were a risk-averse and cautious approach applied in terms of socio-economic impacts?	No negative socio-economic impacts could, at this stage, be identified that cannot be managed through the implementation of mitigation measures.	Highly Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
How will the socio-economic impacts resulting from this development impact on people's environmental right?	As mentioned in Heading *3(j)(1) Impact on the socio-economic condition of any directly affected person*, the activity may have an impact on the visual characteristics of the surrounding environment, and may potentially affect air quality and possibly the noise ambiance of the study area. However, should the mining activities be approved the potential visual-, dust-, and noise impacts associated with the proposed activity will be of low significance. If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that no environmental rights of the surrounding residents/public will be affected by the socio-economic impacts associated with the proposed activity	Highly Desirable
Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio-economic impacts will result in ecological impacts?	As mentioned above should the mining activities be approved the potential visual-, dust-, and noise impacts associated with the proposed activity will be of low significance. If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that no environmental rights of the surrounding residents/public will be affected by the socio-economic impacts associated with the proposed activity.	Highly Desirable
What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?	Please refer to: • Part A(1)(l)(iii) The positive and negative impacts that the proposed activity and alternatives will have on the environmental and the community that may be affected.	Highly Desirable
What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in		

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons?		
What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?	The mining site will (if approved) operate in accordance with, amongst others, the following: • CARA, 1983 – to ensure agriculture related compliance; • Financial Provision Regulations, 2015 – to ensure compliance in terms of rehabilitation; • Mine Health and Safety Act, 1996 (as amended) – to ensure employee safety; • MPRDA, 2002 (as amended) – to ensure mining related compliance; • NEM:AQA, 2004 – to ensure air quality related compliance; • NEM:BA, 2004 – to ensure biodiversity related compliance; • NEM:WA, 2008 – to ensure waste related compliance; • NEMA, 1998 (as amended) – to ensure environmental related compliance;	Highly Desirable
What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?		
Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all	As mentioned earlier, should this mining permit be approved the applicant will be able to, • Provide employment opportunities; • It will also diversify the income of the property as well as potential employees and clients.	Highly Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
the segments of the community that is consistent with the priority needs of the local area.		
What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected.	The mining activities will be in accordance with the specifications of the Mine Health and Safety Act, 1996. Site management will have daily discussions with the workers regarding the work to be performed and the environment in which the work will take place. Grievances/concerns can be lodged during the daily site meetings.	Highly Desirable
Describe how the development will impact on job creation in terms of, amongst other aspects?	As mentioned earlier, should this mining permit be approved the applicant will be able to, • Provide employment opportunities; • It will also diversify the income of the property as well as potential employees and clients.	Highly Desirable
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.	Should the mining permit be approved the activities will operate under a valid mining permit issued by the DMRE, compliance of the mine with the approval conditions can be reported on as per the departmental specifications and also be managed in accordance with all the mining and environmental related legislations.	Highly Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left.	It is believed that the mitigation measures proposed in this document is realistic and can be implemented (when needed) by the proposed activities. If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, the residual impact on the environment is of low significance.	Highly Desirable
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.	In terms of Section 41 of the MPRDA, 2002 a mining permit holder must submit a financial provision to the DMRE that is sufficient to rehabilitate or manage the negative environmental impacts related to the mining activity.	Highly Desirable
Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified, resulted in the selection of the best practicable environmental option in terms of socio-economic considerations	Please refer to: - Part A(1)(g)(i) Details of the development footprint alternatives considered; - Part A(1)(g)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Socio-Economic Environment; - Part A(1)(g)(vii) The positive and negative impacts that the proposed activity and alternatives will have on the environmental and the community that may be affected.	Highly Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area.	If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that the mining activities will not cause a cumulative socio-economic impact should the mining permit application be approved, seeing that there is no other rated activities in the vicinity.	Highly Desirable

g) Motivation for the overall preferred site, activities and technology alternative.

The proposed Site Alternative 1 (S1) (Preferred Alternative and only site viable alternative): The Applicant, applied for a mining permit for the mining of all forms of Limestone, Dimension stone and Marble on a Portion of Portion 3 of the farm Welverdiend no 511 magisterial district of Vanrhynsdorp Western Cape province. The proposed mining footprint will be 4.9 ha and will be developed over a disturbed area previously used for the mining of Marble. Comments were received by Cape Nature for a Prospecting Right application on the said property regarding the sensitivity of the area, it is therefore recommended based on these comments that any future invasive activities and or mining should be limited to existing mining and already disturbed areas in order to prevent the loss of natural vegetation or disturbance to water courses.

Ground truthing, confirmed in terms of local-level biodiversity, the selected site is not exceptional and is highly disturbed in this regard as the boundaries of the selected site falls within and existing quarry, and there are no Species of Conservation Concern or unique and range restricted species present within the proposed mining area as well as no unique habitats which are not widely available in the wider landscape. As a result, the majority of impacts associated with the development of the site are likely to be local in nature and not of wider significance.

Site Alternative 1 (Preferred and Only Site Alternative):

Site Alternative 1 (S1) (Preferred Alternative and only site viable alternative): The Applicant, applied for a mining permit for the mining of all forms of Limestone, Dimension stone and Marble on a Portion of Portion 3 of the farm Welverdiend no 511 magisterial district of Vanrhynsdorp Western Cape province. The proposed mining footprint will be 4.9 ha and will be developed over a disturbed area previously used for the mining of Marble. Comments were received by Cape Nature for a Prospecting Right application on the said property regarding the sensitivity of the area, it is therefore recommended based on these comments that any future invasive activities and or mining should be limited to existing mining and already disturbed areas in order to prevent the loss of natural vegetation or disturbance to water courses. In light of this, S1 was identified during the assessment phase of the environmental impact assessment, by the Applicant and project team as the only possible alternative.

As per the Plant Species and Terrestrial Biodiversity Theme Compliance Statement dated October 2021 compiled by Enviroworks (see appendix N) both proposed development

footprints are located in Ecological Support Areas (ESAs). Alternative one is located in an ESA Category 1 (Terrestrial) and Alternative two is located in an ESA Category 2 (Terrestrial) and ESA Category 1 (Aquatic). The immediate surrounding area is located in an ESA Category 2 (Terrestrial), and an ESA Category 1 (Aquatic and Terrestrial)

During the site visit, both development footprint alternatives were verified to be an old quarry (not in use) with a workshop to the west. The majority of each footprint had either been completely transformed by the quarry or degraded by stockpiles of large marble stones. Only small corridors of vegetation remain between the stockpiles. Within these corridors, the vegetation is dominated by alien invasive species such *Prosopis glandulosa* (NEM:BA Category 1A), grass species such as *Stipellula capensis, Briza maxima*, and *Ornithogolum sp*. Other alien invasive species such *Atriplex lindleyi* (NEM:BA Category 1A) are also present on the footprints. This grassland type appearance of the vegetation may be a sign of the seasonal change in vegetation dominance in the landscape which is common for Vanrhynsdorp Gannabosveld. However, it is highly likely that this grassland appearance is rather a sign of degradation or disturbance. This is echoed by the high abundance of alien invasive species such as *Prosoposis galndulosa* (NEM:BA Category 1A) and the presence of the annual succulent, *Mesembryanthemum nodiflorum*, a disturbance indicator.

In terms of the areas of the footprints included in the Ecological Support Areas (ESAs), these areas have either been lost via mining or are severely degraded by stockpiles. There is one intact area on the footprint that is classified as an ESA and has not been mined in the western area of Alternative one. This area is degraded and consists of little indigenous vegetation cover and is infested.

Based on the aforementioned, both Alterative one and two should be classified as Low Sensitivity for the Plant Species and Terrestrial Biodiversity Themes. Therefore, it is recommended that either Alternative one or two can be developed and used for mining purposes given that the impact management outcomes are adhered to

As per the Water Use Risk Matrix date October 2021 and compiled by Enviroworks (refer to Appendix P) two location alternatives were provided for the proposed mine. A berm, adjoining an artificial dam wall to the north of the proposed mine, has been constructed around the eastern boundary of the old mine, and it effectively divert surface water that would have flown through the non-perennial watercourse. For this reason, choosing the preferred alternative will not differ significantly from the second alternative in terms of impacts on watercourses; as the watercourse indicates on GIS databases have been

transformed by mining. Using the preferred alternative could however provide opportunity in the future to restore the transformed watercourses and could re-establish the more natural and meandering flow path, as opposed to the more rigid and straightened path created by the berm's diversion. The second alternative was thus deemed as not preferred.

In light of this, S1 was identified during the assessment phase of the environmental impact assessment, by the Applicant and project team as the only possible alternative.

The proposed site (Site Alternative 1) was identified as the preferred and only viable site alternative based on the following:

- The proposed area is over a disturbed area of the farm previously used for marble mining but with very low agricultural potential due to the existing marble deposits left in the application area, after consultation with the land owner the application footprint extends into an area with low agricultural potential. The proposed project will not necessitate the loss of agricultural field with high potential to the land owner.
- Access to the proposed mining area is possible via the existing access road with a formal (existing) entrance onto the N7.
- This alternative is highly disturbed and will not result in loss of natural vegetation or disturbance to water courses.
- The mining of the area will ultimately result in rehabilitation of an already disturbed area, leaving it in better state than prior to mining.
- This alternative could however provide opportunity in the future to restore the transformed watercourses and could re-establish the more natural and meandering flow path, as opposed to the more rigid and straightened path created by the berm's diversion.

Site Alternative 2:

Site Alternative 2, which also entails the mining area over a disturbed portion of portion 3 of the farm Welverdiend no 511 magisterial district of Vanrhynsdorp Western Cape province.

Site Alternative 2 (S2) was assessed for the proposed mining but found not environmentally and practically suitable. Ground truthing, by the specialists, however confirmed in terms of local-level biodiversity, the selected site is similar to S1 however as mentioned above using site alternative 1 could however provide opportunity in the future to restore the transformed watercourses and could re-establish the more natural and

meandering flow path, as opposed to the more rigid and straightened path created by the berm's diversion. The second alternative was thus deemed as not preferred.

Site alternative 1, was deemed the only viable site alternative as this is area is regarded to be already disturbed and will not impact on the sensitivity of the area.

The environmental impact assessment process assessed the feasibility of the proposed site alternative to identify fatal flaws that are deemed as severe as to prevent the activity continuing, or warrant another site or project alternative. The outcome of the assessment showed that should the mitigation measures and monitoring programmes proposed in this document be implemented, no fatal flaws could be identified that prevents the activity continuing. In light of the above, the mining proposal was updated to incorporate the project related mitigation measures and monitoring programmes identified during the assessment process. The preferred development footprint was subsequently finalized and is depicted on the attached site activities plan (Appendix C).

h) Full description of the process followed to reach the proposed preferred alternatives within the site.

NB!! – This section is about the determination of the specific site layout and the location of infrastructure and activities on site, having taken into consideration the issues raised by interested and affected parties, and the consideration of alternatives to the initially proposed site layout.

i) Details of the development footprint alternatives considered.

With reference to the site plan provided as Appendix C and the location of the individual activities on site, provide details of the alternatives considered with respect to:

(a) the property on which or location where it is proposed to undertake the activity;
(b) the type of activity to be undertaken;
(c) the design or layout of the activity;
(d) the technology to be used in the activity;
(e) the operational aspects of the activity; and
(f) the option of not implementing the activity.

Due to the application being over a disturbed area of the farm previously used for mining, as indicated on the Regulation 2.2 Mine Plan (Appendix A), was identified as the preferred and only viable site alternative as it entails the mining of an existing quarry with very low agricultural potential due existing marble deposits left in the application area.

Site Alternative 1 (S1) (Preferred and Only Site Alternative): Site Alternative 1 entails the mining area for coal within the GPS coordinates as listed in the table below.

Table 7: GPS Coordinates of Site Alternative 1 (preferred and only site alternative)

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)

A	31°40'51.272"	18°44'4.682"	-31.68090923°;	18.73463405°
B	31°40'51.809"	18°44'7.76"	-31.68105775º	18.73548888º
C	31°40'55.265"	18°44'8.052"	-31.68201846º	18.73556951º
D	31°40'57.504"	18°44'6.911"	-31.68264037º	18.73525287º
E	31°41'0.91"	18°44'6.554"	-31.68358612º	18.73515361º
F	31°41'3.552"	18°44'2.119"	-31.68432032º	18.73392223º
G	31°41'2.468"	18°43'59.002"	-31.68401916 º	18.73305574º

Figure 6: Satellite view showing the position of Site Alternative 1 (black polygon) and Site Alternative 2 (red polygon) within the surrounding landscape.

Site Alternative 2:

Site Alternative 2, which also entails the mining area over a disturbed portion of portion 3 of the farm Welverdiend no 511 magisterial district of Vanrhynsdorp Western Cape province.

Site Alternative 2 (S2) was assessed for the proposed mining **but found not environmentally and practically suitable**. Ground truthing, by the specialists, however confirmed in terms of local-level biodiversity, the selected site is higher and is more sensitive in this regard as the boundaries of the selected site falls within drainage lines that are seen as areas of conservation concern. As a result, the majority of impacts associated with the development on this site alternated are deemed to have a higher impact to be disturbed for the quarry to be established. Site alternative 1, was deemed the

only viable site alternative as this is area is regarded to be already disturbed and will not impact on the sensitivity of the area.

From a sensitivity perspective site alternative 2 quarry layout is less preferred because this will mean the loss of the natural vegetation,

The environmental impact assessment process assessed the feasibility of the proposed site alternative to identify fatal flaws that are deemed as severe as to prevent the activity continuing, or warrant another site or project alternative. The outcome of the assessment showed that should the mitigation measures and monitoring programmes proposed in this document be implemented, no fatal flaws could be identified that prevents the activity continuing. In light of the above, the mining proposal was updated to incorporate the project related mitigation measures and monitoring programmes identified during the assessment process. The preferred development footprint was subsequently finalized and is depicted on the attached site activities plan (Appendix C).

Table 8: GPS Coordinates of the proposed mining footprint – Site Alternative 2

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
a	31°40'51.452"	18°44'4.618 "	-31.680959°	18.734616°
b	31°40'51.895"	18°44'7.58"	-31.681082°	18.735439º
c	31°40'55.866"	18°44'13.301"	-31.682185°	18.737028º
d	31°40'59.351"	18°44'14.96"	-31.683153°	18.737489º
e	31°41'2.206"	18°44'12.386"	-31.683946°	18.736774°
f	31°40'54.588"	18°44'2.954"	-31.68183°	18.734154º

No-go Alternative: The no-go alternative entails no change to the *status quo* and is therefore a real alternative that must be considered.

- The applicant will not be able to prospect for any possible mineral resource;
- The application, if approved, would allow the applicant to determine the available mineral resource as well as provide employment opportunities to local employees.
- Should the no-go alternative be followed these opportunities will be lost to the applicant, potential employees and clients; and the applicant will not be able to diversify the income of the property.

Not proceeding with the proposed operation will entail that a mineral which if found will contribute towards the local and provincial social and economic structures of the area, will not be mined, and that this opportunity will be lost.

In light of this, the no-go alternative was no deemed to be the preferred alternative.

ii) Details of the Public Participation Process Followed

Describe the process undertaken to consult interested and affected parties including public meetings and one on one consultation. NB the affected parties must be specifically consulted regardless of whether or not they attended public meetings. (Information to be provided to affected parties must include sufficient detail of the intended operation to enable them to assess what impact the activities will have on them or on the use of their land.

In accordance with the timeframes stipulated in the EIA Regulations, as amended, the Draft Basic Assessment Report was compiled and will be distributed for comment and perusal to the I&AP's and stakeholders. A 30-day commenting period, ending 22 November 2021, will be allowed for perusal of the documentation and submission of comments. The comments received on the DBAR will be incorporated into the Final Basic Assessment Report (FBAR) to be submitted for decision making to DMRE.

The following I&AP's and stakeholders will be informed of the project:

Table 9: List of the I&AP's and stakeholders that were notified of the proposed mining permit project.

SURROUNDING LANDOWNERS & INTERESTED AND AFFECTED PARTIES	STAKEHOLDERS
surrounding landowners & lawful occupiers: • Sybrand Abraham van der Westhuizen (Portion 1 of Farm Welverdiend nr 511)	• West Coast District Municipality Development Planning; • Matzikama Local Municipality; • Matzikama Local Municipality Ward Number: 7; • Heritage Western Cape Heritage Resource Council; • Cape West Coast Biosphere Reserve; • CapeNature; • Department of Agriculture; • Department of Water and Sanitation; • Department of Economic Development and Tourism; • Department of Environmental Affairs and Development; • Department of Transport and Public Works; • Department of Agriculture Forestry and Fisheries; • Department of Labour; • Department of Rural Development and Land Reform; • SANRAL; • Eskom; • South African Heritage Resource Agency
I&AP'S AND STAKEHOLDERS THAT REGISTERED/COMMENTED DURING THE INITIAL NOTIFICATION PERIOD	
N/A	

During this public participation process the stakeholders and I&AP's will be informed of the project by means an advertisement that will be placed in Ons Kontrei on the 21st of October 2021, and on-site notices were placed one at the entrance to the farm, one

at the local Spar in town, one at the public library and one at Vanrhynsdorp Magistrates Court. A 30-days commenting period will be allowed which expires on 26 November 2021.

iii) Summary of issues raised by I&APs

(Compile the table summarising comments and issues raised, and reaction to those responses)

Table 10: Summary of issues raised by IAPs

Interested and Affected Parties **List the name of persons consulted in this column, and** **Mark with an X where those who must be consulted were in fact consulted**		**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and or response were incorporated.**
AFFECTED PARTIES	**X**				
Landowner/s					
Paramon Pty Ltd (Land owner of Portion 3)	X				
Landowners or lawful occupiers on adjacent properties	**X**	-	-	-	-
Jacobus Johannes van der Westhuizen (Land owner of the Remaining extent of farm 511)	X				
Municipal councillor					
Matzikama Local Municipality Ward Number: 7	X	No comments received	N/A	N/A	N/A
Municipality					
Matzikama Local Municipality	X	No comments received	N/A	N/A	N/A
West Coast District Municipality Development Planning	X	No comments received	N/A	N/A	N/A
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e					
Department of Infrastructure Development	X	No comments received	N/A	N/A	N/A

Interested and Affected Parties **List the name of persons consulted in this column, and** **Mark with an X where those who must be consulted were in fact consulted**		**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and or response were incorporated.**
Eskom	X	No comments received	N/A	N/A	N/A
SANRAL	X	No comments received	N/A	N/A	N/A
Communities	No community were identified within the study area.				
Dept. Land Affairs					
Department of Rural Development and Land Reform	X	No comments received	N/A	N/A	N/A
Traditional Leaders	N/A				
Dept. Environmental Affairs		No comments received	N/A	N/A	N/A
Western Cape Department of Agricultural, Forestry and Fisheries	X	No comments received	N/A	N/A	N/A
Department of Environmental Affairs	X	No comments received	N/A	N/A	N/A
Other Competent Authorities affected					
Department of Labour	X	No comments received	N/A	N/A	N/A
Department of Transportation and Public Works	X	No comments received	N/A	N/A	N/A

Interested and Affected Parties **List the name of persons consulted in this column, and** **Mark with an X where those who must be consulted were in fact consulted**		**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and or response were incorporated.**
Department of Rural Development and Agrarian Reform	X	No comments received	N/A	N/A	N/A
Department of Economic Development and Tourism	X	No comments received			
Department of Water and Sanitation	X	No comments received	N/A	N/A	N/A
South African Heritage Resources Agency	X	No comments received	N/A	N/A	N/A
Department of Water and Sanitation	X	No comments received	N/A	N/A	N/A
Cape Nature	X	No comments received	N/A	N/A	N/A
South African Heritage Resource Agency	X	No comments received	N/A	N/A	N/A
Heritage Western Cape Heritage Resource Council;	X	No comments received	N/A	N/A	N/A
Cape West Coast Biosphere Reserve	X	No comments received	N/A	N/A	N/A
Department of Water and Sanitation	X	No comments received	N/A	N/A	N/A
Department of Water and Sanitation	X	No comments received	N/A	N/A	N/A
OTHER AFFECTED PARTIES					
N/A					
INTERESTED PARTIES					

iv) The Environmental attributes associated with the alternatives.

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

(1) Baseline Environment

(a) Type of environment affected by the proposed activity.

(Its current geographical, physical, biological, socio-economic, and cultural character)

This section describes the biophysical, cultural and socio-economic environment that may be affected and the baseline conditions, which are likely to be affected by the proposed mining activity.

PHYSICAL ENVIRONMENT

CLIMATE

According to the meteoblue website, Vanrhynsdorp area normally receives about 224 mm of rain per year, with most rainfall occurring mainly during winter. The chart below (middle) shows the average rainfall values for Vanrhynsdorp area per month. It receives the lowest rainfall (5 mm) in December - February and the highest (20-55 mm) in June / July. The monthly distribution of average daily maximum temperatures (centre chart below) shows that the average midday temperatures for Vanrhynsdorp area range from >10.0°C in May to > 35°C in January. The region is the coldest during July when the mercury drops to 10°C on average during the night.

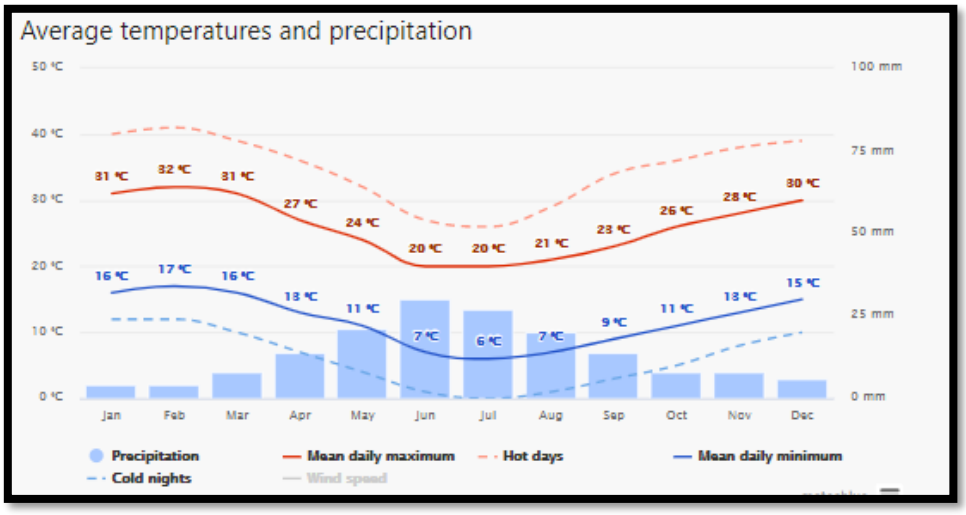


Figure 7: Statistical representation of the average rainfall, maximum temperatures and wind speed for the Vanrhynsdorp region (Chart obtained from meteoblue).

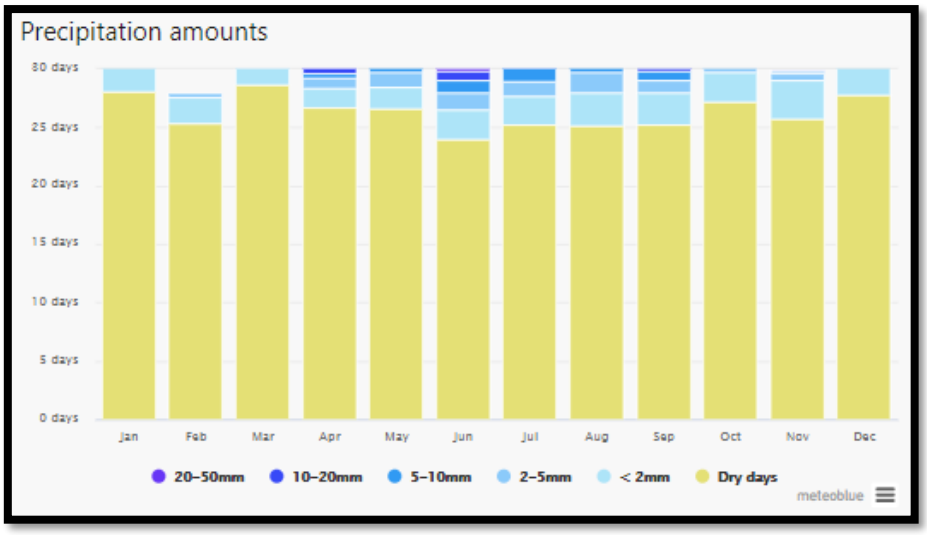


Figure 8: Statistical representation of the average rainfall, maximum temperatures and wind speed for the Vanrhynsdorp region (Chart obtained from meteoblue).

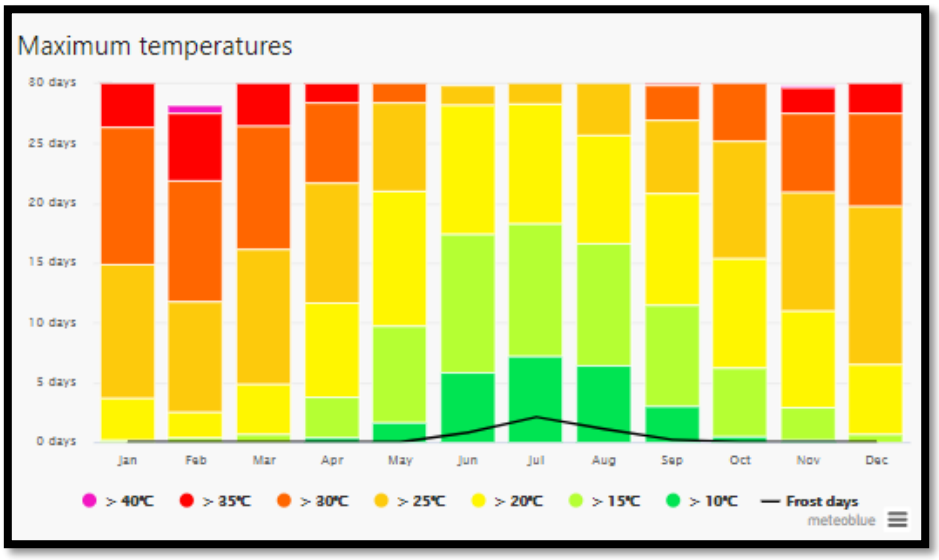


Figure 9: Statistical representation of the average rainfall, maximum temperatures and wind speed for the Vanrhynsdorp region (Chart obtained from meteoblue).

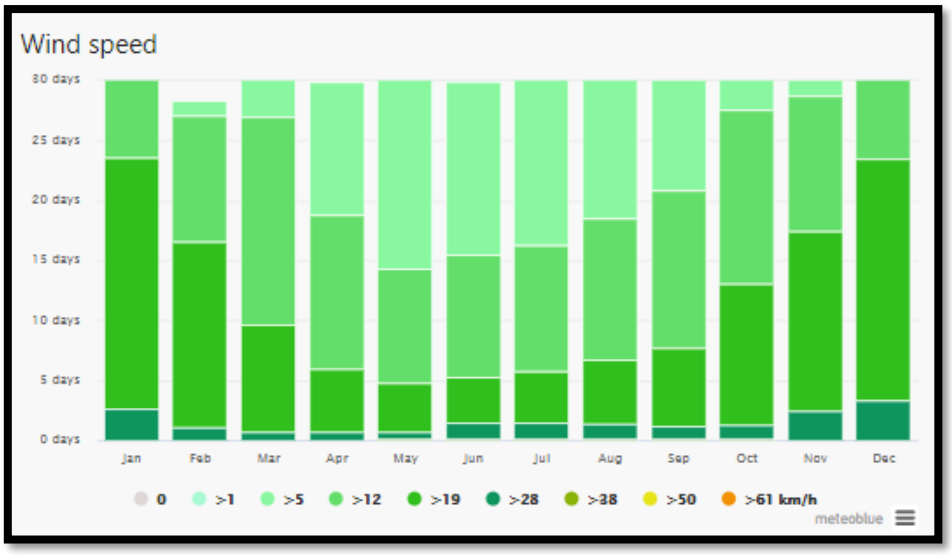


Figure 10: Statistical representation of the average rainfall, maximum temperatures and wind speed for the Vanrhynsdorp region (Chart obtained from meteoblue).

The dominant wind direction of Vanrhynsdorp ranges from East-North-East to West for most of the year. The figure below presents the wind direction distribution in % for the greater Vanrhynsdorp area.

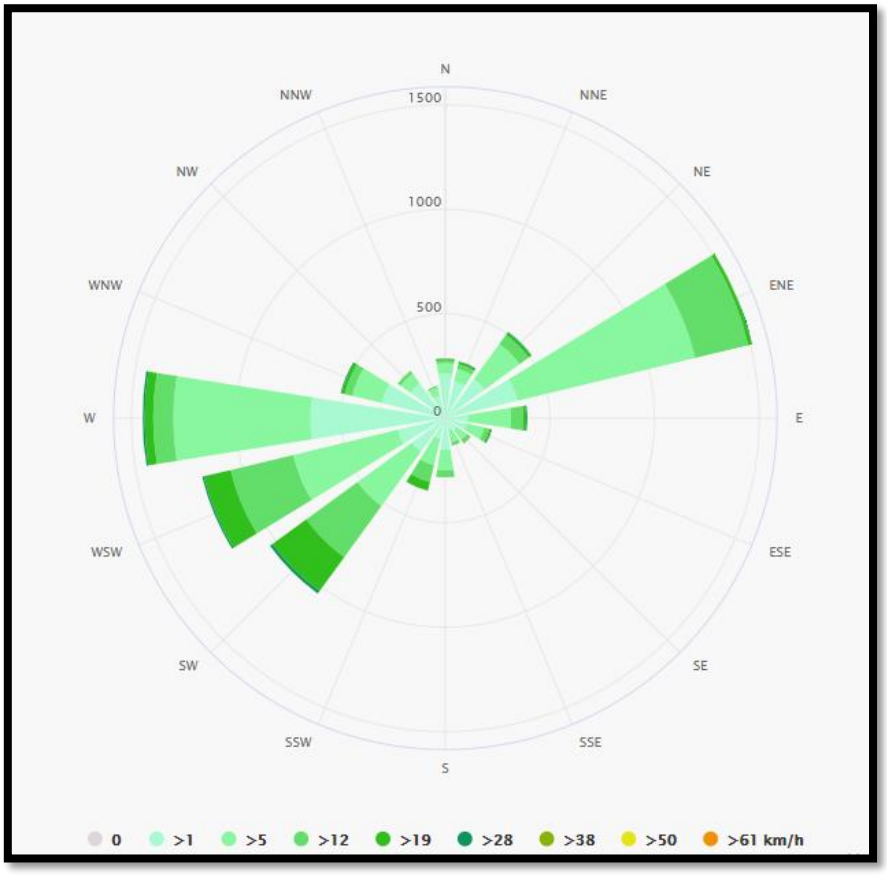


Figure 11: Annual wind direction distribution for the Vanrhynsdorp area, (Image obtained from www.meteoblue.com)

TOPOGRAPHY

The project area is mainly flat or only slightly undulating by superficial sediments of Late Cenozoic age. The thickness of the superficial sediment overburden overlying Precambrian bedrocks here varies from between 0 – 2 meters. A small area in the east is covered by fine-grained aeolian sands (Q-s) that cover large portions of the coastal plain to the north and south of Vanrhynsdorp, where they are often underlain by older calcareous or loamy soils, and that often appear distinctly orange on satellite images. The reddish sands are derived from pale alluvial sands that were accumulated near the coast by the palaeo-Olifants River system and then blown inland by prevailing south-westerly winds. They are mainly of Pleistocene to Recent age. The majority of the study area is mantled by calcareous and gypsiferous soils (Q-r2) that cover large areas of the Knersvlake region around Vanrhynsdorp and are often capped by a reddish, well-consolidated calcareous or siliceous hardpan or dorbank. The soils comprise a spectrum of gravally conglomerates, grit, sand and finer sediment showing a variable degree of calcretisation (i.e. pedogenic limestone formation typical of semi-arid climates). Pleistocene to Holocene alluvial deposits such as silts and gravels occur along the Widouw River but these are small in extent. The altitude varies between 129 -134 m.

Figure 12: Elevation profile of the proposed mining footprint (Image obtained from Google Earth).

VISUAL CHARACTERISTICS

The viewshed analysis showed that the visual impact of the proposed mining operation will be of low significance. The project area is located in the jurisdiction of the Matzikama Local Municipality, with Vanrhynsdorp being the nearest town. The land use of the earmarked property was previously used for mining marble, thus its already a disturbed area. The surrounding properties are mainly used for a variety of mixed agricultural purposes as well as mining and industrial purposes. The proposed mining area will be reached via the N7, making use of the existing internal/haul.

AIR AND NOISE QUALITY

The proposed activity will contribute the emissions mechanical mining equipment to the receiving environment for the duration of the operational phase. Should the permit holder implement the mitigation measures proposed in this document and the EMPR the impact on the air quality of the surrounding environment is deemed to be of low significance and compatible with the current land use. The potential impact on the noise ambiance of the receiving environment is expected to be of low significance and representative of the traffic of the surrounding area.

GEOLOGY AND SOIL

The geology of the study area near Vanrhynsdorp is shown on the 1: 250 000 geology map 3118 Calvinia (Council for Geoscience, Pretoria) below in Figure

2. A comprehensive sheet explanation for this map has been published by De Beer et al. (2002).

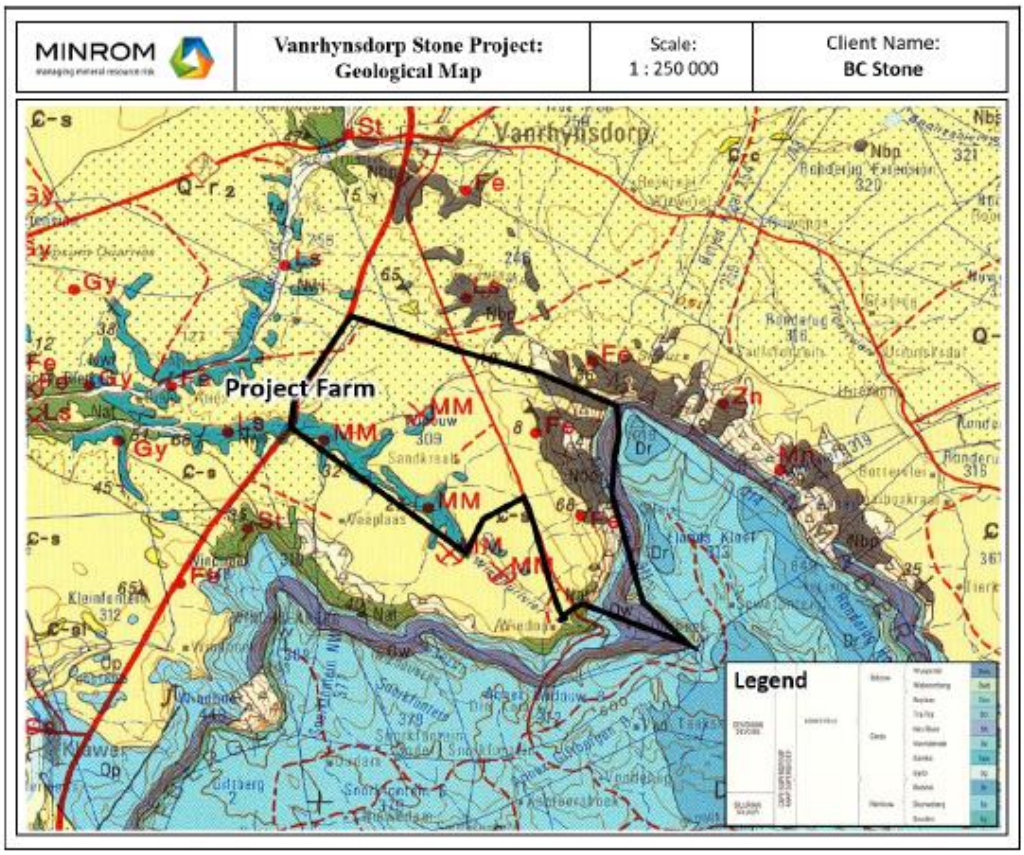


Figure 13: : Geological map retrieved from the Mining Work Programme done for the property prepared by Minrom Consulting (Pty) Ltd.

According to the 1: 250 000 geology map the project area is largely underlain by superficial sediments of Late Cenozoic age. The thickness of the superficial sediment overburden overlying Precambrian bedrocks here varies from between 0 – 2 meters. A small area in the east is covered by fine-grained aeolian sands (Q-s) that cover large portions of the coastal plain to the north and south of Vanrhynsdorp, where they are often underlain by older calcareous or loamy soils, and that often appear distinctly orange on satellite images. The reddish sands are derived from pale alluvial sands that were accumulated near the coast by the palaeo-Olifants River system and then blown inland by prevailing south-westerly winds. They are mainly of Pleistocene to Recent age. The majority of the study area is mantled by calcareous and gypsiferous soils (Q-r2) that cover large areas of the Knersvlake region around Vanrhynsdorp and are often capped by a reddish, well-consolidated calcareous or siliceous hardpan or dorbank. The soils comprise a spectrum of gravally conglomerates, grit, sand and finer sediment showing a variable degree of calcretisation (i.e.

pedogenic limestone formation typical of semi-arid climates). Pleistocene to Holocene alluvial deposits such as silts and gravels occur along the Widouw River but these are small in extent.

Late Precambrian metasediments of the Gifberg Group forming the Vredendal Inlier of the Neoproterozoic Gariep Supergroup crop out along the bed and banks of the Widouw River. Within the study area just to the east of the N7 these comprise metamorphosed, deformed carbonate and other metasedimentary rocks of the Widouw Formation (Nwi). The Widouw succession, here in its type area, mainly consists of recrystallized, greyish limestones (marbles) and dolostones but also includes subordinate bodies of meta-greywacke, quartzite and phyllite (De Beer et al., 2002, Gresse et al., 2006, Frimmel 2008).

The carbonate rocks can reach over 200m in thickness, but this has probably been exaggerated by tectonic reduplication. The target carbonate rock is likely a light grey, massive, fine- to medium/coarse-grained, crystalline, exceptionally homogenous, very high-grade calcium carbonate / marble rock. The “limestone” ore body at the site dips gently eastwards at between 5 and 15° and is overlain by schistose, often highly pyritic metasediments of the Aties Formation (Nat). The latter subunit of the Gifberg Group is not mapped at surface in the study area but is well exposed to the west of the N7 as well as in road cuts along the Olifants River Valley.

The following useful description of the Maskam limestone ore body has been extracted from an original report entitled “Geological Report of the Maskam Limestone Deposit on the farm Welverdiend 511 in the Vanrhynsdorp District” (DW Rees in July 2008). The ore is covered by 5 -20 m of overburden which comprises clay, silt and sand as well as hard silcrete bands. The sub-outcrop is uniformly flat with no karsts penetrating into the ore body. The body does not outcrop but on the central western side it lies 1 - 2m below the land surface. The entire western part of the body is overlain by low-grade carbonate-rich hanging wall rock which gradually deepens eastward. The body is underlain by siliceous graphitic and phyllitic waste rock and the contact between the body and foot-wall schist is sharp. The true thickness of the deposit varies between 20 m in the west and 66 m in the east. The ore body has been identified for 1000m along the strike. The southern part terminates in deep weathering adjacent to the Wiedou River but the body extends northwards along strike over

its full width beyond the prospected area. No obvious faults, discontinuities or abnormalities were encountered. A unique feature of the deposit is the consistent high calcium carbonate values obtained in historical boreholes (no date) along strike, down-dip and in vertical depth from the sub-outcrop to the foot-wall contact. No lenses of dolomite or siliceous limestone were encountered in the any of the samples taken from the 39 boreholes which were drilled into the ore body. The overburden gradually increases in thickness in a northerly direction to 20m.

HYDROLOGY

The proposed site falls within the Olifants/ Doorn Water Management Area, in the E33G quaternary catchment area. The proposed project does not require a Water Use Authorisation in terms of Section 39 of the National Water Act, 1998 (Act No 36 of 1998). Should Site Alternative 1 be approved no activity will take place in or within 100m radius of any water bodies. Any water required for the implementation of the project will be bought from a registered source and transported to on site. The use of potable water for dust suppression should be avoided.

Table 11: Aquatic characteristics of the greater study area

Water Management Area	Olifants/Doorn
Sub Water Management Area	Olifants D
Quaternary Catchment	E33G
FEPA Status	Largely Modified

BIOLOGICAL ENVIRONMENT

MINING AND BIODIVERSITY

(Information extracted from the Mining and Biodiversity Guideline: Mainstreaming Biodiversity into the Mining Sector, Department of Environmental Affairs, Department of Mineral Resources, Chamber of Mines, 2013)

The Mining and Biodiversity Guideline, compiled by the South African Mining and Biodiversity Forum (SAMBF) provides the mining sector with a practical, user-friendly manual for integrating biodiversity considerations into planning processes and managing biodiversity during the developmental and operational phases of a mine, from exploration through to closure.

When the mining footprint is layered over the Mining and Biodiversity Map, as shown in the figure below, it falls over an area of high biodiversity importance with a corresponding rating of highest risk for mining. The Mining and Biodiversity Guideline's describes areas of highest biodiversity importance as: "*these areas are viewed as necessary to ensure protection of biodiversity, environmental sustainability, and human well-being."* The guideline notes that environmental screening, the EIA and specialists should focus on confirming the presence and significance of biodiversity features, and provide a site-specific basis on which to apply the mitigation hierarchy to inform regulatory decision-making.

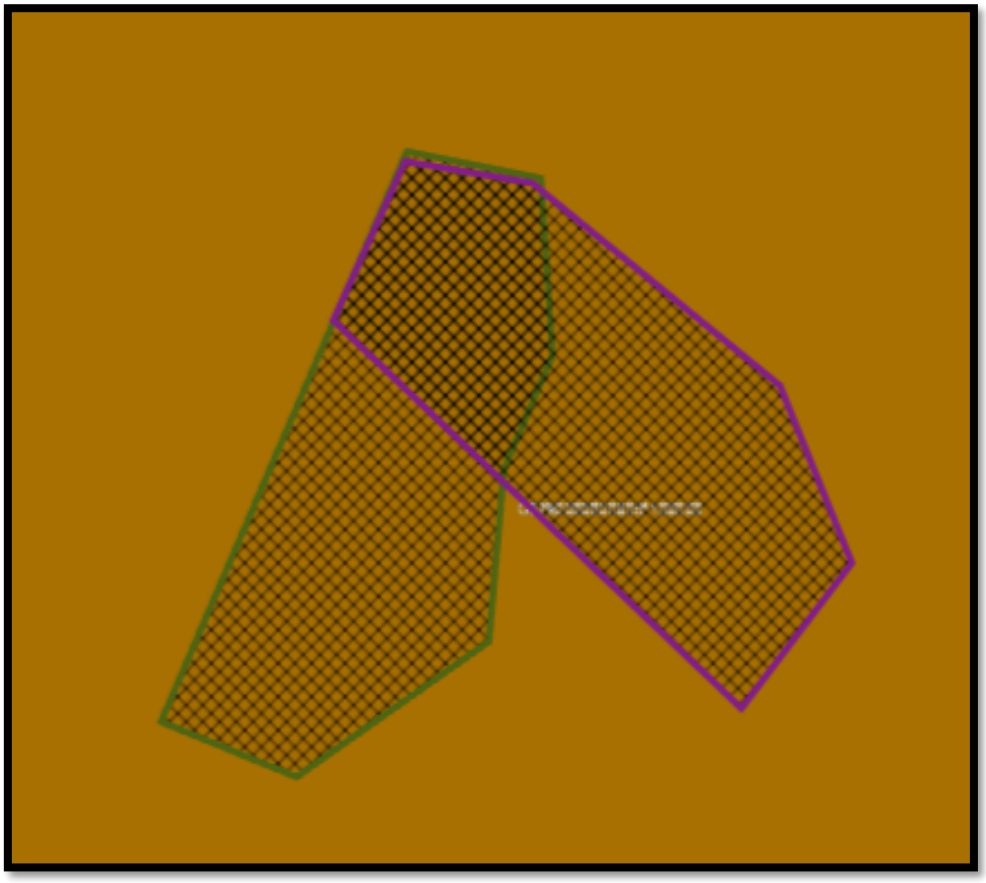


Figure 14: The Mining and Biodiversity importance map with the proposed mining footprint and Site Alternative 2 by the purple polygon. Light brown – High biodiversity importance, (image obtained from the BGIS Map Viewer – Mining Guidelines).

BIODIVERSITY CONSERVATION AREAS

According to the Western Cape Biodiversity Spatial Plan, sections of the proposed site falls within an Ecological Support Areas.

Ground truthing, confirmed in terms of local-level biodiversity, the selected site is not exceptional and is highly disturbed in this regard as the boundaries of the selected site falls within and existing quarry, and there are no Species of Conservation Concern or unique and range restricted species present within the proposed mining area as well as no unique habitats which are not widely available in the wider landscape. As a result, the majority of impacts associated with the development of the site are likely to be local in nature and not of wider significance.

As per the Plant Species and Terrestrial Biodiversity Theme Compliance Statement dated October 2021 compiled by Enviroworks (see appendix N) two location alternatives were provided for the proposed mine. A berm, adjoining an artificial dam wall to the north of the proposed mine, has been constructed around the eastern boundary of the old mine, and it effectively divert surface water that would have flown through the non-perennial watercourse. For this reason, choosing the preferred alternative will not differ significantly from the second alternative in terms of impacts on watercourses; as the watercourse indicates on GIS databases have been transformed by mining. Using the preferred alternative could however provide opportunity in the future to restore the transformed watercourses and could re-establish the more natural and meandering flow path, as opposed to the more rigid and straightened path created by the berm's diversion.

Site Alternative 2 (S2) was assessed for the proposed mining but found not environmentally and practically suitable. Ground truthing, by the specialists, however confirmed in terms of local-level biodiversity, the selected will not differ significantly in this regard as the boundaries of the S2 falls within drainage lines. As a result, the majority of impacts associated with the development on this site alternated are deemed to have a higher impact to be disturbed for the quarry to be established. Site alternative 1, was deemed the only viable site alternative as this is area is regarded to be already disturbed and will not impact on the sensitivity of the area.

From a sensitivity perspective site alternative 2 quarry layout is less preferred.

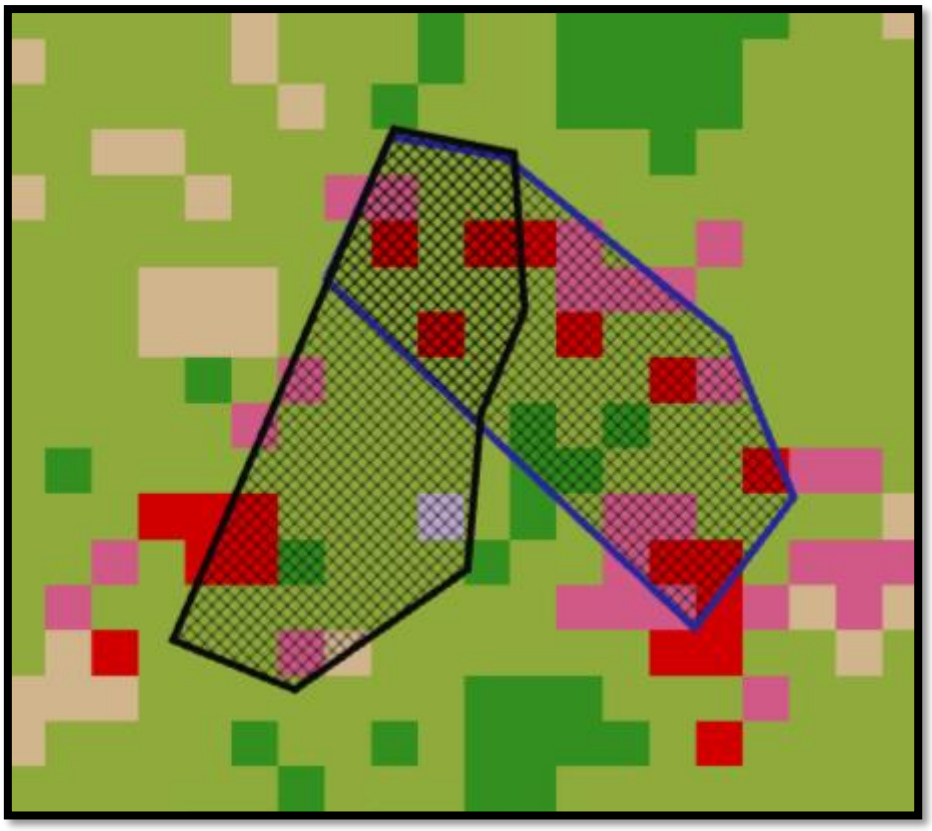


Figure 15: View of the proposed mining permit area as well as Site Alternative 2 (blue polygon) of Seboway (Pty) Ltd- Western Cape Biodiversity Spatial Plan.

GROUNDCOVER

According to Mucina and Rutherford (2012) the proposed area extends over various vegetation types known as SKk 5 Vanrhynsdorp Gannabosveld; SKk 9 Kobee Succulent Shrubland; SKs 13 Klawer Sandy Shrubland and FRs 1 Vanrhynsdorp Shale Renosterveld. The vegetation type that dominates the area is the SKk 5 Vanrhynsdorp Gannabosveld that is mainly flat or only slightly undulating landscape supporting succulent shrubland dominated by Salsola (over large stretches), *Drosanthemum, Ruschia* and some disturbance indicators such as (mainly) short-lived *Aizoacea*e, including representatives of the *genera Galenia, Psilocaulon, Caulipsolon* and *Mesembryanthemum*. In the south, the shale plains can acquire a grassland appearance through seasonal dominance of *Bromus pectinatus* and *Stipa capensis*. Spectacular annual and geophyte flora can appear in spring after good winter rains.

FAUNA

Various small mammals and reptiles occur are likely to on the property. The fauna at the site will not be impacted by the proposed mining activities as they

will be able to move away or through the site, without being harmed. Workers should be educated and managed to ensure that no fauna at the site is harmed. At this stage no resident protected or red data faunal species could be identified within the earmarked footprint. The study area falls over a property that is noted to be an operational game farm, should this mining permit be granted farm owner will be consulted prior to commencement of any activities to ensure that safety of animals and workers. Workers will be informed and managed to ensure that no fauna at the site is harmed. No poaching or hunting of animals will be allowed. All construction vehicles must adhere to a low speed limit (<20km/h) to avoid collisions with susceptible species such as snakes and tortoises.

HUMAN ENVIRONMENT:

CULTURAL AND HERITAGE ENVIRONMENT

Heritage Western Cape were contacted for their perusal and commenting. Archaeological resources (Including archaeological sites and material, rock art, battlefields & wrecks):

As per the Notice of Intent to develop conducted by Jonathan Kaplan (ACRM) (Refer to Appendix O). Later Stone Age (LSA) and Middle Stone Age (MSA) tools have been recorded on portions of Farm 511 (Kaplan 2010, 2017), but the impact of proposed mining on heritage resources will be low, as proposed mining will take place within the footprint of the existing mine.

However, should artefacts archaeological items be observed during the mining activities, then all activity should cease immediately, the area marked off activity and a specialists consulted prior to any further activity. This also includes if any graves are observed on site during activity progress then all activity should have ceased and the area demarcated as a no-go zone

According to consulting palaeontologist John Pether (email correspondence dated 08 October, 2021), `The quarry exploits the limestone, dolomite and marble of the Widouw Formation (Gariep Supergroup, Gifberg Group) which date from ~770 to 700 million years ago. The earliest microfossils and tiny sponges had appeared by this time, but the quarrying will not impact on this cryptic fossil resource. The palaeontological sensitivity is LOW (SAHRIS)

Only FFP required in case of fossil finds in the overlying coversands'.

The South African Heritage Resources Agency (SAHRA) compiled the Palaeontological (fossil) Sensitivity Map (PSM) to guide developers, heritage officers and practitioners in screening paleontologically sensitive areas at the onset of a project. When the footprint of the earmarked mining area is placed on the PSM, it shows the study area to extend over an area of low insignificant (blue) concern as presented in the figure below.

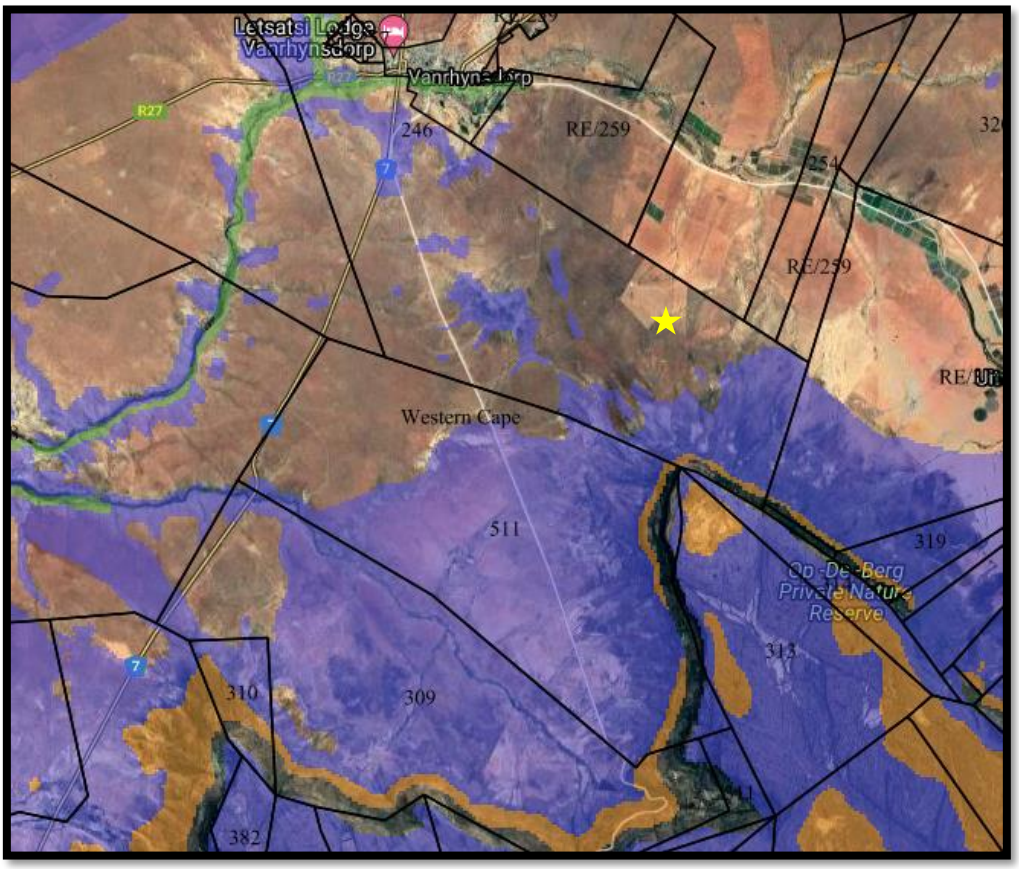


Figure 16: The SAHRA palaeontological sensitivity map shows the proposed mining footprint falls in an area of low insignificant (blue) concern.

SOCIO-ECONOMIC ENVIRONMENT

(Information extracted from the Matzikama Municipality Integrated Development Plan 2017/22)

The proposed mining area is located within ward 7 of the Matzikama municipal areaThe Matzikama Municipality is a category B municipality proclaimed in terms of Provincial Notice No 481/2000 of September 2000. As of May 2011 the previous district managed area to the north (showing in purple on the map) of Matzikama Municipality has been incorporated as per notice in the Provincial Gazette Extraordinary 6825. As a result, the geographical area of the Municipality increased from roughly 8000 km2 to 12900 km2. The municipal area comprises 18 towns and or villages. These towns and villages include Doring Bay, Strandfontein, Papendorp, Ebenaeser, Lutzville-West, Lutzville, Koekenaap, Olifantsriviersettlement, Vredendal, Klawer, Vanrhynsdorp, Nuwerus, Bitterfontein, Kliprand, Put-se-Kloof, Rietpoort, Molsvlei and Stofkraal.

Vanrhynsdorp is the most southern and oldest town in Namaqualand. It exists since 1661. The town is also the gate way to the Western Cape, Upington, Johannesburg, Namibia, Vredendal and the coastal towns. Vanrhynsdorp is located 300km north of Cape Town on the intersection to Cape Namibia, Namakwari and West Coast Karoo tourism routes. The economic base comprises the service and agriculture industries.

Population and Gender Profile

As of 2020, Matzikama Municipality has an estimate of 73 066 persons, making it the second least populated municipal area in the WCD. This tota is expected to grow to 74 696 by 2024, equating to an average annual growth rate of 0.6 per cent.

In 2020, the population density of the West Coast District (WCD) was 15 persons per square kilometer with Matzikama recording a figure of 6 persons per square kilometer.

Population

The table below reveals the total population in the municipal area for the past five years.

Table 12: Socio-economic Profile: Matzikama Municipality (extracted from Matzikama Final Intergrated Development Plan 2021-2022)

2015/2016	2016/2017	2017/2018	2018/2019	2019/2020
71 045	72565	71403	74636	73 066

According to the 2020 Matzikama Municipality Socio-Economic Profile, Matzikama is 73 066 people in 2020, making it the second least populated municipal area in the WCD. This total is expected to growth to 74 696 by 2024, equating to an average annual growth rate of 0.6 per cent. The estimated population growth rate of Matzikama is the lowest in the WCD. The graph below indicate the District average annual growth rate is 1.7 percent.

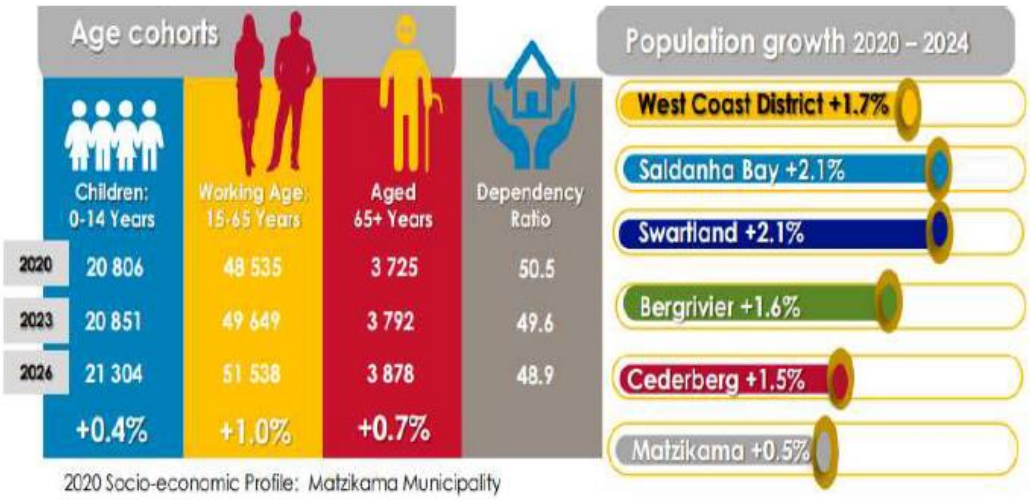


Figure 17:Socio-economic Profile: Matzikama Municipality (extracted from Matzikama Final Intergrated Development Plan 2021-2022)

Sex Ratio

The overall sex ratio (SR) depicts the number of males per 100 females in the population. The data indicates that there are slightly more females than males in the Matzikama municipal area with a ratio of 99.7 per cent of males per 100 females in 2020, rising marginally to 101.5 per cent of males per 100 females in 2024. The SR increases slightly year on year towards 2024 which could be attributed to a wide range of factors such as a decrease in female mortality rates as well as the potential outflow of working males from the municipal area.

Economic Profile

Between seventy and eighty percent of the revenue of the Matzikama Municipality is generated by the local economy therefore, economic growth at the municipal level is essential for the growth of municipal revenue, attainment of economic development, reduction of poverty and improved accessibility. Fostering this growth requires an in-depth understanding of the economic landscape within which each respective municipality operates.

The Matzikama was valued at R4.4 billion (current prices) in 2018, with 28 635 people. The estimate for 2019 indicates the municipal area had a GDPR of R4.5 billion and employed 28 609 people. The growth indicates that the economy of the municipal area contracted in real terms, resulting in job losses in the Matzikama municipal area. The main contributor to GDPR in the

Matzikama municipal area in 2018 was the agriculture, forestry and fishing sector, with a contribution of 22.7 per cent, whereas the electricity, gas and water sector was the smallest, contributing 2.9 per cent to GDPR in the municipal area. Other prominent contributors to GDPR in the Matzikama municipal area include the wholesale and retail trade, catering and accommodation sector and the manufacturing sector, contributing 16.8 percent and 13.8 per cent respectively. The agriculture, forestry and fishing sector is also the largest source of employment, contributing 39.7 per cent to total employment. The significant contribution of the agriculture, forestry and fishing sector indicates that the sector is labour-intensive. Another important source of employment in the municipal area is the wholesale and retail trade, catering and accommodation sector, which contributed 18.1 percent to total employment in the municipal area.

The Matzikama municipal area experienced a net loss of 26 jobs in 2019, which was largely due to the primary and secondary sectors both shedding jobs. Furthermore, estimates for 2019 show that the wholesale and retail trade, catering and accommodation sector continued to be the main contributor to total employment with 87 jobs, followed by the general government sector (60 jobs) for the same period. Despite the strong growth, the finance, insurance, real estate and business services sector is also estimated to have shed 20 jobs in 2019. Sectors within the Matzikama municipal economy are expected to be severely impacted by the COVID-19 pandemic. Some of the key challenges that were identified as a result of COVID-19 and the national lockdown include:

a reduction in municipal revenue, unemployment in the private sector, land grabs for informal housing and the stagnation of development programmes.

The development of the proposed private hospital in Vredendal can be a valuable injection into the local economy. Although temporary, the construction of the development will generate new activity and jobs in the construction sector, while the operation of the hospital can have direct and indirect benefits in the tertiary sector.

The table below indicates Matzikama's Economy and Labour Market Performance.

Table 13: Matzikama's Economy and Labour Market (extracted from Matzikama Final Intergrated Development Plan 2021-2022)

Economy and Labour Market Performance

	SECTOR	GDPR			Employment		
		R million value 2018	Trend 2014 - 2018	Real GDPR growth 2019e	Number of jobs 2018	Average annual change 2014 - 2018	Net change 2019e
PS	**Primary Sector**	**1 203.7**	**3.1**	**-7.4**	**11 661**	**192**	**-10**
	Agriculture, forestry & fishing	999.0	3.7	-7.8	11 357	198	5
	Mining & quarrying	204.7	0.6	-5.3	304	-6	-15
SS	**Secondary sector**	**944.6**	**0.6**	**-2.9**	**3 049**	**80**	**-115**
	Manufacturing	609.4	1.5	-2.4	1 818	41	-23
	Electricity, gas & water	126.3	-5.8	-6.2	95	-1	0
	Construction	208.8	1.7	-3.1	1 136	40	-92
TS	**Tertiary sector**	**2 261.1**	**0.9**	**0.5**	**13 925**	**273**	**99**
	Wholesale & retail trade, catering & accommodation	741.0	1.2	-0.1	5 189	131	87
	Transport, storage & communication	321.6	-2.3	-3.7	658	-5	5
	Finance, insurance, real estate & business services	423.6	2.3	2.5	2 089	44	-20
	General government	487.7	0.7	1.3	2 822	40	60
	Community, social & personal services	287.2	1.9	1.1	3 167	63	-33
	Matzikama	**4 409.4**	**1.5**	**-2.5**	**28 635**	**545**	**-26**

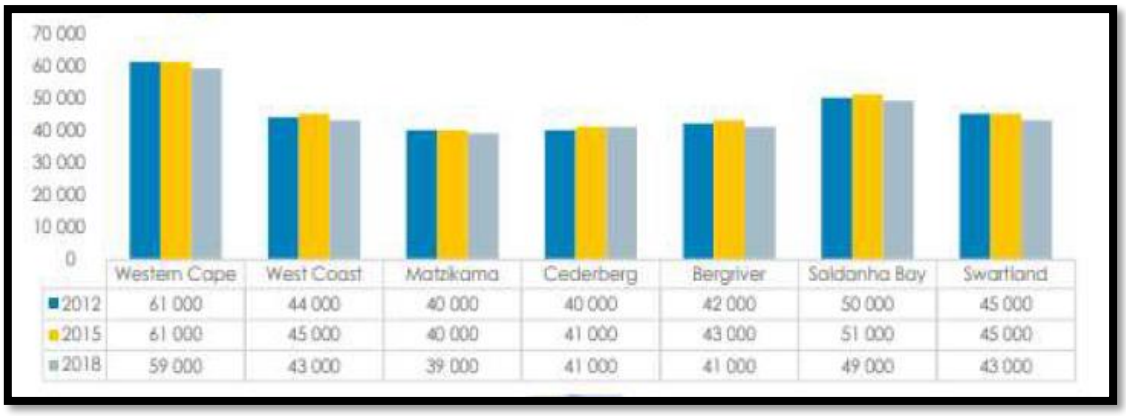
Skill Levels Formal employment	Skill Level Contribution 2019 (%)	Average growth (%) 2015 - 2019	Number of jobs	
			2018	2019
Skilled	14.1	1.9	3 032	3 072
Semi-skilled	32.8	1.6	7 066	7 126
Low-skilled	53.1	0.9	11 345	11 533
TOTAL	**100.0**	**1.2**	**21 443**	**21 731**

Informal Employment	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Number of informal jobs	7 754	6 793	6 641	6 786	7 259	7 193	8 122	7 457	7 538	7 192	6 878
% of Total Employment	30.8	28.5	27.9	27.4	28.0	27.9	28.2	26.1	26.3	25.1	24.0

Unemployment rates	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Bergrivier	4.0	4.8	5.0	4.8	4.5	4.8	4.0	4.5	4.9	5.1	5.6
Matzikama	**9.3**	**10.7**	**11.1**	**10.7**	**10.1**	**10.7**	**9.2**	**10.2**	**11.1**	**11.2**	**12.2**
Swartland	7.5	8.7	9.2	9.0	8.6	9.2	8.2	9.1	9.9	10.1	11.0
Saldanha Bay	11.8	13.7	14.4	13.9	13.1	13.9	12.9	14.3	15.6	15.9	17.5
Cederberg	5.6	6.7	7.1	6.8	6.3	6.8	5.7	6.4	7.0	7.2	7.9
West Coast	8.3	9.7	10.1	9.8	9.3	9.9	8.7	9.7	10.6	10.8	11.9
Western Cape	14.2	15.5	15.7	15.8	15.7	16.0	16.1	17.3	18.1	18.0	19.4

GDPR Per Capita

An increase in real GDPR per capita, i.e. GDPR per person, is experienced only if the real economic growth rate exceeds the population growth rate. Even though real GDP per capita reflects changes in the overall well-being of the population, not everyone within an economy will earn the same amount of money as estimated by the real GDPR per capita indicator. At R39 000.00 in 2018, Matzikama's real GDPR per capita is below the West Coast District figure of R44,000.00, while also ranking bottom when compared to that of neighbouring municipalities (WCD). Furthermore, Matzikama's per capita income ranks well below that of the Western Cape Figure of R59 000.00.



	Western Cape	West Coast	Matzikama	Cederberg	Bergriver	Saldanha Bay	Swartland
2012	61 000	44 000	40 000	40 000	42 000	50 000	45 000
2015	61 000	45 000	40 000	41 000	43 000	51 000	45 000
2018	59 000	43 000	39 000	41 000	41 000	49 000	43 000

Figure 18: GDP per Capita (extracted from Matzikama Final Intergrated Development Plan 2021-2022)

Income Inequality

It is estimated that Matzikama's total labour force will in 2019 amount to 28 609 workers of which 21 731 (76.0 per cent) are in the formal sector while 6 878 (24.0 per cent) are informally employed. The National Development Plan (NDP) has set a target of reducing income inequality in South Africa from a Gini coefficient of 0.7 in 2010 to 0.6 by 2030. Income inequality has increased steadily in Matzikama between 2012 and 2018 (0.58 to 0.59) with the exception of 2015, when it dropped to 0.54.

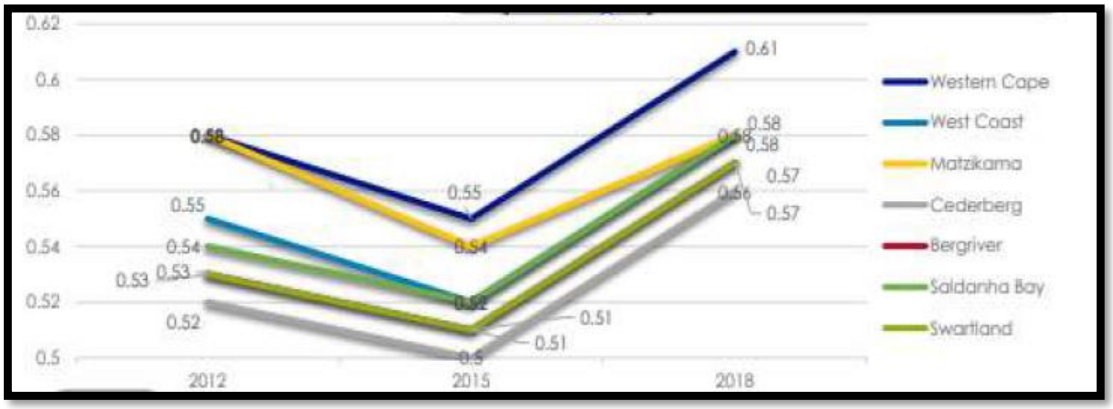


Figure 19: Income inequality (extracted from Matzikama Final Intergrated Development Plan 2021-2022)

Human Development

The United Nations uses the Human Development Index (HDI) to assess the relative level of socio-economic development in countries. Indicators thatmeasure human development are education, housing, access to basicservices and health. There has been a general increase in the HDI in

Matzikama from 0.75 in 2012 to 0.80 in 2018. The trend for the West Coast District and the Western Cape in general has been similar between 2012 and 2018. Naturally, per capita income as per definition is expected to mimic the trend of HDI and this is clearly displayed in the graphic above. In short, what this graphic illustrates is that for the most part an increase in GDP per capita across a particular region is generally accompanied by an improvement in HDI levels with a short lag. The HDI is a composite indicator reflecting education levels, health, and income. It is a measure of peoples' ability to live a long and healthy life, to communicate, participate in the community and to have sufficient means to be able to afford a decent living. The HDI is represented by a number between 0 and 1, where 1 indicates a high level of human development and 0 represents no human development

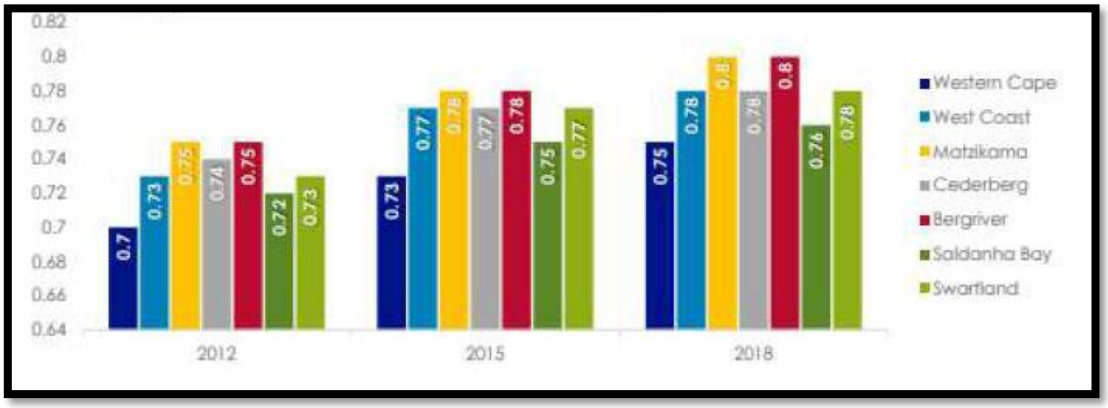


Figure 20: Humam development (extracted from Matzikama Final Intergrated Development Plan 2021-2022)

Education Levels

Education remains one of the key avenues through which the state is involved in the economy. In preparing individuals for future engagements in the broader market, policy decisions and choices in the sphere of education play a critical role in determining the extent to which future economy and poverty reduction plans can be realised. The table below measures the matric pass rate within the Matzikama municipal area compared with other municipalities within WCD.

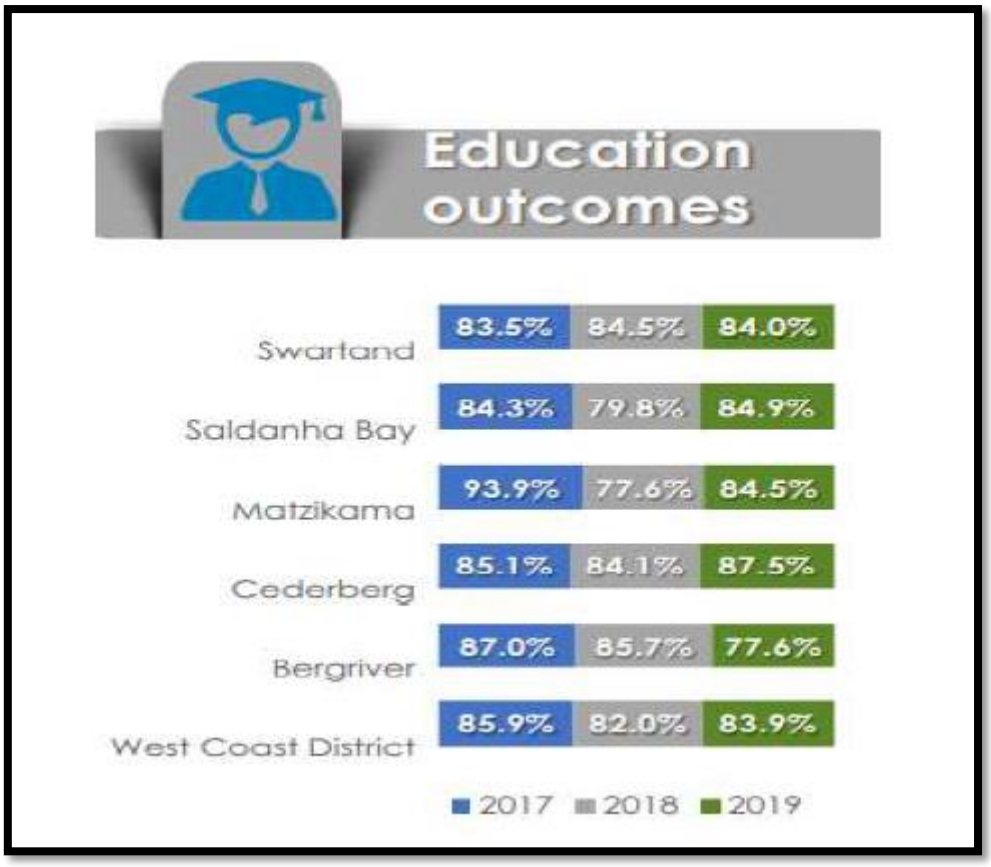


Figure 21: Education outcomes in and around the Matzikama municipality (extracted from Matzikama Final Intergrated Development Plan 2021-2022)

The matric pass rate in Matzikama regressed from 93.9% in 2017 to 84.5% in 2019. Higher matric pass rates could improve access for learners to higher education to broaden their opportunities. The regression of the matric pass rate within the Matzikama area remains a serious concern.

Employment Profile

In Matzikama Local Municipality the economic sectors that recorded the largest number of employment in 2019 were the agriculture sector with a total of 15 800 employed people or 51.6% of total employment in the local municipality. The trade sector with a total of 3 980 (13.0%) employs the second highest number of people relative to the rest of the sectors. The electricity sector with 88.4 (0.3%) is the sector that employs the least number of people in Matzikama Local Municipality, followed by the mining sector with 414 (1.3%) people employed.

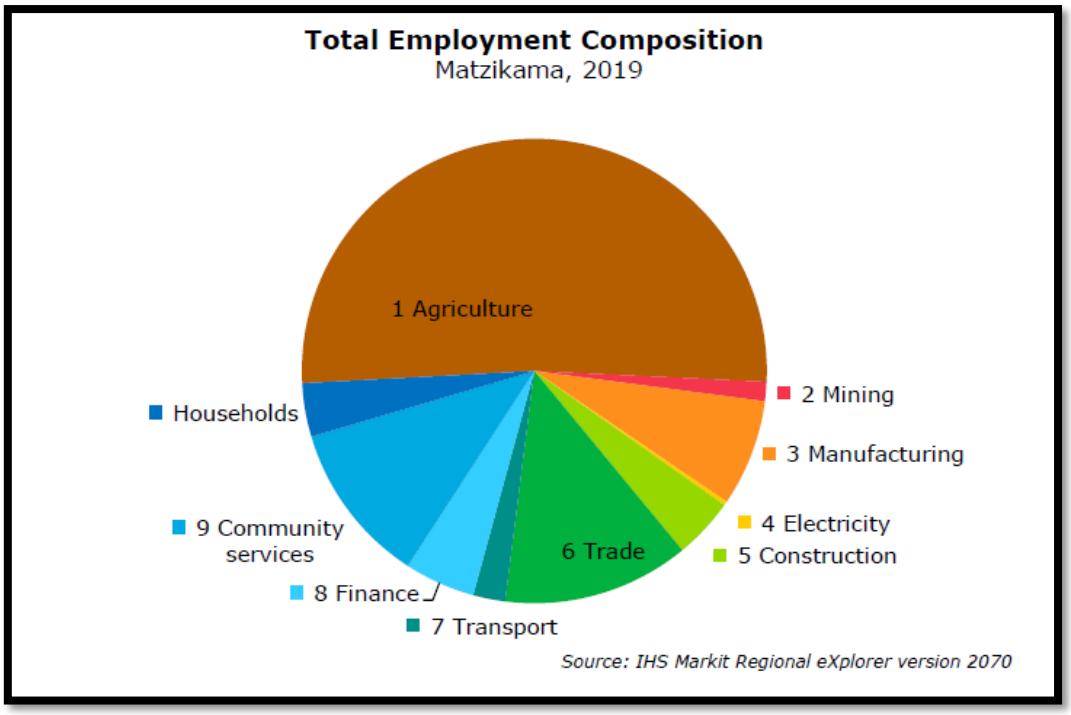


Figure 22: Total employment composition in the Matzikama municipality (extracted from Matzikama Final Intergrated Development Plan 2021-2022)

(b) Description of the current land uses

The current surrounding land uses can be classified as agricultural land, existing mining and tourism:

Table 14: Land uses and/or prominent features that occur within 500 m radius of S1 and S2

LAND USE CHARACTER	YES	NO	DESCRIPTION
Natural area	**YES**	-	**The study area is surrounded by natural areas used for agricultural purposes.**
Low density residential	-	**NO**	
Medium density residential	-	**NO**	
High density residential	-	**NO**	
Informal residential	-	**NO**	
Retail commercial & warehousing	-	**NO**	
Light industrial	-	**NO**	
Medium industrial	-	**NO**	
Heavy industrial	-	**NO**	
Power station	-	**NO**	
High voltage power line	-	**NO**	
Office/consulting room	-	**NO**	
Military or police base / station / compound	-	**NO**	
Spoil heap or slimes dam	-	**NO**	
Quarry, sand or borrow pit	**YES**	**NO**	**Existing Quarry used for previous Dimension Stone mining**
Dam or reservoir		**NO**	
Hospital/medical centre	-	**NO**	

LAND USE CHARACTER	YES	NO	DESCRIPTION
School/ crèche	-	**NO**	
Tertiary education facility	-	**NO**	
Church	-	**NO**	
Old age home	-	**NO**	
Sewage treatment plant	-	**NO**	
Train station or shunting yard	-	**NO**	
Railway line	-	**NO**	
Major road (4 lanes or more)	-	**NO**	
Airport	-	**NO**	
Harbour	-	**NO**	
Sport facilities	-	**NO**	
Golf course	-	**NO**	
Polo fields	-	**NO**	
Filling station	-	**NO**	
Landfill or waste treatment site	-	**NO**	
Plantation		**NO**	
Agriculture	**YES**		The proposed footprint forms part of areas used for agricultural purposes
River, stream or wetland	**YES**		An existing river flows approximately 1.7 km south-west of the proposed site and falls within the Olifants/ Doorn Water Management Area, in the E33G quaternary catchment area.
Nature conservation area	-	**NO**	
Mountain, hill or ridge	**YES**		
Museum	-	**NO**	
Historical building	-	**NO**	
Protected Area	**YES** -		The area adjacent to the application property is protected. However the Op De Berg Private Nature reserve is more than 5km away from the proposed site.
Graveyard	-	**NO**	
Archaeological site	-	**NO**	
Other land uses (describe)	**YES**-		There is a guest house (Maskam Guest) about 1.7km from the proposed site.

(c) Description of specific environmental features and infrastructure on the site.

SPECIFIC ENVIRONMENTAL FEATURES

SITE SPECIFIC TOPOGRAPHY

The project area is mainly flat or only slightly undulating by superficial sediments of Late Cenozoic age. The thickness of the superficial sediment overburden overlying Precambrian bedrocks here varies from between 0 – 2 meters. A small area in the east is covered by fine-grained aeolian sands (Q-s) that cover large portions of the coastal plain to the north and south of Vanrhynsdorp, where they are often underlain by older calcareous or loamy soils, and that often appear distinctly orange on satellite images. The reddish sands are derived from pale alluvial sands that were accumulated near the

coast by the palaeo-Olifants River system and then blown inland by prevailing south-westerly winds. They are mainly of Pleistocene to Recent age. The majority of the study area is mantled by calcareous and gypsiferous soils (Q-r2) that cover large areas of the Knersvlake region around Vanrhynsdorp and are often capped by a reddish, well-consolidated calcareous or siliceous hardpan or dorbank. The soils comprise a spectrum of gravally conglomerates, grit, sand and finer sediment showing a variable degree of calcretisation (i.e. pedogenic limestone formation typical of semi-arid climates). Pleistocene to Holocene alluvial deposits such as silts and gravels occur along the Widouw River but these are small in extent. The altitude varies between 113-134 m.

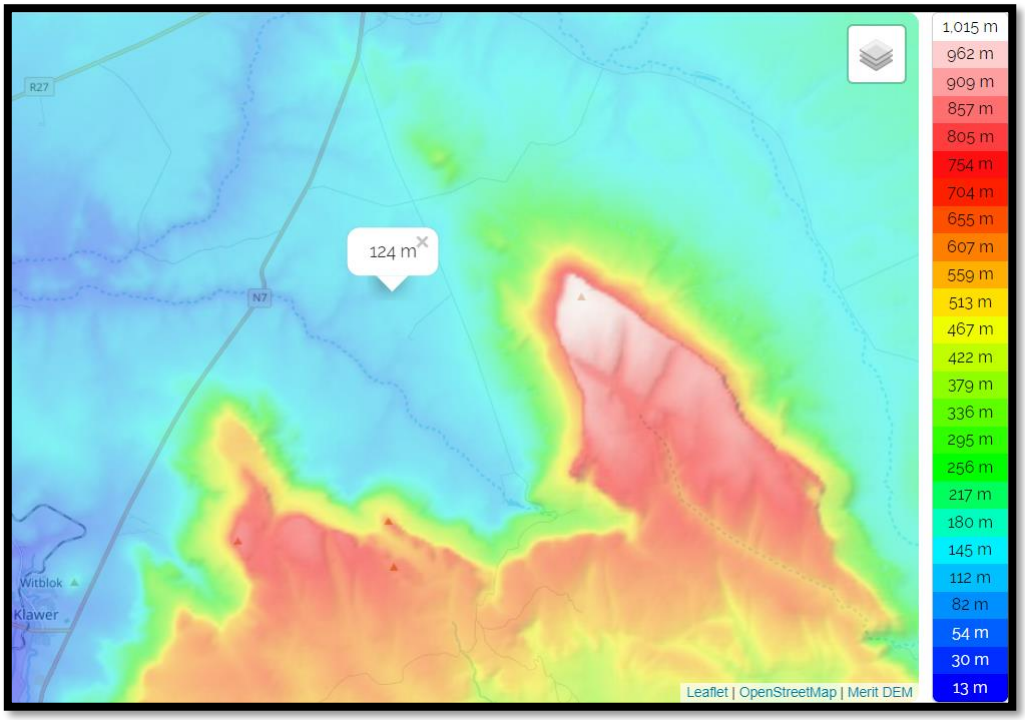


Figure 23 Map showing the topography of the Vanrhynsdorp area (image obtained from www.en-za.topographic-map.com/maps/qwpq/South-Africa/.

SITE SPECIFIC VISUAL CHARACTERISTICS

The figure below shows the viewshed analysis for the footprint. The green shaded areas show the positions from where the mining area will be visible. From this analysis it is proposed that the visual impact of the proposed mining permit operations will be of low significance. Should the Applicant successfully rehabilitate the mining area (upon closure), no residual visual impact is expected upon closure of the mining activities.

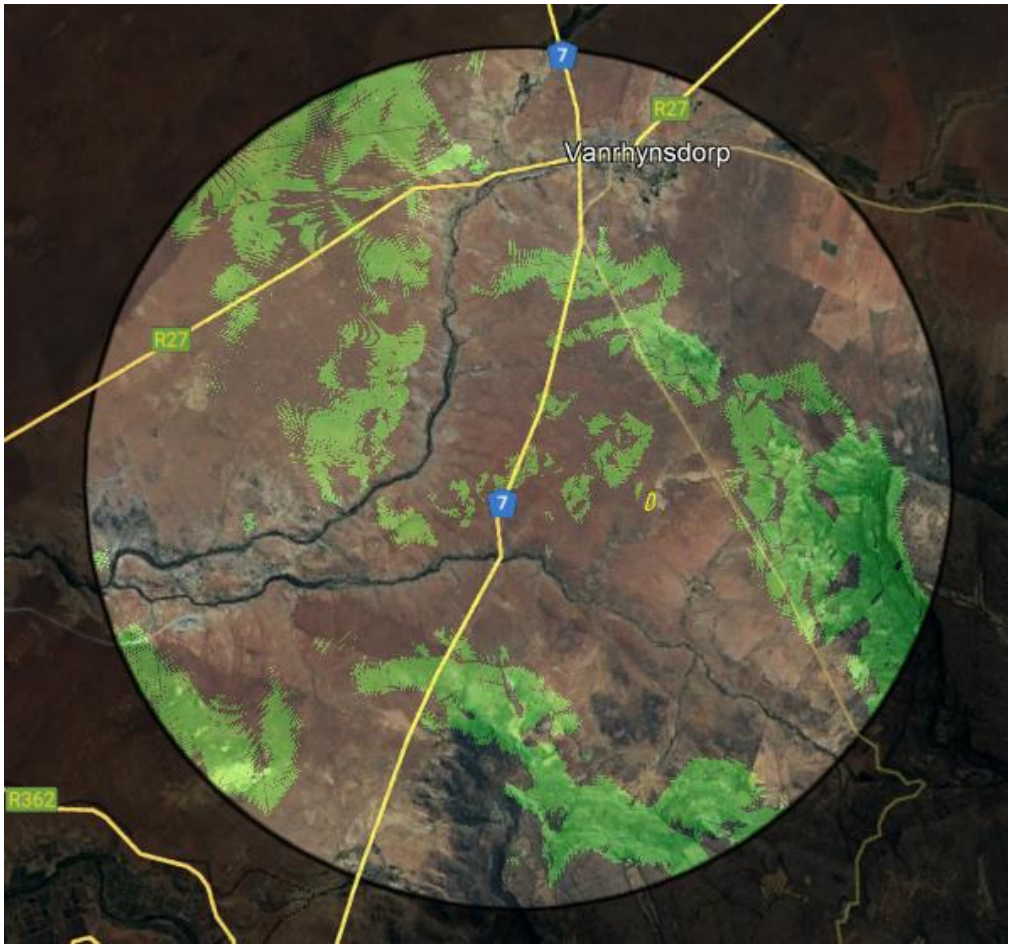


Figure 24: Viewshed of the proposed mining footprint where the green shaded areas shows the positions from where the mining area S1 and S2 (yellow polygon) will be visible. (Image obtained from Google Earth).

SITE SPECIFIC AIR AND NOISE QUALITY

The residential dwellings nearest to the proposed footprint is approximately 7 km away (north). Currently the air quality of the study area is mainly impacted on by the surrounding traffic on the N7 passing the site.

Emission into the atmosphere is controlled by the National Environmental Management: Air Quality Act, 2004. The proposed mining activity does not trigger an application in terms of the said act. The proposed activity will contribute the emissions mechanical mining equipment to the receiving environment for the duration of the operational phase. Should the permit holder implement the mitigation measures proposed in this document and the EMPR the impact on the air quality of the surrounding environment is deemed to be of low significance and compatible with the current land use.

The potential impact on the noise ambiance of the receiving environment is expected to be of low significance and representative of the traffic of the surrounding area. The distance of the proposed mining area from residential infrastructure further lessens the potential noise impact.

SITE SPECIFIC GEOLOGY AND SOIL

(Information extracted from the Prospecting Work Programme (PWP) for a proposed prospecting right on the property)

As mentioned earlier, within the study area just to the east of the N7 these comprise metamorphosed, deformed carbonate and other metasedimentary rocks of the Widouw Formation (Nwi). The Widouw succession, here in its type area, mainly consists of recrystallized, greyish limestones (marbles) and dolostones but also includes subordinate bodies of meta-greywacke, quartzite and phyllite (De Beer et al., 2002, Gresse et al., 2006, Frimmel 2008).

The carbonate rocks can reach over 200m in thickness, but this has probably been exaggerated by tectonic reduplication. The target carbonate rock is likely a light grey, massive, fine- to medium/coarse-grained, crystalline, exceptionally homogenous, very high-grade calcium carbonate / marble rock. The “limestone” ore body at the site dips gently eastwards at between 5 and 15° and is overlain by schistose, often highly pyritic metasediments of the Aties Formation (Nat). The latter subunit of the Gifberg Group is not mapped at

surface in the study area but is wellexposed to the west of the N7 as well as in road cuts along the Olifants River Valley.

The following useful description of the Maskam limestone ore body has been extracted from an original report entitled “Geological Report of the Maskam Limestone Deposit on the farm Welverdiend 511 in the Vanrhynsdorp District” (DW Rees in July 2008). The ore is covered by 5 -20 m of overburden which comprises clay, silt and sand as well as hard silcrete bands. The sub-outcrop is uniformly flat with no karsts penetrating into the ore body. The body does not outcrop but on the central western side it lies 1 - 2m below the land surface. The entire western part of the body is overlain by low-grade carbonate-rich hanging wall rock which gradually deepens eastward. The body is underlain by siliceous graphitic and phyllitic waste rock and the contact between the body and foot-wall schist is sharp. The true thickness of the deposit varies between 20 m in the west and 66 m in the east. The ore body has been identified for 1000m along the strike. The southern part terminates in deep weathering adjacent to the Wiedou River but the body extends northwards along strike over its full width beyond the prospected area. No obvious faults, discontinuities or abnormalities were encountered. A unique feature of the deposit is the consistent high calcium carbonate values obtained in historical boreholes (no date) along strike, down-dip and in vertical depth from the sub-outcrop to the foot-wall contact. No lenses of dolomite or siliceous limestone were encountered in the any of the samples taken from the 39 boreholes which were drilled into the ore body. The overburden gradually increases in thickness in a northerly direction to 20m.

SITE SPECIFIC HYDROLOGY

The proposed site falls within the Olifants/ Doorn Water Management Area, in the E33G quaternary catchment area. The proposed project does not require a Water Use Authorisation in terms of Section 39 of the National Water Act, 1998 (Act No 36 of 1998). Should Site Alternative 1 be approved no activity will take place in or within 100m radius of any water bodies. An existing water authorisation is in place should water be required for the implementation of the project and transported to the mining area in a water truck that will moisten the problem area. The use of potable water for dust suppression should be avoided.

Figure 25: Map showing the proposed mining footprint (blue polygon). The dotted blue line represents rivers and the light blue area dams. (Image obtained from CapeFarmMapper ver 2.6.1 - https://gis.elsenburg.com/apps/cfm/#)

As per the Water Use Risk Matrix date October 2021 and compiled by Enviroworks (refer to appendix P) the proposed mining footprint is situated adjacent to and old marble mine. The surface area of the proposed mining permit is currently used as a stockpile for the marble. The mining footprint thus has been affected by the marble mine's activities across the surface area.

Due to the arid nature of the area, there were no surface water visible in the natural watercourses that were encountered. Surface flow through the drainage features and watercourses are considered to be limited to flood or precipitation events. No natural perennial watercourses occur in the study area and watercourses within 500m from the proposed footprint are all classified as ephemeral that flow during heavy rainfall and run-off events. There is an artificial dam upstream from the mine footprint which had water in at the time of the site visit, but from historical satellite imagery from Google Earth, the dam has been empty at times, and is thus not perennial. The proposed mining footprint is upstream from an ephemeral watercourse, but outside the 100m regulated area. Based on impacts observed on site from and old mine (adjacent to the proposed mining area), the posed mine can potentially impact the

regulated area of the watercourse, and the ephemeral watercourse that it is connected to.

Two location alternatives were provided for the proposed mine. A berm, adjoining an artificial dam wall to the north of the proposed mine, has been constructed around the eastern boundary of the old mine, and it effectively divert surface water that would have flown through the non-perennial watercourse. For this reason, choosing the preferred alternative will not differ significantly from the second alternative in terms of impacts on watercourses; as the watercourse indicates on GIS databases have been transformed by mining. Using the preferred alternative could however provide opportunity in the future to restore the transformed watercourses and could re-establish the more natural and meandering flow path, as opposed to the more rigid and straightened path created by the berm's diversion. The second alternative was thus excluded from further assessment during the study.

The ephemeral watercourse can be classified as having a PES of C, thus it is moderately modified. A loss and change of natural habitat, hydrology and biota have occurred, but the basic ecosystem functions are still predominantly unchanged, despite the significant impact in changes in hydrology and disturbance within the regulated area and part of the ephemeral watercourse.

The EIS for the ephemeral drainage line is C, thus ecologically important and sensitive on a local scale only. Biodiversity not usually sensitive to flow and habitat modifications.

The inherent soil properties on the site make them prone to erosion, and this is confirmed by the features of soil sealing and erosion observed on the old mine. This means vegetation clearing, soil disturbance and stored soil will require specific management measures to manage and mitigate the impacts of the proposed mine. Clearing of vegetation, disturbance of soil and creating stockpiles leaves bare soil vulnerable to soil sealing and erosion. Sealed soil will generate increased run-off with higher erosion potential downstream. This in turn can erode watercourses and increase sedimentation in the system downstream. Exposed or bare soil (and stockpiles) will also be vulnerable to erosion, this will also increase the impact of sedimentation downstream. Given the infrequency of rainfall in the area, these impacts may fortunately happen at a relatively slow rate.

The mining activities in the mining permit application areas do not fall within the regulated area according to the definition in the NWA (in the absence of a 1:100 year flood line delineation) (within 100m of a watercourse) but the proposed mining will impact upon the regulated areas, which is in turn connected to the ephemeral watercourse; thus even though the proposed mining permit footprint is not directly in the regulated area of the watercourse it can impact the regulated area and consequently the watercourse. This assessment assumed that no new access roads will be created. The existing access roads on site pass though the ephemeral watercourse and its regulated area, thus if the access roads have not yet been registered for c & I water uses, it should be done now. For this reason, it is recommended that the proposed mine and associated infrastructure be registered for a c & i water use. If any activities will take place within the regulated area of the ephemeral watercourse, it should be properly assessed and licenced/registered of a c & i water use. The potential impact of changes in water quality and quantity are also a risk of the proposed development. Since the ephemeral watercourse has a relatively high vegetation cover, water quality and sedimentation impacts are expected to be filtered by the vegetation. Significant downstream impacts on the ephemeral watercourse and Wiedou River (> 2.5 km south) are thus expected to be buffered, especially considering the arid nature of the environment.

Surface water flowing from upslope of the proposed mining footprint in a south-western and western direction will likely flow through the proposed mining footprint, before flowing into the valley and ephemeral watercourse downstream. It will be important to develop and implement a proper stormwater management plan, so that clean surface run-off be diverted around the proposed mine, ‘dirty’ water from the proposed mine footprint should be contained if contaminated with waste or hazardous matter and should be allowed to settle out sediments if sediment is picked up in the disturbed mining footprint, before entering into the natural environment or the regulated area of the ephemeral watercourse. Stormwater management should also prevent the proposed mine from impeding surface water flow to reach the downstream watercourse, thus the stormwater management should aim to maintain the natural hydrological flow (quantity, timing and speed of surface water run-off) in the landscape as best as possible.

With suitable mitigation measures the impacts can be decreased, and construction- and operation activities should not have any significant impact upon the regulated area and downstream watercourses.

The impacts of the proposed mine on the regulated area of the ephemeral watercourse are considered of low significance in their mitigated state. Provided the site is well managed during the construction and operational phase, following suggested mitigation measures, the development is not considered to pose and unacceptable risk to the watercourses.

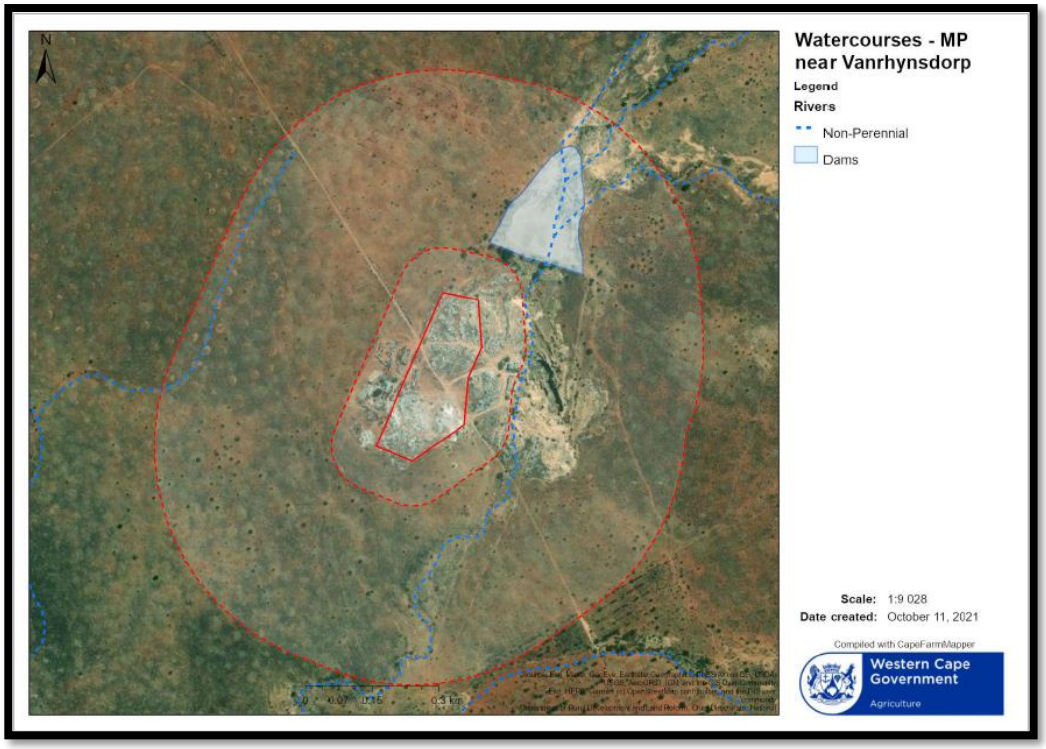


Figure 26: Watercourse map, with a 100m and 500m buffer around the proposed mining permit (MP) area (Information obtained from Water Use Risk Matrix date October 2021 and compiled by Enviroworks dated October 2021 - Figure 26)

Figure 27: The artificial dam upstream from the proposed mining footprint (Information obtained from Water Use Risk Matrix date October 2021 and compiled by Enviroworks dated October 2021 - Figure 18)

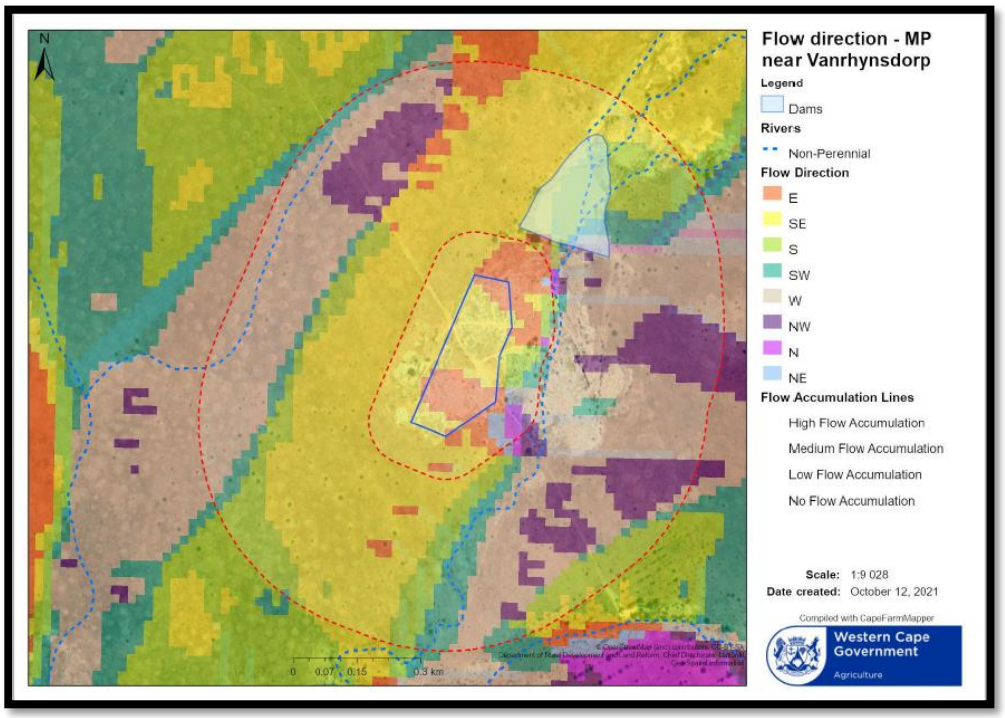


Figure 28: Surface water flow direction on the proposed mining permit (MP) footprint and surrounds, near Vanrhynsdorp (Information obtained from Water Use Risk Matrix date October 2021 and compiled by Enviroworks dated October 2021 - Figure 32)

SITE SPECIFIC MINING AND BIODIVERSITY CONSERVATION AREAS

As mentioned earlier, when the mining footprint is layered over the Mining and Biodiversity Map, it falls over and area of moderate biodiversity importance with a corresponding rating of moderate risk for mining. The Mining and Biodiversity Guideline's describes areas of moderate risk biodiversity importance as: "These areas are of moderate biodiversity value." The guideline notes that environmental screening, the EIA and specialists should focus on confirming the presence and significance of biodiversity features, and provide a site-specific basis on which to apply the mitigation hierarchy to inform regulatory decision-making. As per the Plant Species and Terrestrial Biodiversity Theme Compliance Statement dated October 2021 compiled by Enviroworks, both proposed development footprints are located in Ecological Support Areas (ESAs). Alternative one is located in an ESA Category 1 (Terrestrial) and Alternative two is located in an ESA Category 2 (Terrestrial) and ESA Category

1 (Aquatic). The immediate surrounding area is located in an ESA Category 2 (Terrestrial), and an ESA Category 1 (Aquatic and Terrestrial) (as per Figure below). ESAs are areas that, while note essential for meeting biodiversity targets, still play an important role in supporting the functioning of protected areas and/or CBAs and are key for providing ecosystem services. ESAs must be maintained in at least a functional and often natural state, to maintain the purpose for which they were identified, but restricted habitat loss may be acceptable. ESAs that are still likely to be functional (or in a natural, near natural or moderately degraded state) are classified as Category 1 ESAs. ESAs that have been severely degraded or have no natural cover remaining and would require restoration are classified as Category 2 ESAs. Since the proposed development footprint is situated in sensitive areas identified by the Western Cape Biodiversity Spatial Plan, the footprint is considered to hold conservation importance within these sensitive areas. However, not all these areas are in a natural or near-natural state. Nevertheless, care should be taken to avoid development in these sensitive areas to conserve their ecological importance.

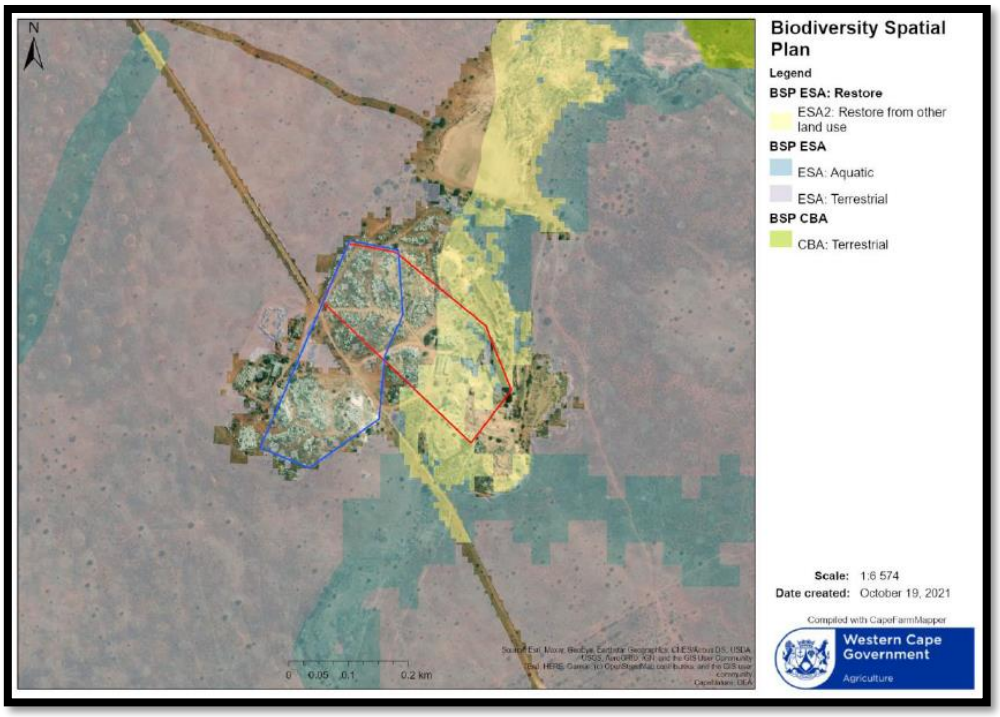


Figure 29: Sensitivity of the proposed development footprint (Alternative one is demarcated in Blue and Alternative two is demarcated in red) Information obtained from (Plant Species and Terrestrial Biodiversity Theme Compliance Statement dated October 2021 compiled by Enviroworks - Figure 4)

During the site visit, both development footprint alternatives were verified to be an old quarry (not in use) with a workshop to the west. The majority of each

footprint had either been completely transformed by the quarry or degraded by stockpiles of large marble stones. Only small corridors of vegetation remain between the stockpiles. Within these corridors, the vegetation is dominated by alien invasive species such *Prosopis glandulosa* (NEM:BA Category 1A), grass species such as *Stipellula capensis, Briza maxima*, and *Ornithogolum sp*. Other alien invasive species such *Atriplex lindleyi* (NEM:BA Category 1A) are also present on the footprints. This grassland type appearance of the vegetation may be a sign of the seasonal change in vegetation dominance in the landscape which is common for Vanrhynsdorp Gannabosveld. However, it is highly likely that this grassland appearance is rather a sign of degradation or disturbance. This is echoed by the high abundance of alien invasive species such as *Prosoposis galndulosa* (NEM:BA Category 1A) and the presence of the annual succulent, *Mesembryanthemum nodiflorum*, a disturbance indicator.

Figure 30: Site pictures of the proposed mining area

Figure 31: Information obtained from (Plant Species and Terrestrial Biodiversity Theme Compliance Statement dated October 2021 compiled by Enviroworks - Figure 7) Example of the vegetated corridors on the development footprints.

In terms of the areas of the footprints included in the Ecological Support Areas (ESAs), these areas have either been lost via mining or are severely degraded by stockpiles. There is one intact area on the footprint that is classified as an ESA and has not been mined (in the western area of Alternative one (refer to the demarcated area in the Figure below). This area is degraded and consists of little indigenous vegetation cover and is infested

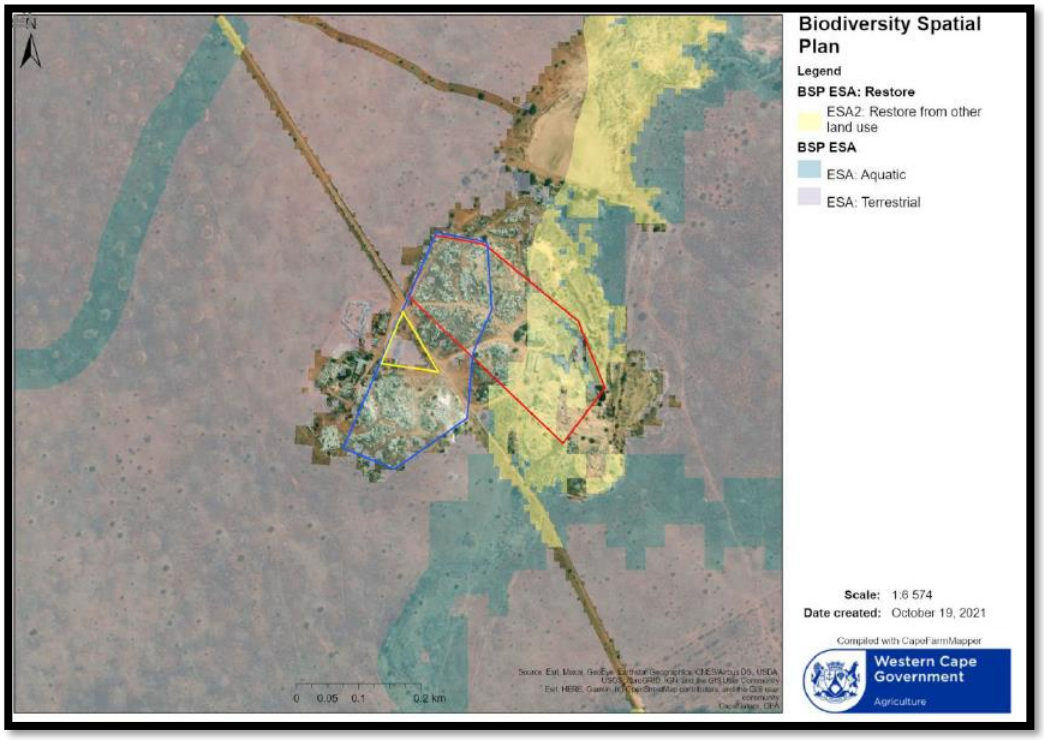


Figure 32: Information obtained from (Plant Species and Terrestrial Biodiversity Theme Compliance Statement dated October 2021 compiled by Enviroworks - Figure 8) Demarcated Ecological Support Area (demarcated by the yellow triangle) in site alternative one.

None of the species listed in (Table 3 – refer to appendix N Plant Species and Terrestrial Biodiversity Theme Compliance Statement dated October 2021 compiled by Enviroworks), were observed during the site visit. Based on known locations from POSA, GBIF, Redlist of South African Plants and iNaturalist, the listed threatened species have also not previously been recorded on the site or direct surrounds. Based on the habitat preferences of the species (Table 3 – refer to appendix N Plant Species and Terrestrial Biodiversity Theme Compliance Statement dated October 2021 compiled by Enviroworks), it is unlikely that any identified threatened species may occur within the

development footprint itself due to its disturbed and degraded nature. However, because the botanical survey was conducted in late spring, it is recommended that a site inspection be conducted during early spring (August – early September) to confirm that no threatened species are inhabiting the area.

Some provincially protected species (as per the Nature Conservation Ordinance (No. 19 of 1974) were located on the footprint (refer to Table 4 in Appendix N Plant Species and Terrestrial Biodiversity Theme Compliance Statement dated October 2021 compiled by Enviroworks). The individuals of these species are recommended to be removed and relocated to a suitable area outside of the footprint (in consultation with a Rehabilitation/Botanical Specialist). Prior to the relocation of the species, a plant removal permit will be required should the individuals be relocated to an area outside of the boundaries of land owned by the applicant of the mining permit. The provincially protected species are listed as Least Concern in the Red List of South African Plants.

Based on the aforementioned, both Alterative one and two should be classified as Low Sensitivity for the Plant Species and Terrestrial Biodiversity Themes. Therefore, it is recommended that either Alternative one or two can be developed and used for mining purposes given that the impact management outcomes are adhered to.

SITE SPECIFIC GROUNDCOVER

The site specific groundcover of the mining area consists of low shrub (karoo succulent) (purple area), open woodland (green area), and mines: extraction

pits and quarries as per the figure below.

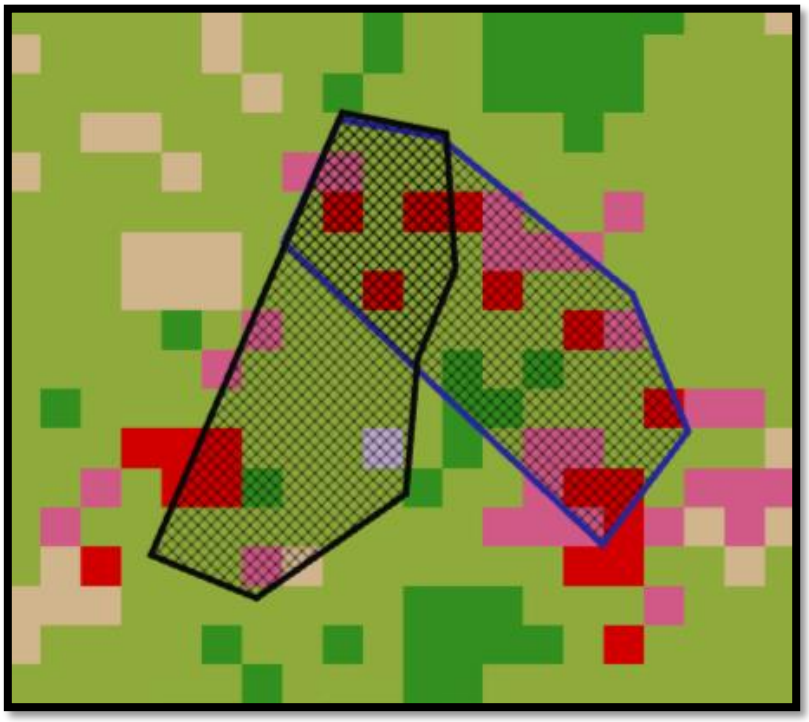


Figure 33: Land Cover 73-class (DEA, 2018)

As per the Plant Species and Terrestrial Biodiversity Theme Compliance Statement dated October 2021 compiled by Enviroworks, Vanrhynsdorp Gannabosveld is a vegetation type part of the Succulent Karoo Biome. It is usually found on flat or slightly undulating landscapes mostly between Vredendal and Vanrhynsdorp and in Namaqualand. The vegetation type supports succulent shrubland dominated by species within the genera *Salsola, Drosanthemum, Ruschia* and a large variety of annual and geophyte flora. In disturbed areas, indicators such as short-lived *Aizoaceae* can be present with seasonal dominance of *Bromus pectinatus* and *Stipellula capensis* on shale plains.

Vanrhynsdorp Gannabosveld is endemic to South Africa and is classified as Least Concern. However, none of the vegetation type is statutorily conserved. Consequently, the vegetation type is vulnerable to transformation whereby 20% is already transformed into cultivated land, open cast gypsum mining and degraded by alien invasive species such as *Atriplex sp*. and *Bromus sp*.

Figure 34: Pictures indicating site specific Land Cover

SITE SPECIFIC FAUNA

Various small mammals and reptiles occur are likely to on the property. Larger herbivore species are very scares or absent due to the conflicting land use. Small mammals, reptiles and insects will occur in the area. The fauna at the site will not be impacted by the proposed mining activity as they will be able to move away or through the site, without being harmed. Some porcupine holes where noted during the site inspection. Workers should be educated and managed to ensure that no fauna at the site is harmed. At this stage no resident protected or red data faunal species were identified within the earmarked footprint, and the project is expected to have a negligible impact in this regard as mining activities will be done by non-invasive activities.

Figure 35: Porcupine holes found on site

SITE SPECIFIC CULTURAL AND HERITAGE ENVIRONMENT

Heritage Western Cape were contacted for their perusal and commenting. Archaeological resources (Including archaeological sites and material, rock art, battlefields & wrecks):

As per the Notice of Intent to develop conducted by Jonathan Kaplan (ACRM) (Refer to Appendix O). Later Stone Age (LSA) and Middle Stone Age (MSA) tools have been recorded on portions of Farm 511 (Kaplan 2010, 2017), but the impact of proposed mining on heritage resources will be low, as proposed mining will take place within the footprint of the existing mine.

However, should artefacts archaeological items be observed during the mining activities, then all activity should cease immediately, the area marked off activity and a specialists consulted prior to any further activity. This also includes if any graves are observed on site during activity progress then all activity should have ceased and the area demarcated as a no-go zone

According to consulting palaeontologist John Pether (email correspondence dated 08 October, 2021), `The quarry exploits the limestone, dolomite and marble of the Widouw Formation (Gariep Supergroup, Gifberg Group) which date from ~770 to 700 million years ago. The earliest microfossils and tiny sponges had appeared by this time, but the quarrying will not impact on this cryptic fossil resource. The palaeontological sensitivity is LOW (SAHRIS)

Only FFP required in case of fossil finds in the overlying coversands'.

The South African Heritage Resources Agency (SAHRA) compiled the Palaeontological (fossil) Sensitivity Map (PSM) to guide developers, heritage officers and practitioners in screening paleontologically sensitive areas at the onset of a project. When the footprint of the earmarked mining area is placed on the PSM, it shows the study area to extend over an area of low insignificant (blue) concern as presented in the figure below.

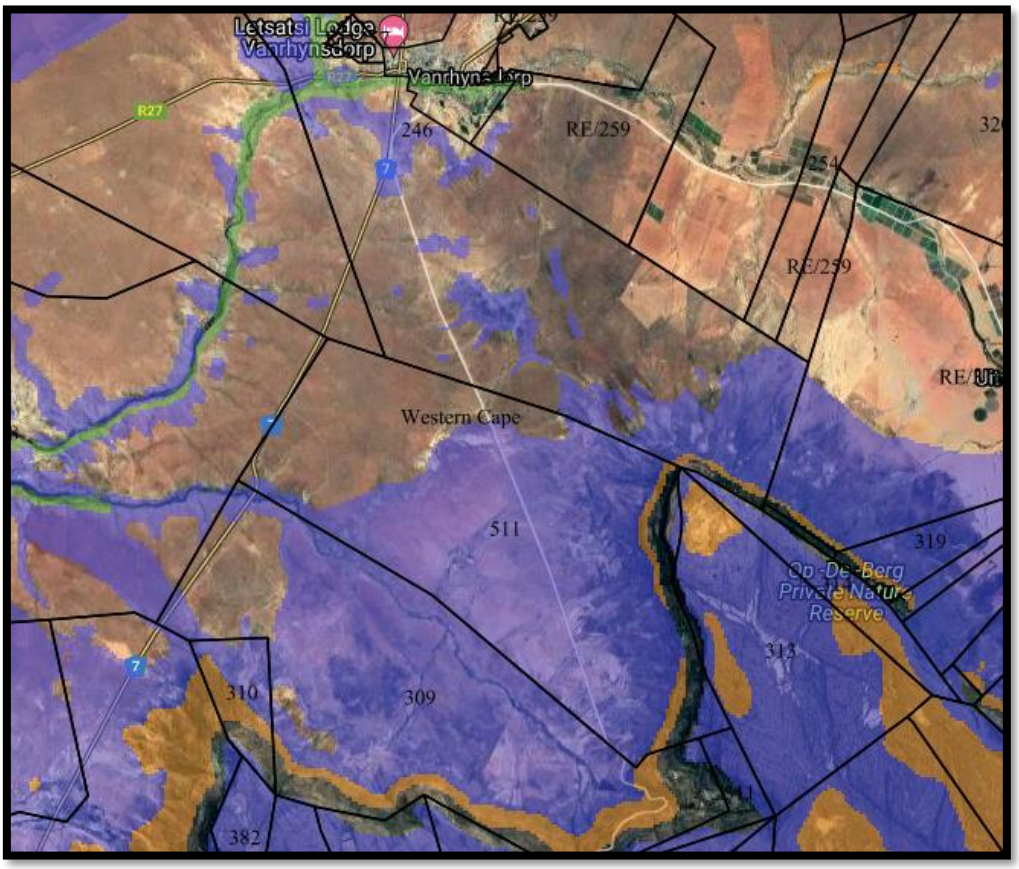


Figure 36: The SAHRA palaeontological sensitivity map shows the proposed mining footprint as well as Site Alternative 2 falls in an area of low insignificant (blue) concern.

(d) Environmental and current land use map.

(Show all environmental and current land use features)

The environmental and current land use map is attached as Appendix D.

v) Impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts

(Provide a list of the potential impacts identified of the activities described in the initial site layout that will be undertaken, as informed by both the typical known impacts of such activities, and as informed by the consultations with affected parties together with the significance, probability, and duration of the impacts. Please indicate the extent to which they can be reversed, the extent to which they may cause irreplaceable loss of resources, and can be avoided, managed or mitigated.)

The following potential impacts were identified of each main activity in each phase of the proposed project. The significance rating was determined using the methodology as explained under *vi) Methodology Used in Determining and Ranking the Significance*. The impact rating listed below was determined for each impact **prior** to bringing the proposed mitigation measures into consideration. The degree of mitigation indicates the possibility of partial, full or no mitigation of the identified impact.

SITE ESTABLISHMENT - STRIPPING AND STOCKPILING OF TOPSOIL AND/OR OVERBURDEN AND INFRASTRUCTURE DEVELOPMENT:

Alteration of the agricultural sense of place

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: None**		
1	4	1	2	2	5	3.5	**7**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**		**Degree of Mitigation: None**		
1	4	1	2	2	5	3.5	**7**

Loss of agricultural land for duration of mining

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: None**		
1	4	1	2	1	5	5	**10**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**		**Degree of Mitigation: None**		
1	4	1	2	1	5	5	**10**

Visual intrusion as a result of site establishment

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: None**		
2	2	1	1.6	2	5	3.5	**5.6**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**		**Degree of Mitigation: None**		
2	2	1	1.6	2	5	3.5	**5.6**

Potential impact on vegetation and listed and/or protected plant species during site establishment

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	2	1	1.6	4	3	3.5	**5.6**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	2	1	1.6	4	3	3.5	**5.6**

Potential impact on fauna within the footprint area by site establishment

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	2	1	1.6	2	3	2.5	**4**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	2	1	1.6	2	3	2.5	**4**

Potential impact on archaeological artefacts by site establishment

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	2	1	1.6	1	1	1	**1.6**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	2	1	1.6	1	1	1	**1.6**

Potential impact on areas of palaeontological concerns by site establishment

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	2	1	1.6	1	1	1	**1.6**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	2	1	1.6	1	1	1	**1.6**

Dust nuisance as a result of the disturbance of soil during site establishment

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	2	1	1.6	4	4	4	**9.2**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	2	1	1.6	4	4	4	**9.2**

Noise nuisance generated by earthmoving machinery during site establishment

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Partial**	
2	2	1	1.6	3	5	4	**9.2**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Partial**	
2	2	1	1.6	3	5	4	**9.2**

Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages during site establishment

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	4	1	2.6	4	4	4	**10.4**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	4	1	2.6	4	4	4	**10.4**

Potential contamination of water resources during site establishment

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	4	1	2.6	4	4	4	**10.4**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	4	1	2.6	4	4	4	**10.4**

Potential contamination of environment due to improper waste management during site establishment

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	4	1	2.6	5	4	4.5	**11.7**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**		**Degree of Mitigation: Full**		
3	4	1	2.6	5	4	4.5	**11.7**

Infestation of the topsoil heaps and mining area with weeds or invader plant species

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	4	2	3	5	2	3.5	**10.5**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**		**Degree of Mitigation: Full**		
3	4	2	3	5	2	3.5	**10.5**

Potential erosion of denuded areas

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	3	1	2.3	4	2	3	**6.9**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 2**		**Degree of Mitigation: Full**		
3	3	1	2.3	4	2	3	**6.9**

New job opportunities as a result of the mining operation (Positive Impact)

			Consequence			Likelihood	**Significance (+)**
Severity (+)	Duration	Extent		Probability	Frequency		
Rating: High (+)			**Site Alternative 1**		**Degree of Mitigation: N/A**		
4	4	5	4.6	5	5	5	**23**
			Consequence			Likelihood	**Significance (+)**
Severity (+)	Duration	Extent		Probability	Frequency		
Rating: High (+)			**Site Alternative 2**		**Degree of Mitigation: N/A**		
4	4	5	4.6	5	5	5	**23**

OPERATIONAL PHASE: DRILLING AND BLASTING, DIAMOND WIRE CUTTING, LOADING AND HAULING OF THE MINED MATERIAL FROM SITE:

Loss of agricultural land for duration of mining during operational phase

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: None**		
1	4	1	2	1	5	5	**10**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**		**Degree of Mitigation: None**		
1	4	1	2	1	5	5	**10**

Visual intrusion caused by operational phase

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: None**		
2	4	1	2.3	5	5	5	**11.5**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**		**Degree of Mitigation: None**		
2	4	1	2.3	5	5	5	**11.5**

Loss of stockpiled topsoil during operational phase

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	4	1	2.6	4	3	3.5	**9.1**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 2**		**Degree of Mitigation: Full**		
3	4	1	2.6	4	3	3.5	**9.1**

Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages during operational phase

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	4	1	2.6	4	4	4	**10.4**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**		**Degree of Mitigation: Full**		
3	4	1	2.6	4	4	4	**10.4**

Potential impact on vegetation and listed and/or protected plant species during operational phase

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	2	1	1.6	4	3	3.5	**5.6**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	2	1	1.6	4	3	3.5	**5.6**

Potential impact on local fauna due to disturbance and loss of available habitat during operational phase

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	4	1	2.3	4	4	4	**9.2**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	4	1	2.3	4	4	4	**9.2**

Potential impact on archaeological artefacts during operational phase

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	5	5	4	1	1	1	**4**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	5	5	4	1	1	1	**4**

Potential impact on areas of palaeontological concern during operational phase

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	5	5	4.6	2	1	1.5	**6.9**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
4	5	5	4.6	2	1	1.5	**6.9**

Facilitation of erosion due to operational phase

			Consequence			Likelihood	**Significance**

Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	4	1	2.6	4	3	3.5	**9.1**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	4	1	2.6	4	3	3.5	**9.1**

Potential contamination of water resources during operational phase

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	4	1	2.6	4	4	4	**10.4**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	4	1	2.6	5	4	4.5	**11.7**

Potential contamination of environment due to improper waste management

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	4	1	2.6	4	4	4	**10.4**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	4	1	2.6	4	4	4	**10.4**

OPERATIONAL PHASE - DRILLING AND BLASTING:

Health and safety risk posed by blasting activities

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	4	1	3	4	3	3.5	**10.5**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
4	4	1	3	4	3	3.5	**10.5**

Dust nuisance caused by drilling and blasting activities

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: None**	
3	4	1	2.6	4	3	3.5	**9.1**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: None**	
3	4	1	2.6	4	3	3.5	**9.1**

Noise nuisance as a result of drilling and blasting activities

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Partial**	
3	4	1	2.6	4	3	3.5	**9.1**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: Partial**	
3	4	1	2.6	4	3	3.5	**9.1**

OPERATIONAL PHASE: DIAMOND WIRE CUTTING, LOADING AND HAULING OF THE MINED MATERIAL FROM SITE

Visual intrusion as a result of diamond wire cutting, loading and hauling of the mined material from site

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: None**		
1	2	2	1.6	5	5	5	**8**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**		**Degree of Mitigation: None**		
1	2	2	1.6	5	5	5	**8**

Dust nuisance due to diamond wire cutting, loading and hauling of the mined material from site

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
1	4	2	2.3	4	5	4.5	**10.3**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**		**Degree of Mitigation: Full**		
1	4	2	2.3	4	5	4.5	**10.3**

Noise nuisance as a result of diamond wire cutting, loading and hauling of the mined material from site

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Partial**		
1	4	2	2.3	4	5	4.5	**10.3**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**		**Degree of Mitigation: Partial**		
1	4	2	2.3	4	5	4.5	**10.3**

Unsafe working environment for employees during diamond wire cutting, loading and hauling of the mined material from site

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	4	1	3	4	5	4.5	**13.5**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	4	1	3	4	5	4.5	**13.5**

Overloading of trucks impacting road infrastructure when loading and hauling the mined material from site

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	4	5	4	4	5	4.5	**18**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	4	5	4	4	5	4.5	**18**

Degradation of the access road when loading and hauling the mined material from site

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	4	2	3	4	5	4.5	**13.5**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	4	2	3	4	5	4.5	**13.5**

CUMULATIVE IMPACTS:

Impact the broad-scale ecological processes - The loss of unprotected vegetation types on a cumulative basis from the broad area may impact the country's ability to meet its conservation targets.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**		**Degree of Mitigation: Partial**		
4	4	4	4	3	1	2	**8**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 2**		**Degree of Mitigation: Partial**		
4	4	4	4	3	1	2	**8**

Impact on existing infrastructure as a direct result of the mining operation

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
4	4	5	4.3	3	3	3	**12.9**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**		**Degree of Mitigation: Full**		
4	4	5	4.3	3	3	3	**12.9**

SLOPING AND LANDSCAPING DURING REHABILITATION:

Loss of agricultural land for duration of mining during operational phase

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: None**	
1	4	1	2	1	5	5	**10**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: None**	
1	4	1	2	1	5	5	**10**

Potential impact on vegetation and listed and/or protected plant species during rehabilitation

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	2	1	1.6	4	3	3.5	**5.6**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	2	1	1.6	4	3	3.5	**5.6**

Safety risk posed by un-sloped areas

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	5	1	3	4	5	4.5	**13.5**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	5	1	3	4	5	4.5	**13.5**

Erosion of returned topsoil after rehabilitation

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	5	1	3	4	3	3.5	**10.5**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	5	1	3	4	3	3.5	**10.5**

Infestation of the reinstated areas by weeds and invader plant species

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	5	3	3.6	5	5	5	**18**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Site Alternative 2**		**Degree of Mitigation: Full**		
3	5	3	3.6	5	5	5	**18**

Potential impact associated with litter/waste left at the mining area

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	5	1	3	4	5	4.5	**13.5**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**		**Degree of Mitigation: Full**		
3	5	1	3	4	5	4.5	**13.5**

Visual intrusion as a result of rehabilitation

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: None**	
1	2	2	1.6	5	5	5	**8**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: None**	
1	2	2	1.6	5	5	5	**8**

Potential contamination of environment due to improper waste management

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	4	1	2.6	4	4	4	**10.4**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	4	1	2.6	4	4	4	**10.4**

Potential contamination of water resources during rehabilitation

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	4	1	2.6	4	4	4	**10.4**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	4	1	2.6	5	4	4.5	**11.7**

Potential impact on local fauna due to disturbance and loss of available habitat during rehabilitation

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	4	1	2.3	4	4	4	**9.2**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	4	1	2.3	4	4	4	**9.2**

Return of the mining area to agricultural use upon closure (Positive Impact)

			Consequence			Likelihood	**Significance (+)**
Severity (+)	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Site Alternative 1**			**Degree of Mitigation: N/A**	
3	5	1	3	5	5	5	**15**
			Consequence			Likelihood	**Significance (+)**
Severity (+)	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Site Alternative 2**			**Degree of Mitigation: N/A**	
3	5	1	3	5	5	5	**15**

vi) -Methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;

(Describe how the significance, probability, and duration of the aforesaid identified impacts that were identified through the consultation process was determined in order to decide the extent to which the initial site layout needs revision.)

Methodology for the assessment of the potential environmental, social and cultural impacts

DEFINITIONS AND CONCEPTS:

Environmental significance:

The concept of significance is at the core of impact identification, evaluation and decision-making. The concept remains largely undefined and there is no international consensus on a single definition. The following common elements are recognised from the various interpretations:

- Environmental significance is a value judgement
- The degree of environmental significance depends on the nature of the impact
- The importance is rated in terms of both biophysical and socio-economic values
- Determining significance involves the amount of change to the environment perceived to be acceptable to affected communities.

Significance can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e. intensity, duration and likelihood). Impact significance is the value placed on the change by different affected parties (i.e. level of acceptability) (DEAT (2002) Impact Significance, Integrated Environmental Management, Information Series 5).

The concept of risk has two dimensions, namely the consequence of an event or set of circumstances, and the likelihood of particular consequences being realised (Environment Australia (1999) Environmental Risk Management).

Impact

The positive or negative effects on human well-being and / or the environment.

Consequence

The intermediate or final outcome of an event or situation OR it is the result, on the environment, of an event.

Likelihood

A qualitative term covering both probability and frequency.

Frequency

The number of occurrences of a defined event in a given time or rate.

Probability

The likelihood of a specific outcome measured by the ratio of a specific outcome to the total number of possible outcomes.

Environment

Surroundings in which an organisation operates, including air, water, land, natural resources, flora, fauna, humans and their interrelation (ISO 14004, 1996).

Methodology that will be used

The environmental significance assessment methodology is based on the following determination:

Environmental Significance = Overall Consequence X Overall Likelihood

Determination of Overall Consequence

Consequence analysis is a mixture of quantitative and qualitative information and the outcome can be positive or negative. Several factors can be used to determine consequence. For the purpose of determining the environmental significance in terms of consequence, the following factors were chosen: ***Severity/Intensity, Duration and Extent/Spatial Scale***. Each factor is assigned a rating of 1 to 5, as described in the tables below.

Determination of Severity / Intensity

Severity relates to the nature of the event, aspect or impact to the environment and describes how severe the aspects impact on the biophysical and socio-economic environment.

The table below will be used to obtain an overall rating for severity, taking into consideration the various criteria.

Table 15: Table to be used to obtain an overall rating of severity, taking into consideration the various criteria.

Type of criteria	Rating				
	1	2	3	4	5
Quantitative	0-20%	21-40%	41-60%	61-80%	81-100%
Qualitative	Insignificant / Non-harmful	Small / Potentially harmful	Significant/ Harmful	Great/ Very harmful	Disastrous Extremely harmful
Social/ Community response	Acceptable / I&AP satisfied	Slightly tolerable / Possible objections	Intolerable/ Sporadic complaints	Unacceptable / Widespread complaints	Totally unacceptable / Possible legal action
Irreversibility	Very low cost to mitigate/ High potential to mitigate impacts to level of insignificance/ Easily reversible	Low cost to mitigate	Substantial cost to mitigate/ Potential to mitigate impacts/ Potential to reverse impact	High cost to mitigate	Prohibitive cost to mitigate/ Little or no mechanism to mitigate impact Irreversible
Biophysical (Air quality, water quantity and quality, waste production, fauna and flora)	Insignificant change / deterioration or disturbance	Moderate change / deterioration or disturbance	Significant change / deterioration or disturbance	Very significant change / deterioration or disturbance	Disastrous change / deterioration or disturbance

Determination of Duration

Duration refers to the amount of time that the environment will be affected by the event, risk or impact, if no intervention e.g. remedial action takes place.

Table 16: Criteria for the rating of duration.

Rating	Description
1	Up to ONE MONTH
2	ONE MONTH to THREE MONTHS (QUARTER)
3	THREE MONTHS to ONE YEAR
4	ONE to TEN YEARS
5	Beyond TEN YEARS

Determination of Extent/Spatial Scale

Extent or spatial scale is the area affected by the event, aspect or impact.

Table 17: Criteria for the rating of extent / spatial scale.

Rating	Description
1	Immediate, fully contained area
2	Surrounding area
3	Within Business Unit area of responsibility
4	Within the farm/neighbouring farm area
5	Regional, National, International

Determination of Overall Consequence

Overall consequence is determined by adding the factors determined above and summarized below, and then dividing the sum by 3.

Table 18: Example of calculating overall consequence.

Consequence	Rating
Severity	Example 4
Duration	Example 2
Extent	Example 4
SUBTOTAL	**10**
TOTAL CONSEQUENCE: (Subtotal divided by 3)	**3.3**

Determination of Likelihood:

The determination of likelihood is a combination of Frequency and Probability. Each factor is assigned a rating of 1 to 5, as described below and in tables 6 and 7.

Determination of Frequency

Frequency refers to how often the specific activity, related to the event, aspect or impact, is undertaken.

Table 19: Criteria for the rating of frequency.

Rating	Description
1	Once a year or once/more during operation
2	Once/more in 6 Months
3	Once/more a Month
4	Once/more a Week
5	Daily

Determination of Probability

Probability refers to how often the activity or aspect has an impact on the environment.

Table 20: Criteria for the rating of probability.

Rating	Description
1	Almost never / almost impossible
2	Very seldom / highly unlikely
3	Infrequent / unlikely / seldom
4	Often / regularly / likely / possible
5	Daily / highly likely / definitely

Overall Likelihood

Overall likelihood is calculated by adding the factors determined above and summarised below, and then dividing the sum by 2.

Table 21: Example of calculating overall likelihood.

Consequence	Rating
Frequency	Example 4
Probability	Example 2
SUBTOTAL	**6**
TOTAL LIKELIHOOD (Subtotal divided by 2)	**3**

Determination of Overall Environmental Significance:

The multiplication of overall consequence with overall likelihood will provide the environmental significance, which is a number that will then fall into a range of **LOW**, **LOW-MEDIUM**, **MEDIUM**, **MEDIUM-HIGH** or **HIGH**, as shown in the table below.

Table 22: Determination of overall environmental significance.

Significance or Risk	Low	Low-Medium	Medium	Medium-High	High
Overall Consequence X Overall Likelihood	1 – 4.9	5 – 9.9	10 – 14.9	15 – 19.9	20 – 25

Qualitative description or magnitude of Environmental Significance

This description is qualitative and is an indication of the nature or magnitude of the Environmental Significance. It also guides the prioritisations and decision making process associated with this event, aspect or impact.

Table 23: Description of environmental significance and related action required.

Significance	Low	Low-Medium	Medium	Medium-High	High
Impact Magnitude	Impact is of very low order and therefore likely to have very little real effect. Acceptable.	Impact is of low order and therefore likely to have little real effect. Acceptable.	Impact is real, and potentially substantial in relation to other impacts. Can pose a risk to company	Impact is real and substantial in relation to other impacts. Pose a risk to the company. Unacceptable	Impact is of the highest order possible. Unacceptable. Fatal flaw.
Action Required	Maintain current management measures. Where possible improve.	Maintain current management measures. Implement monitoring and evaluate to determine potential increase in risk. Where possible improve	Implement monitoring. Investigate mitigation measures and improve management measures to reduce risk, where possible.	Improve management measures to reduce risk.	Implement significant mitigation measures or implement alternatives.

Based on the above, the significance rating scale has been determined as follows:

High	Of the highest order possible within the bounds of impacts which could occur. In the case of negative impacts, there would be no possible mitigation and / or remedial activity to offset the impact at the spatial or time scale for which it was predicted. In the case of positive impacts, there is no real alternative to achieving the benefit.
Medium-High	Impacts of a substantial order. In the case of negative impacts, mitigation and / or remedial activity would be feasible but difficult, expensive, time-consuming or some combination of these. In the case of positive impacts, other means of achieving this benefit would be feasible, but these would be more difficult, expensive, time-consuming or some combination of these.
Medium	Impact would be real but not substantial within the bounds of those, which could occur. In the case of negative impacts, mitigation and / or remedial activity would be both feasible and fairly easily possible, In case of positive impacts; other means of achieving these benefits would be about equal in time, cost and effort.
Low-Medium	Impact would be of a low order and with little real effect. In the case of negative impacts, mitigation and / or remedial activity would be either easily achieved of little would be required, or both. In case of positive impacts alternative means for achieving this benefit would likely be easier, cheaper, more effective, less time-consuming, or some combination of these.
Low	Impact would be negligible. In the case of negative impacts, almost no mitigation and or remedial activity would be needed, and any minor steps, which might be needed, would be easy, cheap and simple. In the case of positive impacts, alternative means would almost all likely be better, in one or a number of ways, than this means of achieving the benefit
Insignificant	There would be a no impact at all – not even a very low impact on the system or any of its parts.

vii) 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.

(Provide a discussion in terms of advantages and disadvantages of the initial site layout compared to alternative layout options to accommodate concerns raised by affected parties)

The environmental impact assessment process assessed the feasibility of the proposed site alternative to identify fatal flaws that are deemed as severe as to prevent

the activity continuing, or warrant another site or project alternative. The outcome of the assessment showed that should the mitigation measures and monitoring programmes proposed in this document be implemented, no fatal flaws could be identified that prevents the activity continuing. In light of the above, the mining proposal was updated to incorporate the project related mitigation measures and monitoring programmes identified during the assessment process. The preferred development footprint was subsequently finalized and is depicted on the attached site activities plan (Appendix C). The proposed mining area was identified as the preferred and only viable site alternative as it entails the mining of an area previously used for marble mining purposes. In light of this, S1 was identified during the assessment phase of the environmental impact assessment, by the Applicant and project team due to the following:

- The proposed area is over a disturbed area of the farm previously used for marble mining but with very low agricultural potential due to the existing marble deposits left in the application area, after consultation with the land owner the application footprint extends into an area with low agricultural potential. The proposed project will not necessitate the loss of agricultural field with high potential to the land owner.
- Access to the proposed mining area is possible via the existing access road with a formal (existing) entrance onto the N7.
- This alternative is highly disturbed and will not result in loss of natural vegetation or disturbance to water courses.
- The mining of the area will ultimately result in rehabilitation of an already disturbed area, leaving it in better state than prior to mining.
- This alternative could however provide opportunity in the future to restore the transformed watercourses and could re-establish the more natural and meandering flow path, as opposed to the more rigid and straightened path created by the berm's diversion.

PROJECT ASSOCIATED POSITIVE IMPACTS:

- Possible work opportunities to local residents;
- Return of the mining area to agricultural use upon closure of the project; and
- Diversification of the land use of the property.

POTENTIAL NEGATIVE IMPACTS:

Site establishment & infrastructure development

- Alteration of the agricultural sense of place;
- Loss of agricultural land for duration of mining;
- Visual intrusion as a result of site establishment;
- Potential impact on fauna within the footprint area;
- Potential impact on archaeological artefacts;
- Potential impact on areas of palaeontological concerns.
- Dust nuisance as a result of the disturbance of soil during site establishment
- Noise nuisance generated by earthmoving machinery
- Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages during site establishment
- Potential contamination of water resources during site establishment
- Potential contamination of environment due to improper waste management during site establishment
- Infestation of the topsoil heaps and mining area with weeds or invader plant species
- Potential impact on archaeological artefacts.

Operational Phase: Drilling and Blasting, Diamond wire cutting, loading and hauling of the mined material from site:

- Health and safety risk posed by drilling and blasting activities;
- Dust nuisance caused by drilling and blasting activities;
- Noise nuisance as a result of drilling and blasting;
- Dust nuisance due to excavation and from diamond wire cutting, loading and hauling of the mined material from site;
- Noise nuisance as a result of the diamond wire cutting, loading and hauling of the mined material from site;
- Unsafe working environment for employees;
- Soil contamination from hydrocarbon spills and/or littering;
- Potential impact on areas of palaeontological concern;
- Facilitation of erosion due to mining activities;

Processing, stockpiling and transporting of material:

- Dust nuisance generated at the processing plant;
- Noise nuisance stemming from operation of the processing plant;
- Potential contamination of environment due to improper waste management;

- Overloading of trucks impacting road infrastructure;
- Degradation of the access road;

Cumulative impacts:

- Impact the broad-scale ecological processes;
- Impact on existing infrastructure as a direct result of the mining operation;

Sloping and landscaping during rehabilitation:

- Safety risk posed by un-sloped areas;
- Erosion of returned topsoil after rehabilitation;
- Infestation of the reinstated areas by weeds and invader plant species;
- Potential impact associated with litter/waste left at the mining area.
- Potential impact associated with litter/waste left at the mining area
- Potential contamination of water resources during rehabilitation
- Potential contamination of environment due to improper waste management
- Potential impact on local fauna due to disturbance and loss of available habitat during rehabilitation

viii) The possible mitigation measures that could be applied and the level of risk

(With regard to the issues and concerns raised by affected parties provide a list of the issues raised and an assessment/discussion of the mitigation or site layout alternatives available to accommodate or address their concerns, together with an assessment of the impacts or risks associated with the mitigation or alternatives considered)

The following mitigation measures are proposed to address/minimize the impact of the proposed activity on the surrounding environment:

The following mitigation measures are proposed to address/minimize the impact of the proposed activity on the surrounding environment:

TOPOGRAPHY

Rehabilitating/Landscaping of Mining Area:

- The excavated area must serve as a final depositing area for the placement of overburden.
- Rocks and coarse material removed from the excavation must be dumped into the excavation.
- Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.
- Stockpiles must be removed during the decommissioning phase, the area ripped and the topsoil returned to its original depth to provide a growth medium.

- No waste may be permitted to be deposited in the excavations.
- Once overburden, rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area.
- The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within six months from closure of the site.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.
- On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002).
- On completion of mining operations, the surface of all plant-, stockpiling-, and/or office areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.

VISUAL CHARACTERISTICS

Visual Mitigation:

- The site must have a neat appearance and be kept in good condition at all times.
- Mining equipment must be stored neatly in dedicated areas when not in use.
- The permit holder must limit vegetation removal, and stripping of topsoil may only be done immediately prior to the mining/use of a specific area.
- The excavation must be contained within the approved footprint of the permitted area.
- Upon closure the site must be rehabilitated to ensure that the visual impact on the aesthetic value of the area is reduced to the minimum.

AIR AND NOISE QUALITY

Fugitive Dust Emission Mitigation Measures:

- The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, straw, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products).
- The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression.
- Speed on the haul roads must be limited to 20 km/h and 40 km/h on the access road to prevent the generation of excess dust.
- Areas devoid of vegetation, which could act as a dust source, must be minimized and vegetation removal may only be done immediately prior to mining.
- Weather conditions must be taken into consideration upon commencement of daily operations. Limiting operations during very windy periods would reduce airborne dust and resulting impacts.
- All dust generating activities shall comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA (Act 39 of 2004) and ASTM D1739 (SANS 1137:2012).
- Best practice measures shall be implemented during the stripping of topsoil, excavation, and transporting of material from site to minimize potential dust impacts.

Noise Handling:

- The permit holder must ensure that employees and staff conduct themselves in an acceptable manner while on site.
- No loud music may be permitted at the mining area.
- All mining vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996 (Act No 93 of 1996).
- The type, duration and timing of the blasting procedures must be planned with due cognizance of other land users and structures in the vicinity. Surrounding land owners must be notified in writing prior to each blasting occasion.
- A qualified occupational hygienist must be contracted to quarterly monitor and report on the personal noise exposure of the employees working at the mine. The monitoring must be done in accordance with the SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA, 2004, SANS 10103:2008.
- Site management must strive to minimise the noise caused by generators. All generators must be maintained and equipped with sound mufflers.
- Best practice measures shall be implemented in order to minimize potential noise impacts.

GEOLOGY AND SOIL

Topsoil Management:

- The upper 300 mm of the soil must be stripped and stockpiled before mining.
- Topsoil is a valuable and essential resource for rehabilitation and it must therefore be managed carefully to conserve and maintain it throughout the stockpiling and rehabilitation processes.
- Topsoil stripping, stockpiling and re-spreading must be done in a systematic way. The mining plan have to be such that topsoil is stockpiled for the minimum possible time.
- The topsoil must be placed on a levelled area, within the mining footprint. No topsoil may be stockpiled in undisturbed areas.
- Topsoil stockpiles must be protected against losses by water- and wind erosion. Stockpiles must be positioned so as not to be vulnerable to erosion by wind and water. The establishment of plants (weeds or a cover crop) on the stockpiles will help to prevent erosion.
- Topsoil heaps may not exceed 1.5 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.
- The temporary topsoil stockpiles must be kept free of invasive plant species.
- Topsoil heaps to be stored longer than a period of 6 months needs to be vegetated with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season.
- Storm- and runoff water must be diverted around the stockpile area to prevent erosion.
- The stockpiled topsoil must be evenly spread, to a depth of 300 mm, over the rehabilitated area upon closure of the site.
- The permit holder must strive to re-instate topsoil at a time of year when vegetation cover can be established as quickly as possible afterwards, so that erosion of returned topsoil by both rain and wind, before vegetation is established, is minimized. The best time of year is at the end of the rainy season, when there is moisture in the soil for vegetation establishment and the risk of heavy rainfall events is minimal.
- A cover crop must be planted and established immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. The cover crop must be fertilized for optimum biomass production. It is important that rehabilitation be taken up to the point of cover crop stabilization. Rehabilitation cannot be considered complete until the first cover crop is well established.

- Run-off water must be controlled via temporary berms, where necessary, on the slopes to ensure that accumulation of run-off does not cause down-slope erosion.
- Silt/sediment traps/barriers should be used where there is a danger of topsoil or material stockpiles eroding and entering downstream drainage lines and other sensitive areas.
- These sediment/silt barriers should be regularly maintained and cleared so as to ensure effective drainage of the areas
- The rehabilitated area must be monitored for erosion, and appropriately stabilized if any erosion occurs for at least 12 months after reinstatement.

HYDROLOGY

Erosion Control and Storm Water Management:

- Clearing of vegetation must be limited to the proposed mining footprint and associated infrastructure. No clearing outside of the minimum required footprint to take place.
- Stormwater must be diverted around the topsoil heaps and mining areas to prevent erosion.
- Stockpiles must be protected from erosion, stored on flat areas where possible, and be surrounded by appropriate berms.
- When mining within steep slopes, it must be ensured that adequate slope protection is provided.
- During mining, the outflow of run-off water from the mining excavation must be controlled to prevent down-slope erosion. This must be done by way of the construction of temporary banks and ditches that will direct run-off water (if needed). These must be in place at any points where overflow out of the excavation might occur.
- Roads and other disturbed areas within the project area must be regularly monitored for erosion and problem areas must receive follow-up monitoring to assess the success of the remediation.
- Any erosion problems within the mining area as a result of the mining activities observed must be rectified immediately (within 48 hours) and monitored thereafter to ensure that it does not re-occur.
- Silt/sediment traps/barriers must be used where there is a danger of topsoil or material stockpiles eroding and entering downstream drainage lines and other sensitive areas. These sediment/silt barriers must regularly be maintained and cleared so as to ensure effective drainage of the areas.

- Similar to the western berm around the old mine, stormwater management should be implemented at the proposed mining footprint.
- Surface run-off should be diverted around the proposed new mine and 'dirty'/contaminated water must be recycled back into the mining system
- Flow continuity and connectivity of the watercourses must be reinstated post-construction activities and operational phase.
- Regular monitoring of water quality must be implemented in order to ensure the impacts of runoff and decant of water into watercourse is prevented or minimised.
- Adequate storm water management must be incorporated into the design of the proposed development throughout all phases. In this regard, special mention is made of: Sheet runoff from cleared areas, paved surfaces, bare, disturbed- and compacted soil and access roads needs to be curtailed.
- Runoff from paved and compacted bare soil surfaces, including channelled stormwater or water should be slowed down by the strategic placement of berms or increasing surface roughness to slow down the flow of water.
- Topsoil and waste stockpiles must have berms and catchment paddocks at their toe to contain runoff of the facilities.
- Construction, development and mining activities should be excluded from the regulated area of the watercourse as much as possible.
- Compacted areas are to be ripped, re-profiled and revegetation as soon as areas becomes available.
- Any areas where active erosion are observed must be immediately rehabilitated in such a way as to ensure that the hydrology of the area is re-instated to conditions which are as natural as possible.
- Cutting/ clearing of the herbaceous layer within the watercourse along the linear development should be avoided so as to retain soil stability provided by the grass root structures.
- Watercourse crossings and diversions must be inspected quarterly.
- Establish vegetation around disturbed areas to prevent any erosion.
- Stormwater runoff should be handled on surface and directed towards natural watercourses.
- • Access roads for support vehicles, and vehicles used in the construction of the crossings, should not encroach into the freshwater features (this excludes existing access roads)
- Install retardation structures where water leaves the site or exits stormwater channels/bermed/diverted areas flow and into the natural watercourse/environment.

- Construct diversion drains around the site timeously prior to operation.
- Ensure adherence to GNR 704 of the NWA.
- Where the diversion re-enters the natural system, it must enter the system at the same elevation as the receiving aquatic environment as well as consist of an energy dissipation structure thereby preventing erosion and incision of the natural watercourse.
- The point where the diversion re-enters the natural watercourse must enter the system where possible at an acute angle to prevent the creation of turbulent flow, erosion and incision.
- Ensure erosion protection measures are adequately implemented and monitored.
- No construction of infrastructure may take place within watercourses and associated buffer zones unless authorisation is granted by the DWS.
- As far as possible all mining activity and infrastructure should be excluded from the watercourses and associated 100 m buffer zone.
- Mining must be conducted only in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose:
  - Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system. You must prevent clean water from running or spilling into dirty water systems.
  - Dirty water must be collected and contained in a system separate from the clean water system.
  - Dirty water must be prevented from spilling or seeping into clean water systems.
  - A storm water management plan must apply for the entire life cycle of the mining activity and over different hydrological cycles (rainfall patterns).
  - The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into a storm water management plan.
- Polluting activities including storage of mining fleet, equipment wash down facilities and vehicle maintenance yards must be restricted to the workshop areas and must be undertaken on impermeable hard standing surfaces, which are formally drained to a dirty water drainage system at the site.

- Vehicle maintenance or refueling should be undertaken within the workshop and service area proposed within the mining area. Alternatively, if emergency repairs or refueling are required, it must be undertaken on an impermeable surface to prevent contamination of soil and groundwater. Vehicles and equipment must be parked and stored on impermeable surfaces or make use of uPVC lining and drip trays when stationary
- All fuels and chemicals stored or used on site must be contained within fit for purpose containers and stored within designated storage areas. In order to prevent pollution of the surrounding environment during an accidental spillage, the designated storage areas must be situated on an impermeable surface and must feature a perimeter bund and a drainage sump. The volume of the bund and sump must be sized to contain at least 110% of the total volume of the fuel and chemicals being stored within the designated storage area. The storage areas must feature a roof to prevent inflow of rainwater, which would require the sump to be emptied more frequently.

HYDROLOGY

Protection of water resources

- Any future development within 1:100-year floodline or within the riparian habitat constitutes a water use licence in terms of section 21 (c) and (i) of the National Water Act, 1998 (Act 36 of 1998) and will require authorisation before any development may commence.
- Any portable toilets would be used on-site during construction and/or operational phase of the development; such toilet facilities must be located outside of the 1:100-year floodline and must be regularly emptied at a municipal wastewater treatment works.
- Solid and chemical waste generated from construction and operational phases of the development must be kept away from drainage line.
- No abstraction of surface water or ground water may take place without the prior authorization from this Department unless it is a Schedule 1 use or an Existing Lawful Use.
- Where solid waste disposal is to take place on site, ensure that only non-toxic materials which have no risk of polluting the groundwater, are buried in designated approved areas at acceptable depths below ground level.
- No surface, ground or storm water may be polluted as a result of any activities on the site.

- The person who owns, controls, occupies, or uses the land in question is responsible for taking measures to prevent any occurrence of pollution to water resources.
- Rehabilitation plan must be formulated and submitted to the Department of Water Affairs and Sanitation for comments. If the rehabilitation of the site will include the storage of water, authorization will be required before any water is stored.
- The rehabilitation of the site must ensure that the final condition of the site is environmentally acceptable and that there will be no adverse long-term effects on the surrounding environment especially the water resources post mining activities.
- All requirements in the Regulations on use of water for mining and related activities aimed at the protection of water resources as contained in Government Notice No 704 dated 4 June 2004 must be adhered to.
- All requirements as stipulated in the National Water Act (NWA) 1998(Act No. 36 of 1998) must be adhered to.

TERRESTRIAL BIODIVERSITY, CONSERVATION AREAS AND GROUNDCOVER

Management of Vegetation Removal:

- The mining boundaries must be clearly demarcated and all operations must be contained to the approved mining area. The area outside the mining boundaries must be declared a no-go area, and all staff must be educated accordingly.
- A pre-commencement walk-through of the final mining footprint, must be done by a suitably qualified botanist to identify species of conservation concern that need to be removed/relocated prior to bush clearance.
- The mining boundaries must be clearly demarcated and all operations must be contained to the approved mining area. The area outside the mining boundaries must be declared a no-go area, and all staff must be educated accordingly.
- All vehicles must remain on demarcated roads and no unnecessary driving in the veld outside these areas may be allowed.
- No fires must be allowed on-site.
- Smoking must be restricted to designated smoking areas.

- An additional botanical survey must be conducted in early spring (autumn – early September) to ensure that there are no additional Species of Conservation Concern on site

- Species of Conservation Concern identified on the footprint must be relocated to suitable area outside of the footprint in consultation with a Rehabilitation/Botanical specialist.

- Should any Species of Conservation Concern be relocated outside of an area that the mining permit applicant does not own, a plant removal permit must be obtained first.

- No plants may be translocated or otherwise uprooted or disturbed for rehabilitation or other purposes without express permission from the ECO and without the relevant permits.

- Permits for the removal of protected plant species (if required) must be obtained and kept on-site in the possession (at all times) of the flora search and rescue team.

- Cleared vegetation to be retained at any time may not be burned, but can be mulched and stockpiled. Ideally the heaps can be covered with stockpiled topsoil and the material be retained for future site rehabilitation purposes.

- An ECO must provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment, especially during the site establishment phase, when the majority of vegetation clearing is taking place.

Management of Invasive Plant Species:

- An invasive plant species management plan (Appendix K) must be implemented at the site to ensure the management and control of all species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto). Weed/alien clearing must be done on an ongoing basis throughout the life of the mining activities.
- No planting or importing of any alien species to the site for landscaping, rehabilitation or any other purpose may be allowed.
- All stockpiles (topsoil & overburden) must be kept free of invasive plant species.

- Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used:
  - The plants can be uprooted, felled or cut off and can be destroyed completely.
  - The plants can be treated chemically by a registered pest control officer (PCO) through the use of an herbicide recommended for use by the PCO in accordance with the directions for the use of such an herbicide.

FAUNA

Protection of Fauna:

- The site manager must ensure no fauna is caught, killed, harmed, sold or played with.
- Any fauna directly threatened by the operational activities must be removed to a safe location by the ECO or other suitably qualified person.
- All personnel must undergo environmental induction regarding fauna management and in particular awareness about not harming or collecting species such as snakes, tortoises and owls which are often persecuted out of superstition. Workers must be instructed to report any animals that may be trapped in the working area.
- No snares may be set or nests raided for eggs or young.
- All vehicles must adhere to a low speed limit (40 km/h is recommended) to avoid collisions with susceptible species such as snakes and tortoises.
- No litter, food or other foreign material may be thrown or left around the site. Such items must be kept in the site vehicles and daily removed to the site camp.

CULTURAL AND HERITAGE ENVIRONMENT

Archaeological, Heritage and Palaeontological Aspects:

The following pre-quarrying archaeological mitigation measures are recommended:

Archaeology:

- No pre-quarrying archaeological mitigation of the proposed quarry site is recommended. Although unlikely, should any human remains be encountered at any stage during the works associated with the project, work must in the vicinity

must cease immediately, the remains must be left in situ but made secure and the project archaeologist and HWC must be notified immediately.;

- Should any human remains be encountered at any stage during the works associated with the project, work must in the vicinity must cease immediately, the remains must be left in situ but made secure and the project archaeologist and HWC must be notified immediately in order to make a decision about how to deal with the remains.

- All mining must be confined to the development footprint area.
- If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.
- It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area.
- The senior on-site Manager must inform the ECO of the chance find and its immediate impact on operations. The ECO must then contact a professional archaeologist for an assessment of the finds who must notify the SAHRA.
- Work may only continue once the go-ahead was issued by SAHRA.

Built Environment:

- If fossils are found during quarrying, they must be excavated and collected by a professional palaeontologist, working under a HWC permit and then housed in a recognised repository.

LAND USE

Loss of agricultural land for duration of mining:

- The Applicant signed a lease agreement with the landowner to compensate for the loss of agricultural land for the duration of the mining period. If needed, mined-out/rehabilitated areas could revert back to agricultural use once the cover crop stabilised.
- Restrict the proposed development to the smallest footprint possible and do not disturb/alter areas outside the development;

- Ensure that the mining activities and associated infrastructure is adequately fenced to prevent livestock from gaining access to the base station; and,
- Ensure that access roads are kept clear and that construction and operational activities do not interfere with agricultural activities.

Management of the Access Road:

- Storm water must be diverted around the access road to prevent erosion.
- Vehicular movement must be restricted to the existing access road and crisscrossing of tracks through undisturbed areas must be prohibited.
- Rutting and erosion of the access road caused as a direct result of the mining activities must be repaired by the permit holder.
- Overloading of the trucks must be prevented and proof of load weights must be filed and be available for auditing by relevant officials.
- The speed of all mining equipment/vehicles must be restricted to 40 km/h on the access roads.

GENERAL

Waste Management:

- Regular vehicle maintenance, repairs and services may only take place at the workshop and service area. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a closed container/bin to be removed from the emergency service area (same day) to the workshop in order to ensure proper disposal. This waste must be treated as hazardous waste and must be disposed of at a registered hazardous waste handling facility, alternatively collected by a registered hazardous waste handling contractor. The safe disposal certificates must be filed for auditing purposes.
- Vehicle maintenance or refueling should be undertaken within the workshop and service area proposed within the mining area. Alternatively, if emergency repairs or refueling are required, it must be undertaken on an impermeable surface to prevent contamination of soil and groundwater. Vehicles and equipment must be parked and stored on impermeable surfaces or make use of uPVC lining and drip trays when stationary
- If a diesel bowser is used on site, it must be equipped with a drip tray at all times. Drip trays must be used during each and every refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling.

- Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site. The dirty rags used to clean the drip trays must be disposed as hazardous waste into a designated bin at the workshop, where it is incorporated into the hazardous waste removal system.
- Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. Proof of safe disposal must be filed for auditing purposes.
- An oil spill kit must be obtained, and the employees must be trained in the emergency procedures to follow when a spill occurs as well as the application of the spill kit.
- Spills must be cleaned up immediately, within two hours of occurrence, to the satisfaction of the Regional Manager (DMRE) by removing the spillage together with the polluted soil and containing it in a designated hazardous waste bin until it is disposed of at a recognised facility. Proof must be filed.
- Suitable covered receptacles must be available at all times and conveniently placed for the disposal of general waste.
- Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point to be collected at least once a month and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or in the vicinity of the mine area. Proof of disposal must be available for auditing purposes.
- Biodegradable refuse must be handled as indicated above.
- Re-use or recycling of waste products must be encouraged on site.
- No waste may be buried or burned on the site.
- Ablution facilities must be provided in the form of a chemical toilet/s. The chemical toilet must be anchored (to prevent blowing/falling over) and shall be serviced at least once a week for the duration of the mining activities by a registered liquid waste handling contractor. The safe disposal certificates must be filed for auditing purposes.
- The use of any temporary, chemical toilet facilities must not cause any pollution to water sources or pose a health hazard. In addition, no form of secondary pollution should arise from the disposal of refuse or sewage from the temporary, chemical toilets. Any pollution problems arising from the above are to be addressed immediately by the permit holder.

- When small volumes of wastewater are generated during the life of the mine the following is applicable:
  - Water containing waste must not be discharged into the natural environment.
  - Measures to contain the waste water and safely dispose thereof must be implemented.
- It is important that any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities is reported to the to all relevant authorities, including Departement Environmental Affairs and Development Planning – Directorate - Pollution and Chemicals Management, in accordance with section 30 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA") pertaining to the *control of incidents*. In the event of a significant accidental spill or leak of hazardous substances (e.g. petrol, diesel, etc.) during any phase of the proposed activities, such an incident(s) must be reported.
- Site management must implement the use of waste registers to keep record of the waste generated and removed from the mining area.

Storage/Handling of Hazardous Substances/Chemicals:

- Chemical storage areas must be placed on level ground to prevent offsite migration of any spilled product.
- The floor of the storage area must be impermeable to prevent seepage of spilled products into the ground or ground water.
- Access to the chemicals/substances must be controlled and require prior notification of an appropriate staff member.
- A Hazardous Substances Register must be maintained, and Safety Data Sheets (SDS) must be kept current for all chemicals used on site.
- Any fuel/used oil tanks must have secondary containment in the form of an impermeable bund wall and base within which the tanks sits, raised above the floor, on plinths. The bund capacity must be sufficient to contain 110% of the tank's maximum capacity. The distance and height of the bund wall relative to that of the tank must also be taken into consideration to ensure that any spillage does not result in hydrocarbons/other substances spouting beyond the confines of the bund.
- The site manager must establish a formal inspection routine to check all equipment in the bund area, as well as the bund area itself for malfunctions or leakages. The bund area must be inspected at least weekly and any accumulated

rainwater removed and handled as contaminated water. All valves and outlets must be checked to ensure that its intact and closed securely.

- The bund base must slope towards an oil sump of sufficient size. Contaminated water may not be allowed to mix with clean water, and must be contained until it is collected by a registered hazardous waste handling contractor or disposed of at a registered hazardous waste handling facility.
- Drip trays must be used underneath all stationary equipment or vehicles. Used drip trays must be placed within a bunded area and are not be stored on bare soil. The waste water originating from the cleaning of drip trays must be discarded into the oil sump.

Management of health and safety risks:

- Workers must have access to the correct personal protection equipment (PPE) as required by law.
- Sanitary facilities must be located within 100 m from any point of work.
- All operations must comply with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).
- The type, duration and timing of the blasting procedures must be planned with due cognizance of other land users and structures in the vicinity.
- The surrounding landowners must be informed in writing ahead of each blasting event.
- The compliance of ground vibration and airblast levels must be monitored to USBM standards with each blasting event.
- A vibro recorder must be used to record all blasts.
- Audible warning of a pending blast must be given at least 3 minutes in advance of the blast.
- Measures to limit flyrock must be taken. All flyrock (of diameter 150 mm and larger) which falls beyond the working area, together with the rock spill must be collected and removed.

ix) Motivation where no alternative sites were considered.

As mentioned previously Site Alternative 1 (S1) (Preferred Alternative and only site viable alternative): The Applicant, applied for a mining permit for the mining of all forms of Limestone, Dimension stone and Marble on a Portion of Portion 3 of the farm Welverdiend no 511 magisterial district of Vanrhynsdorp Western Cape province. The proposed mining footprint will be 4.9 ha and will be developed over a disturbed area previously used for the mining of Marble. Comments were received by Cape Nature for

a Prospecting Right application on the said property regarding the sensitivity of the area, it is therefore recommended based on these comments that any future invasive activities and or mining should be limited to existing mining and already disturbed areas in order to prevent the loss of natural vegetation or disturbance to water courses.

Ground truthing, confirmed in terms of local-level biodiversity, the selected site is not exceptional and is highly disturbed in this regard as the boundaries of the selected site falls within and existing quarry, and there are no Species of Conservation Concern or unique and range restricted species present within the proposed mining area as well as no unique habitats which are not widely available in the wider landscape. As a result, the majority of impacts associated with the development of the site are likely to be local in nature and not of wider significance.

In light of this, S1 was identified during the assessment phase of the environmental impact assessment, by the Applicant and project team as the only possible alternative.

The proposed site (Site Alternative 1) was identified as the preferred and only viable site alternative based on the following:

- The proposed area is over a disturbed area of the farm previously used for marble mining but with very low agricultural potential due to the existing marble deposits left in the application area, after consultation with the land owner the application footprint extends into an area with low agricultural potential. The proposed project will not necessitate the loss of agricultural field with high potential to the land owner.
- Access to the proposed mining area is possible via the existing access road with a formal (existing) entrance onto the N7.
- This alternative is highly disturbed and will not result in loss of natural vegetation or disturbance to water courses.
- The mining of the area will ultimately result in rehabilitation of an already disturbed area, leaving it in better state than prior to mining.

Site Alternative 2:

Site Alternative 2, which also entails the mining area over a disturbed portion of portion 3 of the farm Welverdiend no 511 magisterial district of Vanrhynsdorp Western Cape province.

Site Alternative 2 (S2) was assessed for the proposed mining but found not environmentally and practically suitable. Ground truthing, by the specialists, however confirmed in terms of local-level biodiversity, the selected site is higher and is more sensitive in this regard as the boundaries of the selected site falls within drainage lines that are seen as areas of conservation concern. As a result, the majority of impacts associated with the development on this site alternated are deemed to have a higher impact to be disturbed for the quarry to be established. Site alternative 1, was deemed the only viable site alternative as this is area is regarded to be already disturbed and will not impact on the sensitivity of the area.

From a sensitivity perspective site alternative 2 quarry layout is less preferred because this will mean the loss of the natural vegetation,

The environmental impact assessment process assessed the feasibility of the proposed site alternative to identify fatal flaws that are deemed as severe as to prevent the activity continuing, or warrant another site or project alternative. The outcome of the assessment showed that should the mitigation measures and monitoring programmes proposed in this document be implemented, no fatal flaws could be identified that prevents the activity continuing. In light of the above, the mining proposal was updated to incorporate the project related mitigation measures and monitoring programmes identified during the assessment process. The preferred development footprint was subsequently finalized and is depicted on the attached site activities plan (Appendix C).

x) Statement motivating the alternative development location within the overall site.

(Provide a statement motivating the final site layout that is proposed)

Site Alternative 1 was identified during the assessment phase of the environmental impact assessment as the preferred and only site alternative. The following matters contributed to the identification of the preferred development footprint:

1. **Topography** – The project area is mainly flat or only slightly undulating by superficial sediments of Late Cenozoic age. The thickness of the superficial sediment overburden overlying Precambrian bedrocks here varies from between 0 – 2 meters. A small area in the east is covered by fine-grained aeolian sands (Q-s) that cover large portions of the coastal plain to the north and south of Vanrhynsdorp, where they are often underlain by older calcareous or loamy soils, and that often appear distinctly orange on satellite images. The reddish sands are

derived from pale alluvial sands that were accumulated near the coast by the palaeo-Olifants River system and then blown inland by prevailing south-westerly winds. They are mainly of Pleistocene to Recent age. The majority of the study area is mantled by calcareous and gypsiferous soils (Q-r2) that cover large areas of the Knersvlake region around Vanrhynsdorp and are often capped by a reddish, well-consolidated calcareous or siliceous hardpan or dorbank. The soils comprise a spectrum of gravally conglomerates, grit, sand and finer sediment showing a variable degree of calcretisation (i.e. pedogenic limestone formation typical of semi-arid climates). Pleistocene to Holocene alluvial deposits such as silts and gravels occur along the Widouw River but these are small in extent. The altitude varies between 113-134 m.

2. **Visual Characteristics** The viewshed analysis showed that the visual impact of the proposed mining operation will be of low significance. The project area is located in the jurisdiction of the Matzikama Local Municipality, with Vanrhynsdorp being the nearest town. The land use of the earmarked property was previously used for mining marble, thus its already a disturbed area. The surrounding properties are mainly used for a variety of mixed agricultural purposes as well as mining and industrial purposes. The proposed mining area will be reached via the N7, making use of the existing internal/haul.

3. **Air and Noise Quality** – The proposed activity will contribute the emissions mechanical mining equipment to the receiving environment for the duration of the operational phase. Should the permit holder implement the mitigation measures proposed in this document and the EMPR the impact on the air quality of the surrounding environment is deemed to be of low significance and compatible with the current land use. The potential impact on the noise ambiance of the receiving environment is expected to be of low significance and representative of the traffic of the surrounding area.

4. **Geology and Soil –** The project area is largely underlain by superficial sediments of Late Cenozoic age. The thickness of the superficial sediment overburden overlying Precambrian bedrocks here varies from between 0 – 2 meters. A small area in the east is covered by fine-grained aeolian sands (Q-s) that cover large portions of the coastal plain to the north and south of Vanrhynsdorp, where they are often underlain by older calcareous or loamy soils, and that often appear distinctly orange on satellite images. The reddish sands are derived from pale alluvial sands that were accumulated near the coast by the palaeo-Olifants River

system and then blown inland by prevailing south-westerly winds. They are mainly of Pleistocene to Recent age. The majority of the study area is mantled by calcareous and gypsiferous soils (Q-r2) that cover large areas of the Knersvlake region around Vanrhynsdorp and are often capped by a reddish, well-consolidated calcareous or siliceous hardpan or dorbank. The soils comprise a spectrum of gravally conglomerates, grit, sand and finer sediment showing a variable degree of calcretisation (i.e. pedogenic limestone formation typical of semi-arid climates). Pleistocene to Holocene alluvial deposits such as silts and gravels occur along the Widouw River but these are small in extent.

5. **Hydrology –** The proposed site falls within the Olifants/ Doorn Water Management Area, in the E33G quaternary catchment area. The proposed project does not require a Water Use Authorisation in terms of Section 39 of the National Water Act, 1998 (Act No 36 of 1998). No activity will take place in or within 100m radius of any water bodies. Any water required for the implementation of the project will be bought from a registered source and transported to on site. The use of potable water for dust suppression should be avoided.

6. **Mining, Biodiversity and Groundcover –** The project area is located in the jurisdiction of the Matzikama Local Municipality, with Vanrhynsdorp being the nearest town. The land use of the earmarked property was previously used for mining marble, thus its already a disturbed area. The surrounding properties are mainly used for a variety of mixed agricultural purposes as well as mining and industrial purposes. The proposed mining area will be reached via the N7, making use of the existing internal/haul.

7. **Fauna -** Various small mammals and reptiles occur on the property. Larger herbivore species are very scares or absent due to the conflicting land use. Small mammals, reptiles and insects will occur in the area. The fauna at the site will not be impacted by the proposed mining activity as they will be able to move away or through the site, without being harmed. Workers should be educated and managed to ensure that no fauna at the site is harmed. At this stage no resident protected or red data faunal species were identified within the earmarked footprint, and the project is expected to have a negligible impact in this regard as mining activities will be done by non-invasive activities.

8. **Cultural and Heritage Environment** - Heritage Western Cape were contacted for their perusal and commenting. Archaeological resources (Including archaeological sites and material, rock art, battlefields & wrecks):

   As per the Notice of Intent to develop conducted by Jonathan Kaplan (ACRM) (Refer to Appendix O). Later Stone Age (LSA) and Middle Stone Age (MSA) tools have been recorded on portions of Farm 511 (Kaplan 2010, 2017), but the impact of proposed mining on heritage resources will be low, as proposed mining will take place within the footprint of the existing mine.

   However, should artefacts archaeological items be observed during the mining activities, then all activity should cease immediately, the area marked off activity and a specialists consulted prior to any further activity. This also includes if any graves are observed on site during activity progress then all activity should have ceased and the area demarcated as a no-go zone

   According to consulting palaeontologist John Pether (email correspondence dated 08 October, 2021), `The quarry exploits the limestone, dolomite and marble of the Widouw Formation (Gariep Supergroup, Gifberg Group) which date from ~770 to 700 million years ago. The earliest microfossils and tiny sponges had appeared by this time, but the quarrying will not impact on this cryptic fossil resource. The palaeontological sensitivity is LOW (SAHRIS)

   Only FFP required in case of fossil finds in the overlying coversands'.

   The South African Heritage Resources Agency (SAHRA) compiled the Palaeontological (fossil) Sensitivity Map (PSM) to guide developers, heritage officers and practitioners in screening paleontologically sensitive areas at the onset of a project. When the footprint of the earmarked mining area is placed on the PSM, it shows the study area to extend over an area of low insignificant concern.

i) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site (In respect of the final site layout plan) through the life of the activity.

(Including (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures)

During the impact assessment process the following potential impacts were identified of each main activity in each phase. An initial significance rating (listed under *v) Impacts and Risks Identified*) was determined for each potential impact should the mitigation measures

proposed in this document not be implemented on-site. The impact assessment process then continued in identifying mitigation measures to address the impact that the proposed mining activity may have on the surrounding environment.

The significance rating was again determined for each impact using the methodology as explained under *vi) Methodology Used in Determining and Ranking the Significance*. The impact ratings listed below was determined for each impact **after** bringing the proposed mitigation measures into consideration and therefore represents the final layout/activity proposal.

SITE ESTABLISHMENT - STRIPPING AND STOCKPILING OF TOPSOIL AND/OR OVERBURDEN AND INFRASTRUCTURE DEVELOPMENT:

Alteration of the agricultural sense of place

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: None**		
1	4	1	2	2	5	3.5	**7**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**		**Degree of Mitigation: None**		
1	4	1	2	2	5	3.5	**7**

Loss of agricultural land for duration of mining

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: None**		
1	4	1	2	1	5	5	**10**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**		**Degree of Mitigation: None**		
1	4	1	2	1	5	5	**10**

Visual intrusion as a result of site establishment

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: None**		
2	2	1	1.6	1	5	3	**4.8**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**		**Degree of Mitigation: None**		
2	2	1	1.6	1	5	3	**4.8**

Potential impact on vegetation and listed and/or protected plant species during site establishment

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	2	1	1.6	2	3	2.5	**4**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	2	1	1.6	2	3	2.5	**4**

Potential impact on fauna within the footprint area by site establishment

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	2	1	1.6	1	3	2	**3.2**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	2	1	1.6	1	3	2	**3.2**

Potential impact on archaeological artefacts by site establishment

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	2	1	1.6	1	1	1	**1.6**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	2	1	1.6	1	1	1	**1.6**

Potential impact on areas of palaeontological concerns by site establishment

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	2	1	1.6	1	1	1	**1.6**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	2	1	1.6	1	1	1	**1.6**

Dust nuisance as a result of the disturbance of soil during site establishment

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	2	1	1.6	3	4	3.5	**5.6**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	2	1	1.6	3	4	3.5	**5.6**

Noise nuisance generated by earthmoving machinery during site establishment

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Partial**	
2	2	1	1.6	3	4	3.5	**5.6**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Partial**	
2	2	1	1.6	3	4	3.5	**5.6**

Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages during site establishment

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	4	1	2.6	2	4	3	**7.8**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	4	1	2.6	2	4	3	**7.8**

Potential contamination of water resources during site establishment

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	4	1	2.6	3	4	3.5	**9.1**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	4	1	2.6	4	4	4	**10.4**

Potential contamination of environment due to improper waste management during site establishment

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	4	1	2.6	3	4	3.5	**9.1**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	4	1	2.6	3	4	3.5	**9.1**

Infestation of the topsoil heaps and mining area with weeds or invader plant species

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	4	2	3	3	2	2.5	**7.5**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	4	2	3	3	2	2.5	**7.5**

Potential erosion of denuded areas

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	3	1	2.3	3	2	2.5	**5.7**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	3	1	2.3	3	2	2.5	**5.7**

New job opportunities as a result of the mining operation (Positive Impact)

			Consequence			Likelihood	**Significance (+)**
Severity (+)	Duration	Extent		Probability	Frequency		
Rating: High (+)			**Site Alternative 1**			**Degree of Mitigation: N/A**	
4	4	5	4.6	5	5	5	**23**
			Consequence			Likelihood	**Significance (+)**
Severity (+)	Duration	Extent		Probability	Frequency		
Rating: High (+)			**Site Alternative 2**			**Degree of Mitigation: N/A**	
4	4	5	4.6	5	5	5	**23**

OPERATIONAL PHASE: DRILLING AND BLASTING, DIAMOND WIRE CUTTING, LOADING AND HAULING OF THE MINED MATERIAL FROM SITE:

Loss of agricultural land for duration of mining during operational phase

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: None**		
1	4	1	2	1	5	5	**10**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**		**Degree of Mitigation: None**		
1	4	1	2	1	5	5	**10**

Visual intrusion caused by operational phase

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: None**		
2	4	1	2.3	2	5	3.5	**8**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**		**Degree of Mitigation: None**		
2	4	1	2.3	2	5	3.5	**8**

Loss of stockpiled topsoil during operational phase

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	4	1	2.6	3	3	3	**7.8**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 2**		**Degree of Mitigation: Full**		
3	4	1	2.6	3	3	3	**7.8**

Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages during operational phase

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	4	1	2.6	2	4	3	**7.8**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**		**Degree of Mitigation: Full**		
3	4	1	2.6	2	4	3	**7.8**

Potential impact on vegetation and listed and/or protected plant species during operational phase

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	2	1	1.6	2	3	2.5	**4**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	2	1	1.6	2	3	2.5	**4**

Potential impact on local fauna due to disturbance and loss of available habitat during operational phase

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	4	1	2.3	1	4	2.5	**5.7**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	4	1	2.3	1	4	2.5	**5.7**

Potential impact on archaeological artefacts during operational phase

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	5	5	4	1	1	1	**4**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	5	5	4	1	1	1	**4**

Potential impact on areas of palaeontological concern during operational phase

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	5	5	4.6	1	1	1	**4.6**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
4	5	5	4.6	1	1	1	**4.6**

Facilitation of erosion due to operational phase

			Consequence			Likelihood	**Significance**

Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	4	1	2.6	3	3	3	**7.8**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	4	1	2.6	3	3	3	**7.8**

Potential contamination of water resources during operational phase

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	4	1	2.6	2	4	3	**7.8**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	4	1	2.6	3	4	3.5	**9.1**

Potential contamination of environment due to improper waste management

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	4	1	2.6	3	4	3.5	**9.1**
			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	4	1	2.6	3	4	3.5	**9.1**

OPERATIONAL PHASE - DRILLING AND BLASTING:

Health and safety risk posed by blasting activities

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	4	1	3	2	3	2.5	**7.5**
			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
4	4	1	3	2	3	2.5	**7.5**

Dust nuisance caused by drilling and blasting activities

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: None**	
3	4	1	2.6	3	3	3	**7.8**
			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: None**	
3	4	1	2.6	3	3	3	**7.8**

Noise nuisance as a result of drilling and blasting activities

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Partial**	
3	4	1	2.6	4	3	3.5	**9.1**
			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: Partial**	
3	4	1	2.6	4	3	3.5	**9.1**

OPERATIONAL PHASE: DIAMOND WIRE CUTTING, LOADING AND HAULING OF THE MINED MATERIAL FROM SITE

Visual intrusion as a result of diamond wire cutting, loading and hauling of the mined material from site

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: None**		
1	2	2	1.6	4	5	4.5	**7.2**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**		**Degree of Mitigation: None**		
1	2	2	1.6	4	5	4.5	**7.2**

Dust nuisance due to diamond wire cutting, loading and hauling of the mined material from site

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
1	4	2	2.3	2	5	3.5	**8**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**		**Degree of Mitigation: Full**		
1	4	2	2.3	2	5	3.5	**8**

Noise nuisance as a result of diamond wire cutting, loading and hauling of the mined material from site

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Partial**		
1	4	2	2.3	2	5	3.5	**8**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**		**Degree of Mitigation: Partial**		
1	4	2	2.3	2	5	3.5	**8**

Unsafe working environment for employees during diamond wire cutting, loading and hauling of the mined material from site

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	4	1	3	1	5	3	**9**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	4	1	3	1	5	3	**9**

Overloading of trucks impacting road infrastructure when loading and hauling the mined material from site

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	4	5	4	1	5	3	**12**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	4	5	4	1	5	3	**12**

Degradation of the access road when loading and hauling the mined material from site

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	4	2	3	3	5	4	**12**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	4	2	3	3	5	4	**12**

CUMULATIVE IMPACTS:

Impact the broad-scale ecological processes - The loss of unprotected vegetation types on a cumulative basis from the broad area may impact the country's ability to meet its conservation targets.

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**		**Degree of Mitigation: Partial**		
4	4	4	4	2	1	1.5	**6**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 2**		**Degree of Mitigation: Partial**		
4	4	4	4	2	1	1.5	**6**

Impact on existing infrastructure as a direct result of the mining operation

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
4	4	5	4.3	1	3	2	**8.6**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**		**Degree of Mitigation: Full**		
4	4	5	4.3	1	3	2	**8.6**

SLOPING AND LANDSCAPING DURING REHABILITATION:

Loss of agricultural land for duration of mining during rehabilitation phase

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: None**	
1	4	1	2	1	5	5	**10**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: None**	
1	4	1	2	1	5	5	**10**

Potential impact on vegetation and listed and/or protected plant species during rehabilitation

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	2	1	1.6	2	3	2.5	**4**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	2	1	1.6	2	3	2.5	**4**

Safety risk posed by un-sloped areas

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	5	1	3	3	5	4	**12**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	5	1	3	3	5	4	**12**

Erosion of returned topsoil after rehabilitation

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	5	1	3	2	3	2.5	**7.5**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	5	1	3	2	3	2.5	**7.5**

Infestation of the reinstated areas by weeds and invader plant species

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	4	1	3	2	5	3.5	**9.1**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Site Alternative 2**		**Degree of Mitigation: Full**		
3	4	1	3	2	5	3.5	**9.1**

Potential impact associated with litter/waste left at the mining area

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	5	1	3	1	5	3	**9**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**		**Degree of Mitigation: Full**		
3	5	1	3	1	5	3	**9**

Potential contamination of environment due to improper waste management

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	4	1	2.6	1	4	2.5	**6.5**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	4	1	2.6	1	4	2.5	**6.5**

Potential contamination of water resources during rehabilitation

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	4	1	2.6	2	4	3	**7.8**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	4	1	2.6	3	4	3.5	**9.1**

Potential impact on local fauna due to disturbance and loss of available habitat during rehabilitation

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	4	1	2.3	1	4	2.5	**5.7**
			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	4	1	2.3	1	4	2.5	**5.7**

Return of the mining area to agricultural use upon closure (Positive Impact)

			Consequence			Likelihood	**Significance (+)**
Severity (+)	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Site Alternative 1**			**Degree of Mitigation: N/A**	
3	5	1	3	5	5	5	**15**
			Consequence			Likelihood	**Significance (+)**
Severity (+)	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Site Alternative 2**			**Degree of Mitigation: N/A**	
3	5	1	3	5	5	5	**15**

j) Assessment of each identified potentially significant impact and risk

(This section of the report must consider all the known typical impacts of each of the activities (including those that could or should have been identified by knowledgeable persons and not only those that were raised by registered interested and affected parties).

Table 24: Assessment of each identified potentially significant impact and risk

ACTIVITY Whether listed or not listed. (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.)	POTENTIAL IMPACT (E.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, air pollution, etc…etc…etc.)	ASPECTS AFFECTED	PHASE In which impact is anticipated. (E.g. Construction, commissioning, operational Decommissioning closure, post closure.)	SIGNIFICANCE If not mitigated.	MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc etc) E.g. Modify through alternative method Control through noise control Control through management and monitoring through rehabilitation.	SIGNIFICANCE If mitigated.
• Demarcation of site with visible beacons.	• No impact could be identified other than the beacons being outside the boundaries of the approved mining area.	N/A	Site Establishment & Operational Phase	• Low-Medium (S1&S2)	<u>Control:</u> Implementing proper housekeeping.	• Low-Medium (S1&S2)
• Site establishment: Stripping and stockpiling of topsoil and/or overburden and infrastructure development. • Operations Phase: Drilling and blasting.	• Alteration of the agricultural sense of place.	The impact may affect the agricultural opportunities of the property.	Site Establishment & Operational Phase	• Low-Medium (S1&S2)	<u>Control & Remedy:</u> Proper housekeeping and storm water management.	• Low-Medium (S1&S2)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
• Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site						
• Site establishment: Stripping and stockpiling of topsoil and/or overburden and infrastructure development. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon closure of the mining area.	• Loss of agricultural land for duration of mining.	The impact may affect the agricultural opportunities of the property.	Site Establishment-, Operational- and Decommissioning phase	• Medium (S1&S2) • Medium (S1&S2) • Medium (S1&S2)	Control: Implementing soil- and storm water management.	• Medium (S1&S2) • Medium (S1&S2) • Medium (S1&S2)
• Site establishment: Stripping and stockpiling of topsoil and/or overburden and infrastructure development. • Operations Phase: Drilling and blasting.	• Visual intrusion as a result of site establishment. • Visual intrusion caused by mining activities.	The visual impact may affect the aesthetics of the landscape.	Site Establishment- and Operational phase	• Low-Medium (S1&S2) • Low-Medium (S1&S2)	Control & Stop: Implementing good management practices.	• Low – Medium (S1&S2) • Low-Medium (S1&S2)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
• Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon closure of the mining area.				• Low - Medium (S1&S2) • Low-Medium (S1&S2)		• Low-Medium (S1&S2) • Low-Medium (S1&S2)
• Site establishment: Stripping and stockpiling of topsoil and/or overburden and infrastructure development. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon closure of the mining area.	• Potential impact on vegetation and listed and/or protected plant species.	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	• Low-Medium (S1&S2) • Low-Medium (S1&S2) • Low-Medium (S1&S2	<u>Control:</u> Noise suppression methods and proper housekeeping.	• Low (S1&S2) • Low (S1&S2) • Low (S1&S2)
• Site establishment: Stripping and stockpiling of topsoil and/or overburden and	• Potential impact on fauna within the footprint area.	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	• Low-Medium (S1&S2) • Low-Medium (S1&S2)	<u>Control & Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.	• Low (S1&S2) • Low (S1&S2)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
infrastructure development. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon closure of the mining area.	• Potential impact on local fauna due to distrubance and loss of available habitat.			• Low – Medium (S1&S2)		• Low (S1&S2)
• Site establishment: Stripping and stockpiling of topsoil and/or overburden and infrastructure development. • Operations Phase: Drilling and blasting.	• Dust nuisance due to excavation and from loading and vehicles transporting the material	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	• Low – Medium (S1&S2) • Medium (S1&S2) • Medium (S1&S2)	<u>Control & Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.	• Low – medium (S1&S2) • Low - medium(S1& S2) • Low - medium
• Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon closure of the mining area.	• Noise nuisance as a result of the mining activities	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	• Low – Medium (S1&S2) • Medium (S1&S2) • Medium (S1&S2)	<u>Control & Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.	• Low – medium (S1&S2) • Low – medium (S1&S2) • Low – medium (S1&S2)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
	• Unsafe working environment for employees	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	• Medium (S1&S2) • Medium (S1&S2) • Medium (S1&S2)	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan.	• Low – medium (S1&S2) • Low – medium (S1&S2) • Low – medium (S1&S2)
	• Soil contamination from hydrocarbon spills and/or littering	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	• Medium (S1&S2) • Medium (S1&S2) • Medium (S1&S2)	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan.	• Low – medium (S1&S2) • Low – medium (S1&S2) • Low – medium (S1&S2)
• Site establishment: Stripping and stockpiling of topsoil and/or overburden and infrastructure development. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of	• Potential impact on archaeological artefacts. • Potential impact on areas of palaeontological concerns.	This could impact on the cultural and heritage legacy of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	• Low (S1&S2) • Low (S1&S2)	Control & Stop: Implementing good management practices, as well as the chance-find protocol.	• Low (S1&S2) • Low (S1&S2)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
the mined material from site • Sloping and landscaping upon closure of the mining area.						
• Site establishment: Stripping and stockpiling of topsoil and/or overburden and infrastructure development. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon closure of the mining area.	• Health and safety risk posed by blasting activities	This will impact on the biodiversity of the receiving environment	Site Establishment-, Operational-, and Decommissioning Phase	• Medium (S1&S2)	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan.	• Low – Medium (S1&S2)
	• Dust nuisance caused by mining activities	This will impact on the biodiversity of the receiving environment	Site Establishment-, Operational-, and Decommissioning Phase	• Low - Medium (S1&S2)	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan.	• Low – Medium (S1&S2)
	• Noise nuisance as a result of blasting	This will impact on the biodiversity of the receiving environment	Site Establishment-, Operational-, and Decommissioning Phase	• Low –Medium (S1&S2)	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan.	• Low – Medium (S1&S2)
• Site establishment: Stripping and stockpiling of topsoil and/or overburden and infrastructure development. • Operations Phase: Drilling and blasting.	• New job opportunities as a result of the mining operation (+)	Contribution to the socio-economic status of the area.	Site Establishment-, Operational-, and Decommissioning Phase	• High (S1&S2)	Control: Proper site management.	• High (S1&S2)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
• Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon closure of the mining area.						
• Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site	• Dust nuisance generated during the mining activities	This will impact on the biodiversity of the receiving environment	Operational Phase	• Medium (S1&S2)	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management.	• Low -Medium (S1&S2)
	• Noise nuisance stemming from operation of the mining activities	This will impact on the biodiversity of the receiving environment	Operational Phase	• Medium (S1&S2)	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management.	• Low -Medium (S1&S2)
	• Potential contamination of environment due to improper waste management	This will impact on the biodiversity of the receiving environment	Operational Phase	• Medium (S1&S2)	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management.	• Low-Medium (S1&S2)
	• Overloading of trucks impacting road infrastructure	This will impact on the biodiversity of the receiving environment	Operational Phase	• Medium – High (S1&S2)	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management.	• Low-Medium (S1&S2)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
	Degradation of the access road	This will impact on the biodiversity of the receiving environment	Operational Phase	Medium (S1&S2)	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management.	Low-Medium (S1&S2)
Sloping and landscaping during rehabilitaition	Safety risk posed by un-sloped areas	This will impact on the biodiversity of the receiving environment	Decommissioning Phase	Medium (S1&S2)	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management.	Low (S1&S2)
	Erosion of returned topsoil after rehabilitation	This will impact on the biodiversity of the receiving environment	Decommissioning Phase	Medium (S1&S2)	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management	Low (S1&S2)
	Infestation of the reinstated areas by weeds and invader plant species	This will impact on the biodiversity of the receiving environment	Decommissioning Phase	Medium – High (S1&S2)	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management	LowMedium (S1&S2)
	Potential impact associated with litter/waste left at the mining area	This will impact on the biodiversity of the receiving environment	Decommissioning Phase	Medium (S1&S2)	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management	Low (S1&S2)

The supporting Impact Assessment conducted by the EAP must be attached as an appendix, marked Appendix H

k) Summary of specialist reports.

(This summary must be completed if any specialist reports informed the impact assessment and final site layout process and must be in the following tabular form):

SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORISATION AS REQUIRED BY THE 2014 EIA REGULATIONS:

The report identified the following list of specialist assessment for inclusion in the assessment report:

- Agricultural Impact Assessment;
- Archaeological and Cultural Heritage Impact Assessment;
- Paleontology Impact Assessment;
- Terrestrial Biodiversity Impact Assessment;
- Aquatic Biodiversity Impact Assessment;
- Hydrology Assessment;
- Noise Impact Assessment;
- Radioactivity Impact Assessment;
- Traffic Impact Assessment;
- Geotechnical Assessment;
- Socio-economic Assessment;
- Plant Species Assessment;
- Animal Species Assessment.

Table 25: Summary of specialist reports

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with X if applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
The screening report identified the following list of specialist assessment for inclusion in the assessment report: • Agricultural Impact Assessment; • Archaeological and Cultural Heritage Impact Assessment; • Paleontology Impact Assessment; • Terrestrial Biodiversity Impact Assessment; • Aquatic Biodiversity Impact Assessment; • Hydrology Assessment; • Noise Impact Assessment; • Radioactivity Impact Assessment; • Traffic Impact Assessment; • Geotechnical Assessment; • Socio-economic Assessment; • Plant Species Assessment; • Animal Species Assessment.			
• Agricultural Impact Assessment (AIA): The portion of Portion 3 of the farm Welverdiend No 511 magisterial district of Vanrhynsdorp, Western Cape Province is a previously disturb area. The agricultural potential of the farm was assessed as part of the EIA, however, Greenmined is of the opinion that a specialist AIA is not needed as the application footprint extends into an area previously used for mining purposes. The proposed project will not necessitate the loss of any agricultural field, center pivot or similarly operated agricultural area. • Archaeological and Cultural Heritage Impact Assessment (HIA) & Paleontology Impact Assessment (PIA):			

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with X if applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED

The proposed mining footprint extends into an area that has been previously disturb, and therefore no sites of archaeological or cultural importance is expected within the footprint. In light of this, it is proposed that a chance-find protocol be incorporated in the EMPR to be adhered to for the duration of the site establishment-, operational- and decommissioning phases. However, a notice of intent for the HIA and PIA were conducted and no further studies proposed by the specialist.

As per the Notice of Intent to develop conducted by Jonathan Kaplan (ACRM) (Refer to Appendix O Appendix O Heritage NID (& Paleo Statement) Later Stone Age (LSA) and Middle Stone Age (MSA) tools have been recorded on portions of Farm 511 (Kaplan 2010, 2017), but the impact of proposed mining on heritage resources will be low, as proposed mining will take place within the footprint of the existing mine.

However, should artefacts archaeological items be observed during the mining activities, then all activity should cease immediately, the area marked off activity and a specialists consulted prior to any further activity. This also includes if any graves are observed on site during activity progress then all activity should have ceased and the area demarcated as a no-go zone

According to consulting palaeontologist John Pether (email correspondence dated 08 October, 2021), `The quarry exploits the limestone, dolomite and marble of the Widouw Formation (Gariep Supergroup, Gifberg Group) which date from ~770 to 700 million years ago. The earliest microfossils and tiny sponges had appeared by this time, but the quarrying will not impact on this cryptic fossil resource. The palaeontological sensitivity is LOW (SAHRIS)

Only FFP required in case of fossil finds in the overlying coversands'.

- Terrestrial Biodiversity Impact Assessment (TBIA) & Animal Species Assessment (ASA) & Plant Species Assessment:

As mentioned earlier, the proposed mining footprint extends into an area that has previously been disturb. The earmarked area falls within a CBA area and therefore requires a Biodiversity Impact Assessment which is currently underway. It is proposed, by Greenmined, that should the Applicant implement the mitigation measures proposed in the EMPr the impact of the proposed activity on the riparian vegetation, groundcover and/or fauna is deemed to be of low significance. According to Mucina and Rutherford (2012) the proposed area can be described as mainly flat or only slightly undulating landscape supporting succulent shrubland dominated by *Salsola* (over large stretches), *Drosanthemum, Ruschia* and some disturbance indicators

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with X if applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED

such as (mainly) short-lived *Aizoaceae*, including representatives of the genera *Galenia, Psilocaulon, Caulipsolon* and *Mesembryanthemum*. In the south, the shale plains can acquire a grassland appearance through seasonal dominance of *Bromus pectinatus* and *Stipa capensis*. Spectacular annual and geophyte flora can appear in spring after good winter rains.

According to the Screening tool report, the application area falls over an Ecological Support area and the Terrestrial Biodiversity theme has a very high sensitivity thus the impact on Biodiversity was assessed as part of the EIA. It is highly unlikely that this development will have an impact on the status of the Ecosystem and Vegetation Types due to the limited extent of the mine as well as the extent of natural vegetation surrounding the mining area. Furthermore, this mine will not have a significant impact on the services and functions provided by the surrounding natural habitats and development within this area is regarded as acceptable. As per the Plant Species and Terrestrial Biodiversity Theme Compliance Statement dated October 2021 compiled by Enviroworks (see appendix N) It is anticipated that the proposed development (Alternative one and two) will have negligible impact on the biodiversity and botanical features identified by the screening tool as the development footprint is extensively disturbed and does not represent likely habitat for any plant species that may be threatened with extinction, as listed by the Screening Tool.

None of the plant species listed by the screening tool were directly observed on the footprint during the site visit. There is however one provincially protected species located on site (Table 4 of the said report), but this species is not threatened in terms of the Red List of South African Plants. Individuals of this species must be relocated effectively as per the recommendations in Section 6 (of the said report). Because the site inspection was conducted in late spring, some geophytic and annual species may not have been visually present during the site inspection. it is recommended that a botanical survey be conducted in early spring (August-early September) to confirm that no additional Species of Conservation Concern are found on site.

Some of the western portion of Alternative one may have some ecological value, albeit minimal, because it is located on a degraded Ecological Support Area (ESA). However, given that the entire area surrounding the proposed mining permit area is located in the ESA, the cumulative conservation loss of developing or mining in the ESA located in Site Alternative one is not expected to be significant. Taking into consideration the sensitivity of the development footprint, sensitive features identified by the screening tool, the results from the baseline biodiversity and ecosystem of the site, which was verified by a site visit for Alternative one, it can be concluded that both site alternatives is of low sensitivity for the Plant Species and Terrestrial Biodiversity Theme. Provided that all the management outcomes are adhered to, this compliance statement is considered sufficient to meet the requirements for authorisation under the Plant Species and Terrestrial Theme Minimum requirements.

- Aquatic Biodiversity Impact Assessment (ABIA) & Hydrology Assessment (HA):

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with X if applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED

None of the activities will take place in or in close proximity to any water bodies. Any water required for the implementation of the project will be bought and transported to site. A Risk Matric Assessment was conducted as part of the EIA.

As per the Water Use Risk Matrix date October 2021 and compiled by Enviroworks, the proposed mining footprint is situated adjacent to and old marble mine. The surface area of the proposed mining permit is currently used as a stockpile for the marble. The mining footprint thus has been affected by the marble mine's activities across the surface area.

Due to the arid nature of the area, there were no surface water visible in the natural watercourses that were encountered. Surface flow through the drainage features and watercourses are considered to be limited to flood or precipitation events. No natural perennial watercourses occur in the study area and watercourses within 500m from the proposed footprint are all classified as ephemeral that flow during heavy rainfall and run-off events. There is an artificial dam upstream from the mine footprint which had water in at the time of the site visit, but from historical satellite imagery from Google Earth, the dam has been empty at times, and is thus not perennial. The proposed mining footprint is upstream from an ephemeral watercourse, but outside the 100m regulated area. Based on impacts observed on site from and old mine (adjacent to the proposed mining area), the posed mine can potentially impact the regulated area of the watercourse, and the ephemeral watercourse that it is connected to.

Two location alternatives were provided for the proposed mine. A berm, adjoining an artificial dam wall to the north of the proposed mine, has been constructed around the eastern boundary of the old mine, and it effectively divert surface water that would have flown through the non-perennial watercourse. For this reason, choosing the preferred alternative will not differ significantly from the second alternative in terms of impacts on watercourses; as the watercourse indicates on GIS databases have been transformed by mining. Using the preferred alternative could however provide opportunity in the future to restore the transformed watercourses and could re-establish the more natural and meandering flow path, as opposed to the more rigid and straightened path created by the berm's diversion. The second alternative was thus excluded from further assessment during the study.

The ephemeral watercourse can be classified as having a PES of C, thus it is moderately modified. A loss and change of natural habitat, hydrology and biota have occurred, but the basic ecosystem functions are still predominantly unchanged, despite the significant impact in changes in hydrology and disturbance within the regulated area and part of the ephemeral watercourse.

The EIS for the ephemeral drainage line is C, thus ecologically important and sensitive on a local scale only. Biodiversity not usually sensitive to flow and habitat modifications.

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with X if applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED

The inherent soil properties on the site make them prone to erosion, and this is confirmed by the features of soil sealing and erosion observed on the old mine. This means vegetation clearing, soil disturbance and stored soil will require specific management measures to manage and mitigate the impacts of the proposed mine. Clearing of vegetation, disturbance of soil and creating stockpiles leaves bare soil vulnerable to soil sealing and erosion. Sealed soil will generate increased run-off with higher erosion potential downstream. This in turn can erode watercourses and increase sedimentation in the system downstream. Exposed or bare soil (and stockpiles) will also be vulnerable to erosion, this will also increase the impact of sedimentation downstream. Given the infrequency of rainfall in the area, these impacts may fortunately happen at a relatively slow rate.

The mining activities in the mining permit application areas do not fall within the regulated area according to the definition in the NWA (in the absence of a 1:100 year flood line delineation) (within 100m of a watercourse) but the proposed mining will impact upon the regulated areas, which is in turn connected to the ephemeral watercourse; thus even though the proposed mining permit footprint is not directly in the regulated area of the watercourse it can impact the regulated area and consequently the watercourse. This assessment assumed that no new access roads will be created. The existing access roads on site pass though the ephemeral watercourse and its regulated area, thus if the access roads have not yet been registered for c & I water uses, it should be done now. For this reason, it is recommended that the proposed mine and associated infrastructure be registered for a c & i water use. If any activities will take place within the regulated area of the ephemeral watercourse, it should be properly assessed and licenced/registered of a c & i water use. The potential impact of changes in water quality and quantity are also a risk of the proposed development. Since the ephemeral watercourse has a relatively high vegetation cover, water quality and sedimentation impacts are expected to be filtered by the vegetation. Significant downstream impacts on the ephemeral watercourse and Wiedou River (> 2.5 km south) are thus expected to be buffered, especially considering the arid nature of the environment.

Surface water flowing from upslope of the proposed mining footprint in a south-western and western direction will likely flow through the proposed mining footprint, before flowing into the valley and ephemeral watercourse downstream. It will be important to develop and implement a proper stormwater management plan, so that clean surface run-off be diverted around the proposed mine, 'dirty' water from the proposed mine footprint should be contained if contaminated with waste or hazardous matter and should be allowed to settle out sediments if sediment is picked up in the disturbed mining footprint, before entering into the natural environment or the regulated area of the ephemeral watercourse. Stormwater management should also prevent the proposed mine from impeding surface water flow to reach the downstream watercourse, thus the stormwater management should aim to maintain the natural hydrological flow (quantity, timing and speed of surface water run-off) in the landscape as best as possible.

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with X if applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED

With suitable mitigation measures the impacts can be decreased, and construction- and operation activities should not have any significant impact upon the regulated area and downstream watercourses.

The impacts of the proposed mine on the regulated area of the ephemeral watercourse are considered of low significance in their mitigated state. Provided the site is well managed during the construction and operational phase, following suggested mitigation measures, the development is not considered to pose and unacceptable risk to the watercourses.

- Noise Impact Assessment (NIA):

The potential impact on the noise ambiance of the receiving environment is expected to be of low significance and representative of the machinery already operational at the property. Due to the small scale of the operation a NIA is not deemed applicable.

- Visual Impact Assessment

The viewshed analysis showed that the visual impact of the proposed mining operation will be of low significance. The land use of the earmarked property was previously used for mining marble, thus its already a disturbed area. The surrounding properties are mainly used for a variety of mixed agricultural purposes as well as mining and industrial purposes. The proposed mining area will be reached via the N7, making use of the existing internal/haul.

- Radioactivity Impact Assessment

A radioactivity impact assessment is not deemed necessary for the proposed mining operation that will not store any chemicals on site, perform activities of radioactive nature or generate hazardous waste of radioactive nature.

- Traffic Impact Assessment (TIA):

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with X if applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
The Applicant will use the existing road to access the mining area and transport material from the open pit mining area to the stockpile area. No upgrading of the road is needed prior to commencement. In light of the small scale of the proposed operation a TIA is not deemed necessary, should the Applicant implement the mitigation measures to be proposed in the EMPR. • Geotechnical Assessment: No reason for a geotechnical assessment could be identified as no permanent infrastructure will be established at the proposed mining area.			

l) Environmental impact statement

i) Summary of the key findings of the environmental impact assessment;

The key findings of the environmental impact assessment entail the following:

Project Proposal

Seboway (Pty) Ltd ("hereinafter referred to as "the Applicant"), applied for environmental authorisation (EA) and a mining permit for all forms of Limestone, Dimension stone and Marble on a Portion of Portion 3 of the farm Welverdiend no 511 magisterial district of Vanrhynsdorp Western Cape province.

A portion of Portion 3 of the farm Welverdiend No 511 is situated approximately 8 km South of the town of Vanrhynsdorp along the N7 national road making use of the existing internal/haul roads to access the mining area. The commodity of interest is. Limestone, Dimension stone and Marble. The proposed mining footprint is approximately 4.9 ha over the above mentioned property and the mining method will entail an open-pit quarry with diamond wire cutting, loading and hauling of the mined material. The quarry is dug on a pit with face walls of sub-vertical inclination, benching is not required due to the shallow nature of the deposit. A system of ramps is to be excavated within the pit to provide access to all face wall sides. The angle of the pit face wall is determined carefully to prevent and minimize damage and danger from rock falls and/or safety hazards.

Waste and mineralisation on a scale of a few hundred to thousands tons per day may be drilled and blasted to break off from the pit face in blocks. The material is then loaded and hauled to various stockpiles and/or waste dumps. Waste rock is hauled to a waste dump. Waste dumps can be piled at the surface of the active pit, or in previously mined pits. Mineralised material is stockpiled in a separate location. The land surface rights are owned by the applicant of this application area.

Access to the proposed mining area will be via the N7, making use of the existing internal/haul roads to access the mining permit area. Existing water authorisation is in place should water be required for the implementation of the project will be bought and transported to site. The proposed project will not require any additional electricity connections, as power existing power connection is in place and will be supported, when needed, by generators.

Land Use

The land use of the earmarked property was previously used for mining marble, thus its already a disturbed area. The current surrounding land uses can be classified as agricultural land, existing mining and tourism Due to the remote location of the proposed project very little to no negative impacts on the community could be identified that were deemed to be of significant importance. The dust and noise impacts that may emanate from the prospecting area during the operational phase could have a negative impact on the surrounding community as it can be compared with the existing farming activities providing that the mitigation measures proposed in this document is not implemented and managed on-site.

Topography

The project area is mainly flat or only slightly undulating by superficial sediments of Late Cenozoic age. The thickness of the superficial sediment overburden overlying Precambrian bedrocks here varies from between 0 – 2 meters. A small area in the east is covered by fine-grained aeolian sands (Q-s) that cover large portions of the coastal plain to the north and south of Vanrhynsdorp, where they are often underlain by older calcareous or loamy soils, and that often appear distinctly orange on satellite images. The reddish sands are derived from pale alluvial sands that were accumulated near the coast by the palaeo-Olifants River system and then blown inland by prevailing south-westerly winds. They are mainly of Pleistocene to Recent age. The majority of the study area is mantled by calcareous and gypsiferous soils (Q-r2) that cover large areas of the Knersvlake region around Vanrhynsdorp and are often capped by a reddish, well-consolidated calcareous or siliceous hardpan or dorbank. The soils comprise a spectrum of gravally conglomerates, grit, sand and finer sediment showing a variable degree of calcretisation (i.e. pedogenic limestone formation typical of semi-arid climates). Pleistocene to Holocene alluvial deposits such as silts and gravels occur along the Widouw River but these are small in extent. The altitude varies between 1100–1 217 m. The altitude varies between 113-134 m.

Visual Characteristics

The viewshed analysis showed that the visual impact of the proposed mining operation will be of low significance. The project area is located in the jurisdiction of the Matzikama Local Municipality, with Vanrhynsdorp being the nearest town. The land use of the earmarked property was previously used for mining marble, thus its already

a disturbed area. The surrounding properties are mainly used for a variety of mixed agricultural purposes as well as mining and industrial purposes. The proposed mining area will be reached via the N7, making use of the existing internal/haul.

Air and Noise Quality

The proposed activity will contribute the emissions mechanical mining equipment to the receiving environment for the duration of the operational phase. Should the permit holder implement the mitigation measures proposed in this document and the EMPR the impact on the air quality of the surrounding environment is deemed to be of low significance and compatible with the current land use. The potential impact on the noise ambiance of the receiving environment is expected to be of low significance and representative of the traffic of the surrounding area

Geology and Soil

The project area is largely underlain by superficial sediments of Late Cenozoic age. The thickness of the superficial sediment overburden overlying Precambrian bedrocks here varies from between 0 – 2 meters. A small area in the east is covered by fine-grained aeolian sands (Q-s) that cover large portions of the coastal plain to the north and south of Vanrhynsdorp, where they are often underlain by older calcareous or loamy soils, and that often appear distinctly orange on satellite images. The reddish sands are derived from pale alluvial sands that were accumulated near the coast by the palaeo-Olifants River system and then blown inland by prevailing south-westerly winds. They are mainly of Pleistocene to Recent age. The majority of the study area is mantled by calcareous and gypsiferous soils (Q-r2) that cover large areas of the Knersvlake region around Vanrhynsdorp and are often capped by a reddish, well-consolidated calcareous or siliceous hardpan or dorbank. The soils comprise a spectrum of gravally conglomerates, grit, sand and finer sediment showing a variable degree of calcretisation (i.e. pedogenic limestone formation typical of semi-arid climates). Pleistocene to Holocene alluvial deposits such as silts and gravels occur along the Widouw River but these are small in extent.

Hydrology

The proposed site falls within the Olifants/ Doorn Water Management Area, in the E33G quaternary catchment area. The proposed project does not require a Water Use Authorisation in terms of Section 39 of the National Water Act, 1998 (Act No 36 of 1998). No activity will take place in or within 100m radius of any water bodies. Any

water required for the implementation of the project will be bought from a registered source and transported to on site. The use of potable water for dust suppression should be avoided.

As per the Water Use Risk Matrix date October 2021 and compiled by Enviroworks (refer to appendix P) the proposed mining footprint is situated adjacent to and old marble mine. The surface area of the proposed mining permit is currently used as a stockpile for the marble. The mining footprint thus has been affected by the marble mine's activities across the surface area.

Due to the arid nature of the area, there were no surface water visible in the natural watercourses that were encountered. Surface flow through the drainage features and watercourses are considered to be limited to flood or precipitation events. No natural perennial watercourses occur in the study area and watercourses within 500m from the proposed footprint are all classified as ephemeral that flow during heavy rainfall and run-off events. There is an artificial dam upstream from the mine footprint which had water in at the time of the site visit, but from historical satellite imagery from Google Earth, the dam has been empty at times, and is thus not perennial. The proposed mining footprint is upstream from an ephemeral watercourse, but outside the 100m regulated area. Based on impacts observed on site from and old mine (adjacent to the proposed mining area), the posed mine can potentially impact the regulated area of the watercourse, and the ephemeral watercourse that it is connected to.

Two location alternatives were provided for the proposed mine. A berm, adjoining an artificial dam wall to the north of the proposed mine, has been constructed around the eastern boundary of the old mine, and it effectively divert surface water that would have flown through the non-perennial watercourse. For this reason, choosing the preferred alternative will not differ significantly from the second alternative in terms of impacts on watercourses; as the watercourse indicates on GIS databases have been transformed by mining. Using the preferred alternative could however provide opportunity in the future to restore the transformed watercourses and could re-establish the more natural and meandering flow path, as opposed to the more rigid and straightened path created by the berm's diversion. The second alternative was thus excluded from further assessment during the study.

The ephemeral watercourse can be classified as having a PES of C, thus it is moderately modified. A loss and change of natural habitat, hydrology and biota have occurred, but the basic ecosystem functions are still predominantly unchanged, despite

the significant impact in changes in hydrology and disturbance within the regulated area and part of the ephemeral watercourse.

The EIS for the ephemeral drainage line is C, thus ecologically important and sensitive on a local scale only. Biodiversity not usually sensitive to flow and habitat modifications.

The inherent soil properties on the site make them prone to erosion, and this is confirmed by the features of soil sealing and erosion observed on the old mine. This means vegetation clearing, soil disturbance and stored soil will require specific management measures to manage and mitigate the impacts of the proposed mine. Clearing of vegetation, disturbance of soil and creating stockpiles leaves bare soil vulnerable to soil sealing and erosion. Sealed soil will generate increased run-off with higher erosion potential downstream. This in turn can erode watercourses and increase sedimentation in the system downstream. Exposed or bare soil (and stockpiles) will also be vulnerable to erosion, this will also increase the impact of sedimentation downstream. Given the infrequency of rainfall in the area, these impacts may fortunately happen at a relatively slow rate.

The mining activities in the mining permit application areas do not fall within the regulated area according to the definition in the NWA (in the absence of a 1:100 year flood line delineation) (within 100m of a watercourse) but the proposed mining will impact upon the regulated areas, which is in turn connected to the ephemeral watercourse; thus even though the proposed mining permit footprint is not directly in the regulated area of the watercourse it can impact the regulated area and consequently the watercourse. This assessment assumed that no new access roads will be created. The existing access roads on site pass though the ephemeral watercourse and its regulated area, thus if the access roads have not yet been registered for c & I water uses, it should be done now. For this reason, it is recommended that the proposed mine and associated infrastructure be registered for a c & i water use. If any activities will take place within the regulated area of the ephemeral watercourse, it should be properly assessed and licenced/registered of a c & i water use. The potential impact of changes in water quality and quantity are also a risk of the proposed development. Since the ephemeral watercourse has a relatively high vegetation cover, water quality and sedimentation impacts are expected to be filtered by the vegetation. Significant downstream impacts on the ephemeral watercourse and Wiedou River (> 2.5 km south) are thus expected to be buffered, especially considering the arid nature of the environment.

Surface water flowing from upslope of the proposed mining footprint in a south-western and western direction will likely flow through the proposed mining footprint, before flowing into the valley and ephemeral watercourse downstream. It will be important to develop and implement a proper stormwater management plan, so that clean surface run-off be diverted around the proposed mine, 'dirty' water from the proposed mine footprint should be contained if contaminated with waste or hazardous matter and should be allowed to settle out sediments if sediment is picked up in the disturbed mining footprint, before entering into the natural environment or the regulated area of the ephemeral watercourse. Stormwater management should also prevent the proposed mine from impeding surface water flow to reach the downstream watercourse, thus the stormwater management should aim to maintain the natural hydrological flow (quantity, timing and speed of surface water run-off) in the landscape as best as possible.

With suitable mitigation measures the impacts can be decreased, and construction- and operation activities should not have any significant impact upon the regulated area and downstream watercourses.

The impacts of the proposed mine on the regulated area of the ephemeral watercourse are considered of low significance in their mitigated state. Provided the site is well managed during the construction and operational phase, following suggested mitigation measures, the development is not considered to pose and unacceptable risk to the watercourses.

Mining, Biodiversity and Groundcover

The project area is located in the jurisdiction of the Matzikama Local Municipality, with Vanrhynsdorp being the nearest town. The land use of the earmarked property was previously used for mining marble, thus its already a disturbed area. The surrounding properties are mainly used for a variety of mixed agricultural purposes as well as mining and industrial purposes. The proposed mining area will be reached via the N7, making use of the existing internal/haul.

Fauna

Various small mammals and reptiles occur on the property. Larger herbivore species are very scares or absent due to the conflicting land use. Small mammals, reptiles and insects will occur in the area. The fauna at the site will not be impacted by the proposed mining activity as they will be able to move away or through the site, without being

harmed. Workers should be educated and managed to ensure that no fauna at the site is harmed. At this stage no resident protected or red data faunal species were identified within the earmarked footprint, and the project is expected to have a negligible impact in this regard as mining activities will be done by non-invasive activities.

Cultural and Heritage Environment

Heritage Western Cape were contacted for their perusal and commenting. Archaeological resources (Including archaeological sites and material, rock art, battlefields & wrecks):

As per the Notice of Intent to develop conducted by Jonathan Kaplan (ACRM) (Refer to Appendix O). Later Stone Age (LSA) and Middle Stone Age (MSA) tools have been recorded on portions of Farm 511 (Kaplan 2010, 2017), but the impact of proposed mining on heritage resources will be low, as proposed mining will take place within the footprint of the existing mine.

However, should artefacts archaeological items be observed during the mining activities, then all activity should cease immediately, the area marked off activity and a specialists consulted prior to any further activity. This also includes if any graves are observed on site during activity progress then all activity should have ceased and the area demarcated as a no-go zone

According to consulting palaeontologist John Pether (email correspondence dated 08 October, 2021), `The quarry exploits the limestone, dolomite and marble of the Widouw Formation (Gariep Supergroup, Gifberg Group) which date from ~770 to 700 million years ago. The earliest microfossils and tiny sponges had appeared by this time, but the quarrying will not impact on this cryptic fossil resource. The palaeontological sensitivity is LOW (SAHRIS)

Only FFP required in case of fossil finds in the overlying coversands'.

The South African Heritage Resources Agency (SAHRA) compiled the Palaeontological (fossil) Sensitivity Map (PSM) to guide developers, heritage officers and practitioners in screening paleontologically sensitive areas at the onset of a project. When the footprint of the earmarked mining area is placed on the PSM, it shows the study area to extend over an area of low insignificant concern.

ii) Final Site Map

Provide a map at an appropriate scale which superimposes the proposed overall activity and its associated structure and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers. Attach as Appendix.

See the map indicating site activities attached as Appendix C.

iii) Summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;

The positive impacts associated with the project include:

- Possible work opportunities to local residents;
- Return of the mining area to agricultural use upon closure of the project; and
- Diversification of the land use of the property.

The negative impacts associated with the project that was deemed to have a Low-Medium or higher significance includes for both S1 and S2:

- Alteration of the agricultural sense of place **Low - Medium**
- Loss of agricultural land for duration of mining Medium
- Dust nuisance as a result of the disturbance of soil during site establishment **Low - Medium**
- Noise nuisance generated by earthmoving machinery during site establishment **Low - Medium**
- Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages during site establishment **Low - Medium**
- Potential contamination of water resources during site establishment **Low - Medium**
- Potential contamination of environment due to improper waste management during site establishment **Low - Medium**
- Infestation of the topsoil heaps and mining area with weeds or invader plant species **Low - Medium**
- Potential erosion of denuded areas **Low - Medium**
- Loss of agricultural land for duration of mining during operational phase **Medium**
- Visual intrusion caused by operational phase **Low - Medium**
- Loss of stockpiled topsoil during operational phase **Low - Medium**
- Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages during operational phase **Low - Medium**
- Potential impact on local fauna due to disturbance and loss of available habitat during operational phase **Low - Medium**
- Facilitation of erosion due to operational phase **Low - Medium**

- Potential contamination of water resources during operational phase **Low - Medium**
- Potential contamination of environment due to improper waste management **Low - Medium**
- Health and safety risk posed by blasting activities **Low - Medium**
- Dust nuisance caused by drilling and blasting activities **Low - Medium**
- Noise nuisance as a result of drilling and blasting activities **Low - Medium**
- Visual intrusion as a result of diamond wire cutting, loading and hauling of the mined material from site **Low - Medium**
- Dust nuisance due to diamond wire cutting, loading and hauling of the mined material from site – **Low –Medium**
- Unsafe working environment for employees during diamond wire cutting, loading and hauling of the mined material from site **Low –Medium**
- Overloading of trucks impacting road infrastructure when loading and hauling the mined material from site **Medium**
- Degradation of the access road when loading and hauling the mined material from site **Medium**
- Impact the broad-scale ecological processes - The loss of unprotected vegetation types on a cumulative basis from the broad area may impact the country's ability to meet its conservation targets. **Low - Medium**
- Impact on existing infrastructure as a direct result of the mining operation **Low - Medium**
- Loss of agricultural land for duration of mining during rehabilitation phase **Low - Medium**
- Safety risk posed by un-sloped areas **Medium**
- Erosion of returned topsoil after rehabilitation **Low - Medium**
- Infestation of the reinstated areas by weeds and invader plant species **Low - Medium**
- Potential impact associated with litter/waste left at the mining area **Low - Medium**
- Potential contamination of environment due to improper waste management **Low - Medium**
- Potential contamination of water resources during rehabilitation **Low - Medium**
- Potential impact on local fauna due to disturbance and loss of available habitat during rehabilitation **Low - Medium**

m) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr;

Based on the assessment and where applicable the recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as condition of authorisation.

Table 26: Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
TOPOGRAPHY Landscaping of Mining Area	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Use the excavated area for the final depositing of overburden. • Dump rocks and coarse material removed from the excavation into the excavation. • Remove coarse natural material used for the construction of ramps and dump it into the excavations. • Remove stockpiles during the decommissioning phase, rip the area and return the topsoil to its original depth to provide a growth medium. • Do not permit any waste to be deposited into the excavations. • Return the previously stored topsoil to its original depth, once overburden, rocks and coarse natural materials have been	• Effectively restoring the mined area to allow the return of land use to agricultural purposes.	• R 1 000	• R 5 000

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
		added to the excavation and it was profiled with acceptable contours and erosion control measures. • If necessary, fertilize the area to allow vegetation to establish rapidly. Seed the site with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within six months from closure of the site. • If required by the Regional Manager (DMRE) the soil must be analysed and any deleterious effects on the soil arising from the mining operation must be corrected and the area be seeded with a vegetation seed mix to his/her specification. • On completion of operations, deal with all structures or objects in accordance with section 44 of the Mineral and Petroleum Resources			

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
		Development Act, 2002 (Act 28 of 2002). • On completion of mining operations, scarify the surface of all plant-, stockpiling-, and/or office areas, if compacted due to hauling and dumping operations, to a depth of at least 200mm and graded it to an even surface condition. Where applicable/possible return topsoil to its original depth over the area.			
VISUAL CHARACTERISTICS Visual mitigation	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Ensure that the site have a neat appearance and is kept in good condition at all times. • Store mining equipment in a dedicated area when not in use. • Limit vegetation removal, and only strip topsoil immediately prior to the mining/use of a specific area. • Contain excavations to the approved footprint of the permitted area.	• Minimise the impact of the mining operations on the visual characteristics of the receiving environment during the operational phase, and minimise the residual impact after closure.	• R 500	• R 3 000

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
		• Upon closure, rehabilitate the site to ensure that the visual impact on the aesthetic value of the area is reduced to the minimum.			
AIR AND NOISE QUALITY Dust Mitigation	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Control the liberation of dust into the surrounding environment by the use of; inter alia, water spraying and/or other dust-allaying agents. • Ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Limit speed on the haul roads to 20 km/h and 40 km/h on the access road to prevent the generation of excess dust. • Minimise areas devoid of vegetation, and only remove vegetation immediately prior to mining. • Consider weather conditions upon commencement of daily	• Dust prevention measures are applied to minimise the impact.	• R 500	• R 3 000

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
		operations. Limit operations during very windy periods to reduce airborne dust and resulting impacts. • Ensure dust generating activities comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA, 2004 and ASTM D1739 (SANS 1137:2012). • Implement best practice measures during the stripping of topsoil, excavation, and transporting of material from site to minimize potential dust impacts.			
AIR AND NOISE QUALITY Noise Mitigation	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Ensure that employees and staff conduct themselves in an acceptable manner while on site. • No loud music may be permitted at the mining area. • Ensure that all project related vehicles are equipped with silencers	• Prevent unnecessary noise to the environment by ensuring that noise from development activity is mitigated.	• R 500	• R 3 000

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
		and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996. • Plan the type, duration and timing of the blasting procedures with due cognizance of other land users and structures in the vicinity. Notify the surrounding land owners in writing prior to each blasting occasion. • Contract a qualified occupational hygienist to quarterly monitor and report on the personal noise exposure of the employees working at the mine. Monitoring must be in accordance with SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA 2004, SANS 10103:2008. • Implement best practice measures to minimise potential noise impacts.			
GEOLOGY AND SOIL	Site Manager to ensure compliance with the guidelines	• Strip and stockpile the upper 300 mm of the soil before mining.	• Adequate fertile topsoil is available	• R 500	• R 3 000

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
Topsoil Handling	as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Carefully manage and conserve the topsoil throughout the stockpiling and rehabilitation process. • Ensure topsoil stripping, stockpiling and re-spreading is done in a systematic way. Plan mining in such a way that topsoil is stockpiled for the minimum possible time. • Place the topsoil on a levelled area, within the mining footprint. Do not stockpile topsoil in undisturbed areas. • Protect topsoil stockpiles against losses by water- and wind erosion. Position stockpiles so it is not vulnerable to erosion by wind and water. The establishment of plants (weeds or a cover crop) on the stockpiles will help to prevent erosion. • Ensure that topsoil heaps do not exceed 1.5 m in order to preserve micro-organisms within the topsoil, which can be lost	to rehabilitate the mined area.		

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
		due to compaction and lack of oxygen. • Keep temporary topsoil stockpiles free of invasive plant species. • Vegetate the topsoil heaps to be stored longer than 6 months with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season. • Divert storm- and runoff water around the stockpile area to prevent erosion. • Spread the topsoil evenly, to a depth of 300 mm, over the rehabilitated area upon closure of the site. • Strive to re-instate topsoil at a time of the year when vegetation cover can be established as quickly as possible afterwards, to that erosion of returned topsoil is minimized. The best time of year is at the end of the rainy season. • Plant a cover crop immediately after spreading topsoil to stabilise the soil and			

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
		protect it from erosion. Fertilise the cover crop for optimum production. Rehabilitation extends until the first cover crop is well established. • Control run-off water with temporary banks, where necessary, to prevent accumulation of run-off causing down-slope erosion. • Monitor the rehabilitated area for erosion, and appropriately stabilize if erosion do occur, for at least 12 months after reinstatement.			
HYDROLOGY Erosion Control and Storm Water Management	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Limit clearing of vegetation to the proposed mining footprint and associated infrastructure. Ensure no clearing takes place outside the minimum required footprint. • Divert stormwater around the topsoil heaps and mining areas to prevent erosion.	• Impact on the environment caused by stormwater discharge is avoided and erosion is managed.	• R 300	• R 3 000

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
		▪ Protect stockpiles from erosion, and store it on flat areas surrounded by appropriate berms where possible. ▪ Ensure that adequate slope protection is provided when mining within steep slopes. ▪ Control the outflow of run-off water from the mining excavation to prevent down-slope erosion, by constructing temporary banks and ditches that will direct run-off water (if needed). These must be in place at any points where overflow out of the excavation might occur. ▪ Regularly monitor roads and other disturbed areas within the project for erosion, and ensure problem areas receive follow-up monitoring to assess the success of the remediation. ▪ Rectify erosion problems within the mining area as a result of the mining activities immediately			

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
		(within 48 hours) and monitored thereafter to ensure that it does not re-occur. • Use silt/sediment traps/barriers where there is a danger of topsoil or material stockpiles eroding and entering downstream drainage lines and other sensitive areas. Regularly maintain and clear the sediment/silt barriers to ensure effective drainage of the areas. • Clearing of vegetation must be limited to the proposed mining footprint and associated infrastructure. No clearing outside of the minimum required footprint to take place. • Stormwater must be diverted around the topsoil heaps and mining areas to prevent erosion. • Stockpiles must be protected from erosion, stored on flat areas where possible, and be			

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
		surrounded by appropriate berms. • When mining within steep slopes, it must be ensured that adequate slope protection is provided. • During mining, the outflow of run-off water from the mining excavation must be controlled to prevent down-slope erosion. This must be done by way of the construction of temporary banks and ditches that will direct run-off water (if needed). These must be in place at any points where overflow out of the excavation might occur. • Roads and other disturbed areas within the project area must be regularly monitored for erosion and problem areas must receive follow-up monitoring to assess the success of the remediation. • Any erosion problems within the mining area as a result of the mining			

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
		activities observed must be rectified immediately (within 48 hours) and monitored thereafter to ensure that it does not re-occur. • Silt/sediment traps/barriers must be used where there is a danger of topsoil or material stockpiles eroding and entering downstream drainage lines and other sensitive areas. These sediment/silt barriers must regularly be maintained and cleared so as to ensure effective drainage of the areas. • Implement similar berms to the western berm around the old mine, stormwater management at the proposed mining footprint. • Divert surface run-off around the proposed new mine and recycle 'dirty'/contaminated water back into the mining system			

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
		▪ Reinstate flow continuity and connectivity of the watercourses post-construction activities and operational phase. ▪ Implement regular monitoring of water quality in order to ensure the impacts of runoff and decant of water into watercourse is prevented or minimised. ▪ Incorporate adequate storm water management into the design of the proposed development throughout all phases. In this regard, special mention is made of: Sheet runoff from cleared areas, paved surfaces, bare, disturbed- and compacted soil and access roads needs to be curtailed. ▪ Slow down runoff from paved and compacted bare soil surfaces, including channelled stormwater or water by the strategic placement of berms or increasing			

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
		surface roughness to slow down the flow of water. • Implement berms and catchment paddocks at the toe of topsoil and waste stockpiles to contain runoff of the facilities. • Excluded Construction, development and mining activities from the regulated area of the watercourse as much as possible. • Rip, re-profile and revegetate compacted areas as soon as areas becomes available. • Rehabilitate any areas where active erosion is observed immediately in such a way as to ensure that the hydrology of the area is re-instated to conditions which are as natural as possible. • Avoid cutting/ clearing of the herbaceous layer within the watercourse along the linear development so as to retain soil stability			

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
		provided by the grass root structures. • Inspect watercourse crossings and diversions quarterly. • Establish vegetation around disturbed areas to prevent any erosion. • Stormwater runoff should be handled on surface and directed towards natural watercourses. • Access roads for support vehicles, and vehicles used in the construction of the crossings, should not encroach into the freshwater features (this excludes existing access roads) • Install retardation structures where water leaves the site or exits stormwater channels/bermed/diverted areas flow and into the natural watercourse/environment. • Construct diversion drains around the site timeously prior to operation.			

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
		• Ensure adherence to GNR 704 of the NWA. • Where the diversion re-enters the natural system, it must enter the system at the same elevation as the receiving aquatic environment as well as consist of an energy dissipation structure thereby preventing erosion and incision of the natural watercourse. • The point where the diversion re-enters the natural watercourse must enter the system where possible at an acute angle to prevent the creation of turbulent flow, erosion and incision. • Ensure erosion protection measures are adequately implemented and monitored. • No construction of infrastructure may take place within watercourses and associated buffer zones unless authorisation is granted by the DWS.			

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
		▪ As far as possible all mining activity and infrastructure should be excluded from the watercourses and associated 100 m buffer zone. ▪ Mining must be conducted only in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose: ▪ Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system. You must prevent clean water from running or spilling into dirty water systems. ▪ Dirty water must be collected and contained in			

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
		a system separate from the clean water system. • Dirty water must be prevented from spilling or seeping into clean water systems. • A storm water management plan must apply for the entire life cycle of the mining activity and over different hydrological cycles (rainfall patterns). • The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into a storm water management plan. • Polluting activities including storage of mining fleet, equipment wash down facilities and vehicle maintenance yards must be restricted to the workshop areas and must be undertaken on impermeable hard standing surfaces, which are formally drained to a			

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
		dirty water drainage system at the site. • Vehicle maintenance or refueling should be undertaken within the workshop and service area proposed within the mining area. Alternatively, if emergency repairs or refueling are required, it must be undertaken on an impermeable surface to prevent contamination of soil and groundwater. Vehicles and equipment must be parked and stored on impermeable surfaces or make use of uPVC lining and drip trays when stationary • All fuels and chemicals stored or used on site must be contained within fit for purpose containers and stored within designated storage areas. In order to prevent pollution of the surrounding environment during an accidental spillage, the designated storage areas must be			

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
		situated on an impermeable surface and must feature a perimeter bund and a drainage sump. The volume of the bund and sump must be sized to contain at least 110% of the total volume of the fuel and chemicals being stored within the designated storage area. The storage areas must feature a roof to prevent inflow of rainwater, which would require the sump to be emptied more frequently. • Conduct activity in terms of the Best Practice Guidelines for small-scale mining as developed by DWS. • Restrict polluting activities including storage of mining fleet, equipment wash down facilities and vehicle maintenance yards to the workshop areas and ensure it takes place on impermeable hard standing surfaces, which formally drain to a			

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
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		dirty water drainage system at the site. • vehicle maintenance or refuelling must be undertaken within the workshop and service area proposed within the mining area. Alternatively, if emergency repairs or refuelling are required, it must be undertaken on an impermeable surface to prevent contamination of soil and groundwater. Vehicles and equipment must be parked and stored on impermeable surfaces or make use of uPVC lining and drip trays when stationary • Contain all fuels and chemicals stored or used on site in fit for purpose containers and store within designated storage areas. Ensure the designated storage areas are situated on an impermeable surface with a perimeter bund and a drainage sump.			

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
		Size the volume of the bund and sump to contain at least 110% of the total volume of the fuel and chemicals being stored within the designated storage area. Ensure that the storage areas have a roof to prevent inflow of rainwater, which would require the sump to be emptied more frequently.			
HYDROLOGY **Water Resource Management**	Project Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Any future development within 1:100-year floodline or within the riparian habitat constitutes a water use licence in terms of section 21 (c) and (i) of the National Water Act, 1998 (Act 36 of 1998) and will require authorisation before any development may commence. • Any portable toilets would be used on-site during construction and/or operational phase of the development; such toilet facilities must be located outside of the 1:100-year floodline and must be	• Impact to water resources is minimised	• R 300	• R 3 000

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
		regularly emptied at a municipal wastewater treatment works. • Solid and chemical waste generated from construction and operational phases of the development must be kept away from drainage line. • No abstraction of surface water or ground water may take place without the prior authorization from this Department unless it is a Schedule 1 use or an Existing Lawful Use. • Where solid waste disposal is to take place on site, ensure that only non-toxic materials which have no risk of polluting the groundwater, are buried in designated approved areas at acceptable depths below ground level. • No surface, ground or storm water may be polluted as a result of any activities on the site. • The person who owns, controls, occupies, or uses			

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				BOTTOM RANGE	TOP RANGE
		the land in question is responsible for taking measures to prevent any occurrence of pollution to water resources. • Rehabilitation plan must be formulated and submitted to the Department of Water Affairs and Sanitation for comments. If the rehabilitation of the site will include the storage of water, authorization will be required before any water is stored. • The rehabilitation of the site must ensure that the final condition of the site is environmentally acceptable and that there will be no adverse long-term effects on the surrounding environment especially the water resources post mining activities. • All requirements in the Regulations on use of water for mining and related activities aimed at the protection of water resources as contained in Government Notice No 704			

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
		dated 4 June 2004 must be adhered to. • All requirements as stipulated in the National Water Act (NWA) 1998(Act No. 36 of 1998) must be adhered to.			
TERRESTRIAL BIODIVERSITY, CONSERVATION AREAS AND GROUNDCOVER Management of vegetation removal.	Permit holder to apply for a destruction/removal plant permit from DEADP Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Clearly demarcate the mining boundaries and contain all operations to the approved mining area. Declare the area outside the mining boundaries a no-go area, and educate all staff accordingly. • Arrange a pre-commencement walk-through of the final mining footprint by a suitably qualified botanist for species of conservation concern that need to be removed/relocated prior to bush clearance. • Obtain permits for the removal of protected plant species (if required) and keep it on-site in the possession (at all times) of the flora search and rescue team.	• Vegetation clearing is restricted to the authorised development footprint of the mine.	• R 1 000	• R 5 000

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
		• Arrange a pre-commencement environmental induction for all staff on site to ensure that basic environmental principles are adhered to. This must include awareness of no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimising wildlife interactions, remaining within demarcated construction areas, etc. • Only commence with bush-clearance once the recommendations of the specialist (pre-commencement walkthrough) have been implemented. • Do not burn cleared vegetation to be retained at any time, but rather mulch and stockpiled it. Ideally cover the heaps with stockpiled topsoil and retain the material for future site rehabilitation.			

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				BOTTOM RANGE	TOP RANGE
		• The on-site ECO must provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment, especially during the site establishment phase, when the majority of vegetation clearing is taking place. • Ensure all vehicles remain on demarcated roads and prevent unnecessary driving in the veld outside these areas. • Do not translocated, uprooted or disturbed plants for rehabilitation or other purposes without express permission from the ECO and without the relevant permits. • Do not allow fires on-site. • Provide spoil heaps and topsoil stockpiles with a vegetation cover of indigenous grasses. • If deemed necessary by the ECO, make a firebreak around the periphery of			

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				BOTTOM RANGE	TOP RANGE
		the site in autumn every year. Upon recommendation of the ECO, burn the vegetated areas inside the break on a biennial basis if deemed necessary. Adhere to the relevant veld burning legislation.			
TERRESTRIAL BIODIVERSITY, CONSERVATION AREAS AND GROUNDCOVER Management of invasive plant species.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Implement an invasive plant species management plan to control all invasive plant species on site in terms of NEM:BA, 2004 and CARA, 1983. Do weed/alien ongoing clearing on throughout the life of the mining activities. • Do not allow planting or importing of any alien species to the site for landscaping, rehabilitation or any other purpose. • Keep all stockpiles (topsoil & overburden) free of invasive plant species. • Control declared invader or exotic species on the rehabilitated areas.	• Mining area is kept free of invasive plant species.	• R 500	• R 3 000

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
FAUNA Protection of fauna	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Ensure no fauna is caught, killed, harmed, sold or played with. • The ECO or other suitably qualified person must remove any fauna directly threatened by the operational activities to a safe location. • Arrange that all personnel undergo environmental induction regarding fauna management and in particular awareness about not harming or collecting species such as snakes, tortoises and owls which are often persecuted out of superstition. Instruct workers to report any animals that may be trapped in the working area. • Ensure no snares are set or nests raided for eggs or young. • Ensure all vehicles adhere to a low speed limit (20 km/h is recommended) to avoid collisions with	• Disturbance to fauna is minimised.	• R 500	• R 3 000

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
		susceptible species such as snakes and tortoises. • Prevent litter, food or other foreign material thrown or left around the site. Keep such items in the site vehicles and daily removed it to the site camp.			
CULTURAL AND HERITAGE ENVIRONMENT Archaeological, heritage and palaeontological aspects.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Confine all mining to the development footprint area. • Implement the following change find procedure when discoveries are made on site: • The following pre-quarrying archaeological mitigation measures are recommended as per the Heritage Impact Assessment (Appendix N): ▪ No pre-quarrying archaeological mitigation of the proposed quarry site is recommended. Although unlikely, should any human remains be	• Impact to cultural/heritage resources is avoided or at least minimised.	• R 1 000	• R 5 000

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				BOTTOM RANGE	TOP RANGE
		encountered at any stage during the works associated with the project, work must in the vicinity must cease immediately, the remains must be left in situ but made secure and the project archaeologist and HWC must be notified immediately.; ▪ Should any human remains be encountered at any stage during the works associated with the project, work must in the vicinity must cease immediately, the remains must be left in situ but made secure and the project archaeologist and HWC must be notified immediately in order to make a decision about how to deal with the remains. The Palaeontological Impact Assessment conducted by Prof Marion Bamford			

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		indicates that, based on the geological record and fossil collecting map maintained by the Evolutionary Studies Institute, there is a chance that vertebrate fossils could occur on the site but none have been recorded to date. If dolerite is the material to be mined than there will be no fossils, but if mudstones and shales are to be mined there is a moderate chance that fossils will be present. The following mitigation measures are, therefore, recommended: ▪ A Fossil Chance Finds Protocol must be implemented once quarrying commences to ensure the reporting, safeguarding and recovery of any discoveries of fossils; ▪ If fossils are found during quarrying, they must be excavated and collected by a professional palaeontologist, working under a HWC			

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				BOTTOM RANGE	TOP RANGE
		permit and then housed in a recognised repository. ▪ If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager. ▪ It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find, and confirm the extent			

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				BOTTOM RANGE	TOP RANGE
		of the work stoppage in that area. ▪ The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify the SAHRA. • Work may only continue once the go-ahead was issued by SAHRA.			
LAND USE Loss of agricultural land for duration of mining.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	○ If needed, sign mined-out/rehabilitated areas back to agricultural use once the cover crop stabilised.	• Mining has the least possible impact on the operation of the property.	• R 300	• R 1 000
EXISTING INFRASTRUCTURE	Site Manager to ensure compliance with the guidelines	• Divert storm water around the access road to prevent erosion.	• The access road remains accessible to the landowner and lawful	• R 500	• R 3 000

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
Management of the access road.	as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Restrict vehicular movement to the existing access road to prevent crisscrossing of tracks through undisturbed areas. • Repair rutting and erosion of the access road caused as a direct result of the mining activities. • Prevent the overloading of the trucks and file proof of load weights for auditing by relevant officials. ○ Restrict the speed of all mining equipment/vehicles to 40 km/h on the access roads.	occupiers during the operational phase, and upon closure, the road is returned in a better, or at least the same state as received by the permit holder.		
GENERAL Waste management	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Ensure regular vehicle maintenance, repairs and services only take place at the workshop and service area. Ensure drip trays are present if emergency repairs are needed on equipment not able to move to the workshop. Dispose all waste products in a closed container/bin to be	• Wastes are appropriately handled and safely disposed of at recognised waste facilities.	• R 1 000	• R 5 000

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				BOTTOM RANGE	TOP RANGE
		removed from the emergency service area (same day) to the workshop in order to ensure proper disposal. Treat this as hazardous waste and dispose of it at a registered hazardous waste handling facility, alternatively arrange collection by a registered hazardous waste handling contractor. File safe disposal certificates for auditing purposes. • If a diesel bowser is used on site, equip it with a drip tray at all times. Use drip trays during each and every refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling. • Ensure drip trays are cleaned after each use. Do not allow dirty drip trays to be used on site. Dispose of dirty rags used to clean the drip trays as hazardous waste into a designated bin at the			

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
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		workshop, where it is incorporated into the hazardous waste removal system. • Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and remove it from the site, either for resale or for appropriate disposal at a recognized facility. File proof. • Obtain an oil spill kit, and train the employees in the emergency procedures to follow when a spill occurs as well as the application of the spill kit. • Clean spills immediately, within two hours of occurrence, to the satisfaction of the Regional Manager (DMRE) by removing the spillage together with the polluted soil and containing it in a designated hazardous waste bin until it is disposed of at a			

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
		recognised facility. File proof. • Ensure suitable covered receptacles are available at all times and conveniently placed for the disposal of general waste. • Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point to be collected at least once a month and disposed of at a recognized landfill site. Take specific precautions to prevent refuse from being dumped on or in the vicinity of the mine area. File proof of disposal. • Handle biodegradable refuse as indicated above. • Encourage re-use or recycling of waste products. • Do not bury or burn waste on the site. • Provide ablution facilities in the form of a chemical toilet/s. Anchor the			

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
		chemical toilet (to prevent blowing/falling over) and arrange that it is serviced at least once a week for the duration of the mining activities by a registered liquid waste handling contractor. File the safe disposal certificates. Ensure that the use of any temporary, chemical toilet facilities do not cause any pollution to water sources or pose a health hazard. In addition, ensure that no form of secondary pollution arise from the disposal of refuse or sewage from the temporary, chemical toilets. Address any pollution problems arising from the above immediately. Do not discharge water containing waste into the natural environment. Implement measures to contain the waste water and safely dispose thereof.			

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
		▪ Report any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities to the to all relevant authorities, including Department Environmental Affairs and Development Planning – Directorate - Pollution and Chemicals Management, in accordance with section 30 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA") pertaining to the *control of incidents*. In the event of a significant accidental spill or leak of hazardous substances (e.g. petrol, diesel, etc.) during any phase of the proposed activities, such an incident(s) must be reported. o Implement the use of waste registers to keep record of the waste			

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		generated and removed from the mining area. • The storage of hazardous and/or general waste in excess of 80m^3 and 100m^3 respectively, excluding the storage of waste in lagoons or the temporary storage of such waste, would require the applicant to comply with the National Norms and Standards for the Storage of Waste, published in GN No. 926 of 29 November 2013. Although the storage of general and hazardous waste below these mentioned thresholds is not regulated, section 28 of the NEMA, 1998 would apply to ensure that any waste storage does not impact negatively on the environment.			
GENERAL	Site Manager to ensure compliance with the guidelines	• Place chemical storage areas on level ground to	• The chemical/hazardous substances used on	• R 1 000	• R 5 000

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
Storage/handling of hazardous substances/chemicals.	as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	prevent offsite migration of any spilled product. • Ensure that the floor of the storage area is impermeable to prevent seepage of spilled products into the ground or ground water. • Control access to the chemicals/substances and implement a notification system of an appropriate staff member. • Ensure that the storage area is out of the 1:100 year floodline or further than 100 m from the edge of a watercourse, whichever is greatest. • Maintain a Hazardous Substances Register, and keep Safety Data Sheets (SDS) current for all chemicals used on site. • Ensure any fuel/used oil tanks have secondary containment in the form of an impermeable bund wall and base within which the tanks sits, raised above the floor, on plinths. Check that the bund capacity is	site are stored according to specifications without contaminating the receiving environment.		

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
		sufficient to contain 110% of the tank's maximum capacity. Ensure that the distance and height of the bund wall relative to that of the tank is taken into consideration to ensure that any spillage does not result in hydrocarbons/other substances spouting beyond the confines of the bund. • Establish a formal inspection routine to check all equipment in the bund area, as well as the bund area itself for malfunctions or leakages. Inspect the bund area at least weekly and remove any accumulated rainwater and hand it as contaminated water. Check all valves and outlets to ensure that its intact and closed securely. • Ensure that the bund base slope towards an oil sump of sufficient size. Do not allow contaminated water to mix with clean water,			

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
		and contain it until it is collected by a registered hazardous waste handling contractor or disposed of at a registered hazardous waste handling facility. ○ Use drip trays under all stationary equipment or vehicles. Place used drip trays within a bunded area and do not store on the bare soil. Discard the waste water originating from the cleaning of drip trays into the oil sump.			
GENERAL Management of health and safety risks	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Ensure that workers have access to the correct PPE as required by law. • Locate sanitary facilities within 100 m from any point of work. • Manage all operations in compliance with the Mine Health and Safety Act, 1996 (Act No 29 of 1996). • Plan the type, duration and timing of blasting with due cognizance of other land users and structures in the vicinity.	• Employees work in a healthy and safe environment.	• R 1 000	• R 5 000

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME	PENALTY FOR NON-CONFORMANCE	
				BOTTOM RANGE	TOP RANGE
		▪ Inform the surrounding landowners and communities in writing ahead of any blasting event. ▪ Monitor the compliance of ground vibration and airblast levels to USBM standards with each blasting event. ▪ Record all blasts with a vibro recorder. ▪ Give audible warning of a pending blast at least 3 minutes in advance of the blast. ○ Limit fly rock, and collect and remove flyrock and rock spill that falls beyond the working area.			

n) Aspects for inclusion as conditions of Authorisation.

Any aspects which must be made conditions of the Environmental Authorisation

The management objectives listed in this report under *Part A(1)(m) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR* above should be considered for inclusion in the environmental authorisation.

o) Description of any assumptions, uncertainties and gaps in knowledge.

(Which relate to the assessment and mitigation measures proposed)

The assumptions made in this document which relate to the assessment and mitigation measures proposed, stem from site specific information gathered from site inspections, desktop studies as well as the specialist study. No uncertainty regarding the proposed project or the receiving environment could be identified.

p) Reasoned opinion as to whether the proposed activity should or should not be authorised

i) Reasons why the activity should be authorised or not.

Should the mitigation measures and monitoring programmes proposed in this document be implemented on site, no fatal flaws could be identified that were deemed as severe as to prevent the activity continuing.

ii) Conditions that must be included in the authorisation

The management objectives listed in this report under *Part A(1)(m) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR* should be considered for inclusion in the environmental authorisation.

q) Period for which the Environmental Authorisation is required.

The Applicant requests the Environmental Authorisation to be valid for a five-year period to correspond with the validity of the mining permit.

r) Undertaking

Confirm that the undertaking required to meet the requirements of this section is provided at the end of the EMPr and is applicable to both the Basic assessment report and the Environmental Management Programme report.

The undertaking required to meet the requirements of this section is provided at the end of the EMPR and is applicable to both the Basic Assessment Report and the Environmental Management Programme report.

s) Financial Provision

State the amount that is required to both manage and rehabilitate the environment in respect of rehabilitation.

i) Explain how the aforesaid amount was derived

The amount required to manage and rehabilitate the environment was estimated to be The annual amount required to manage and rehabilitate the environment was estimated to be R 400000. Please see the explanation as to how this amount was derived at attached as Appendix H – Financial and Technical Competence Report.

ii) Confirm that this amount can be provided from operating expenditure.

(Confirm that the amount is anticipated to be an operating cost and is provided for as such in the Mining Work Programme, Financial and Technical Competence Report or Prospecting Work Programme as the case may be).

Seboway (Pty) Ltd will be responsible for the financial and technical aspects of the proposed prospecting project. The operating expenditure is provided for as such in the Financial and Technical Competence Report attached as Appendix H to this report.

t) Specific Information required by the competent Authority

i) Compliance with the provisions of sections 24(4)(a) and (b) read with section 24 (3)(a) and (7) of the National Environmental Management Act (Act 107 of 1998). The EIA report must include the: -

(1) Impact on the socio-economic conditions of any directly affected person.

(Provide the results of investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any directly affected person including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim, attach the investigation report as an Appendix)

The following potential impacts were identified that may impact on socio-economic conditions of directly affected persons:

- **Visual intrusion associated with the proposed mining activities:**

  The viewshed analysis showed that the visual impact of the proposed mining operation will be of low significance. The small scale of the proposed operation contributes to the low visual significance. Should the Applicant successfully rehabilitate the mining areas (upon closure), no residual visual impact is expected upon closure of the mining activities.

- **Dust nuisance caused as a result of the proposed mining activities:**

The proposed activity will contribute the emissions of drill rigs, excavators, Front End Loaders, Light Domestic Vehicles (LDVs),Flatbed/Low-bed and Ore transport trucks to the receiving environment for the duration of the operational phase. Should the mining permit holder implement the mitigation measures proposed in this document and the EMPR the impact on the air quality of the surrounding environment is deemed to be of low significance and compatible with the current land use.

- **Noise nuisance as a result of mining activities:**

The potential impact on the noise ambiance of the receiving environment is expected to be of low significance and representative of the machinery already operational at the property. The distance of the proposed mining area from residential infrastructure further lessens the potential noise impact.

- **Employment opportunities and socio-economic impact:**

The proposed labour component of the activity will be twenty to fifty employees. The operation will contribute to the local economy in the area, both directly and through the multiplier effect that its continued presence will create.

Equipment and supplies will be purchased locally, and wages are spent at local businesses, generating both jobs and income in the area. Although the employees are not resident on the site, they will be from the surrounding community.

(2) Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act.

(Provide the results of investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 (Act No 25 of 1999) with the exception of the national estate contemplated in section 3(2)(i)(vi) and (vii) of the Act, attach the investigation report as Appendix 2.19.2 and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6 and 2.12 herein).

Heritage Western Cape will be contacted for their perusal and commenting. However, should artefacts archaeological items be observed during the mining activities, then all activity should cease immediately, the area marked off activity and a specialists consulted prior to any further activity. This also includes if any graves are observed on site during activity progress then all activity should have ceased and the area demarcated as a no-go zone.

As per the Notice of Intent to develop conducted by Jonathan Kaplan (ACRM) Later Stone Age (LSA) and Middle Stone Age (MSA) tools have been recorded on portions of Farm 511 (Kaplan 2010, 2017), but the impact of proposed mining on heritage resources will be low, as proposed mining will take place within the footprint of the existing mine.

However, should artefacts archaeological items be observed during the mining activities, then all activity should cease immediately, the area marked off activity and a specialists consulted prior to any further activity. This also includes if any graves are observed on site during activity progress then all activity should have ceased and the area demarcated as a no-go zone

According to consulting palaeontologist John Pether (email correspondence dated 08 October, 2021), `The quarry exploits the limestone, dolomite and marble of the Widouw Formation (Gariep Supergroup, Gifberg Group) which date from ~770 to 700 million years ago. The earliest microfossils and tiny sponges had appeared by this time, but the quarrying will not impact on this cryptic fossil resource. The palaeontological sensitivity is LOW (SAHRIS)

Only FFP required in case of fossil finds in the overlying coversands'.

The South African Heritage Resources Agency (SAHRA) compiled the Palaeontological (fossil) Sensitivity Map (PSM) to guide developers, heritage officers and practitioners in screening paleontologically sensitive areas at the onset of a project. When the footprint of the earmarked mining area is placed on the PSM, it shows the study area to extend over an area of insignificant/zero concern.

u) Other matters required in terms of section 24(4)(a) and (b) of the Act.

(the EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by section 24(4)(b)(i) of the Act and motivation if no reasonable or feasible alternatives, as contemplated in sub-regulation 22(2)(h), exist. The EAP must attach such motivation as Appendix)

Site Alternative 1 (S1) (Preferred Alternative and only site viable alternative): The Applicant, applied for a mining permit for the mining of all forms of Limestone, Dimension stone and Marble on a Portion of Portion 3 of the farm Welverdiend no 511 magisterial district of Vanrhynsdorp Western Cape province. The proposed mining footprint will be 4.9 ha and will be developed over a disturbed area previously used for the mining of Marble. Comments were received by Cape Nature for a Prospecting Right application on the said

property regarding the sensitivity of the area, it is therefore recommended based on these comments that any future invasive activities and or mining should be limited to existing mining and already disturbed areas in order to prevent the loss of natural vegetation or disturbance to water courses.

Ground truthing, confirmed in terms of local-level biodiversity, the selected site is not exceptional and is highly disturbed in this regard as the boundaries of the selected site falls within and existing quarry, and there are no Species of Conservation Concern or unique and range restricted species present within the proposed mining area as well as no unique habitats which are not widely available in the wider landscape. As a result, the majority of impacts associated with the development of the site are likely to be local in nature and not of wider significance.

In light of this, S1 was identified during the assessment phase of the environmental impact assessment, by the Applicant and project team as the only possible alternative.

The proposed site (Site Alternative 1) was identified as the preferred and only viable site alternative based on the following:

- The proposed area is over a disturbed area of the farm previously used for marble mining but with very low agricultural potential due to the existing marble deposits left in the application area, after consultation with the land owner the application footprint extends into an area with low agricultural potential. The proposed project will not necessitate the loss of agricultural field with high potential to the land owner.
- Access to the proposed mining area is possible via the existing access road with a formal (existing) entrance onto the N7.
- This alternative is highly disturbed and will not result in loss of natural vegetation or disturbance to water courses.
- The mining of the area will ultimately result in rehabilitation of an already disturbed area, leaving it in better state than prior to mining.

Site Alternative 2:

Site Alternative 2, which also entails the mining area over a disturbed portion of portion 3 of the farm Welverdiend no 511 magisterial district of Vanrhynsdorp Western Cape province.

Site Alternative 2 (S2) was assessed for the proposed mining but found not environmentally and practically suitable. Ground truthing, by the specialists, however confirmed in terms of local-level biodiversity, the selected site is higher and is more

sensitive in this regard as the boundaries of the selected site falls within drainage lines that are seen as areas of conservation concern. As a result, the majority of impacts associated with the development on this site alternated are deemed to have a higher impact to be disturbed for the quarry to be established. Site alternative 1, was deemed the only viable site alternative as this is area is regarded to be already disturbed and will not impact on the sensitivity of the area.

From a sensitivity perspective site alternative 2 quarry layout is less preferred because this will mean the loss of the natural vegetation,

The environmental impact assessment process assessed the feasibility of the proposed site alternative to identify fatal flaws that are deemed as severe as to prevent the activity continuing, or warrant another site or project alternative. The outcome of the assessment showed that should the mitigation measures and monitoring programmes proposed in this document be implemented, no fatal flaws could be identified that prevents the activity continuing. In light of the above, the mining proposal was updated to incorporate the project related mitigation measures and monitoring programmes identified during the assessment process. The preferred development footprint was subsequently finalized and is depicted on the attached site activities plan (Appendix C).

No-go Alternative: The no-go alternative entails no change to the status quo and is therefore

a real alternative that must be considered.

- The applicant will not be able to mine for any possible mineral resource;
- The application, if approved, would allow the applicant to determine the available mineral resource as well as provide employment opportunities to local employees.
- Should the no-go alternative be followed these opportunities will be lost to the applicant, potential employees and clients; and the applicant will not be able to diversify the income of the property.

Not proceeding with the proposed operation will entail that a mineral which if found will contribute towards the local and provincial social and economic structures of the area, will not be mined, and that this opportunity will be lost.

In light of this, the no-go alternative was no deemed to be the preferred alternative.

PROPOSED MINING PERMIT ON A PORTION OF PORTION 3 OF THE FARM WELVERDIEND NO 511 MAGISTERIAL DISTRICT OF VANRHYNSDORP WESTERN CAPE PROVINCE

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

OCTOBER 2021

REFERENCE NUMBER: WC 30/5/1/3/2/10284 MP

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1. DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME.

a) Details of the EAP,

(Confirm that the requirements for the provision of the details and expertise of the EAP are already included in Part A, section 1(a) herein as required).

The details and expertise of Sonette Smit of Greenmined Environmental that acts as EAP on this project has been included in Part A Section 1(a) as well as Appendix M as required.

b) Description of the Aspects of the Activity

(Confirm that the requirements to describe the aspects of the activity that are covered by the draft environmental management programme is already included in PART A, section (1)(h) herein as required).

The aspects of the activity that are covered by the draft environmental management programme has been described and included in Part A, section (1)(h).

c) Composite Map

(Provide a map (Attached as an Appendix) at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that any areas that should be avoided, including buffers)

As mentioned under Part A, section (1)(l)(ii) this map has been compiled and is attached as Appendix C to this document.

d) Description of impact management objectives including management statements

i) Determination of closure objectives.

(Ensure that the closure objectives are informed by the type of environment described in 2.4 herein)

The primary objective, at the end of the mine's life, is to obtain a closure certificate at minimum cost and in as short a time period as possible whilst still complying with the requirements of the Minerals and Petroleum Resources Development Act (Act No. 28 of 2002) [MPRDA]. To realise this, the following main objectives must be achieved:

- Remove all temporary infrastructure and waste from the mine as per the requirements of this EMPR and of the Provincial Department of Minerals and Resources.
- Shape and contour disturbed areas in compliance with the EMPR.
- Ensure that permanent changes in topography (due to mining) are sustainable and do not cause erosion or the uncontrolled damming of surface water.

- Make all excavations safe.
- Use the topsoil effectively to promote the re-establishment of vegetation.
- Ensure that all rehabilitated areas are stable and self-sustaining in terms of vegetation cover.
- Eradicate all weeds/invader plant species by intensive management of the mining area.

The site-specific closure objectives are discussed in the attached Closure Plan (Appendix E), however, a summary of the closure objectives for the proposed mine were included below.

The decommissioning phase will entail the reinstatement of the processing area by removing the stockpiled material, and site infrastructure/equipment and landscaping the disturbed footprints. Due to the impracticality of importing large volumes of fill to restore the quarry area to its original topography, the rehabilitation option is to develop the quarry into a minor landscape feature. This will entail creating a series of irregular benches along the quarry faces, the top edges of each face being blasted away to form scree slopes on the benches below, thereby reducing the overall face angle. The benches will be top-dressed with topsoil and vegetated with an appropriate grass mix if vegetation does not naturally establish in the area within six months of the replacement of the topsoil.

The decommissioning activities will therefore consist of the following:

- Sloping and landscaping the quarry pit;
- Removing all stockpiled material;
- Removing all mining machinery and equipment from site;
- Landscaping all disturbed areas and replacing the topsoil;
- Vegetating the reinstated area; and
- Controlling/monitoring the invasive plant species.

The future land use of the proposed area will be agriculture. Upon replacement of the topsoil, the area around the excavation will once again be available for grazing purposes, and the planting of the cover crop (to protect the topsoil) will tie in with the proposed land use.

The applicant will comply with the minimum closure objectives as prescribed by the DMRE and detailed below:

- <u>Rehabilitation of the excavated area:</u>

The excavated area must serve as a final depositing area for the placement of overburden. Rocks and coarse material removed from the excavation must be dumped into the excavation.

No waste may be permitted to be deposited in the excavations.

Once overburden, rocks and coarse natural materials has been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area.

The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within 6 months from closure of the site.

If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.

- <u>Rehabilitation of plant, office and service areas:</u>

Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.

Stockpiles must be removed during the decommissioning phase, the area ripped and the topsoil returned to its original depth to provide a growth medium.

On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002):

- Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
- Areas containing French drains shall be compacted and covered with a final layer of topsoil to a height of 10 cm above the surrounding ground surface.
- The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.

Photographs of the camp and office sites, before and during the mining operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the DMRE Regional Manager.

On completion of mining operations, the surface of these areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.

The area shall then be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local, adapted indigenous seed mix.

If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the DMRE Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a seed mix to his or her specification.

- Final rehabilitation:

Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required) and maintenance, and invasive plant species clearing.

All mining equipment, and other items used during the mining period must be removed from the site (section 44 of the MPRDA).

Waste material of any description, including receptacles, scrap, rubble and tyres, must be removed entirely from the mining area and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.

The management of invasive plant species must be done in a sporadic manner during the life of the mining activities. Species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto) will be eradicated from the site.

Final rehabilitation shall be completed within a period specified by the Regional Manager.

Once the mining area was rehabilitated the permit holder is required to submit a closure application to the Department of Mineral Resources and Energy in accordance with section 43(4) of the MPRDA, 2002 that states: *"An application for a closure certificate must be made to the Regional Manager in whose region the land in question is situated within 180 days of the occurrence of the lapsing, abandonment, cancellation, cessation, relinquishment or completion contemplated in subsection (3) and must be accompanied by the prescribed environmental risk report".* The Closure Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).

ii) Volume and rate of water use required for the operation

As no mineral washing is proposed for this project, the Applicant will exclusively use water for dust suppression purposes on the access road when needed. As mentioned earlier, the contractor will strive to manage dust generation through alternative suppression methods to restrict water use to the absolute minimum. An existing water authorisation is in place should water be required for the implementation of the project and transported to the mining area in a water truck that will moisten the problem area.

iii) Has a water use licence has been applied for?

The Applicant will not require water use authorisation in terms of the NWA, 1998.

iv) Impacts to be mitigated in their respective phases

Table 27: Impact to be mitigated in their respective phases

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
(as listed in 2.11.1)	of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	(volumes, tonnages and hectares or m^2)	(describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	(A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either – Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
Demarcation of site with visible beacons.	Site Establishment phase	4.9 ha	Demarcation of the site will ensure that all employees are aware of the boundaries of the mining area, and that work stay within the approved area.	Mining of all forms of Limestone, Dimension stone and Marble is only allowed within the boundaries of the approved area. • MPRDA, 2008 • NEMA, 1998	Beacons need to be in place throughout the life of the activity.
• Site establishment. • Operations Phase: Drilling and blasting.	Site Establishment & Operational Phase	4.9 ha	**<u>Loss of agricultural land for duration of mining:</u>** The Applicant signed a lease agreement with the landowner to compensate for the loss of agricultural land for the duration of the mining period. If needed,	Use of agricultural land must be managed in accordance with the: • CARA, 1983 Closure Plan (Appendix E)	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
• Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site			mined-out/rehabilitated areas could revert back to agricultural use once the cover crop stabilised.		
• Site establishment. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site	Site Establishment & Operational Phase	4.9 ha	**Visual Mitigation** • Mining must be contained to the boundaries of the permitted area. • The site must have a neat appearance and be kept in good condition at all times. • Mining equipment must be stored neatly in dedicated areas when not in use. • The permit holder must limit vegetation removal (if applicable), and stripping of topsoil may only be done immediately prior to the use of a specific area. • Upon closure the mining area must be rehabilitated and levelled to remove the visual impact on the aesthetic value of the area.	Management of the mining area must be in accordance with the: • MPRDA, 2008 • NEMA, 1998	Throughout the site establishment-, and operational phase.
• Site establishment and infrastructure development. • Cumulative Impacts	Site Establishment phase	±4.9 ha	**Management of vegetation removal:** • The mining boundaries must be clearly demarcated and all operations must be contained to the approved mining area. The area outside the mining boundaries must be declared a no-go area, and all staff must be educated accordingly. • All vehicles must remain on demarcated roads and no unnecessary driving in the veld outside these areas may be allowed.	Natural vegetated areas must be managed in accordance with the: • NEM:BA 2004 • Western Cape Biodiversity Plan	Throughout the site establishment phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			• No fires must be allowed on-site. • Smoking must be restricted to designated smoking areas. • An additional botanical survey must be conducted in early spring (autumn – early September) to ensure that there are no additional Species of Conservation Concern on site • Species of Conservation Concern identified on the footprint must be relocated to suitable area outside of the footprint in consultation with a Rehabilitation/Botanical specialist. • Should any Species of Conservation Concern be relocated outside of an area that the mining permit applicant does not own, a plant removal permit must be obtained first. • No plants may be translocated or otherwise uprooted or disturbed for rehabilitation or other purposes without express permission from the ECO and without the relevant permits. • Permits for the removal of protected plant species (if required) must be obtained and kept on-site in the possession (at all times) of the flora search and rescue team. • Cleared vegetation to be retained at any time may not be burned, but can be mulched and stockpiled. Ideally the heaps can be covered with stockpiled topsoil and the material be retained for future site rehabilitation purposes. • An ECO must provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment, especially during the site establishment phase, when the majority of vegetation clearing is taking place.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
• Site establishment. • Sloping and landscaping upon closure of the mining area.	Site Establishment- and Decommissioning phase	±4.9 ha	**Topsoil Management:** • The upper 300 mm of the soil must be stripped and stockpiled. • Topsoil is a valuable and essential resource for rehabilitation and it must therefore be managed carefully to conserve and maintain it throughout the stockpiling and rehabilitation processes. • Topsoil stripping, stockpiling and re-spreading must be done in a systematic way. The mining plan have to be such that topsoil is stockpiled for the minimum possible time. • The topsoil must be placed on a levelled area, within the mining footprint. No topsoil may be stockpiled in undisturbed areas. • Topsoil stockpiles must be protected against losses by water and wind erosion. Stockpiles must be positioned so as not to be vulnerable to erosion by wind and water. The establishment of plants (weeds or a cover crop) on the stockpiles will help to prevent erosion. • Topsoil heaps may not exceed 1.5 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen. • The temporary topsoil stockpiles must be kept free of invasive plant species. • Storm- and runoff water must be diverted around the mining area to prevent erosion. • The stockpiled topsoil must be evenly spread, to a depth of 300 mm, over the rehabilitated area upon closure of the site. • The permit holder must strive to re-instate topsoil at a time of year when vegetation cover can be established as quickly as possible	Topsoil must be managed in accordance with the: • CARA, 1983 • NEM:BA, 2004 • MPRDA, 2008	Throughout the site establishment-, operational, and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			afterwards, so that erosion of returned topsoil by both rain and wind, before vegetation is established, is minimized. The best time of year is at the end of the rainy season, when there is moisture in the soil for vegetation establishment and the risk of heavy rainfall events is minimal. • A cover crop must be planted, irrigated and established immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. The cover crop must be fertilized for optimum biomass production. It is important that rehabilitation be taken up to the point of cover crop stabilization. Rehabilitation cannot be considered complete until the first cover crop is well established. • The rehabilitated area must be monitored for erosion, and appropriately stabilized if any erosion occurs for at least 12 months after reinstatement.		
• Site establishment. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site	Site Establishment-, Operational- and Decommissioning phase	±1 ha	**<u>Management of Invader Plant Species:</u>** • An invasive plant species management plan (Appendix J) must be implemented at the site to ensure the management and control of all species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto). Weed/alien clearing must be done on an ongoing basis throughout the life of the mining activities. • All stockpiles (topsoil) must be kept free of invasive plant species. • Management must take responsibility to control declared invader or exotic species on the	Invader plants must be managed in accordance with the: • CARA, 1983 • NEM:BA 2004 • Invasive Plant Species Management Plan (Appendix I)	Throughout the site establishment-, operational, and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
▪ Sloping and landscaping upon closure of the mining area.			rehabilitated areas. The following control methods can be used: ▪ The plants can be uprooted, felled or cut off and can be destroyed completely. ▪ The plants can be treated chemically by a registered pest control officer (PCO) through the use of an herbicide recommended for use by the PCO in accordance with the directions for the use of such an herbicide.		
▪ Site establishment. ▪ Operations Phase: Drilling and blasting. ▪ Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site ▪ Sloping and landscaping upon closure of the mining area	Site Establishment-, Operational- and Decommissioning phase	4.9 ha	**<u>Protection of Fauna:</u>** ▪ The site manager must ensure no fauna is caught, killed, harmed, sold or played with. ▪ Any fauna directly threatened by the operational activities must be removed to a safe location by the ECO or other suitably qualified person. ▪ All personnel must undergo environmental induction regarding fauna management and in particular awareness about not harming or collecting species such as snakes, tortoises and owls which are often persecuted out of superstition. Workers must be instructed to report any animals that may be trapped in the working area. ▪ No snares may be set or nests raided for eggs or young. ▪ All vehicles must adhere to a low speed limit (20 km/h is recommended) to avoid collisions with susceptible species such as snakes and tortoises. ▪ No litter, food or other foreign material may be thrown or left around the site. Such items must be kept in the site vehicles and daily removed to the site camp..	Fauna must be managed in accordance with the: ▪ NEM:BA 2004	Throughout the site establishment-, and operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
• Site establishment. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site	Site Establishment, & Operational Phase.	4.9 ha	**Archaeological, Heritage and Palaeontological Aspects:** • All mining must be confined to the development footprint area. • If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager. • It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area. • The senior on-site Manager must inform the ECO of the chance find and its immediate impact on operations. The ECO must then contact a professional archaeologist for an assessment of the finds who must notify the SAHRA. Work may only continue once the go-ahead was issued by SAHRA.	Cultural/heritage aspects on site must be managed in accordance with the: NHRA, 1999	Throughout the site establishment-, and operational phases.
• Site establishment. • Operations Phase: Drilling and blasting.	Site Establishment-, Operational- and Decommissioning phase	±1 ha	**Fugitive Dust Emission Mitigation:** • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, straw, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products).	Dust generation must be managed in accordance with the: • NEM:AQA. 2004 Regulation 6(1) • National Dust Control Regulations, GN No R827	Throughout the site establishment-, operational, and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
• Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon closure of the mining area			• The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the haul roads must be limited to 20 km/h and 40 km/h on the access road to prevent the generation of excess dust. • Areas devoid of vegetation, which could act as a dust source, must be minimized and vegetation removal may only be done immediately prior to mining. • Weather conditions must be taken into consideration upon commencement of daily operations. Limiting operations during very windy periods would reduce airborne dust and resulting impacts. • All dust generating activities shall comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA (Act 39 of 2004) and ASTM D1739 (SANS 1137:2012). • Best practice measures shall be implemented during the stripping of topsoil, excavation, and transporting of material from site to minimize potential dust impacts.	• ASTM D1739 (SANS 1137:2012)	
• Site establishment. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and	Site Establishment-, Operational-, and Decommissioning Phase	4.9 ha	**Noise Handling:** • The permit holder must ensure that employees and staff conduct themselves in an acceptable manner while on site. • No loud music may be permitted at the mining area. • All mining vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996 (Act No 93 of 1996).	Noise generation must be managed in accordance with the: • NEM:AQA. 2004 Regulation 6(1) • NRTA, 1996 • Western Cape Noise Control Regulations (Provincial Notice 200/2013) of 20 June 2013	Throughout the site establishment-, operational-, and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
hauling of the mined material from site • Sloping and landscaping upon closure of the mining area			• Best practice measures shall be implemented in order to minimize potential noise impacts. • A qualified occupational hygienist must be contracted to quarterly monitor and report on the personal noise exposure of the employees working at the mine. The monitoring must be done in accordance with the SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA, 2004, SANS 10103:2008. • All noise levels of machinery and work activities within the mining area must be monitored and controlled and noise generated from blasting, excavations, cutting, stockpiling activities, loading of material, and the decommissioning/rehabilitation of the mining area must comply with the Western Cape Noise Control Regulations (Provincial Notice 200/2013) of 20 June 2013.		
• Site establishment. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon	Site Establishment-, Operational-, and Decommissioning Phase	4.9 ha	**<u>Waste Management:</u>** • Regular vehicle maintenance, repairs and services may only take place in a demarcated service area of the permit holder. If emergency repairs are needed on equipment not able to move to the workshop / service area, drip trays must be present. All waste products must be disposed of in a 200 litre closed container/bin to be removed from the emergency service area to the workshop in order to ensure proper disposal. • Vehicle maintenance or refueling must be undertaken within the workshop and service area proposed within the mining area. Alternatively, if emergency repairs or refueling are required, it must be undertaken on an impermeable surface to prevent contamination of soil and groundwater. Vehicles and	Mining related waste must be managed in accordance with the: • NWA, 1998 • NEM:WA, 2008 • NEM:WA, 2008: National norms and standards for the storage of waste (GN 926) • NEMA, 1998 (Section 30)	Throughout the site establishment-, operational-, and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
closure of the mining area			equipment must be parked and stored on impermeable surfaces or make use of uPVC lining and drip trays when stationary • Ablution facilities must be provided in the form of a chemical toilet. The chemical toilet must be placed outside the 1:100 year floodline of any open water resource, and must be serviced at least once every two weeks for the duration of the mining activities. • The use of any temporary, chemical toilet facilities may not cause any pollution to water sources or pose a health hazard. In addition, no form of secondary pollution should arise from the disposal of refuse or sewage from the temporary, chemical toilets. Any pollution problems arising from the above are to be addressed immediately by the permit holder. • If a diesel bowser is used on site, it must be equipped with a drip tray at all times. Drip trays must be used during each and every refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling. • Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site. • A spill kit must be available on-site which can be operated by trained employees for the adhoc remediation of minor chemical and hydrocarbon spillages. • Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Should spillage occur, such as oil or diesel leaking from a burst pipe, the contaminated soil		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			must, within the first hour of occurrence, be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. Proof must be filed. • A waste management plan must be compiled by site management and implemented on site. The plan must focus on the waste hierarchy of the NEM:WA. • General waste must be contained in marked, sealable, refuse bins placed at a designated area, to be removed when filled to capacity to a recognised general waste landfill site. • No waste may be buried or burned on the site. • No chemicals or hazardous materials may be stored at the mining area. • Report any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities to the to all relevant authorities, including Department Environmental Affairs and Development Planning – Directorate - Pollution and Chemicals Management, in accordance with section 30 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA") pertaining to the control of incidents. In the event of a significant accidental spill or leak of hazardous substances (e.g. petrol, diesel, etc.) during any phase of the proposed activities, such an incident(s) must be reported.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
• Site establishment. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon closure of the mining area	Site Establishment-, Operational-, and Decommissioning Phase	4.9 ha	**<u>Erosion Control and Storm Water Management:</u>** • Clearing of vegetation must be limited to the proposed mining footprint and associated infrastructure. No clearing outside of the minimum required footprint to take place. • Stormwater must be diverted around the topsoil heaps and mining areas to prevent erosion. • Stockpiles must be protected from erosion, stored on flat areas where possible, and be surrounded by appropriate berms. • When mining within steep slopes, it must be ensured that adequate slope protection is provided. • During mining, the outflow of run-off water from the mining excavation must be controlled to prevent down-slope erosion. This must be done by way of the construction of temporary banks and ditches that will direct run-off water (if needed). These must be in place at any points where overflow out of the excavation might occur. • Roads and other disturbed areas within the project area must be regularly monitored for erosion and problem areas must receive follow-up monitoring to assess the success of the remediation. • Any erosion problems within the mining area as a result of the mining activities observed must be rectified immediately (within 48 hours) and monitored thereafter to ensure that it does not re-occur. • Silt/sediment traps/barriers must be used where there is a danger of topsoil or material stockpiles eroding and entering downstream drainage lines and other sensitive areas. These sediment/silt	Storm water must be managed in accordance with the: • CARA, 1983 • NEMA, 1998 • NWA, 1998	Throughout the operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			barriers must regularly be maintained and cleared so as to ensure effective drainage of the areas. • Similar to the western berm around the old mine, stormwater management should be implemented at the proposed mining footprint. • Surface run-off should be diverted around the proposed new mine and 'dirty'/contaminated water must be recycled back into the mining system • Flow continuity and connectivity of the watercourses must be reinstated post-construction activities and operational phase. • Regular monitoring of water quality must be implemented in order to ensure the impacts of runoff and decant of water into watercourse is prevented or minimised. • Adequate storm water management must be incorporated into the design of the proposed development throughout all phases. In this regard, special mention is made of: Sheet runoff from cleared areas, paved surfaces, bare, disturbed- and compacted soil and access roads needs to be curtailed. • Runoff from paved and compacted bare soil surfaces, including channelled stormwater or water should be slowed down by the strategic placement of berms or increasing surface roughness to slow down the flow of water. • Topsoil and waste stockpiles must have berms and catchment paddocks at their toe to contain runoff of the facilities. • Construction, development and mining activities should be excluded from the regulated area of the watercourse as much as possible.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			• Compacted areas are to be ripped, re-profiled and revegetation as soon as areas becomes available. • Any areas where active erosion are observed must be immediately rehabilitated in such a way as to ensure that the hydrology of the area is re-instated to conditions which are as natural as possible. • Cutting/ clearing of the herbaceous layer within the watercourse along the linear development should be avoided so as to retain soil stability provided by the grass root structures. • Watercourse crossings and diversions must be inspected quarterly. • Establish vegetation around disturbed areas to prevent any erosion. • Stormwater runoff should be handled on surface and directed towards natural watercourses. • • Access roads for support vehicles, and vehicles used in the construction of the crossings, should not encroach into the freshwater features (this excludes existing access roads) • Install retardation structures where water leaves the site or exits stormwater channels/bermed/diverted areas flow and into the natural watercourse/environment. • Construct diversion drains around the site timeously prior to operation. • Ensure adherence to GNR 704 of the NWA. • Where the diversion re-enters the natural system, it must enter the system at the same elevation as the receiving aquatic environment as well as consist of an energy dissipation structure thereby preventing erosion and incision of the natural watercourse.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			• The point where the diversion re-enters the natural watercourse must enter the system where possible at an acute angle to prevent the creation of turbulent flow, erosion and incision. • Ensure erosion protection measures are adequately implemented and monitored. • No construction of infrastructure may take place within watercourses and associated buffer zones unless authorisation is granted by the DWS. • As far as possible all mining activity and infrastructure should be excluded from the watercourses and associated 100 m buffer zone. • Mining must be conducted only in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose: • Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system. You must prevent clean water from running or spilling into dirty water systems. • Dirty water must be collected and contained in a system separate from the clean water system. • Dirty water must be prevented from spilling or seeping into clean water systems. • A storm water management plan must apply for the entire life cycle of the mining activity and over different hydrological cycles (rainfall patterns). • The statutory requirements of various regulatory agencies and the interests of stakeholders must		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			be considered and incorporated into a storm water management plan. • Polluting activities including storage of mining fleet, equipment wash down facilities and vehicle maintenance yards must be restricted to the workshop areas and must be undertaken on impermeable hard standing surfaces, which are formally drained to a dirty water drainage system at the site. • Vehicle maintenance or refueling should be undertaken within the workshop and service area proposed within the mining area. Alternatively, if emergency repairs or refueling are required, it must be undertaken on an impermeable surface to prevent contamination of soil and groundwater. Vehicles and equipment must be parked and stored on impermeable surfaces or make use of uPVC lining and drip trays when stationary • All fuels and chemicals stored or used on site must be contained within fit for purpose containers and stored within designated storage areas. In order to prevent pollution of the surrounding environment during an accidental spillage, the designated storage areas must be situated on an impermeable surface and must feature a perimeter bund and a drainage sump. The volume of the bund and sump must be sized to contain at least 110% of the total volume of the fuel and chemicals being stored within the designated storage area. The storage areas must feature a roof to prevent inflow of rainwater, which would require the sump to be emptied more frequently.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
• Site establishment. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon closure of the mining area	Site Establishment-, Operational-, and Decommissioning Phase	4.9 ha	**Water Resource Management** • Any future development within 1:100-year floodline or within the riparian habitat constitutes a water use licence in terms of section 21 (c) and (i) of the National Water Act, 1998 (Act 36 of 1998) and will require authorisation before any development may commence. • Any portable toilets would be used on-site during construction and/or operational phase of the development; such toilet facilities must be located outside of the 1:100-year floodline and must be regularly emptied at a municipal wastewater treatment works. • Solid and chemical waste generated from construction and operational phases of the development must be kept away from drainage line. • No abstraction of surface water or ground water may take place without the prior authorization from this Department unless it is a Schedule 1 use or an Existing Lawful Use. • Where solid waste disposal is to take place on site, ensure that only non-toxic materials which have no risk of polluting the groundwater, are buried in designated approved areas at acceptable depths below ground level.	Prospecting related activities aimed at the protection of water resources must be managed in accordance with the: • Government Notice No 704 dated 4 June 2004 must be adhered to. National Water Act (NWA) 1998(Act No. 36 of 1998) must be adhered to.	Throughout the planning and design -, operational-, and closure phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			• No surface, ground or storm water may be polluted as a result of any activities on the site. • The person who owns, controls, occupies, or uses the land in question is responsible for taking measures to prevent any occurrence of pollution to water resources. • Rehabilitation plan must be formulated and submitted to the Department of Water Affairs and Sanitation for comments. If the rehabilitation of the site will include the storage of water, authorization will be required before any water is stored. • The rehabilitation of the site must ensure that the final condition of the site is environmentally acceptable and that there will be no adverse long-term effects on the surrounding environment especially the water resources post mining activities. • All requirements in the Regulations on use of water for mining and related activities aimed at the protection of water resources as contained in Government Notice No 704 dated 4 June 2004 must be adhered to. • All requirements as stipulated in the National Water Act (NWA) 1998(Act No. 36 of 1998) must be adhered to.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
• Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site	Operational Phase	±1 ha	**Access Road Mitigation:** • Storm water must be diverted around the access road to prevent erosion. • Vehicular movement must be restricted to the existing access road to prevent crisscrossing of tracks through undisturbed areas. • Rutting and erosion of the access road caused as a direct result of the mining activities must be repaired by the permit holder. • Overloading of the truck must be prevented, and proof of load weights must be filed for auditing purposes.	The access road must be managed in accordance with the: • NRTA, 1996	Throughout the operational phase.
• Site establishment. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon closure of the mining area	Site Establishment-, Operational-, and Decommissioning phase	4.9 ha	**Management of health and safety risks:** • Workers must have access to the correct personal protection equipment (PPE) as required by law. • Sanitary facilities must be located within 100 m from any point of work. • All operations must comply with the Mine Health and Safety Act, 1996 (Act No 29 of 1996). • The type, duration and timing of the blasting procedures must be planned with due cognizance of other land users and structures in the vicinity. • The surrounding landowners must be informed in writing ahead of each blasting event. • The compliance of ground vibration and airblast levels must be monitored to USBM standards with each blasting event. • A vibro recorder must be used to record all blasts. • Audible warning of a pending blast must be given at least 3 minutes in advance of the blast.	Health and safety aspects must be managed in accordance with the: • MHSA, 1996 • OHSA, 1993 • OHSAS, 18001	Throughout the site establishment-, operational and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			• Measures to limit flyrock must be taken. All flyrock (of diameter 150 mm and larger) which falls beyond the working area, together with the rock spill must be collected and removed.		
• Site establishment. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon closure of the mining area.	Site Establishment-, Operational-, and Decommissioning phase.	±500 m²	**Storage/Handling of Hazardous Substances/Chemicals:** • Chemical storage areas must be placed on level ground to prevent offsite migration of any spilled product. • The floor of the storage area must be impermeable to prevent seepage of spilled products into the ground or ground water. • Access to the chemicals/substances must be controlled and require prior notification of an appropriate staff member. • A Hazardous Substances Register must be maintained, and Safety Data Sheets (SDS) must be kept current for all chemicals used on site. • Any fuel/used oil tanks must have secondary containment in the form of an impermeable bund wall and base within which the tanks sits, raised above the floor, on plinths. The bund capacity must be sufficient to contain 110% of the tank's maximum capacity. The distance and height of the bund wall relative to that of the tank must also be taken into consideration to ensure that any spillage does not result in hydrocarbons/other substances spouting beyond the confines of the bund. • The site manager must establish a formal inspection routine to check all equipment in the bund area, as well as the bund area itself for	Chemicals/hazardous substances must be stored in accordance with the: • HSA,1973 • NWA, 1998 • NEM:WA, 2008	Throughout the site establishment-, operational and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			malfunctions or leakages. The bund area must be inspected at least weekly and any accumulated rainwater removed and handled as contaminated water. All valves and outlets must be checked to ensure that its intact and closed securely. • The bund base must slope towards an oil sump of sufficient size. Contaminated water may not be allowed to mix with clean water, and must be contained until it is collected by a registered hazardous waste handling contractor or disposed of at a registered hazardous waste handling facility. • Drip trays must be used underneath all stationary equipment or vehicles. Used drip trays must be placed within a bunded area and are not be stored on bare soil. The waste water originating from the cleaning of drip trays must be discarded into the oil sump.		
• Sloping and landscaping during rehabilitation phase.	Decommissioning Phase	4.9 ha	**<u>Rehabilitation/landscaping of mining area:</u>** • The excavated area must serve as a final depositing area for the placement of overburden. • Rocks and coarse material removed from the excavation must be dumped into the excavation. • Coarse natural material used for the construction of ramps must be removed and dumped into the excavations. • Stockpiles must be removed during the decommissioning phase, the area ripped and the topsoil returned to its original depth to provide a growth medium. • No waste may be permitted to be deposited in the excavations.	Rehabilitation of the mining area must be in accordance with the: ❖ CARA, 1983 ❖ NEM:BA, 2004 ❖ MPRDA, 2002 Closure Plan (Appendix E)	Throughout the decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			• Once overburden, rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area. • The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within six months from closure of the site. • If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification. • On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002). • On completion of mining operations, the surface of all plant-, stockpiling-, and/or office areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.		

e) Impact Management Outcomes

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

Table 28: Impact Management Outcomes

ACTIVITY whether listed or not listed (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc..etc.)	**POTENTIAL IMPACT** (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated (e.g. Construction, commissioning, operational Decommissioning, closure, post-closure))	**MITIGATION TYPE** (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc..) E.g. • Modify through alternative method. • Control through noise control • Control through management and monitoring Remedy through rehabilitation.	**STANDARD TO BE ACHIEVED** (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
• Demarcation of site with visible beacons.	• No impact could be identified other than the beacons being outside the boundaries of the approved mining area.	N/A	Site Establishment phase	Control through management and monitoring.	Mining of all forms of Limestone, Dimension stone and Marble is only allowed within the boundaries of the approved area. • MPRDA, 2008 • NEMA, 1998
• Site establishment and infrastructure development. • Stripping and stockpiling of topsoil and overburden.	• Visual intrusion as a result of site establishment.	The visual impact may affect the aesthetics of the landscape.	Site Establishment & Operational Phase	<u>Control:</u> Implementing proper housekeeping.	Management of the mining area must be in accordance with the: • MPRDA, 2008 • NEMA, 1998
• Site establishment and infrastructure development**.**	• Loss of agricultural land for duration of mining.	The impact may affect the agricultural	Site Establishment & Operational Phase	Should the proposed project be approved, the operation will temporarily interrupt the agricultural activities of the footprint area, only to be reversed upon the closure of the mine.	Use of agricultural land must be managed in accordance with the: • CARA, 1983

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
		opportunities of the property.		The impact could be controlled through progressive rehabilitation.	Closure Plan (Appendix E)
• Stripping and stockpiling of topsoil and overburden. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site. • Sloping and landscaping during rehabilitation.	• Loss of stockpiled topsoil during mining and stockpiling. • Potential erosion of denuded areas. • Facilitation of erosion due to mining activities. • Erosion of returned topsoil after rehabilitation.	Loss of topsoil will affect the rehabilitation success upon closure of the mine.	Site Establishment-, Operational and Decommissioning Phase	<u>Control & Remedy:</u> Proper housekeeping and storm water management.	Topsoil must be managed in accordance with the: • CARA, 1983 • NEM:BA, 2004 • MPRDA, 2008
• Site establishment • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site. • Sloping and landscaping upon closure of the mining area.	• Infestation of the topsoil heaps and mining area with invader plant species. • Infestation of denuded areas with invader plant species • Infestation of the reinstated area with invader plant species.	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational- and Decommissioning phase	<u>Control:</u> Implementing soil- and storm water management.	Invader plants must be managed in accordance with the: • CARA, 1983 • NEM:BA 2004 • Invasive Plant Species Management Plan (Appendix J)
• Site establishment: Stripping and stockpiling of topsoil and/or overburden and infrastructure development.	• Potential impact on fauna within the footprint area.	This will impact on the biodiversity of the receiving environment.	Site Establishment- and Operational phase	<u>Control & Stop:</u> Implementing good management practices.	Fauna must be managed in accordance with the: • NEM:BA 2004

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
• Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site	• Disturbance to aquatic fauna within the footprint area				
• Site establishment: Stripping and stockpiling of topsoil and/or overburden and infrastructure development. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site	• Dust nuisance as a result of the mining activities. • Dust nuisance as a result of the mining activities.	Increased dust generation will impact on the air quality of the receiving environment.	Site Establishment- and Operational Phase	<u>Control:</u> Dust suppression methods and proper housekeeping.	Dust generation must be managed in accordance with the: • NEM:AQA. 2004 Regulation 6(1) • National Dust Control Regulations, GN No R827 • ASTM D1739 (SANS 1137:2012)
• Site establishment: Stripping and stockpiling of topsoil and/or overburden and infrastructure development. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site	• Noise nuisance generated by earthmoving machinery. • Noise nuisance as a result of blasting. • Noise nuisance as a result of the mining activities.	Should noise levels become excessive it may have an impact on the noise ambiance of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	<u>Control:</u> Noise suppression methods and proper housekeeping.	Noise generation on site must be managed in accordance with the: • NEM:AQA, 2004 Regulation 6(1) • NRTA, 1996

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
• Site establishment: Stripping and stockpiling of topsoil and/or overburden and infrastructure development. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon closure of the mining area.	• Soil contamination from hydrocarbon spills. • Potential impact assocaited with littering and hydrocarbon spills. • Potential impact associated with litter left at the mining area.	Contamination of the footprint area will negatively impact the soil, surface runoff and potentially the groundwater. It will also incur additional costs to the permit holder.	Site Establishment-, Operational-, and Decommissioning Phase	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan.	Mining related waste must be managed in accordance with the: • NWA, 1998 • NEM:WA, 2008 • NEM:WA, 2008: National norms and standards for the storage of waste (GN 926) • NEMA, 1998 (Section 30)
• Site establishment: Stripping and stockpiling of topsoil and/or overburden and infrastructure development of topsoil and/or overburden. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site	• Potential impact on area/infrastructure of heritage or cultural concern.	This could impact on the cultural and heritage legacy of the receiving environment.	Operational Phase	Control & Stop: Implementing good management practices, as well as the chance-find protocol.	Cultural/heritage aspects must be managed in accordance with the: • NHRA, 1999
• Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site	• Deterioration of the access road to the mining area.	Collapse of the road infrastructure will affect the landowner.	Operational Phase	Control & Remedy: Maintaining the access road for the duration of the operational phase, as well as leaving it in a representative or better condition than prior to mining.	The access road must be managed in accordance with the: • NRTA, 1996

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
• Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site Sloping and landscaping during rehabilitation phase.	• Health and safety risk posed by blasting activities. • Unsafe working environment for employees. • Safety risk posed by un-sloped areas.	An unsafe working environment affects the labour force, as well as pose a threat to animals and humans that may enter the mining footprint.	Operational-, and Decommissioning Phase	Stop & Control: Adherance to the blasting rules and regulations, demarcation of the mining area and proper housekeeping.	Health and safety aspects on site must be managed in accordance with the: • MHSA, 1996 • OHSA, 1993 • OHSAS 18001 USBM standards
• Operational Phase: hauling of the mined material from site.	• Overloading of trucks having an impact on the public roads.	Overloading will negatively affect the roads in the vicinity of the mining area.	Operational Phase	Control: Proper site management.	Load weights must be managed in accordance with the: • NRTA, 1996

f) Impact Management Actions

(A description of impact management actions, identifying the manner in which the impact management objectives and outcomes in paragraph (c) and (d) will be achieved)

Table 29: Impact Management Actions

ACTIVITY whether listed or not listed (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc..etc.)	**POTENTIAL IMPACT** (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)	**MITIGATION TYPE** (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc... etc.) E.g. • Modify through alternative method. • Control through noise control • Control through management and monitoring Remedy through rehabilitation.	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: Upon cessation of the individual activity Or. Upon the cessation of mining bulk sampling or alluvial diamond prospecting as the case may be.	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
▪ Demarcation of site with visible beacons.	▪ No impact could be identified other than the beacons being outside the boundaries of the approved mining area.	Demarcation of the site will ensure that all employees are aware of the boundaries of the mining area, and that work stay within the approved area.	Beacons need to be in place throughout the life of the activity.	Mining of all forms of Limestone, Dimension stone and Marble is only allowed within the boundaries of the approved area. ▪ MPRDA, 2008 ▪ NEMA, 1998

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
• Site establishment: Stripping and stockpiling of topsoil and/or overburden and infrastructure development. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site	• Visual intrusion as a result of site establishment.	**Visual Mitigation** • Mining must be contained to the boundaries of the permitted area. • The site must have a neat appearance and be kept in good condition at all times. • The permit holder must limit vegetation removal (if applicable), and stripping of topsoil may only be done immediately prior to the use of a specific area. • Upon closure the mining area must be rehabilitated and levelled to remove the visual impact on the aesthetic value of the area.	Throughout the site establishment-, and operational phase.	Management of the mining area must be in accordance with the: • MPRDA, 2008 • NEMA, 1998
• Site establishment: Stripping and stockpiling of topsoil and/or overburden and infrastructure development. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon closure of the mining area.	• Loss of topsoil and fertility during mining and stockpiling • Loss of stockpiled material due to ineffective storm water control. • Erosion of returned topsoil after rehabilitation	**Topsoil Management:** • The upper 300 mm of the soil must be stripped and stockpiled. • Topsoil is a valuable and essential resource for rehabilitation and it must therefore be managed carefully to conserve and maintain it throughout the stockpiling and rehabilitation processes. • Topsoil stripping, stockpiling and re-spreading must be done in a systematic way. The mining plan have to be such that topsoil is stockpiled for the minimum possible time. • The topsoil must be placed on a levelled area, within the mining footprint. No topsoil may be stockpiled in undisturbed areas. • Topsoil stockpiles must be protected against losses by water and wind erosion. Stockpiles must be positioned so as not to be vulnerable to erosion by wind and water. The establishment of plants (weeds or a	Throughout the site establishment-, operational, and decommissioning phase.	Topsoil must be managed in accordance with the: • CARA, 1983 • NEM:BA, 2004 • MPRDA, 2008

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		cover crop) on the stockpiles will help to prevent erosion. • Topsoil heaps may not exceed 1.5 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen. • The temporary topsoil stockpiles must be kept free of invasive plant species. • Storm- and runoff water must be diverted around the mining area to prevent erosion. • The stockpiled topsoil must be evenly spread, to a depth of 300 mm, over the rehabilitated area upon closure of the site. • The permit holder must strive to re-instate topsoil at a time of year when vegetation cover can be established as quickly as possible afterwards, so that erosion of returned topsoil by both rain and wind, before vegetation is established, is minimized. The best time of year is at the end of the rainy season, when there is moisture in the soil for vegetation establishment and the risk of heavy rainfall events is minimal. • A cover crop must be planted, irrigated and established immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. The cover crop must be fertilized for optimum biomass production. It is important that rehabilitation be taken up to the point of cover crop stabilization. Rehabilitation cannot be considered complete until the first cover crop is well established. • The rehabilitated area must be monitored for erosion, and appropriately stabilized if any		

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		erosion occurs for at least 12 months after reinstatement.		
• Site establishment: Stripping and stockpiling of topsoil and/or overburden and infrastructure development. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon closure of the mining area.	• Infestation of the topsoil heaps and mining area with invader plant species. • Infestation of denuded areas with invader plant species • Infestation of the reinstated area with invader plant species.	**<u>Management of Invader Plant Species:</u>** • An invasive plant species management plan (Appendix J) must be implemented at the site to ensure the management and control of all species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto). Weed/alien clearing must be done on an ongoing basis throughout the life of the mining activities. • All stockpiles (topsoil) must be kept free of invasive plant species. • Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used: ▪ The plants can be uprooted, felled or cut off and can be destroyed completely. ▪ The plants can be treated chemically by a registered pest control officer (PCO) through the use of an herbicide recommended for use by the PCO in accordance with the directions for the use of such an herbicide.	Throughout the site establishment-, operational, and decommissioning phase.	Invader plants must be managed in accordance with the: • CARA, 1983 • NEM:BA 2004 • Invasive Plant Species Management Plan (Appendix J)
• Site establishment: Stripping and stockpiling of topsoil and/or overburden and infrastructure development.	• Potential impact on fauna within the footprint area.	**<u>Protection of Fauna:</u>** • The site manager must ensure no fauna is caught, killed, harmed, sold or played with. • Workers must be instructed to report any animals that may be trapped in the working area.	Throughout the site establishment-, operational, and decommissioning phase.	Fauna must be managed in accordance with the: • NEM:BA 2004

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
• Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon closure of the mining area.		• No snares may be set or nests raided for eggs or young.		
• Site establishment: Stripping and stockpiling of topsoil and/or overburden and infrastructure development. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon closure of the mining area.	• Dust nuisance as a result of the mining activities. • Dust nuisance as a result of the mining activities.	**<u>Fugitive Dust Emission Mitigation:</u>** • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, straw, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products). • The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the access road must be limited to 40 km/h to prevent the generation of excess dust. • Areas devoid of vegetation, which could act as a dust source, must be minimized and vegetation removal may only be done immediately prior to mining. • Weather conditions must be taken into consideration upon commencement of daily operations. Limiting operations during very windy periods would reduce airborne dust and resulting impacts.	Throughout the site establishment-, operational, and decommissioning phase.	Dust generation must be managed in accordance with the: • NEM:AQA. 2004 Regulation 6(1) • National Dust Control Regulations, GN No R827 • ASTM D1739 (SANS 1137:2012)

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		• All dust generating activities shall comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA (Act 39 of 2004) and ASTM D1739 (SANS 1137:2012). • Best practice measures shall be implemented during the stripping of topsoil, loading, and transporting of the mineral from site to minimize potential dust impacts.		
• Site establishment: Stripping and stockpiling of topsoil and/or overburden and infrastructure development. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon closure of the mining area.	• Noise nuisance as a result of the mining activities. • Noise nuisance as a result of the decomissiononig activities.	**Noise Handling:** • The permit holder must ensure that employees and staff conduct themselves in an acceptable manner while on site. • No loud music may be permitted at the mining area. • All mining vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996 (Act No 93 of 1996). • Best practice measures shall be implemented in order to minimize potential noise impacts. • A qualified occupational hygienist must be contracted to quarterly monitor and report on the personal noise exposure of the employees working at the mine. The monitoring must be done in accordance with the SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA, 2004, SANS 10103:2008.	Throughout the site establishment-, operational-, and decommissioning phase.	Noise generation must be managed in accordance with the: • NEM:AQA. 2004 Regulation 6(1) • NRTA, 1996
• Site establishment: Stripping and stockpiling of topsoil and/or overburden and infrastructure development.	• Soil contamination from hydrocarbon spills.	**Waste Management:** • Regular vehicle maintenance, repairs and services may only take place in a demarcated service area of the permit	Throughout the site establishment-, operational-, and decommissioning phase.	Mining related waste must be managed in accordance with the: • NWA, 1998 • NEM:WA, 2008

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
• Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon closure of the mining area.	• Potential impact assocaited with littering and hydrocarbon spills. • Potential impact associated with litter left at the mining area.	holder. If emergency repairs are needed on equipment not able to move to the workshop / service area, drip trays must be present. All waste products must be disposed of in a 200 litre closed container/bin to be removed from the emergency service area to the workshop in order to ensure proper disposal. • All safe disposal certificates, including hazardous waste and waste from the chemical ablution facilities, should be retained for a minimum period of five years. This requirement is stipulated in regulation 8(1) of the Waste Classification and Management Regulations published in GN No. R. 634 of 23 August 2013: "*All waste generators, transporters and managers subjected to the requirements of subregulations (1), (2), (4), (5), (6) and (7) must retain copies, or be able to access copies/records, of the waste manifest documentation for a period of at least five (5) years."* Waste registers, as described in this document must be made available for review upon request by any relevant authority. • Vehicle maintenance or refueling must be undertaken within the workshop and service area proposed within the mining area. Alternatively, if emergency repairs or refueling are required, it must be undertaken on an impermeable surface to prevent contamination of soil and groundwater. Vehicles and equipment must be parked and stored on impermeable surfaces or make use of uPVC lining and drip trays when stationary • Ablution facilities must be provided in the form of a chemical toilet. The chemical toilet		• NEM:WA, 2008: National norms and standards for the storage of waste (GN 926) • NEMA, 1998 (Section 30) • Regulation 8(1) of the Waste Classification and Management Regulations published in GN No. R. 634 of 23 August 2013

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		must be placed outside the 1:100 year floodline of any open water resource, and must be serviced at least once every two weeks for the duration of the mining activities. • The use of any temporary, chemical toilet facilities may not cause any pollution to water sources or pose a health hazard. In addition, no form of secondary pollution should arise from the disposal of refuse or sewage from the temporary, chemical toilets. Any pollution problems arising from the above are to be addressed immediately by the permit holder. • If a diesel bowser is used on site, it must be equipped with a drip tray at all times. Drip trays must be used during each and every refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling. • Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site. • A spill kit must be available on-site which can be operated by trained employees for the adhoc remediation of minor chemical and hydrocarbon spillages. • Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Should spillage occur, such as oil or diesel leaking from a burst pipe, the contaminated soil must, within the first hour of occurrence, be collected in a suitable receptacle and removed from the site, either for resale or for		

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		appropriate disposal at a recognized facility. Proof must be filed. • A waste management plan must be compiled by site management and implemented on site. The plan must focus on the waste hierarchy of the NEM:WA. • The storage of hazardous and/or general waste in excess of 80m^3 and 100m^3 respectively, excluding the storage of waste in lagoons or the temporary storage of such waste, would require the applicant to comply with the National Norms and Standards for the Storage of Waste, published in GN No. 926 of 29 November 2013. Although the storage of general and hazardous waste below these mentioned thresholds is not regulated, section 28 of the NEMA, 1998 would apply to ensure that any waste storage does not impact negatively on the environment. • General waste must be contained in marked, sealable, refuse bins placed at a designated area, to be removed when filled to capacity to a recognised general waste landfill site. • No waste may be buried or burned on the site. • No chemicals or hazardous materials may be stored at the mining area. • Report any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities to the to all relevant authorities, including Department Environmental Affairs and Development Planning – Directorate - Pollution and Chemicals Management, in accordance with section 30 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA")		

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		pertaining to the *control of incidents*. In the event of a significant accidental spill or leak of hazardous substances (e.g. petrol, diesel, etc.) during any phase of the proposed activities, such an incident(s) must be reported.		
• Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site	• Potential impact on area/infrastructure of heritage or cultural concern.	**Archaeological, Heritage and Palaeontological Aspects:** • All mining must be confined to the development footprint area. • If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager. • It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area. • The senior on-site Manager must inform the ECO of the chance find and its immediate impact on operations. The ECO must then contact a professional archaeologist for an assessment of the finds who must notify SAHRA. • Work may only continue once the go-ahead was issued by SAHRA.	Throughout the operational phase.	Cultural/heritage aspects must be managed in accordance with the: • NHRA, 1999

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
• Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site	• Loss of stockpiled material due to ineffective storm water control.	**Storm Water Mitigation:** • Storm water must be diverted around the topsoil heaps and mining area to prevent erosion. • Mining must be conducted only in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose: ▪ Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system. You must prevent clean water from running or spilling into dirty water systems. ▪ Dirty water must be collected and contained in a system separate from the clean water system. ▪ Dirty water must be prevented from spilling or seeping into clean water systems.	Throughout the operational phase.	Storm water must be managed in accordance with the: • CARA, 1983 • NEMA, 1998 • NWA, 1998
• Site establishment: Stripping and stockpiling of topsoil and/or overburden and infrastructure development. • Operations Phase: Drilling and blasting.	• Potential impact on water resources.	• Water Resource Management • Any future development within 1:100-year floodline or within the riparian habitat constitutes a water use licence in terms of section 21 (c) and (i) of the National Water Act, 1998 (Act 36 of 1998) and will require authorisation before any development may commence.	Throughout the site establishment-, operational-, and decommissioning phase.	• Government Notice No 704 dated 4 June 2004 must be adhered to. National Water Act (NWA) 1998(Act No. 36 of 1998) must be adhered to.

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
▪ Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site ▪ Sloping and landscaping upon closure of the mining area.		▪ Any portable toilets would be used on-site during construction and/or operational phase of the development; such toilet facilities must be located outside of the 1:100-year floodline and must be regularly emptied at a municipal wastewater treatment works. ▪ Solid and chemical waste generated from construction and operational phases of the development must be kept away from drainage line. ▪ No abstraction of surface water or ground water may take place without the prior authorization from this Department unless it is a Schedule 1 use or an Existing Lawful Use. ▪ Where solid waste disposal is to take place on site, ensure that only non-toxic materials which have no risk of polluting the groundwater, are buried in designated approved areas at acceptable depths below ground level. ▪ No surface, ground or storm water may be polluted as a result of any activities on the site. ▪ The person who owns, controls, occupies, or uses the land in question is responsible for		

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		taking measures to prevent any occurrence of pollution to water resources. • Rehabilitation plan must be formulated and submitted to the Department of Water Affairs and Sanitation for comments. If the rehabilitation of the site will include the storage of water, authorization will be required before any water is stored. • The rehabilitation of the site must ensure that the final condition of the site is environmentally acceptable and that there will be no adverse long-term effects on the surrounding environment especially the water resources post mining activities. • All requirements in the Regulations on use of water for mining and related activities aimed at the protection of water resources as contained in Government Notice No 704 dated 4 June 2004 must be adhered to. • All requirements as stipulated in the National Water Act (NWA) 1998(Act No. 36 of 1998) must be adhered to.		
• Operational Phase: Loading and hauling of the mined material from site	• Deterioration of the access road to the mining area. • Overloading of trucks having an impact on the public roads.	**<u>Access Road Mitigation:</u>** • Storm water must be diverted around the access road to prevent erosion. • Vehicular movement must be restricted to the existing access road to prevent crisscrossing of tracks through undisturbed areas.	Throughout the operational phase.	The access road must be managed in accordance with the: • NRTA, 1996

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		• Rutting and erosion of the access road caused as a direct result of the mining activities must be repaired by the permit holder. • Overloading of the truck must be prevented, and proof of load weights must be filed for auditing purposes.		
• Site establishment: Stripping and stockpiling of topsoil and/or overburden and infrastructure development. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon closure of the mining area.	• Potential health and safety risk to employees.	**<u>Management of Health and Safety Risks:</u>** • Adequate ablution facilities and water for human consumption must daily be available on site. • Workers must have access to the correct personal protection equipment (PPE) as required by law. • All operations must comply with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).	Throughout the site establishment-, operational and decommissioning phase.	Health and safety aspects must be managed in accordance with the: • MHSA, 1996 • OHSA, 1993 • OHSAS, 18001

i) Financial Provision

(1) Determination of the amount of Financial Provision.

(a) Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under the Regulation.

The closure objectives entail removing the mining machinery from the site. Removal of the containers and chemical toilet from the mining area, removal/levelling of all stockpiled material and the landscaping of the mining area to allow the replacement of stockpiled topsoil. The reinstated area will be vegetated and invasive plant species will be controlled during a 12 months' aftercare period to address germination of problem plants in the area. The Applicant will comply with the minimum closure objectives as prescribed by DMRE.

(b) Confirm specifically that the environmental objectives in relation to closure have been consulted with landowner and interested and affected parties.

This report, the Draft Basic Assessment Report, includes all the environmental objectives in relation to closure and will be made available for perusal by the landowner, registered I&AP's and stakeholders over a 30-days commenting period.

(c) 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.

The requested rehabilitation plan is attached as Appendix E.

(d) Explain why it can be confirmed that the rehabilitation plan is compatible with the closure objectives.

The decommissioning phase will entail the final rehabilitation of the mining site. Final landscaping, levelling and top dressing will be done. The rehabilitation of the mining area as indicated on the rehabilitation plan attached as Appendix E will comply with the minimum closure objectives as prescribed by DMRE and detailed below, and therefore is deemed to be compatible:

- Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding and maintenance, and weed / alien clearing.
- All Temporary Infrastructures, equipment, plant, temporary housing and other items used during the mining period will be removed from the site.
- Waste material of any description, including receptacles, scrap, rubble and tyres, will be removed entirely from the mining area and disposed of at a recognized landfill facility, proof of this removal will be kept on file at the applicant's office. It will not be permitted to be buried or burned on the site.
- Weed / Alien clearing will be done in a sporadic manner during the life of the mining activities. Species regarded as the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014 Species regarded as need to be eradicated from the site on final closure.
- Final rehabilitation shall be completed within a period specified by the Regional Manager.

(e) Calculate and state the quantum of the financial provision required to manage and rehabilitate the environment in accordance with the applicable guideline.

The calculation of the quantum for financial provision was according to Section B of the working manual.

Mine type and saleable mineral by-product

According to Tables B.12, B.13 and B.14

Mine type	Limestone, Dimension stone and Marble
Saleable mineral by-product	None

Risk ranking

According to Tables B.12, B.13 and B.14

Primary risk ranking (either Table B.12 or B.13)	C (Low risk).

Revised risk ranking (B.14)	N/A

Environmental sensitivity of the mine area

According to Table B.4

Environmental sensitivity of the mine area	Low

Level of information

According to Step 4.2:

Level of information available	Limited

Identify closure components

According to Table B.5 and site-specific conditions

Component No.	Main description	Applicability of closure components (Circle Yes or No)	
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	-	NO
2(A)	Demolition of steel buildings and structures	-	NO
2(B)	Demolition of reinforced concrete buildings and structures	-	NO
3	Rehabilitation of access roads	-	NO
4(A)	Demolition and rehabilitation of electrified railway lines	-	NO
4(B)	Demolition and rehabilitation of non-electrified railway lines	-	NO
5	Demolition of housing and facilities	-	NO
6	Opencast rehabilitation including final voids and ramps	YES	
7	Sealing of shafts, adits and inclines	-	NO
8(A)	Rehabilitation of overburden and spoils	-	NO
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing)	-	NO
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich)	-	NO
9	Rehabilitation of subsided areas	-	NO
10	General surface rehabilitation, including grassing of all denuded areas	YES	-
11	River diversions	-	NO
12	Fencing	-	NO
13	Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater)	-	NO
14	2 to 3 years of maintenance and aftercare	YES	

Unit rates for closure components

According to Table B.6 master rates and multiplication factors for applicable closure components.

Component No.	Main description	Master rate	Multiplication factor
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	-	-
2(A)	Demolition of steel buildings and structures	-	-
2(B)	Demolition of reinforced concrete buildings and structures	-	-
3	Rehabilitation of access roads	-	-
4(A)	Demolition and rehabilitation of electrified railway lines	-	-
4(B)	Demolition and rehabilitation of non-electrified railway lines	-	-
5	Demolition of housing and facilities	-	-
6	Opencast rehabilitation including final voids and ramps	268 200	0.52
7	Sealing of shafts, adits and inclines	-	-
8(A)	Rehabilitation of overburden and spoils	178 800	1.00
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing)	-	-
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich)	-	-
9	Rehabilitation of subsided areas	-	-
10	General surface rehabilitation, including grassing of all denuded areas	141 640	1.00
11	River diversions	-	-
12	Fencing	-	-
13	Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater)	-	-
14	2 to 3 years of maintenance and aftercare	18849	1.00

Determine weighting factors

According to Tables B.7 and B.8

Weighting factor 1: Nature of terrain/accessibility	1.0 (Flat)
Weighting factor 2: Proximity to urban area where goods and services are to be supplied	1.05

Calculation of closure costs

Table B.10 Template for Level 2: "Rules-based" assessment of the quantum for financial provision

Table 30: Calculation of closure cost

CALCULATION OF THE QUANTUM							
Mine:	Seboway (Pty) Ltd - Vanrhynsdorp MP			**Location:**	Vanrhynsdorp		
Evaluators:	Sonette Smit			**Date:**			
No	**Description**	**Unit**	**A Quantity**	**B Master rate**	**C Multiplication factor**	**D Weighting factor 1**	**E=A *B*C*D Amount (Rand)**
			Step 4.5	**Step 4.3**	**Step 4.3**	**Step 4.4**	
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	m^2	0	18	1.00	1	R 0.00
2(A)	Demolition of steel buildings and structures	m^2	0	256	1.00	1	R 0.00
2(B)	Demolition of reinforced concrete buildings and structures	m^2	0	377	1.00	1	R 0.00
3	Rehabilitation of access roads	m^2	0	46	1.00	1	R 0.00
4(A)	Demolition and rehabilitation of electrified railway lines	m	0	444	1.00	1	R 0.00
4(B)	Demolition and rehabilitations of non-electrified railway lines	m	0	242	1.00	1	R 0.00
5	Demolition of housing and/or administration facilities	m^2	0	512	1.00	1	R 0.00
6	Opencast rehabilitation including final voids and ramps	ha	4	268 200	0.04	1	R 42912
7	Sealing of shaft, audits and inclines	m^3	0	137	1.00	1	R 0.00
8(A)	Rehabilitation of overburden and spoils	ha	0	178 800	1.00	1	R0.00
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing waste)	ha	0	222 692	1.00	1	R 0.00
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)	ha	0	646 804	0.51	1	R 0.00
9	Rehabilitation of subsided areas	ha	0	149 718	1.00	1	R 0.00
10	General surface rehabilitation	ha	0.9	141 640	1.00	1	R 127476
11	River diversions	ha	0	141 640	1.00	1	R 0.00

12	Fencing	m	0	162	1.00	1	R 0.00
13	Water Management	ha	0	53 855	0.17	1	R 0.00
14	2 to 3 years of maintenance and aftercare	ha	4.9	18 849	1.00	1	R 92360.1
15(A)	Specialists study	Sum	0				R 0.00
15(B)	Specialists study	Sum	0				R 0.00
Sum of items 1 to 15 above							R 262748.1
Multiply Sum of 1-15 by Weighting factor 2 (Step 4.4)		1.05				**Sub Total 1**	R 275885.51

1	Preliminary and General	6% of Subtotal 1 if Subtotal 1 <R100 000 000.00	R 16553.13
		12% of Subtotal 1 if Subtotal 1 >R100 000 000.00	-
2	Contingency	10.0% of Subtotal 1	R 27588.55
		Sub Total 2 (Subtotal 1 plus management and contingency)	R 320027.19
		Vat (15%)	R48004.08
		GRAND TOTAL (Subtotal 3 plus VAT)	**R 368031.26**

The amount that will be necessary for the rehabilitation of damages caused by the operation, both sudden closures during the normal operation of the project and at final, planned closure gives a sum total of **R 368031.26**

(f) Confirm that the financial provision will be provided as determined.

Herewith I, the person, whose name is stated below confirm that I am the person authorised to act as representative of the Applicant in terms of the resolution submitted with the application. I herewith confirm that the company will provide the amount that will be determined by the Regional Manager in accordance with the prescribed guidelines.

Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including

g) Monitoring of Impact Management Actions
h) Monitoring and reporting frequency
i) Responsible persons
j) Time period for implementing impact management actions
k) Mechanisms for monitoring compliance

Table 31: Mechanisms for monitoring compliance with and performance assessment against the EMPR and reporting thereon.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
• Demarcation of site with visible beacons • Stripping and stockpiling of topsoil and/or overburden. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon closure of the mining area.	Maintenance of beacons	• Visible beacons need to be placed at the corners of the mining area.	<u>Role:</u> • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Responsibility:</u> • Ensure beacons are in place throughout the life of the mine.	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
• Stripping and stockpiling of topsoil and/or overburden. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon closure of the mining area.	**Visual Characteristics:** • Visual intrusion as a result of site establishment.	• Minimize the visual impact of the activity on the surrounding environment through proper site management and implementing good housekeeping practices.	Role: • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility: • Contain mining to the boundaries of the permitted area. • Ensure that the site have a neat appearance and is kept in good condition at all times. • Limit vegetation removal, and only strip topsoil immediately prior to the use of a specific area. • Rehabilitate and level the site upon closure to ensure that the visual impact on the aesthetic value of the area is kept to a minimum.	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.
• Stripping and stockpiling of topsoil and/or overburden. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon	**Geology and Soil:** • Loss of topsoil and fertility during mining and stockpiling • Loss of stockpiled material due to ineffective storm water control. • Erosion of returned topsoil after rehabilitation .	• Earthmoving equipment to reinstate mined-out areas. • Cover crop to be established on reinstated areas. • Erosion control infrastructure (if necessary)	Role: • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility: • Strip and stockpile the upper 300 mm of the soil. • Carefully manage and conserve the topsoil throughout the stockpiling and rehabilitation process. • Ensure topsoil stripping, stockpiling and re-spreading is done in a systematic way. Plan mining in such a way that topsoil is stockpiled for the minimum possible time.	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
closure of the mining area.			• Place topsoil heaps on a levelled area within the mining footprint area. Do not stockpile topsoil in undisturbed areas. • Protect topsoil stockpiles against losses by water and wind erosion. Position stockpiles so as not to be vulnerable to erosion by wind and water. Establishment of plants on the stockpiles will help prevent erosion. • Ensure that topsoil heaps do not exceed 1.5 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen. • Keep temporary stockpiles free of invasive plant species. • Divert storm- and runoff water around the mining area to prevent erosion. • Spread the topsoil evenly over the rehabilitated area, to a depth of 300 mm, upon closure of the site. • Strive to re-instate topsoil at a time of the year when vegetation cover can be established as quickly as possible afterwards, to that erosion of returned topsoil is minimized. The best time of year is at the end of the rainy season. • Plant and irrigate a cover crop immediately after spreading topsoil to stabilise the soil and protect it from erosion. Fertilise the cover crop for optimum biomass production. Rehabilitation extends until the first cover crop is well established. • Monitor the rehabilitated area for erosion, and appropriately stabilize if erosion do occur, for at least 12 months after reinstatement.	

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
• Stripping and stockpiling of topsoil and/or overburden. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon closure of the mining area.	**Groundcover:** • Infestation of the topsoil heaps and mining area with invader plant species. • Infestateion of denuded areas with invader plant species. • Infestation of the reinstated area with invader plant species.	• Designated team to cut or pull out invasive plant species that germinated on site. • Herbicide application equipment.	Role: • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility: • Implement an invasive plant species management plan to control all invasive plant species on site in terms of NEM:BA, 2004 and CARA, 1983. • Keep all stockpiles (topsoil) free of invasive plant species. • Control declared invader or exotic species on the rehabilitated areas.	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.
• Stripping and stockpiling of topsoil and/or overburden. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon closure of the mining area.	**Fauna:** • Potential impact on fauna within the footprint area. • Disturbance to fauna within the footprint area.	• Toolbox talks to educate employees how to handle fauna that enter the work areas.	Role: • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility: • Ensure no fauna is caught, killed, harmed, sold or played with. • Instruct workers to report any animals that may be trapped in the working area. • Ensure no snares are set or nests raided for eggs or young. •	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
• Stripping and stockpiling of topsoil and/or overburden. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon closure of the mining area..	**Air Quality:** • Dust nuisance as a result of the mining activities.	• Dust suppression equipment such as a water car. • Signage that clearly reduce the speed on the access roads.	Role: • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility: • Control the liberation of dust into the surrounding environment by the use of; inter alia, straw, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products). • Ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Limit speed on the haul roads to 40 km/h to prevent the generation of excess dust. • Minimise areas devoid of vegetation. • Take weather conditions into consideration upon commencement of daily operations. Limit operations during very windy periods to reduce airborne dust and resulting impacts. • Ensure dust generating activities comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA, 2004 and ASTM D1739 (SANS 1137:2012). • Implement best practice measures during the stripping of topsoil, loading, and transporting of material from site to minimize potential dust impacts.	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.
• Stripping and stockpiling of topsoil and/or overburden.	**Noise Ambiance:**	• Silencers fitted to all project related vehicles, and the use of vehicles that are in road worthy	Role: • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
• Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon closure of the mining area.	• Noise nuisance as a result of the mining activities. • Noise nuisance as a result of the decomissiononig activities.	condition in terms of the National Road Traffic Act, 1996.	• Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Responsibility:</u> • Ensure that employees and staff conduct themselves in an acceptable manner while on site. • No loud music may be permitted at the mining area. • Ensure that all project related vehicles are equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996. • Implement best practice measures to minimise potential noise impacts. • Contract a qualified occupational hygienist to quarterly monitor and report on the personal noise exposure of the employees working at the mine. Monitoring must be in accordance with SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA 2004, SANS 10103:2008.	• Annual compliance monitoring of site by an Environmental Control Officer.
• Stripping and stockpiling of topsoil and/or overburden. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site	**<u>Waste Management:</u>** • Soil contamination from hydrocarbon spills. • Potential impact assocaited with littering and hydrocarbon spills. • Potential impact associated with litter left at the mining area.	• Oil spill kit. • Sealed drip trays. • Formal waste disposal system with waste registers.	<u>Role:</u> • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Responsibility:</u> • Ensure regular vehicle maintenance, repairs and services take place in a demarcated service area of the permit holder. If emergency repairs are needed on equipment not able to move to	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
• Sloping and landscaping upon closure of the mining area.			the workshop / service area, drip trays must be present. All waste products must be disposed of in a 200 litre closed container/bin to be removed from the emergency service area to the workshop in order to ensure proper disposal. • Vehicle maintenance or refueling must be undertaken within the workshop and service area proposed within the mining area. Alternatively, if emergency repairs or refueling are required, it must be undertaken on an impermeable surface to prevent contamination of soil and groundwater. Vehicles and equipment must be parked and stored on impermeable surfaces or make use of uPVC lining and drip trays when stationaryProvide ablution facilities in the form of a chemical toilet that is placed outside the 1:100 year floodline of any open water resource. Ensure the toilet is serviced at least once every two weeks for the duration of the mining activities. • Ensure that the use of any temporary, chemical toilet facilities does not cause any pollution to water sources or pose a health hazard. In addition, ensure that no form of secondary pollution arise from the disposal of refuse or sewage from the temporary, chemical toilets. Address any pollution problems arising from the above immediately. • Equip the diesel bowser with a drip tray if used on site. The nozzle of the bowser must rest in a sleeve to prevent dripping after refuelling. • Clean drip trays after use. Do not use dirty drip trays. • Keep a spill kit on site. • Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either for	

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			resale or for appropriate disposal at a recognized facility. • Collect the contaminated soil from spillage that occurred, such as oil or diesel leaking from a burst pipe, within the first hour of occurrence, in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. File proof. • Compile a waste management plan and implement it on site. The plan must focus on the waste hierarchy of the NEM:WA. • Contain general waste in marked, sealable, refuse bins placed at a designated area and remove waste from the mining area to a recognised general waste landfill site. • Prevent the burning or burying of waste on site. • Report any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities to the to all relevant authorities, including Department Environmental Affairs and Development Planning – Directorate - Pollution and Chemicals Management, in accordance with section 30 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA") pertaining to the *control of incidents*. In the event of a significant accidental spill or leak of hazardous substances (e.g. petrol, diesel, etc.) during any phase of the proposed activities, such an incident(s) must be reported. • Park the machinery at the mining area with drip trays placed underneath stationary vehicles.	
• Stripping and stockpiling of topsoil and/or overburden.	• Potential impact on areas/infrastructure of heritage or cultural concern.	• Contact number of an archaeologist that can be contacted when a discovery is made on site.	<u>Role:</u> • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
• Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon closure of the mining area..			• Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Responsibility:</u> • Confine all mining to the development footprint area. • Implement the following change find procedure when discoveries are made on site: ▪ If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager. ▪ It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area. ▪ The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify SAHRA. ▪ Work may only continue once the go-ahead was issued by SAHRA.	• Annual compliance monitoring of site by an Environmental Control Officer.
• Stripping and stockpiling of topsoil and/or overburden.	**<u>Hydrology:</u>** • Storm water management	• Storm water management structures such as berms to direct storm- and runoff water around the	<u>Role:</u> • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
• Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon closure of the mining area.		stockpiled topsoil area (when needed).	• Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Responsibility:</u> • Divert storm water around the topsoil heaps to prevent erosion. • Conduct activity in terms of the Best Practice Guidelines for small-scale mining as developed by DWS.	• Annual compliance monitoring of site by an Environmental Control Officer.
• Stripping and stockpiling of topsoil and/or overburden. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon closure of the mining area.	**<u>Hydrology:</u>** • Water Resource Management	• Toolbox talks to educate field workers how to handle water resources in the prospecting area		Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management. Annual compliance monitoring of site by an Environmental Control Officer.
• Operational Phase: Loading and hauling of the mined material from site.	**<u>Existing Infrastructure:</u>**	• Grader to restore the road surface when needed.	<u>Role:</u> • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.	Applicable throughout operational phases. • Daily compliance monitoring by site management.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
	• Deterioration of the access road to the mining area. • Overloading of trucks having an impact on the public roads.		• Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Responsibility:</u> • Divert storm water around the access road to prevent erosion. • Restrict vehicular movement to the existing access road to prevent crisscrossing of tracks through undisturbed areas. • Repair rutting and erosion of the access road caused as a direct result of the mining activities. • Prevent the overloading of the truck, and file proof of load weights for auditing purposes.	• Annual compliance monitoring of site by an Environmental Control Officer.
• Site establishment. • Stripping and stockpiling of topsoil and/or overburden. • Operations Phase: Drilling and blasting. • Operational Phase: Diamond wire cutting, loading and hauling of the mined material from site • Sloping and landscaping upon closure of the mining area.	• Potential health and safety risks to employees.	• Stocked first aid box. • Level 1 certified first aider. • All appointments in terms of the Mine Health and Safety Act, 1996.	<u>Role:</u> • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Responsibility:</u> • Ensure adequate ablution facilities and water for human consumption is daily available on site. • Ensure that workers have access to the correct PPE as required by law. • Manage all operations in compliance with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).	Applicable throughout operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

l) Indicate the frequency of the submission of the performance assessment/environmental audit report.

The Environmental Audit Report in accordance with Appendix 7 as prescribed in Regulation 34 of the EIA Regulations, 2014 (as amended) will annually be submitted to DMRE for compliance monitoring purposes or in accordance with the time period stipulated by the Environmental Authorisation.

m) Environmental Awareness Plan

i) Manner in which the applicant intends to inform his or her employees of any environmental risk which may result from their work.

Once the Applicant received the mining permit and may commence with the proposed activity, a copy of the Environmental Management Programme will be handed to the site manager for his perusal. Issues such as the mining boundaries, fire principals and waste handling will be discussed.

An induction meeting will be held with all the site workers to inform them of the Basic Rules of Conduct with regard to the environment.

ii) Manner in which risk will be dealt with in order to avoid pollution or the degradation of the environment.

The operations manager must ensure that he/she understands the EMPR document and its requirement and commitments before any mining takes place. An Environmental Control Officer needs to check compliance of the mining activity to the management programmes described in the EMPR.

The following list represents the basic steps towards environmental awareness, which all participants in this project must consider whilst carrying out their tasks.

- **Site Management:**

  - Stay within boundaries of site – do not enter adjacent properties.
  - Keep tools and material properly stored.
  - Smoke only in designated areas.
  - Use toilets provided – report full or leaking toilets.

- **Water Management and Erosion:**

  - Check that rainwater flows around work areas and are not contaminated.
  - Report any erosion.
  - Check that dirty water is kept from clean water.

- **Waste Management:**

  - Take care of your own waste
  - Keep waste separate into labelled containers – report full bins.
  - Place waste in containers and always close lid.
  - Don't burn waste.
  - Pick-up any litter laying around.

- **Hazardous Waste Management (Petrol, Oil, Diesel, Grease)**

  - Never mix general waste with hazardous waste.
  - Use only sealed, non-leaking containers.
  - Keep all containers closed and store only in approved areas.
  - Always put drip trays under vehicles and machinery.
  - Empty drip trays after rain.
  - Stop leaks and spills, if safe:
    - ✓ Keep spilled liquids moving away.
    - ✓ Immediately report the spill to the site manager/supervision.
    - ✓ Locate spill kit/supplies and use to clean-up, if safe.
    - ✓ Place spill clean-up wastes in proper containers.
    - ✓ Label containers and move to approved storage area.

- **Discoveries:**

  - Stop work immediately.
  - Notify site manager/supervisor.
  - Includes – archaeological finds, cultural artefacts, contaminated water, pipes, containers, tanks and drums, any buried structures.

- **Air Quality:**

  - Wear protection when working in very dusty areas.
  - Implement dust control measures:
    - ✓ Water all roads and work areas.

- ✓ Minimize handling of material.
- ✓ Obey speed limit and cover trucks.

- **Driving and Noise:**

  - Use only approved access roads.
  - Respect speed limits.
  - Only use turn-around areas – no crisscrossing through undisturbed areas.
  - Avoid unnecessary loud noises.
  - Report or repair noisy vehicles.

- **Vegetation and Animal life:**

  - Do not remove any plants or trees without approval of the site manager.
  - Do not collect fire wood.
  - Do not catch, kill, harm, sell or play with any animal, reptile, bird or amphibian on site.
  - Report any animal trapped in the work area.
  - Do not set snares or raid nests for eggs or young.

- **Fire Management:**

  - Do not light any fires on site, unless contained in a drum at demarcated area.
  - Put cigarette butts in a rubbish bin.
  - Do not smoke near gas, paints or petrol.
  - Know the position of firefighting equipment.
  - Report all fires.
  - Don't burn waste or vegetation.

n) Specific information required by the Competent Authority

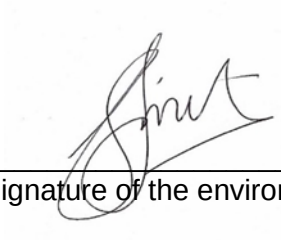
(Among others, confirm that the financial provision will be reviewed annually)

The Applicant undertakes to annually review and update the financial provision calculation, upon which it will be submitted to DMRE for review and approved as being sufficient to cover the environmental liability at the time and for closure of the mine at that time.

2. UNDERTAKING

The EAP herewith confirms

a) the correctness of the information provided in the reports **X**
b) the inclusion of comments and inputs from stakeholders and I&AP's **X**
c) the inclusion of inputs and recommendations from the specialist reports where relevant, and **X**
d) that the information provided by the EAP to interested and affected parties and any response by the EAP to comments or inputs made by interested and affected parties are correctly reflected herein **X**



Signature of the environmental assessment practitioner:

Greenmined Environmental (Pty) Ltd

Name of Company:

21 October 2021

Date:

-END-

APPENDIX A

REGULATION 2(2) MINE MAP

APPENDIX B

1:250 000 LOCALITY MAP

APPENDIX C
MINING ACTIVITIES PLAN

APPENDIX D

SURROUNDING LAND USE MAP

APPENDIX E1
REHABILITATION MAP

APPENDIX E2

CLOSURE / REHABILITATION PLAN

APPENDIX F
LOCALITY MAP

APPENDIX G1 & G2

COMMENTS AND RESPONSE REPORT

&

PROOF OF PUBLIC PARTICIPATION

APPENDIX H
FINANCIAL AND TECHNICAL COMPETENCE REPORT

APPENDIX I

SUPPORTING IMPACT ASSESSMENT

APPENDIX J

INVASIVE PLANT SPECIES MANAGEMENT PLAN

APPENDIX K

PHOTOGRAPHS OF THE PROPOSED SITE

APPENDIX L1&2

DMRE ACCEPTANCE AND ACKNOWLEDGEMENT LETTERS

LAND OWNER CONSENT

APPENDIX M
CV AND PROOF OF EXPERIENCE OF THE EAP

APPENDIX N - PLANT SPECIES AND TERRESTRIAL BIODIVERSITY THEME COMPLIANCE STATEMENT DATED OCTOBER 2021 COMPILED BY ENVIROWORKS

APPENDIX O
HERITAGE NID (& PALEO STATEMENT)

APPENDIX P
SECTION C&I RISK MATRIX

APPENDIX Q - SITE ALTERNATIVE MAP

APPENDIX R
SCREENING REPORT

APPENDIX S
SITE SENSITIVITY REPORT

APPENDIX T
PPP PLAN