PROPOSED SAND MINE ON A PORTION OF PORTION 2 (REMAINING EXTENT) OF FARM 199 RD, CLANWILLIAM, WESTERN CAPE PROVINCE

DRAFT BASIC ASSESSMENT REPORT

OCTOBER 2024

REFERENCE NUMBER: *WC30/5/1/3/2/10349MP*

PREPARED FOR:

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EXECUTIVE SUMMARY

The Applicant, Skemervlei Trust, applied for environmental authorisation and a mining permit to mine sand from a portion of Portion 2 (Remaining Extent) of Farm 199, Clanwilliam, Western Cape Province. The proposed mining area will be 1.7 ha and will be developed over an area currently used for agricultural purposes. If the proposed mining footprint is apportioned into two strips the mining direction will start from strip 1 (1ha) working towards strip 2 (0.7ha).The position of the permit area was chosen to avoid the disturbance of natural fynbos. The mineral (sand) will be loaded with a front-end-loader directly from the footprint area onto a truck that delivers it to the clients. Little to no stockpiling required. No washing of sand is needed. Due to the small scale of the operation no infrastructure, other than a chemical toilet, will be established within the mining footprint. The proposed project does not require any electrical connections, and no chemicals will be stored on site. Vehicle/equipment maintenance will be done at an existing off-site workshop (Clanwilliam Town) of the Applicant, and the area will be reached via an existing farm road.

The proposed project triggers listed activities in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) and the Environmental Impact Assessment Regulations 2014 (as amended) and therefore requires a Basic assessment process that assess project specific environmental impacts and alternatives, consider public input, and propose mitigation measures, to ultimately culminate in an environmental management programme that informs the competent authority (Department of Mineral Resources and Energy) when considering the environmental authorisation. This report, the Draft Basic Assessment Report, forms part of the departmental requirements and presents the first report of the EIA process.

Site Alternative 1 (Preferred Site):

Site Alternative 1, which entails the mining of sand from an area currently used for agricultural purposes, was identified during the assessment phase of the environmental impact assessment, by the Applicant and project team, as the preferred site alternative.

Site Alternative 2:

Site alternative 2 entails the mining of sand from an area directly adjacent to the current mining area on the property. This alternative was considered as it will afford the Applicant a mining area that borders an existing sand mine and allows access to the area via an existing road that does not require stabilizing. However, upon assessment of the alternative, read together with the potential impacts associated with S1, site alternative 2 was not deemed the preferred option as it will have a higher ecological significance without the need or motivation justifying it.

No-go Alternative:

The no-go alternative entails no change to the *status quo* and is therefore a real alternative that needs to be considered. The sand to be mined from the property will be sold to the building, road rehabilitation/maintenance and associated construction industry, if however, the no-go alternative is implemented the Applicant will not be able to mine the sand and the landowner will not receive assistance with the improvement of the agricultural potential of his fields. The no-go alternative was therefore not deemed a viable option.

Public Participation Process:

During the initial public participation process the stakeholders and I&AP's were informed of the project with notification letters that were sent directly to the contact persons. An advertisement was placed in the Ons Kontrei, and two on-site notices were placed at the farm gate and Agrimark in Clanwilliam on 4 October 2024. 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 8 November 2024, 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 DMR.

Basic Assessment Report:

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

Topography:

- The excavation of the mining area has the potential to level the centre pivot lands, which will have advantages for preventing irrigation run-off and improving ease of agricultural management. It will however be important that mining depths are controlled across the entire mine so that excavations result in a levelling of the centre pivot lands rather than a hole with steep edges.

Visual Characteristics:

- It is proposed that the visual impact of the proposed sand mining operation will be of low-medium significance, especially as it will be developed within the footprint of an existing pivot.
- The small scale of the proposed operation (1 ha disturbed at a time), the implementation of progressive rehabilitation, as well as the fact that no infrastructure will be establish contributes to the low visual significance. As the landowner will continue with the use of the area for cultivation purposes, no residual visual impact is expected upon closure of the mine.

Site specific air and noise quality:

- 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 machinery already operational at the property. The distance of the proposed mining area from residential infrastructure further lessens the potential noise impact.

Geology and Soil:

- The soils are limited by the very low clay content and leaching of the upper soil horizons and therefore have a low water and nutrient holding capacity. As a result, they have a low to medium agricultural potential. The land capability of the investigated area is predominantly 4 and 5, which is very low to low. The grazing capacity of the natural veld is very low at 66 hectares per large stock unit.
- Because there is a gradual increase in the clay content with depth, removal of the upper sand (through mining) will leave a soil that has higher clay and resultant higher water holding capacity. This will alleviate, to some extent, the low water holding capacity limitation of the existing soil.

Hydrology:

- Should the proposed operation be established within the footprint of S1, and the permit holder contain all activities to the approved mining boundary no impact on the non-perennial stream could be identified.

Mining and Biodiversity Conservation Areas:

- When the mining footprints of both S1 and S2 is layered over the Mining and Biodiversity Map, it falls over and area of highest biodiversity importance with a corresponding rating of highest

risk for mining. The High Biodiversity Importance area does however not correspond with the boundaries of the CBA's and ESA's identified in terms of the Western Cape Biodiversity Spatial Plan, which excludes the footprint of S1 from significant conservation areas and it being already disturbed.

- In order to avoid an impact on either the CBA's (terrestrial & aquatic) or the ESA's (terrestrial) it is proposed that S1 be considered for approval, as it does not extent over an area of conservation concern.

Groundcover:

- No natural occurring fynbos remains within the footprint of S1. Should the footprint of S1 be considered for approval, the potential impact on the endangered Leipoldtville Sand Fynbos is of low significance.

Cultural and Heritage Environment:

- No sites of archaeological or cultural importance were identified during the site inspection, and consultation with the interested and affected parties also did not identify any potential area of concern.
- The potential impact of the proposed mining activities on the cultural and/or heritage environment is therefore deemed to be insignificant, however the Applicant will implement a chance-find protocol on site for the duration of the site establishment-, operational- and decommissioning phase.
- A Needs and Desirability Application Form will be submitted to SAHRA in October 2024 to inform them of the proposed project and obtain their comments.

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 of R 80 788.51

LIST OF ABBREVIATIONS

ACRM	Agency for Cultural Resource Management
BID	Background Information Document
BGIS	Biodiversity GIS
CARA	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)
CBA	Critical Biodiversity Area
CN	Cape Nature
CLM	Cederberg Local Municipality
CWDM	Cape Winelands District Municipality
DBAR	Draft Basic Assessment Report
DEA&DP	Department of Environmental Affairs and Development Planning
DMR	Department of Mineral and Resources
DTPW	Department of Transport and Public Works
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)
EMPR	Environmental Management Programme
ESA	Ecological Support Areas
FBAR	Final Basic Assessment Report
FEL	Front-End-Loader
FFd2	Leipoldtville Sand Fynbos
GDP	Gross Domestic Product
GNR	Government Notice
GVA	Gross Value Added
HWC	Heritage Western Cape
I&AP's	Interested and Affected Parties
MHSA	Mine Health and Safety Act, 1996 (Act No. 29 of 1996)
MP	Mining Permit
MPRDA	Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
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)
NID	Notice of Intend to Develop
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
PPE	Personal Protective Equipment
PSM	Palaeontological Sensitivity Map
S1	Site Alternative 1
S2	Site Alternative 2
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SAMBE	South African Mining and Biodiversity Forum
USBM	US Bureau of Mines
WC	Western Cape Province
WCBSP	West Coast Biosphere Spatial Plan
WCDM	West Coast District Municipality
WCNCO	Western Cape Nature Conservation Ordinance, 1974 (No 19 of 1974)
WMA	Water Management Area

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

Appendix A: Regulation 2.2 Mine Plan
Appendix B: 1:250 000 Locality Map
Appendix C: Site Activities Map
Appendix D: Surrounding Land Use Map
Appendix E: Rehabilitation Plan
Appendix F1: Comments and Response Report
Appendix F2: Proof of Public Participation
Appendix G: Agricultural Impact Assessment
Appendix H: Supporting Impact Assessment
Appendix I: Financial and Technical Competence Report
Appendix J: Closure Plan
Appendix K: Invasive Plant Species Management Plan
Appendix L: Photographs of the site
Appendix M: CV and Experience Record of EAP
Appendix N: Screening Report
Appendix O: Site Sensitivity Report
Appendix P: Notice of Intent to Develop
Appendix Q: Notice of land use application- Mrs Marié Terblanche of Tplan Consultants

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:	Skemervlei Trust
TEL NO:	027 482 1701
FAX NO:	027 482 1701
POSTAL ADDRESS:	P.O. Box 249, Clanwilliam, 8135
PHYSICAL ADDRESS:	1 Industrial Road, Clanwilliam, Western Cape Province
FILE REFERENCE NUMBER SAMRAD:	WC30/5/1/3/2/10349MP

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. Skemervlei Trust appointed Greenmined Environmental to undertake the study needed. Greenmined Environmental has no vested interest in Skemervlei Trust 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 Murchellin Saal (Senior Environmental Consultant)
Tel No.:	021 851 2673
Fax No.:	086 546 0579
E-mail address:	Murchellin.s@greenmined.co.za
EAP Registration No:	2021/4203

Expertise of the EAP.

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

Mrs. M Saal has thirteen 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. Full curriculum vitae with evidence is attached as Appendix M.

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

Mrs. Murchellin Saal has 13 years' experience in doing Water use Licence Applications, Environmental Impact Assessments and Mining applications in South Africa. Mrs. M Saal is a registered Environmental Assessment Practitioner (registration no: 2021/4203) with EAPASA (Environmental Assessment 19

Practitioners Association of South Africa) since 2021. See a list of past projects attached as Appendix M.

b) Location of the overall Activity.

Table 1: Location of the proposed project.

Farm Name:	Portion 2 (Remaining Extent) of Farm 199 RD
Application area (Ha)	1.7 ha
Magisterial district:	Clanwilliam
Distance and direction from the nearest town	The site is located ±740 m south-west of the N7 national road approximately 6.5 km north of Clanwilliam town.
21digit Surveyor General Code for each farm portion	C02000000000019900002

c) Locality map

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

The requested map is attached as Appendix B.

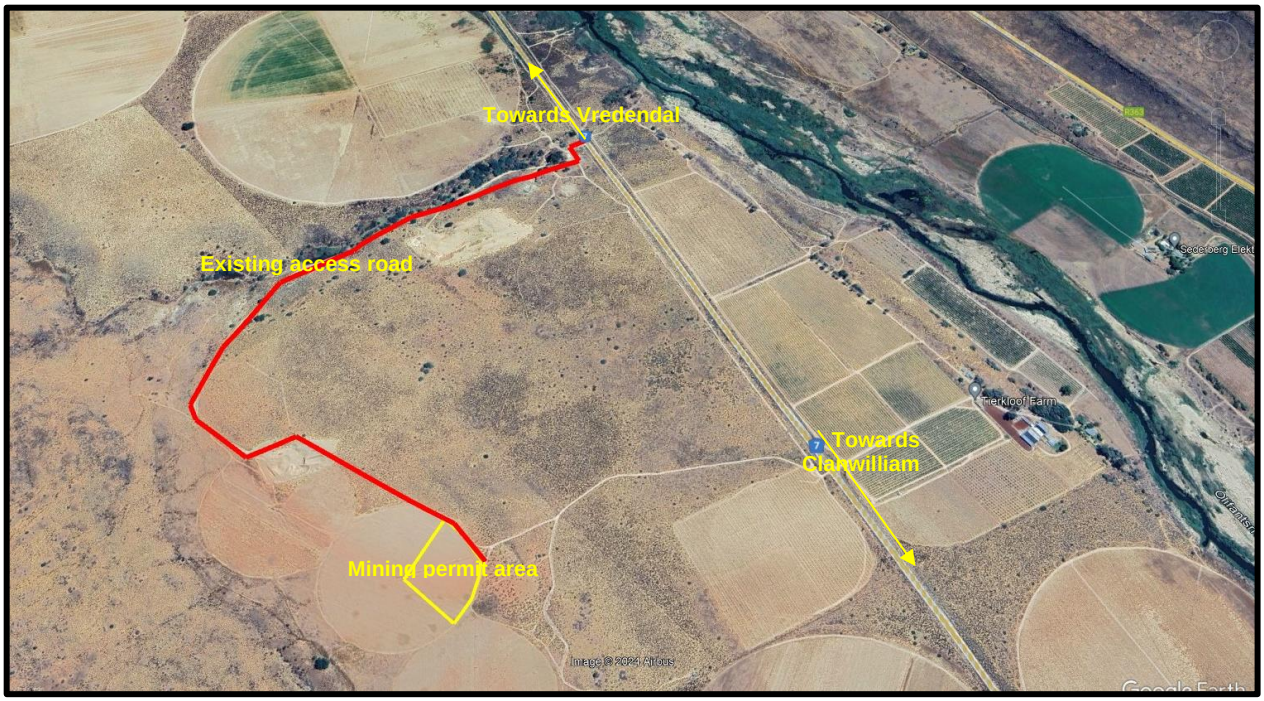

Figure 1: Satellite view of the proposed mining permit area (yellow polygon) of Skemervlei Trust (image obtained from Google Earth).

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

Skemervlei Trust (hereinafter referred to as “the Applicant”), applied for environmental authorisation and a mining permit to mine sand from a portion of Portion 2 (Remaining Extent) of Farm 199, Clanwilliam, Western Cape Province.

The proposed mining area of the Applicant will be 1.7 ha and will be developed over an area currently used for agricultural purposes. If the proposed mining footprint is apportioned into two strips the mining direction will start from strip 1 (1ha) working towards strip 2 (0.7ha).

The mining method is representative of the small-scale mining industry where the mineral (sand) is loaded with a front-end-loader (FEL) directly from the footprint area onto a truck that delivers it to the clients. Mining will be implemented with little to no stockpiling required. No washing of sand is needed. Due to the small scale of the operation no infrastructure, other than a chemical toilet, will be established within the mining footprint. The proposed project does not require any electrical connections, and no chemicals will be stored on site. Vehicle/equipment maintenance will be done at an existing off-site workshop (Clanwilliam Town) of the Applicant, and the area will be reached via an existing farm road.

The proposed mining method will implement strip mining and be representative of the small-scale mining industry where the mineral (sand) is loaded with a front-end-loader (FEL) directly from the footprint area onto a truck that delivers it to the clients. Little to no stockpiling is required and no washing of sand is needed.

The mining activities will be as listed below:

- Stripping and stockpiling of the topsoil from a 1 ha strip;
- Loading and hauling of the sand from the open strip;
- Sloping and landscaping of the mined strip prior to the opening and mining of the consecutive strip (remaining 0,7ha); and
- Replacing the topsoil and vegetating the disturbed area.

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 facilities, 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 m^2	**LISTED ACTIVITY** Mark with an X where applicable or affected	**APPLICABLE LISTING NOTICE** (GNR 324, GNR 325, GNR 326 OR GNR 327)
Demarcation of site with visible beacons.	1.7 ha	N/A	Not listed
Stripping and stockpiling of topsoil.	±1 ha at a time	X	GNR 983 Listing Notice 1 Activity 21 (as amended)
Loading and hauling of the sand from the mining footprint.	±1 ha at a time	X	
Sloping and landscaping upon closure of the mining area.	±1 ha (last disturbed area)	X	
Replacing the topsoil and vegetating the disturbed area.	±1 ha (last disturbed area)	X	
GNR 983 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.*			

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)

Background Information:

Smit Grondwerke Pty Ltd (Mr Tobias Gerhardus Smit & Mr Johannes Adriaan Elias Smit), holds an existing sand mining permit on Portion 2 (Remaining Extent) of Farm 199 RD. The permit was issued in 2020 and allows for the mining of a 4.9 ha area. The third renewal of this permit was submitted in January 2024 and expires 9 March 2025. Due to the covid pandemic and the delay of the Clanwilliam dam project the client was unable to fully utilize the existing mining permit and has to date only managed to mine 0.85 ha of the full extent.

Skemervlei Trust (Mr Tobias Gerhardus Smit & Mr Johannes Adriaan Elias Smit), a separate entity with different shareholding than the above entity, in collaboration with the landowner, Mr GE Smith, identified a potential 1.7 ha sand mining area currently used for the cultivation of potatoes and/or wheat. The proposed mining area (yellow polygon) borders the current 4.9 ha permit area (white polygon) see figure below).

Figure 2: Satellite view showing the position of the proposed mining area (yellow polygon) and access road (red polygon) in relation to the existing 4.9 ha mining permit area (white polygon). (Image obtained from Google Earth).

The motivation for placing the proposed 1.7 ha mining area over the centre pivot of the landowner was to assist with the reduction of the top sandy soil layer (through mining), whereby the clay content and resultant water holding capacity of the soil will be increased that will assist the farmer with future crop cultivation of the lands. Further to this, the natural vegetation cover of the proposed 1.7 ha area has historically been altered through agricultural practices and no fynbos needs to be disturbed to allow the mining of the area (refer to *i) Details of the development footprint alternatives considered*.).

Project Proposal:

In light of the above, the Applicant applied for environmental authorisation and a mining permit to mine sand from a portion of Portion 2 (Remaining Extent) of Farm 199, Clanwilliam, Western Cape Province. The table below lists the GPS coordinates of the

proposed mining area as shown on the Regulation 2(2) Mine Plan attached as Appendix A.

Table 3: GPS Coordinates of the proposed mining footprint.

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
A	32° 8'12.08"S	18°50'49.61"	-32.136690°	18.847114°
B	32° 8'13.05"S	18°50'50.96"E	-32.136958°	18.847489°
C	32° 8'14.84"S	18°50'52.54"E	-32.137455°	18.847927°
D	32° 8'15.77"S	18°50'52.53"E	-32.137714°	18.847925°
E	32° 8'17.35"S	18°50'52.08"E	-32.138152°	18.847800°
F	32° 8'18.88"S	18°50'51.00"E	-32.138577°	18.847501°
G	32° 8'16.10"S	18°50'47.12"E	-32.137805°	18.846422°

The satellite image below shows the location of the MP application area in relation to the surrounding landscape.

Figure 3: Satellite view showing the location of the MP application area (yellow polygon) in relation to the surrounding landscape.

The proposed mining method will implement strip mining and be representative of the small-scale mining industry where the mineral (sand) is loaded with a front-end-loader (FEL) directly from the footprint area onto a truck that delivers it to the clients. Little to no stockpiling is required and no washing of sand is needed.

The mining activities will be as listed below:

- Stripping and stockpiling of the topsoil from a 1 ha strip;

- Loading and hauling of the sand from the open strip;
- Sloping and landscaping of the mined strip prior to the opening and mining of the consecutive strip; and
- Replacing the topsoil and vegetating the disturbed area.

Should the MP be issued, and the mining of sand be allowed, the proposed project will comprise of activities that can be divided into 3 key phases (discussed in more detail below) namely the:

(1) *Site establishment phase* which will involve the demarcation of the permitted mining area and the identification of the first 1 ha strip to be mined. Site establishment may necessitate the clearing of vegetation (that established through succession), the stripping and stockpiling of topsoil, and the introduction of the mining machinery.

(2) *Operational phase* that will entail the strip mining of sand from the approved footprint area through direct excavation. The Applicant will make use of a front-end-loader to load the sand directly onto a truck that will deliver it to the clients. Little to no stockpiling will be required and no washing of sand is needed.

(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 (DMRE).

- The permit holder will further be responsible for the seeding of all rehabilitated areas.

- 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 (when needed), and stripping and stockpiling of topsoil to access the mineral 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 must be demarcated.

- **Clearing of Vegetation:**

  As mentioned earlier, the footprint of the proposed sand mine was chosen to extend over an area that is used for agricultural purposes (central pivot) and no natural fynbos needs to be disturbed to allow access to the mineral. According to Mucina and Rutherford (2012) the vegetation type of the natural areas is known as the Leipoldtville Sand Fynbos (FFd2).

  Although the proposed project will not necessitate the removal of natural Leipoldtville Sand Fynbos, the removal of some indigenous vegetation may be necessary should the cultivation of the pivot cease and indigenous vegetation establish through succession. The clearing of vegetation must be contained to the approved mining footprint, and no vegetation/bush clearance, outside the approved area, may be allowed. It is proposed that a botanist is consulted to clear uncultivated areas, where indigenous vegetation established, prior to the stripping of topsoil.

- **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 the edge of the strip to be replaced during the rehabilitation of the area. The Applicant must take note that dry sand has a natural angle of repose of ±34°, accommodation of this must form part of the mine planning to prevent topsoil simply slide back into the mining 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 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 to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.

- **Access Road:**

The proposed mining area will be reached via an existing farm road that has a formal (existing) entrance onto the N7. The surface of the farm road will be upgraded and maintained by the permit holder for the duration of the operational phase. The width of the road will not be increased and therefore does not trigger listed activities in terms of the NEMA EIA Regulations, 2014 (as amended 2017).

Figure 4: Satellite view showing the access road (red line) to the proposed mining area (yellow polygon).

- **Introduction of Mining Machinery:**

  No infrastructure, other than a chemical toilet, needs to be established within the proposed 1.7 ha mining area. Mining machinery that will operate within the footprint is expected to consist of the following:

  - Front-end-loader (1);
  - Excavator (1) (part time); and
  - ADT truck (1) (part time).

2. *Operational Phase:*

The operational phase will involve the removal of topsoil off a strip of approximately 1 ha. The topsoil will be stockpiled at the edge of the strip to be replaced during the rehabilitation of the area. The sand will be removed from the stripped area with a front-end-loader that will directly load a truck that will haul the mined material, via the existing road, to the clients. The transport of sand from the mining area will be done by site management as no clients will be allowed to collect sand directly from the mine. It is proposed that the truck will visit the mining area approximately twenty times a week.

As mentioned in the Agricultural Impact Assessment (AIA) (full copy attached as Appendix G), it will be important to control the mining depths across the entire mine so that the excavation results in a levelling of the centre pivot lands rather than a hole with steep edges.

If the proposed mining footprint is apportioned into two strips (figure below), the mining direction will start from strip 1 (1ha) working towards strip 2 (0.7ha). Using the existing access road (red line in the figure below) the Applicant could access each strip to be mined without the need of driving over rehabilitated areas. Strip mining the earmarked area in this manner, allows for mined-out areas to be rehabilitated / signed back to the landowner for continued cultivation without the need of mining equipment re-entering rehabilitated areas.

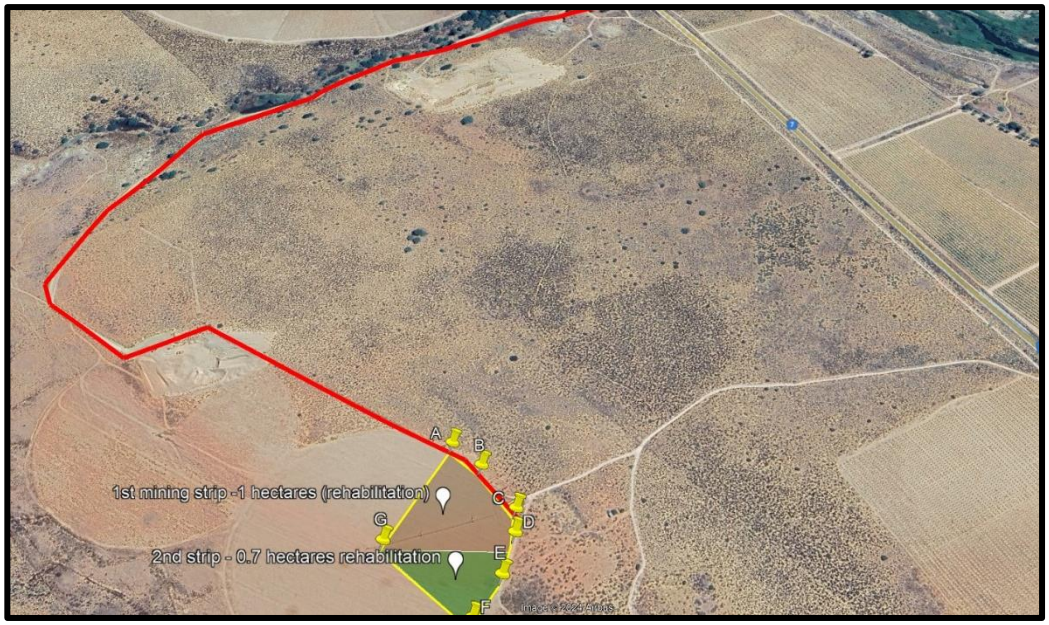

Figure 5: Proposed strip-mining direction of the footprint area where the red line shows the existing access road.

The proposed sand mine will appoint ±3 employees. The proposed project does not require any electrical connections, and no chemicals will be stored on site. Vehicles/ equipment maintenance will be done at an existing off-site workshop in Clanwilliam Town of the Applicant, and the sand mining operation will take place during normal working hours (no work on Sundays).

- <u>Water Use:</u>

  Due to the nature of the sand to be mined (heavy), very little to no water is needed as dust levels are typically low. 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 20 km/h on the internal farm road to minimize dust generation;
  - When the truck leaves the mining area it will be covered to minimise windblown dust from the loads;
  - The removal of vegetation (that established through succession within the mining footprint) will only be done immediately prior to the mining of the area 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 water will be bought and transported to the farm 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.

- Waste Handling:

Due to the nature of the project, the small scale of the proposed operation, and the fact that no infrastructure will be established or maintenance work done within the earmarked footprint, 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 the existing waste disposal system at the Clanwilliam offices of the Applicant.

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 the Applicants Clanwilliam office 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:

  No workshop or servicing area will be established within the boundaries of the permitted area. Any maintenance/services will be performed at the existing Clanwilliam workshop of the Applicant.

Decommissioning Phase:

The end objective is for the entire mining area to return to agricultural use (as agreed with the landowner). No buildings/infrastructure need to be demolished, and the access road will remain intact to be used by the landowner.

The closure specific objectives entail progressive rehabilitation of each 1 ha strip as mining continues. The decommissioning activities will consist of the following:

- Sloping and landscaping the mining area;
- Replacing the topsoil;
- Removing all mining machinery and equipment from site.
- Vegetating the reinstated area; and
- Controlling the invasive plant species.

The Applicant proposes the following with regard to rehabilitation of the mined-out strips (see Appendix J for the Closure Plan):

- Rehabilitation of the excavated area:

  The mine plan will ensure that topsoil is stockpiled for the minimum possible time through rehabilitating each mining block as mining continues.

  To ensure minimum impact on drainage, the applicant will take care not to leave any depressions in the mining floor. A surface slope (even if minimal) will be maintained across the mining floor in the drainage direction, so that all excavations are free draining.

  After mining, any steep slopes at the edges of excavations will be reduced to a minimum and profiled to blend with the surrounding topography and allow the travel of the centre pivot.

  The stockpiled topsoil will then be evenly spread over the disturbed mining area, so that there is a depth of 300 mm of sandy topsoil above the underlying layer.

The depth will be monitored during spreading to ensure that coverage is adequate and even.

The Applicant will strive to (when possible) spread topsoil at a time of the year when vegetation cover can be established as quickly as possible afterwards, so that erosion of returned topsoil by both rain and wind, is minimized.

A cover crop that ties in with the proposed land use will be planted immediately after spreading of topsoil to stabilize the soil and protect it from erosion. The cover crop will be fertilised for optimum biomass production, and any soil chemical deficiencies will be corrected, based on a chemical analysis of the re-spread soil.

The rehabilitated area as well as the land down slope of it will monthly be monitored for erosion, and appropriately stabilized if any erosion occurs.

The Applicant will ensure monthly monitoring of weeds/invader plants that may germinated within the rehabilitated area. The invasive plant species management plan (Appendix K) will continually be implemented on site.

- 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 entire mining area was rehabilitated the permit holder is required to submit a closure application to the Department of Mineral Resources 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 4: 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)
Cederberg Municipality: By-Law on Municipal Land Use Planning (PN 137 of 15 April 2016)	Part A(1)(h)(iv)(1)(b) Description of current land uses.	The proposed footprint area is currently zoned for agricultural use and a temporary departure application will be submitted for approval to the competent authority. Refer to the site notice included in the PPP report.
Cederberg Municipality: Final IDP/PMS/Budget Progress Plan 2024/2024.	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity: Human Environment – Socio-Economic Environment.	The IDP was used in the assessment of the socio-economic profile of the community in which the project is situated.
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.
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 DMR-WC. Ref No: WC30/5/1/3/2/10349MP
National Environmental Management Act,1998 (Act No. 107 of 1998) and the Environmental Impact Assessment Regulations, 2014 (as amended)	Part A(1)(d)(i) Listed and specified activities.	Application for environmental authorisation submitted to DMR-WC. Ref No: WC30/5/1/3/2/10349MP

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)
• GNR 983 Listing Notice 1 Activity 21		
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 – *Fugitive Dust Emission Mitigation Measures.*	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.
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. Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – Waste Management.	The mitigation measures proposed for the site take into account the NEM:WA.
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.* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – Archaeological, Heritage and Palaeontological Aspects.	The mitigation measures proposed for the site includes specifications of the NHRA, 1999.

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 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. Part B(1)(d)(iii) Has a water use licence been applied for?	The mitigation measures proposed for the site includes specifications of the NWA, 1998.
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
Western Cape Biodiversity Spatial Plan	Part A(1)(h)(iv)(1)(b) Description of current land uses.	The proposed footprint area is currently zoned for agricultural use and a temporary departure application will be submitted for approval to the competent authority.
Western Cape Noise Control Regulations (PN 200/2013), June 2013	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Air and Noise Quality.	The mitigation measures proposed for the site take into account the Western Cape Noise Control Regulations, 2013.
Western Cape Land Use Planning Act, 2014 (Act No 3 of 2014)	Part A(1)(h)(iv)(1)(b) Description of current land uses.	The proposed project requires a land development application to Provincial Government (DEA&DP) in terms of Section 53 of the Land Use Planning Act, 2014. The Applicant is in contact with a town and regional planner to commence with the land development application to Provincial Government.
Western Cape Nature Conservation Ordinance, 1974 (No 19 of 1974), read with the Western Cape Natural Conservation Laws Amendment Act, 2000 (No 3 of 2000)	Part A1(g)(iv)(1)(a) Type of environment affected by the proposed activity - Biological Environment Part A(1)(g)(viii) The possible mitigation measures that could be applied on the level of risk – Mining,	The mitigation measures proposed for the site considers the WCNCO 1974.

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)
	Biodiversity Conservation Area, and Vegetation.	

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 sustainable mining of sand for the construction industry is an important economic sector in the West Coast accounting for a 7.5% contribution to the District GDP. The increase in building, construction and road maintenance projects in the vicinity of the property triggered the need to trade with the available sand from a permitted area. The construction work on the Clanwilliam Dam wall (DWS project), and the subsequent market for the mineral, added to the Applicants need for sand from a nearby area.

Portion 2 (Remaining Extent) of Farm 199 RD is mainly used for agricultural purposes (potato farming & grazing). However, since 2010 the land use of the property was extended to include small scale sand mining. The Applicant of this proposed project, applied for a sand mining permit of 1.7 ha that extends over a portion of the centre pivots. The landowner has provided a motivation letter in support of the application as it would be beneficial for the farm to remove the topsoil in order to get to the more nutrient rich soil for future farming purposes.

This was confirmed by the soil scientist that found the soils of the study area very sandy with low water holding capacity which results in low to medium agricultural potential. The specialists found adequate reserves of sand on site for mining and rehabilitation, and identified two potential positive effects from the direct mining of the land namely:

- Increase in clay content and resultant water holding capacity of the soil, due to the removal of the upper, more sandy soil; and
- Decreased slope due to the levelling effect of excavation.

The AIA (see Appendix G) concludes that mining will not significantly reduce the future agricultural production potential of the site, if effective rehabilitation is implemented.

The proposed operation will also contribute to the local economy of the area, both directly and through the multiplier effect that its presence will generate. Equipment and supplies will be purchased locally, and wages will be spent at local businesses, generating both jobs and income to the area.

Table 5: 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*, the mining footprints of both S1 and S2 are layered over the Mining and Biodiversity Map, as shown in the figure below, it falls over and area of highest 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. • The proposed mining area is on a centre pivot irrigated lands that have been used for the production of potatoes, wheat and perennial pastures. The first centre pivot land was developed between 2012 and 2013. The surrounding area is natural vegetation. Also refer to: • Part A(1)(d)(ii) Description of the activities to be undertaken – Clearing of Vegetation. • Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Mining and Biodiversity. • Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Biodiversity Conservation Areas. • Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Groundcover. • Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Terrestrial Biodiversity (including fauna and flora), • Part A(1)(h)(viii) The possible mitigation measures that could be applied and the level of risk.	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 this development pollute and/or degrade the biophysical environment?	Soils were assessed by an investigation of test pits distributed across the site. Soils were classified according to the South African soil classification system (Soil Classification Working Group, 1991). An interview was also conducted with the farmer for information on farming practices on the site. An assessment of soils and long-term agricultural potential is in no way affected by the season in which the assessment is made, and therefore the date on which this assessment was done has no bearing on its results. The level of agricultural assessment is considered entirely adequate for an understanding of on-site agricultural production potential for the purposes of this assessment. This verification of sensitivity addresses both components that determine it, namely cropping status (that is whether the land is currently or has recently been used for crop production) and land capability. The screening tool classifies the assessed area as very high agricultural sensitivity due to its cropping status as pivot irrigated land. This assessment confirms the very high sensitivity rating by the screening tool that is based on the cropping status component of sensitivity. The classified land capability of the site ranges from 5 to 6. This assessment verifies the classified land capability, based on the assessment of the dryland cropping potential of the site in this report (see Section 8) and therefore verifies it as being of medium agricultural sensitivity in terms of the land capability component of sensitivity. Taking the above mentioned into consideration and should the permit holder adhere to the conditions of the EA and provided that the mitigation measures are implemented it is believed that the impact on the biophysical environment is of acceptable significance.	Desirable
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 daily operations of the employees. All general waste will be contained in sealable refuse bins until it is transported to a registered general waste	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**
	landfill site. A registered 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.	
How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage?	No sites of archaeological or cultural importance were identified during the site inspection, and consultation with the interested and affected parties also did not identify any potential area of concern. The potential impact of the proposed mining activities on the cultural and/or heritage environment is therefore deemed to be insignificant, however the Applicant will implement a chance-find protocol on site for the duration of the site establishment-, operational- and decommissioning phase. A Needs and Desirability Application Form will be submitted to SAHRA in October 2024 to inform them of the proposed project and obtain their comments.	Highly Desirable
How will this development use and/or impact on non-renewable natural resources?	If approved the Applicant will mine the resource identified on a portion of portion 2 (Remaining extent) of Farm 199RD, Clanwilliam, Western Cape Province. Presently, it is believed that the mineable area is (1.7 ha). Because there is a gradual increase in the clay content with depth, removal of the upper sand will leave a soil that has higher clay and resultant higher water holding capacity. This will alleviate, to some extent, the low water holding capacity limitation of the existing soil. The permit holder will responsibly consume the resource on the property on the property over a period of 5 years.	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 this development use and/or impact on renewable natural resources and the ecosystem of which they are part?	A maximum of 10 000 l/month is expected to be needed during the dry months. As mentioned earlier, the contractor will strive to manage dust generation through alternative suppression methods to restrict water use to the absolute minimum. Presently, it is proposed that water will be bought from a legal source and transported to site. The contractor will be encouraged to consider the use of non-potable water for mining related activities.	Desirable
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. Refer to the following sections: • Part A(1)(d)(ii) Description of the activities to be undertaken; • Part A(1)(h)(i) Details of the development footprint alternatives considered; • Part A(1)(h)(iv) The environmental attributes associated with the alternatives; • Part A(1)(i) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will • Part A(1)(l) Environmental impact statement.	Highly Desirable
How will the ecological impacts be resulting from this development impact on people's environmental right?	The mine will be managed in accordance with the specifications of the lease agreement with the landowner and should the mitigation measures proposed in this document be implemented the potential visual-, dust-, and noise impacts associated with the mining operation will be of medium - low significance. If the monitoring programs, proposed in this document, is implemented it is believed that no environmental rights of the surrounding residents/public will be affected by 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	I	

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**
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 it impact negatively on the socio-economic status of the area.	Highly Desirable
Based on all the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?		
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 Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Socio-Economic Environment.	Highly Desirable

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
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. • The people/businesses of Clanwilliam will benefit from diversification of dolerite sources which will result in competitive product costs. • It will also diversify the income of the property as well as potential employees and clients.	
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 it impact negatively on the socio-economic status of the area.	
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.	Mining the resource on the property will contribute to the area in that the landowner will receive compensation, the project will create employment opportunities, and the use of the material will directly and indirectly promote the economy of the area as mentioned earlier. As mentioned earlier, the increase in building, construction and road maintenance projects in the vicinity of the property triggered the need to trade with the available sand from a permitted area. The construction work on the Clanwilliam Dam wall (DWS project), and the subsequent market for the mineral, added to the Applicants need for sand from a nearby area.	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 included in this report.	Highly Desirable

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
How will the socio-economic impacts be resulting from this development impact on people's environmental right?	As mentioned in Part A(1)(t)(i)(1) *Impact on the socio-economic conditions of any directly affected person*, the activity may have an impact on the visual characteristics of the surrounding environment and may affect air quality and the noise ambiance of the study area. However, the mine will be managed in accordance with the specifications of the lease agreement with the landowner and should the mitigation measures proposed in this document be implemented the potential visual-, dust-, and noise impacts associated with the mining operation will be of low significance. If the monitoring programs, 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
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?	If approved, the sand mine will create new work opportunities to residents and will also contribute an additional source of income (compensation) to the landowner. It is proposed that the sand mine will contribute to the local economy of the area, both directly and through the multiplier effect that its presence will create. Equipment and supplies will be purchased locally, and wages will be spent at local businesses, generating both jobs and income in the area. As mentioned earlier, the increase in building, construction and road maintenance projects in the vicinity of the property triggered the need to trade with the available sand from a permitted area. The construction work on the Clanwilliam Dam wall (DWS project), and the subsequent market for the mineral, added to the Applicants need for sand from a nearby area.	Highly Desirable
What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations? What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against	If the mitigation measures proposed in this document is adhered to, the project entails the mining of a 1.7ha area. Should the permit application be approved, the project will directly contribute to the socio-economic status of the receiving environment through the employment, and support of the local economy. Please refer to: • 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

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
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? 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?	The mine will 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
Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community that is consistent with the priority needs of the local area.	Presently, it is proposed that the mine will create employment opportunities to residents. The sustainable mining of sand for the construction industry is an important economic sector in the West Coast accounting for a 7.5% contribution to the District GDP. The increase in building, construction and road maintenance projects in the vicinity of the property triggered the need to trade with the available sand from a permitted area. The construction work on the Clanwilliam Dam wall (DWS project), and the subsequent market for the mineral, added to the Applicants need for sand from a nearby area.	Highly Desirable

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
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 mine will operate in accordance with the specifications of the Mine Health and Safety Act, 1996 as well as the Occupational Health and Safety Act, 1993. Site management will arrange regular toolbox talks with the site personnel regarding the work to be performed and the environment in which the work will take place. Grievances/concerns can be lodged during the toolbox sessions and site meetings.	Highly Desirable
Describe how the development will impact on job creation in terms of, amongst other aspects?	As mentioned earlier, the proposed sand mine will appoint 3 employees of which will be from the surrounding area.	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.	The proposed mine will operate under a valid environmental authorisation and mining permit to be issued by the DMRE-WC. Compliance of the site with the approved EMPR, EA- conditions will be reported on as per departmental specifications. Considering this, the proposed activity will take place in an environmentally sustainable manner with the least possible impact on the receiving environment.	Highly Desirable
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 If rehabilitation is successful, the land is likely to have a slightly higher agricultural potential than what it was pre-mining.	Highly Desirable

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
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. Upon approval of this application, the Applicant will lodge a financial guarantee with the DMRE that will be deemed sufficient to cover the financial provision amount needed to rehabilitate the mining footprint. The environmental liability of the operation will annually be reviewed and if a shortfall is indicated, the guarantee will be accordingly adjusted.	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
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.	The surrounding landscape is mainly used for agricultural purposes. 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 are no other rated activities in the vicinity. The proposed project will be developed in co-operation with the landowner employment opportunities to residents of the area. The project will be of temporary nature (5 years maximum) and although it will add visual-, air- and noise impacts to the surroundings it is believed that these impacts can be mitigated to an acceptable level. The socio-economic benefit of mining	Highly Desirable

2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		
Question	**Response**	**Level of Desirability**
	the sand mine as a material source for the construction work on the Clanwilliam Dam wall (DWS project), and the subsequent market for the mineral, added to the Applicants need for sand from a nearby area.	

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

During the EIA process two alternatives' locations were considered for the proposed mining project (S1 & S2 in this report). Site Alternative 1 was identified during the assessment phase of the environmental impact assessment as the preferred site alternative due to the following:

Site Alternative 1 (Preferred and Only Site Alternative):

Site Alternative 1, which entails the mining of an area that was previously disturbed. The natural fynbos (Leipoldtville Sand Fynbos) of the footprint area was historically altered by the current agricultural activities, and therefore the proposed mining of sand will not disturb or result in the loss of natural fynbos

- Access to the proposed mining area is possible via an existing farm road with a formal (existing) entrance onto the N7.
- The reduction of the upper sandy soil layer will increase the clay content and resultant water holding capacity of the soil, and if rehabilitation is successful the land is likely to have a slightly higher agricultural potential than what it was pre-mining.
- The levelling effect of excavation will contribute to a decreased slope of the pivot area.
- The quality of the sand, in the earmarked area, complies with the requirements of the Applicant's clients and/or contracts.
- No watercourse, drainage line or wetland will be affected by the proposed mining area.
- The mine will not be visible to the road users of the N7 national road.

The no-go alternative entails no change to the *status quo* and is therefore a real alternative that needs to be considered. The sand to be mined from the property will be sold to the building, road rehabilitation/maintenance and associated construction industry, if however, the no-go alternative is implemented the Applicant will not be able to mine the sand and the landowner will not receive assistance with the improvement of the agricultural potential of his fields. The no-go alternative was therefore not deemed a viable option.

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. These factors collectively contribute to the decision to exclude Site Alternative 2 from further consideration in 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 4 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.

Site Alternative 1 (S1) (Preferred Site Alternative): Site Alternative 1 entails mining of sand from an area currently used for agricultural purposes within the GPS coordinates as listed in the table below.

Table 6: GPS Coordinates of Site Alternative 1 (preferred site alternative)

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
A	32° 8'12.08"S	18°50'49.61"	-32.136690°	18.847114°
B	32° 8'13.05"S	18°50'50.96"E	-32.136958°	18.847489°
C	32° 8'14.84"S	18°50'52.54"E	-32.137455°	18.847927°
D	32° 8'15.77"S	18°50'52.53"E	-32.137714°	18.847925°
E	32° 8'17.35"S	18°50'52.08"E	-32.138152°	18.847800°
F	32° 8'18.88"S	18°50'51.00"E	-32.138577°	18.847501°
G	32° 8'16.10"S	18°50'47.12"E	-32.137805°	18.846422°

Figure 6: Satellite view showing the position of Site Alternative 1 (yellow polygon) within the surrounding landscape.

Site Alternative 1 was identified during the assessment phase of the environmental impact assessment, by the Applicant, landowner and project team, as the **preferred site alternative** due to the following:

- The natural fynbos (Leipoldtville Sand Fynbos) of the footprint area was historically altered by the current agricultural activities, and therefore the proposed mining of sand will not disturb or result in the loss of natural fynbos.
- Access to the proposed mining area is possible via an existing farm road with a formal (existing) entrance onto the N7.
- The reduction of the upper sandy soil layer will increase the clay content and resultant water holding capacity of the soil, and if rehabilitation is successful the land is likely to have a slightly higher agricultural potential than what it was pre-mining.
- The levelling effect of excavation will contribute to a decreased slope of the pivot area.
- The quality of the sand, in the earmarked area, complies with the requirements of the Applicant's clients and/or contracts.
- No watercourse, drainage line or wetland will be affected by the proposed mining area.
- The mine will not be visible to the road users of the N7 national road.

Potential negative aspects associated with Site Alternative include:

- The footprint of the mining area will temporarily be lost to the landowner as part of his pivots will be mined by the permit holder.
- Although an existing farm road can be used to access the mining area, the road surface has to be stabilized.

Site Alternative 2 (S2): Site Alternative 2 entails mining of sand from an area currently used for agricultural purposes within the GPS coordinates as listed in the table below.

Table 7: GPS Coordinates of Site Alternative 2

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
A	32º07’59.48”	18º50’31.24”	-32.133191º	18.842011º
B	32° 8'1.90"S	18°50'35.38"E	-32.133860°	18.843160°
C	32º08’05.42”	18°50'36.96"E	-32.13484º	18.843600°
D	32° 8'7.04"S	18°50'33.68"E	-32.135290°	18.842690°
E	32° 8'5.06"S	18°50'29.47"E	-32.134740°	18.841520°
F	32° 8'2.54"S	18°50'28.79"E	-32.134040°	18.841330°

Figure 7: Satellite view showing the position of Site Alternative 2 (green polygon) in relation to the new proposed Site Alternative 1(yellow polygon) and an existing mining permit (white polygon-which expires 2025) on the property.

Site Alternative 2 was considered as it will afford the Applicant a mining area that is close to an existing sand mine and allows access to the area via an existing road that does not require stabilizing.

Positive aspects associated with Site Alternative 2 include:

- No road improvements are required, and the Applicant can share the maintenance of the road with the permit holder.
- The haul road to S2 will be ±380 m shorter than the road to S1.
- Sand mining will be centred to one area on the property.
- Mining will not affect the centre pivots (as is the case with S1).

Potential negative aspects associated with Site Alternative 2 include:

- The footprint of S2 contains natural Leipoldtville Sand Fynbos and extends over a Terrestrial Critical Biodiversity Area (CBA) as well as an area classified as an Ecological Support Area (ESA): Aquatic and Terrestrial. In order to access the mineral, the Applicant will have to remove the fynbos, directly impacting the vulnerability of the ecosystem.
- The haul road to S2 will be ±380 m shorter than the road to S1.
- The footprint of S2 is within ±280 m from a non-perennial drainage line that passes towards the north/north-west. This area is classified as a channelled valley-bottom wetland on the National Wetland and NFEPA map viewer of BGIS. Mining within 500 m of a wetland will require a water use authorisation in terms of Section 39 of the National Water Act, 1998 (Act No 36 of 1998) for water uses as defined in section 21 (c) and section 21 (i).

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 sand to be mined from the property will be sold to the building, road rehabilitation/maintenance and associated construction industry. If, however, the no-go alternative is implemented:

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

- the Applicant cannot utilise the mineral resource;
- the landowner will not receive compensation and assistance with the improvement of the agricultural potential of his fields;
- the mining permit of the 4.9 ha area will expire in 2025 and the Clanwilliam people/businesses, in need of sand will have to transport it from Vanrhynsdorp or as far as Piketberg, making building sand unaffordable.

In light of this, the no-go alternative was therefore 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.

An advertisement was placed in the Ons Kontrei on 10 October 2024 and on-site notices were placed at Agrimark Clanwilliam and at the entrance to the farm on 4 October 2024. The advertisement and on-site notices invited the recipients to register/comment on the project before 8 November 2024.

Any comments received on the DBAR will be incorporated into the final BAR to be submitted to the DMRE for approval.

The following I&AP's and stakeholders were thus far consulted with regarding the project:

Table 8: List of the I&AP's and stakeholders that were notified of the proposed sand mine project.

SURROUNDING LANDOWNERS & INTERESTED AND AFFECTED PARTIES	STAKEHOLDERS
Landowner: • Mr & Mrs Smith **Surrounding landowners & lawful occupiers:** • Mr CPJ Smith (Portion 0 (RE) of Farm 199) • Mr MG Bergh (Portion 0 (RE) of Seekoevlei 110) • Mr W Nel (Portion 2 of Zekoe Valley 107) • Mr JGM Genis (Portion 0 (RE) of Kogelmanskloof 200) • Mr P Steens (Portion 14 of Klein Valley 193) • Mr B Beukes (Portion 15 of Klein Valley 193) • Mr A Bergh (Portion 2 of Kleinvlei 196)	• Cape West Coast Biosphere Reserve; • CapeNature; • Cederberg Local Municipality Ward Councillor (Ward 6); • Cederberg Local Municipality; • Department of Agriculture, Forestry and Fisheries; • Department of Economic Development and Tourism; • Department of Environmental Affairs and Development Planning; • Department of Labour; • Department of Rural Development and Land Reform; • Department of Social Development; • Department of Transport and Public Works; • Department of Water and Sanitation; • Heritage Western Cape • SANRAL; and • South African Heritage Resources Agency. • West Coast District Municipality;
I&AP'S AND STAKEHOLDERS THAT REGISTERED/COMMENTED DURING THE INITIAL NOTIFICATION PERIOD	
• CapeNature; • Cederberg Local Municipality; • Department of Environmental Affairs and Development Planning; • Department of Water and Sanitation; • Heritage Western Cape; and • West Coast District Municipality.	

ENTITIES THAT COMMENTED / RESPONDED ON THE PROJECT
N/A

Refer to the following table for an explanation on how the public participation process of this project took the methods stipulated in Regulation 41 of the NEMA Regulations into account. Proof of the public participation process that was followed is attached as Appendix F to this document.

Table 9: Table comparing the required methods with the public participation process of this project.

REQUIREMENTS IN TERMS OF NEMA REGULATION 41	PUBLIC PARTICIPATION PROCESS FOLLOWED
▪ Regulation 41(2)(a): *Fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of-* *(i) The site where the activity to which the application or proposed application relates is or is to be undertaken; and* (ii) *Any alternative site.* ▪ Regulation 41(3): *A notice, notice board or advertisement referred to in sub regulation (2) must—* *(a) give details of the application or proposed application which is subjected to public participation; and* *(b) state—* *(i) whether basic assessment or S&EIR procedures are being applied to the application.* *(ii) the nature and location of the activity to which the application relates.* *(iii) where further information on the application or proposed application can be obtained; and* (iv) *the manner in which and the person to whom representations in respect of the application or proposed application may be made.* ▪ Regulation 41(4): *A notice board referred to in sub regulation (2) must—* *(a) be of a size of at least 60cm by 42cm; and*	Notice boards in English were fixed at the following conspicuous and public accessible areas: ❖ Entrance to the farm/site. ❖ Agrimark Clanwilliam. All the notice boards that were placed complied with the requirements of Regulation 41(3) as presented in Appendix F2 attached to this document. The notices were printed on boards of 60 x 42 cm in Arial font of sufficient size.

REQUIREMENTS IN TERMS OF NEMA REGULATION 41	PUBLIC PARTICIPATION PROCESS FOLLOWED
(b) *display the required information in lettering and in a format as may be determined by the competent authority.*	
Regulation 41(2)(b): *giving written notice, in any of the manners provided for in section 47D of the Act, to-* (i) *the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken.* (ii) *owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken.* (iii) *the municipal councillor of the ward in which the site and alternative site is situated and any organisation of ratepayers that represent the community in the area.* *(iv) the municipality which has jurisdiction in the area.* *(v) any organ of state having jurisdiction in respect of any aspect of the activity.* *(vi) any other party as required by the competent authority;*	(i) The Landowner (and Applicant) signed an agreement regarding this project and is kept apprised of the EIA (BA) process. To date, no additional comments were received. (ii) The surrounding landowner will be invited to comment on the project and the DBAR. (iii) The Ward Councillor of Ward 6 will be invited to comment on the project and DBAR. (iv) The Cederberg Local Municipality and West Coast District Municipality (WCDM) will be invited to comment on the project and DBAR. (v) As listed in Table 7 the relevant state departments and entities will be invited to comment on the project and DBAR.
Regulation 41(2)(c): *Placing an advertisement in-* *(i) One local newspaper; or* *(ii) any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations.*	The project and availability of the DBAR was advertised in the Ons Kontrei in English.
Regulation 41(2)(d): *Placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken…*	Not applicable, as the proposed activity will not extend beyond the boundaries of the metropolitan or district municipality in which it will be undertaken.
Regulation 41(2)(e): *Using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desirous of but unable to participate in the process due to—* *(i) illiteracy.* *(ii) disability; or*	The ward councillor was notified of the project and availability of the DBAR. The availability of the DBAR on the website: www.greenmined.co.za was advertised in all the public participation documents that were distributed.

REQUIREMENTS IN TERMS OF NEMA REGULATION 41	PUBLIC PARTICIPATION PROCESS FOLLOWED
(iii) *any other disadvantage.*	
▪ Regulation 41(5): *Where public participation is conducted in terms of this regulation for an application or proposed application, sub regulation (2)(a), (b), (c) and (d) need not be complied with again during the additional public participation process contemplated in regulations 19(1)(b) or 23(1)(b) or the public participation process contemplated in regulation 21(2)(d) …*	▪ Not applicable to this application.
▪ Regulation 41(6): *When complying with this regulation, the person conducting the public participation process must ensure that—* *(a) information containing all relevant facts in respect of the application or proposed application is made available to potential interested and affected parties; and* (b) *participation by potential or registered interested and affected parties is facilitated in such a manner that all potential or registered interested and affected parties are provided with a reasonable opportunity to comment on the application or proposed application.*	▪ The DBAR containing all relevant facts in respect of the application was available to potential I&APs for perusal and commenting over a 30-days commenting period. The DBAR was available on the company (Greenmined) website. I&AP's will be invited to contact the EAP should additional information be required.
▪ Regulation 41(7): *Where an environmental authorisation is required in terms of these Regulations and an authorisation, permit or licence is required in terms of a specific environmental management Act, the public participation process contemplated in this Chapter may be combined with any public participation processes prescribed in terms of a specific environmental management Act, on condition that all relevant authorities agree to such combination of processes.*	▪ Not applicable to this project.

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					
Mr & Mrs Smith	X	27 May 2024	The landowner supports the proposed sand mine application. See following motivation:	N/A	N/A

- Landowners consent and motivation dated 24 May 2024:

I am writing to provide clarification regarding the proposed utilization of land for a new sand mine, particularly concerning its prior agricultural use and the measures taken for water preservation.

The parcel of land under consideration was previously dedicated to dry land sowing and potato farming. Traditional farming methods, including the use of sprinkler irrigation, were employed during this period. However, in line with our commitment to water conservation and efficiency, we transitioned to the use of pivot irrigation systems several years ago.

The decision to switch to pivot irrigation was motivated by its capacity to significantly reduce water consumption and labour requirements compared to traditional sprinkler irrigation methods. By adopting this more water-wise approach, we aimed to ensure the sustainable management of water resources while maintaining agricultural productivity.

It is important to emphasize that the land in question was actively utilized for farming purposes until just a few years ago. However, due to our strategic shift towards more efficient irrigation practices, the land has been left fallow. We recognize the importance of responsible land use and stewardship, and our decision to cease agricultural activities on this plot was driven by our commitment to sustainable practices. If the sand mining project were to continue, it would be beneficial for us as a farm to remove the topsoil in order to get to the more nutrient rich soil for future farming purposes.

Thank you for your attention to this matter.

Should you require further information or wish to discuss any aspect of our proposal in more detail, please do not hesitate to contact me at *tierkloof1@gmail.com.*

Sincerely, GE Smith

Lawful occupier/s of the land					

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.
N/A		N/A	N/A	N/A	
Landowners or lawful occupiers on adjacent properties	**X**	-	-	-	-
Mr CPJ Smith adjacent landowner of: • Portion 0 (RE) of Farm 199	X	No comments recevied	N/A	N/A	N/A
Mr MB Bergh adjacent landowner of: • Portion 0 (RE) of Seekoevlei 110	X	No comments recevied	N/A	N/A	N/A
Mr W Nel adjacent landowner of: • Portion 2 of Zekoe Valley 107	X	No comments recevied	N/A	N/A	N/A
Mr M JGM Genis adjacent landowner of: • Portion 0 (RE) of Kogelmanskloof 200	X	No comments recevied	N/A	N/A	N/A
Mr P Steens adjacent landowner of • Portion 14 of Klein Valley 193	X	No comments recevied	N/A	N/A	N/A
Mr B Beukes adjacent landowner of: • Portion 15 of Klein Valley 193	X	No comments recevied	N/A	N/A	N/A
Mr A Bergh adjacent landowner of: • Portion 2 of Kleinvlei 196	X	No comments recevied	N/A	N/A	N/A
Municipal councillor					
Cllr. R Witbooi (Ward 6)	X	No comments recevied	N/A	N/A	N/A
Municipality					

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.
Cederberg Local Municipality (CLM)	X	No comments recevied	N/A	N/A	N/A
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e					
Department of Transport and Public Works (DTPW)	X	X	No comments recevied	N/A	N/A
SANRAL	X	X	No comments recevied	N/A	N/A
Communities	No community were identified within the study area.				
Dept. Land Affairs					
Department of Rural Development and Land Reform	X	X	No comments recevied	N/A	N/A
Traditional Leaders	N/A				
Dept. Environmental Affairs					
Department of Environmental Affairs and Development Planning (DEA&DP)	X	X	No comments recevied	N/A	N/A
Other Competent Authorities affected					

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 Agriculture, Forestry and Fisheries	X	No comments received	N/A	N/A	N/A
Department of Economic Development and Tourism	X	No comments received	N/A	N/A	N/A
Department of Labour	X	No comments received	N/A	N/A	N/A
Department of Social Development	X	No comments received	N/A	N/A	N/A
Department of Water and Sanitation	X	No comments recevied	N/A	N/A	N/A
CapeNature	X	No comments recevied	N/A	N/A	N/A
Heritage Western Cape (HWC)	X	No comments recevied	N/A	N/A	N/A
South African Heritage Resources Agency	X	No comments received	N/A	N/A	N/A
West Coast District Municipality (WCDM)	X	No comments received	ℑ N/A	N/A	N/A
OTHER AFFECTED PARTIES					
N/A					
INTERESTED PARTIES					
N/A					

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, Clanwilliam normally receives about 369 mm of rain per year, with most rainfall occurring mainly during winter. The chart below shows the average temperature and rainfall values for Clanwilliam per month. It receives the lowest rainfall (5 mm) in February and the highest (57 mm) in June. The monthly distribution of average daily maximum temperatures (centre chart below) shows that the average midday temperatures for Clanwilliam range from 18 °C in July to 35°C in February. The region is the coldest during July when the mercury drops to 3°C on average during the night.

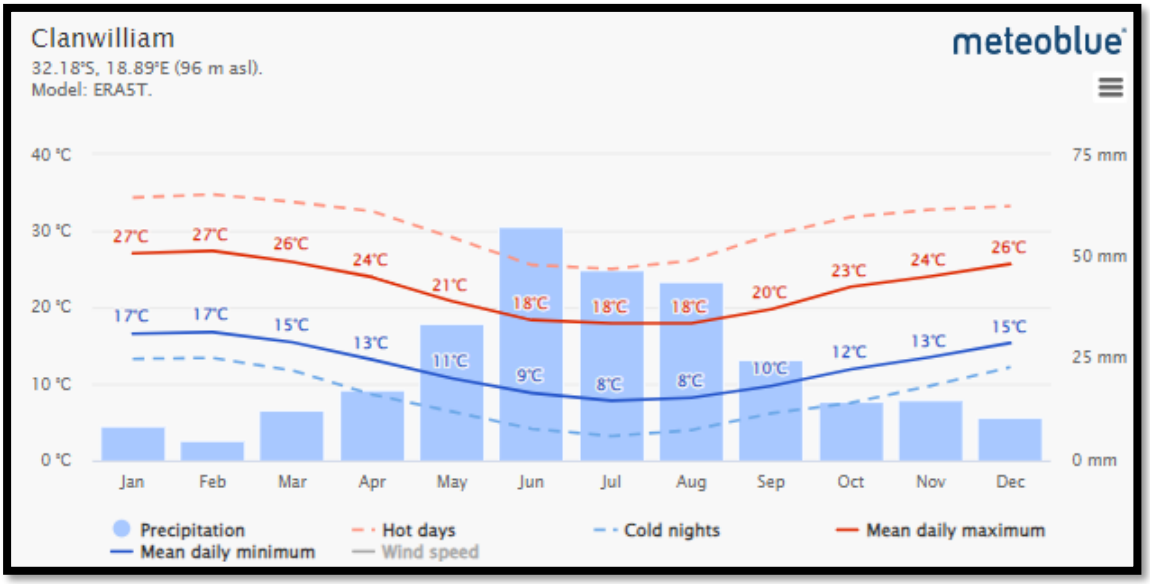

Figure 8: Statistical representation of the average temperature and precipitation for the Clanwilliam region (Chart obtained from https://www.meteoblue.com/en/weather/historyclimate/climatemodelled/clanwilliam_south-africa_3369100).

The wind patterns in Clanwilliam are highly variable and influenced by seasonal changes. According to the wind statistics as presented on Windfinder.com the prevalent wind direction distribution of Clanwilliam is in a west, south-western direction from December to March. In April, September and October the wind changes direction to south-south-east, while the dominant direction is north-north-west from May to August.

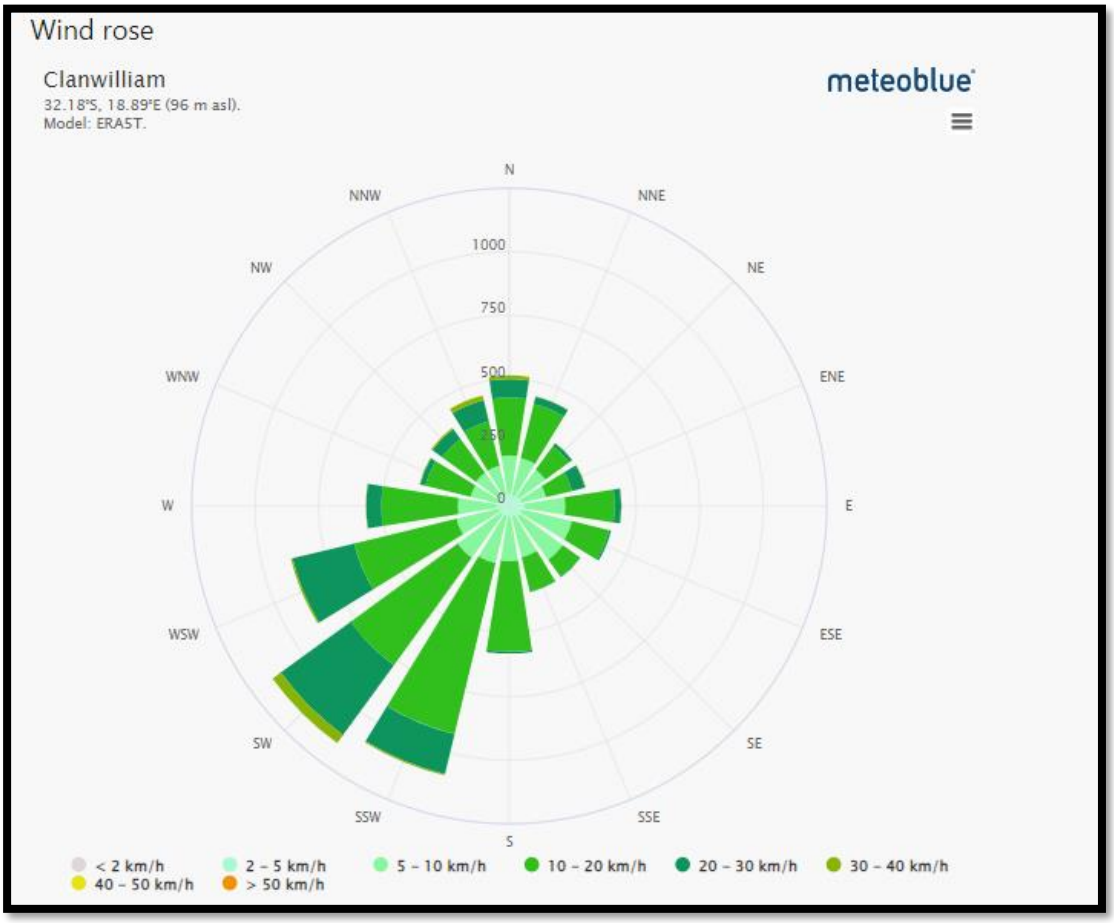

Figure 9: Image showing the dominant wind direction (first panel) and average wind speed over a 12 month period for the Clanwilliam area (image obtained from https://www.meteoblue.com/en/weather/historyclimate/climatemodelled/clanwilliam_south-africa_3369100)

TOPOGRAPHY

The natural topography of the area surrounding the proposed sand mine is best described as an undulating sandy landscape covered with shrublands. The surface elevation of the study area decreases towards the north (non-perennial drainage line), east (national road N7), and south-east (Olifants River) as shown in the figures below. The elevation loss from the proposed mining footprint to the town of Clanwilliam to be 143 m over 6.27km.

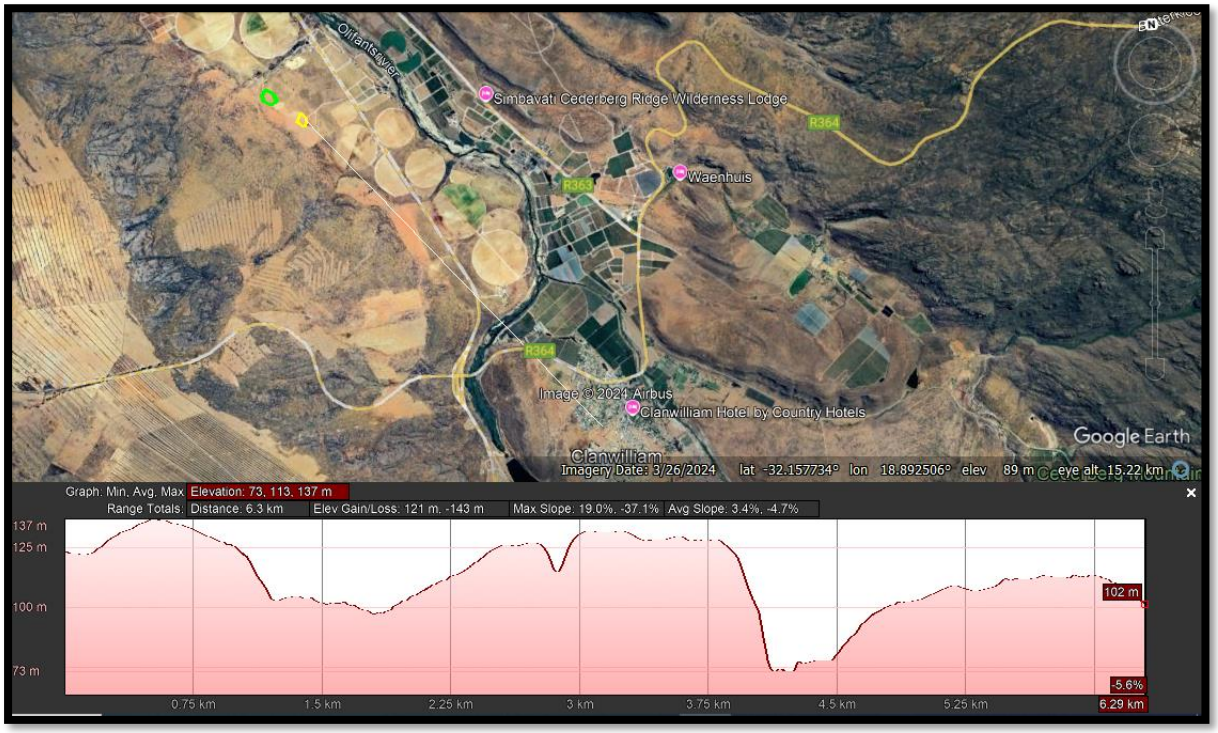

Figure 10: Elevation profile showing the topography between the proposed mining footprint (white line) and the town of Clanwilliam (Image obtained from Google Earth

VISUAL CHARACTERISTICS

The visual character of the surrounding areas mainly comprises of an agricultural setting, intersected by pivots, the N7 national road, and the 1.7 ha sand mining area. The aesthetic ambiance of the area is that of a rural area with highly natural landscapes.

AIR AND NOISE QUALITY

The air quality of the study area is generally very good given the area's predominant agricultural use and rural character. Likewise, the noise ambiance is very low (classified as ambient rural / pastoral) with noise levels mainly affected by traffic along the N7, and the farming equipment operational in the area.

GEOLOGY AND SOIL

The geology of the study area comprises mostly sediments of the Table Mountain Group (at depth) overlain with Cenozoic sands of the Sandveld Group. The underlying sediments consist of the Nardouw Supergroup which are light-coloured quartzitic sandstones. As seen in the figure below the geological map for the Council of Geoscience shows very little detail and omits the overlying Cenozoic sand cover of the study area.

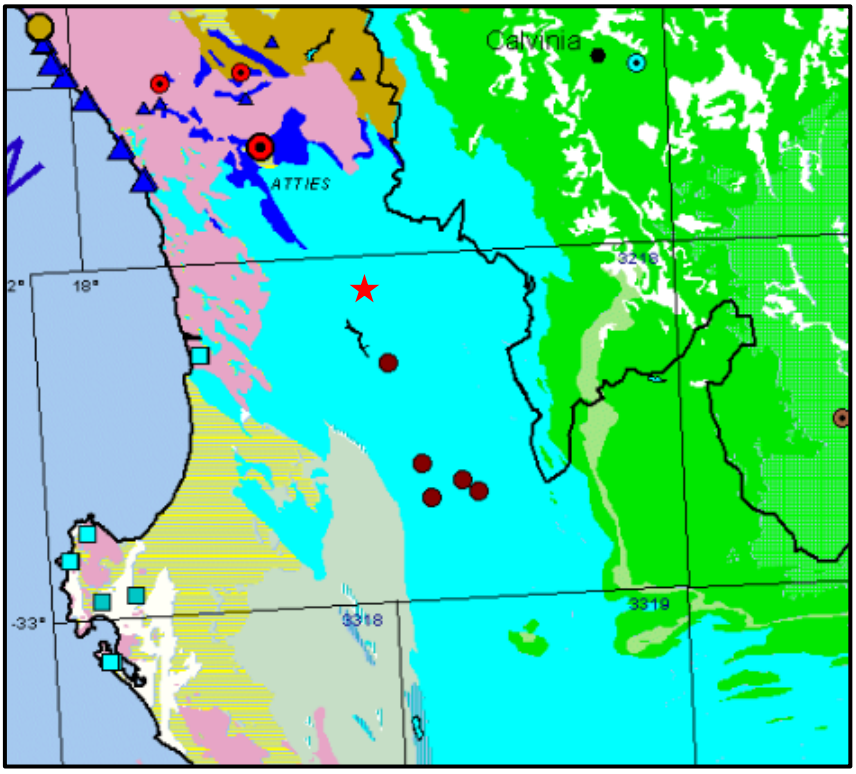

Figure 11: Indication of the simplified geology of the study area, where light blue represents Cape Supergroup, pink the Namaqua Metamorphic Provinces, green the Dwyka and ECC Groups, and the yellow lined area represents the Cenozoic Deposits. The proposed mining area is indicated by the red star. (Image obtained from the Council for Geoscience)

HYDROLOGY

The earmarked mining area is situated within the Olifants D sub water management area that forms part of the greater Olifants-Doring water management area. According to the National Freshwater Ecosystem Priority Areas (NFEPA) map as presented by SANBI, the NFEPA status of the study area (S1) is classified as a no priority area.

A non-perennial drainage line passes towards the north (±510 m from S1) before it joins up with the Olifants River on the opposite (eastern) side of the N7. The drainage line is classified as a channelled valley-bottom wetland on the National Wetland and NFEPA map viewer of BGIS. No other wetlands or other drainage lines were identified within a 500 m radius of the study area (S1). The figure below shows the position of the non-perennial stream and Olifants River that occur within the surrounding area.

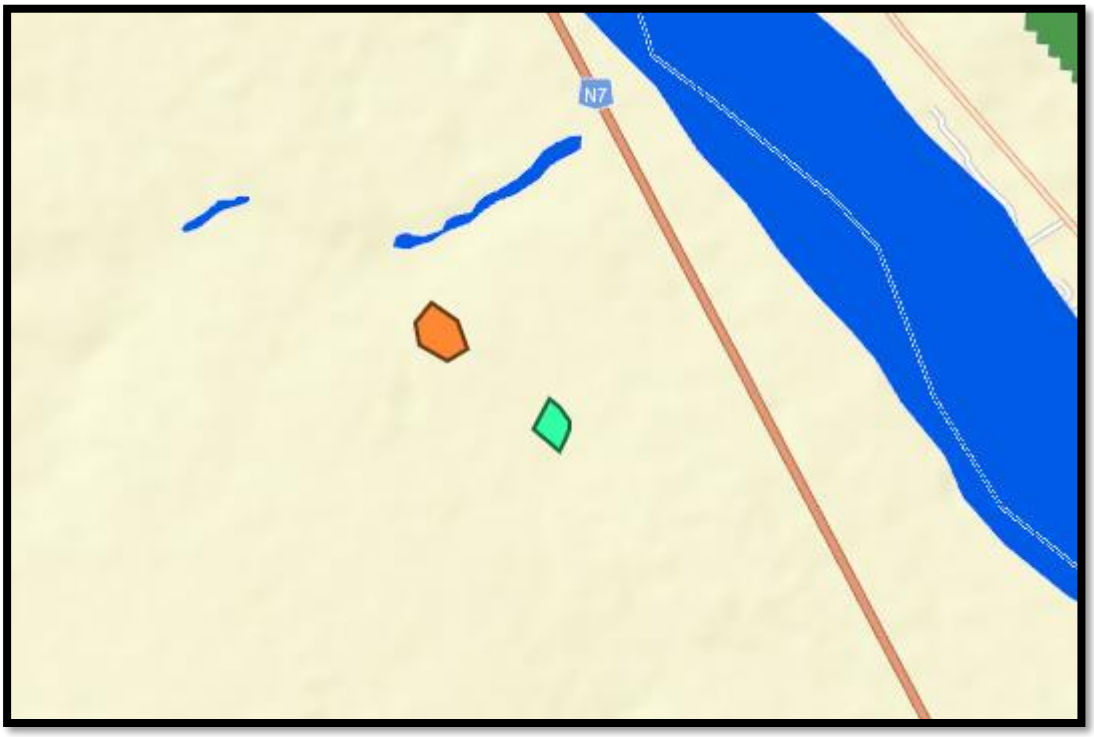

Figure 12:Map showing the proposed mining footprint S1 (green polygon) and S2 (brown polygon) in comparison with the Olifants river area. (Image obtained from BGIS map viewer)

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 footprints of both S1 and S2 are layered over the Mining and Biodiversity Map, as shown in the figure below, it falls over and area of highest 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.

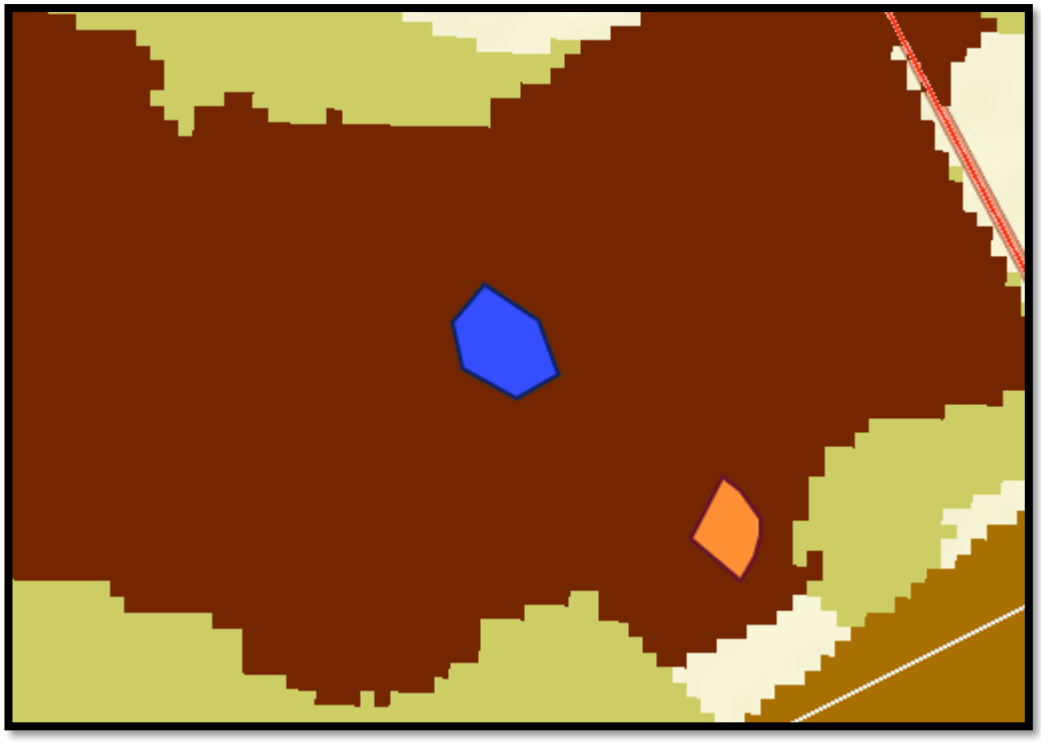

Figure 13: The Mining and Biodiversity importance map with the proposed mining footprint (S1) indicated by the orange polygon and S2 indicated by the blue polygon. Dark brown – highest biodiversity importance, highest risk for mining, light brown – high biodiversity Importance, high risk for mining, sand colour – moderate biodiversity importance, moderate risk for mining.

BIODIVERSITY CONSERVATION AREAS

The 2017 Western Cape Biodiversity Spatial Plan (WCBSP) shows the following areas of importance occurring within/nearby the study area (see figure below):

- Cederberg CBA1: Terrestrial
- Cederberg ESA1: Terrestrial
- Cederberg ESA2: Terrestrial
- Cederberg CBA1: Aquatic
- Cederberg ESA1: Aquatic

The Lexicon of Biodiversity Planning in South Africa provides the following definitions:

- Critical Biodiversity Area (CBA)*: "an area that must be maintained in a good ecological condition in order to meet biodiversity targets. CBA's collectively meet biodiversity targets for all ecosystem types as well as for species and ecological processes that depend on natural or near-natural habitat, that have not already been met in the protected area network."*

- Ecological Support Area (ESA): "*an area that must be maintained in at least fair ecological condition (semi-natural/moderately modified state) in order to support the ecological functioning of a CBA or protected area, or to generate or deliver ecosystem services, or to meet remaining biodiversity targets for ecosystem types or species when it is not possible or not necessary to meet them in natural or near-natural areas.".*

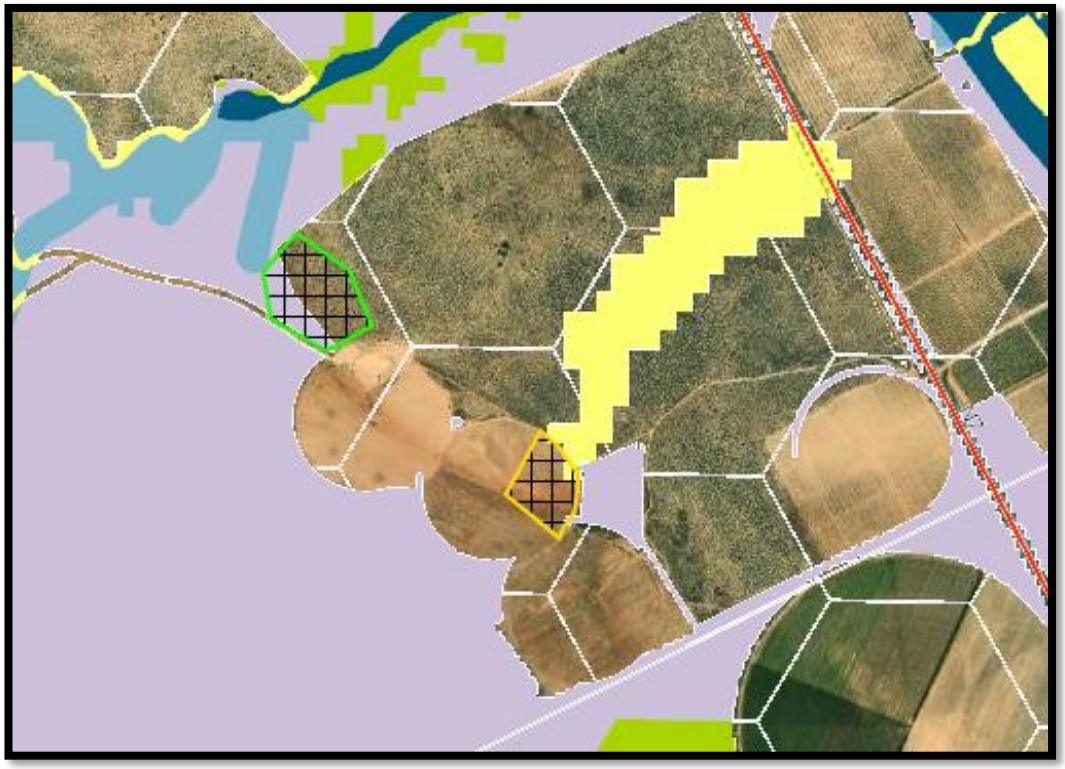

Figure 14: 2017 Western Cape Biodiversity Spatial Plan showing the preferred mining area (S1) (yellow polygon), as well as site alternative 2 (green polygon) in relation to the Cederberg ESA 1 (purple), Cederberg ESA 2 (yellow), Cederberg CBA 1 (green), Cederberg ESA: Aquatic (light blue), and Cederberg CBA: Aquatic (dark blue). (Image obtained from BGIS Map Viewer – 2017 Western Cape Biodiversity Spatial Plan).

GROUNDCOVER

According to Mucina and Rutherford (2012) the vegetation type of the natural areas is classified as Leipoldtville Sand Fynbos (FFd2). The vegetation and landscape features of this vegetation type is characterised by fairly dense, 1 – 1.2 m tall restiolands, with numerous medium tall to low shrubs scattered in between. The vegetation type is a dry form of sand fynbos lacking Ericaceae with proteoid elements relatively rare.

Some of the important taxa found in this vegetation type include tall shrubs such as *Aspalathus acuminata, Leucadendron pubescens, Chrysanthemoides monilifera, Diospyros glabra, Euclea racemosa, and Euryops speciosissimus*. Low shrubs includes *Aspalathus divaricata, Diosma acmaeophylla, Eriocephalus africanus, Anthospermum galioides, Metalasia adunca, Nenax arenicola*, and *Phylica cephalantha*. Succulent shrubs: *Rushia decurbans, Crassula nudicaulis, Euphorbia burmannii.*

The vegetation type is classified as Endangered and according to Mucina and Rutherford (2012) none of the unit is conserved in statutory or private conservation areas. 55% of the vegetation type has already undergone transformation, including

cultivation with central pivot irrigation and pastures. A conservation target of 29% was set for the vegetation type.

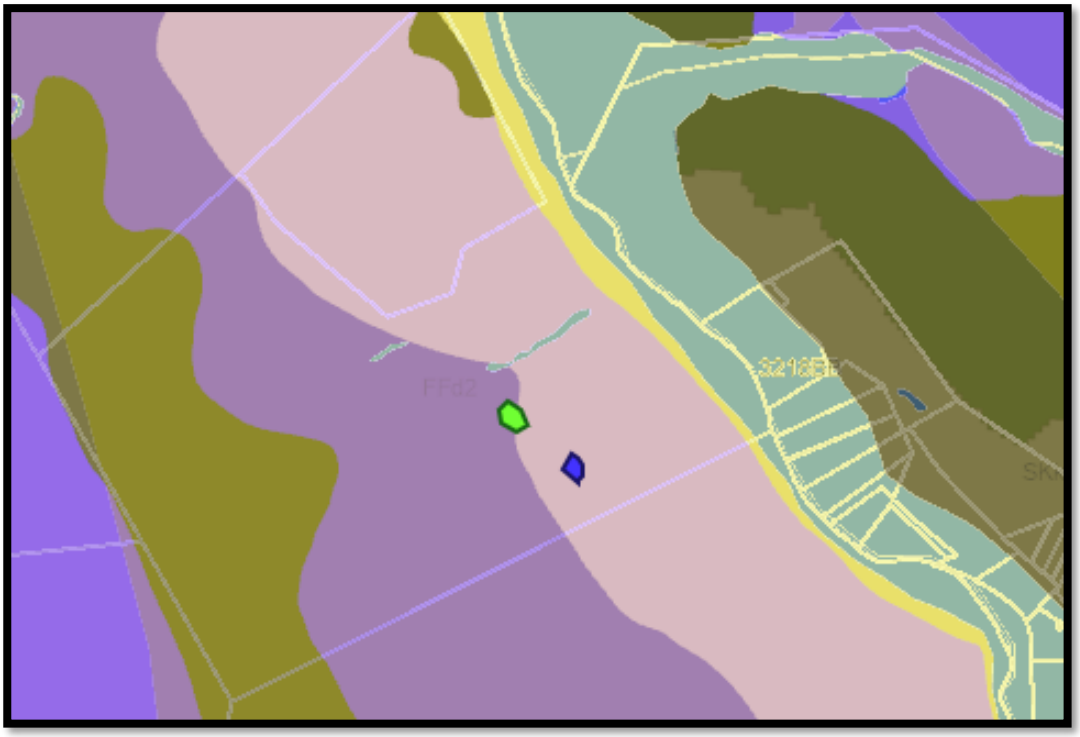

Figure 15: National vegetation cover map for FFd2 Leipoldtville Sand Fynbos (light purple). (Image obtained from BGIS Map Viewer – National Vegetation Map).

FAUNA

The resident fauna identified during the site inspection mainly comprise of natural occurring small mammals, reptiles and various bird species. The faunal action is mainly contained to the natural vegetated areas and riparian areas along the non-perennial stream and the banks of the Olifants River. Due to the altered nature of the mining area, no protected or red data species were identified to be resident within the proposed footprint.

HUMAN ENVIRONMENT:

CULTURAL AND HERITAGE ENVIRONMENT

No sites of archaeological or cultural importance were identified during the site inspection, and consultation with the interested and affected parties also did not identify any potential area of concern. The potential impact of the proposed mining activities on the cultural and/or heritage environment is therefore deemed to be insignificant, however the Applicant will implement a chance-find protocol on site for the duration of the site establishment-, operational- and decommissioning phase.

A Needs and Desirability Application Form will be submitted to SAHRIS to inform them of the proposed project and obtain their comments.

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 high (orange) concern as presented in the figure below.

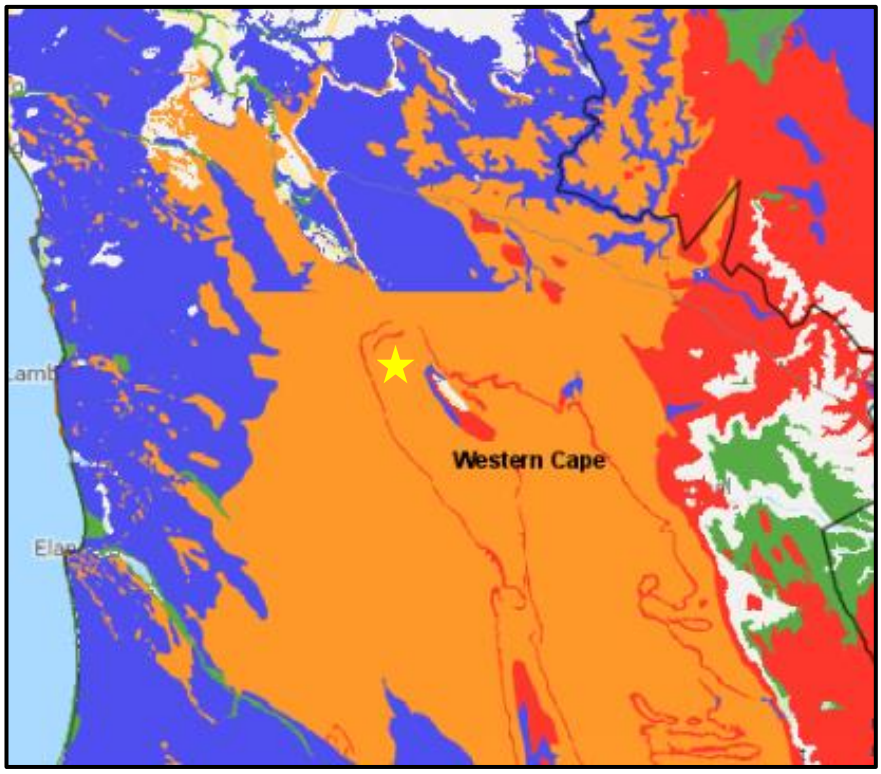

Figure 16: The SAHRA palaeontological sensitivity map shows the proposed mining footprint (yellow star) falls in an area of high concern.

SOCIO-ECONOMIC ENVIRONMENT

(The following information extracted from the Revision to the Fourth Generation Integrated Development Plan (IDP) of Cederberg Municipality 2023-2024)

The proposed mining area is located within ward 6 of the Cederberg Local Municipality (CLM). The CLM forms part of the West Coast District Municipality and is located in the northern segment of the district wedged between the Matzikama municipality and the Bergrivier Municipality.

The following table provides a summary of key datasets for the municipal area:

Table 11: Summary of Socio-economic profiles for the Cederberg Local Municipality (obtained from the (IDP) of Cederberg Municipality 2023-2024)

Social context	
Total number of learners enrolled in 2019 (West Coast District)	65 000 (62 958 in 2018)
Total number of learners enrolled in 2019 (Cederberg)	7 889 (7 710 in 2017)
Average learner retention rate (West Coast District)	68.7% (2019)
Average learner retention rate (Cederberg)	69.6% (2019)
Total number of educators in 2016 (West Coast District)	2 081 (less than in 2014)
Total number of public schools in 2019 (West Coast District)	123 (declined from 125 in 2017)
Total number of public schools in 2019 (Cederberg)	23
Total number of schools in 2016 (West Coast District)	138 (2 schools less than in 2014)
Number of no-fee schools (Cederberg)	78.2%
Matric outcomes -pass rate 2019 (West Coast District)	83.9% (82% in 2018)
Matric outcomes -pass rate 2019 (Cederberg)	87.5% (85.1% in 2017)
Labour force participation rate (percentage) within the municipal area (2019)	78.8% (70.09% in 2017)
Unemployment rates within the municipal area (2019)	7.9% (7.3% in 2017)
Income levels (typical income within the municipal area)	89.4% of households earn less than R153 801 per annum
Major travelling modes for the municipal community (by priority usage)	Foot, car as a passenger, car as a driver, minibus/taxi, bus, bicycle, train
Transportation needs and challenges	Provide reliable and cheap short and long-distance travel modes (feasibility restricted by public-transport ridership)
Public transport areas of need and mode type that could link development corridors or development areas	Minibus/taxi, bus
Socio-economic profile 2020	

Population Dynamics

The overall annual population growth rate in Cederberg Municipality for the 2011—2018 period was 2.6% with a slightly lower increase (2.5%) per annum in the number of households — indicating a slight increase in household size over this period. The population of Cederberg is 59 382 people in 2020, making it the least populated municipal area in the district.

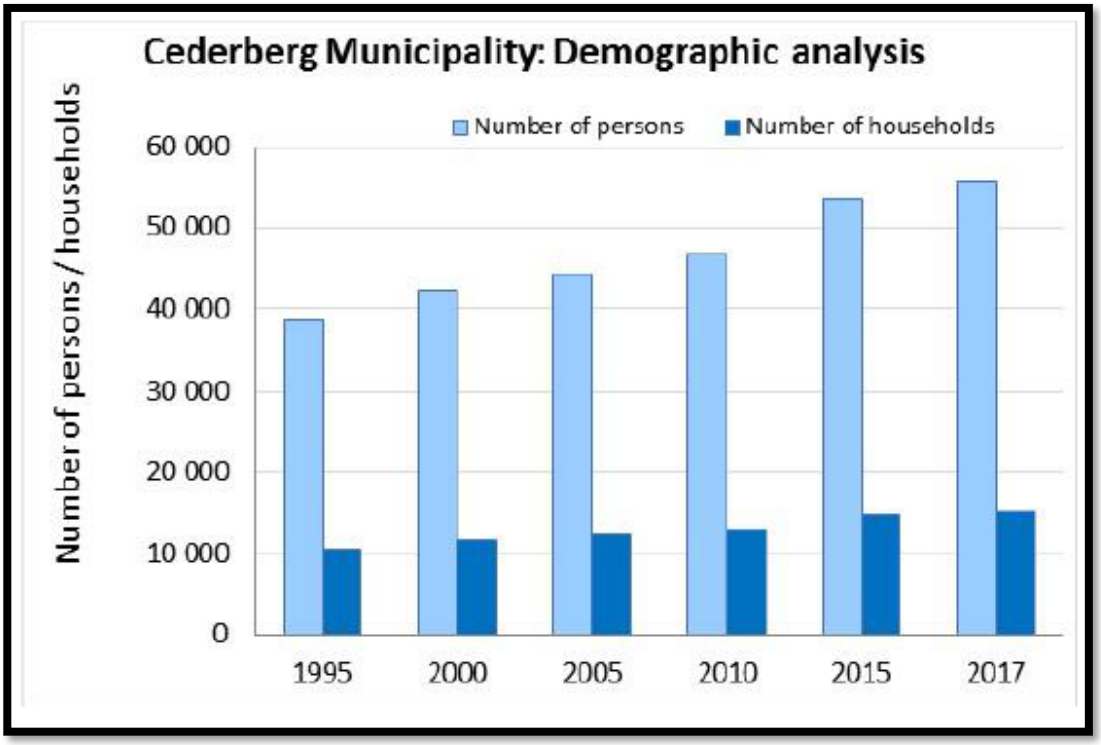

Figure 17: Demographic analysis (image obtained from the Cederberg IDP 2023-2024).

Clanwilliam, the largest town in the municipal area and had a population of close to 7 700 persons in 2011, with more than 2 300 households. The estimated need for subsidised housing in the town, together with Citrusdal, is more than 55% of the total need for low-cost housing in the municipal area.

Cederberg Municipality accounts for 13.3% of the population within the West Coast District in 2011 and 13.4% in 2018. In this regard, the availability of economic opportunities, within a growing economy, to especially young adults do impact on net population growth rates, i.e. jobseekers relocating to where economic opportunities are

Table 12:Demographics of the Cederberg municipal area (image obtained from the Cederberg IDP 2023 - 2024

Indicators	Black-African		Coloured		White		Asian	
	2011	2018	2011	2018	2011	2018	2011	2018
Population size	6 174	8 221	38 503	45 843	5 180	5 046	117	180
Proportional share of total population	12,6%	13,8%	76%	77%	10%	9%	0,2%	0,3%
Number of households by population group	2 238	2 922	9268	10 866	2 129	2 152	21	30
Source: Quantec								

Economic Profile

There is a substantial improvement in the number of persons with matric in the Cederberg municipal area. However, the number of persons with no schooling in 2017 was more than the comparative number in 2011. The biggest success in the education levels is the consistent increase in the number of pupils with a Grade 12 qualification. Cederberg's matric outcome has exceeded 80% in 2017 and 2019 recording figures of 85.1% and 87.5 % respectively.

Table 13:Education levels in the municipal area are indicated

Indicator		2001	2011	2017	%change (2011 to 2017)
Education	No schooling	4 728	4 715	5 647	19%
	Matric	4 537	5 797	7 045	55%
	Higher education (certificate with Grade 12 or better)	1 502	1 520	1 699	13%
Source: Quantec					

Economic Profile

The Cederberg Municipality is a relatively small economy, making up 12.7% of 2017 Gross Domestic Product (GDP) in the West Coast District. This contribution is a negligible proportion (less than 1%) of the Western Cape Province's economy in the same year. Notably, all the municipal areas in the West Coast District, except the Cederberg and Saldanha Bay municipal areas had contracting economies in 2016. The GDP growth in Cederberg municipal area is from a small base as this municipal area has the smallest economy in the district.

The percentage share contribution by the tertiary sector in 2017 to the total 'GVA' generated in the Cederberg municipal area is 51% (or R1 871 billion). The primary sector contributed 23.1% (or R847 million) and the secondary sector 25.9% (or R953 million). Between 2000 and 2015, every economic sector in Cederberg grew positively in terms of GVA contribution. The table below provides a summary by subsector of the municipality's GDP in 5-year increments from 1995. Also included are figures for 2016 and 2017 and growth rates over the last two years in which manufacturing was the only sector that contracted.

Table 14:GDP of the Municipality

Industry	Sector	1995	2000	2005	2010	2015	% Change (2000 to 2015)	2016	2017	% Change (2015 to 2017)
Agriculture, forestry and fishing	Primary	185	229	332	516	680	196%	765	838	10%
Mining (and	Primary	2	1	2	4	6	304%	6	8	35%
Manufacturing	Secondary	65	105	211	390	653	521%	709	682	-4%
Electricity, gas and water	Secondary	5	6	10	32	68	978%	71	79	12%
Construction	Secondary	12	19	36	76	163	770%	172	191	11%
Wholesale and retail trade, catering and accommodation	Tertiary	58	91	158	263	439	380%	482	515	7%
Transport, storage and communication	Tertiary	23	44	95	187	396	806%	420	459	9%
Finance, insurance, real estate and business services	Tertiary	35	67	152	251	334	396%	359	381	6%
General government	Tertiary	37	61	91	163	272	349%	297	320	8%
Community, social and personal services	Tertiary	17	32	61	115	169	421%	179	196	9%

A Location Quotient provides an indication of the comparative advantage of an economy in terms of its production and employment. An economy has a Location Quotient larger or smaller than one, or a comparative advantage or disadvantage in a particular sector when the share of that sector in the specific economy is greater or less than the share of the same sector in the aggregate economy. The Cederberg Municipality (in 2017) had a relatively high comparative advantage in the primary sector compared to the district (1.10), the province (5.6) and the country as whole (2.3) – an even bigger advantage than in 2016. This is normal given the nature of the primary sector in the area, which is essentially resource-based agriculture. At the secondary level, the 2017 Location Quotient for Cederberg also shows a comparative advantage compared to the district (1.00), province (1.2) and national (1.2) – explaining the negative growth in the manufacturing sector since 2015. An assessment of the tertiary sector suggests neither a comparative advantage nor disadvantage compared to the district (1.00), although comparative disadvantages exist compared to the Western Cape (0.7) and South Africa (0.7) – 2016 had a similar scenario.

A Tress analysis determines the level of diversification or concentration of the economy for a geographical area. A Tress Index of zero represents a totally diversified economy, while an Index of closer to 100 indicates a more concentrated or vulnerable economy to exogenous variables, such as adverse climatic conditions, commodity price fluctuations, etc. The 10 industry Tress Index (in 2017) for the Cederberg economy

hovers around 46, which suggests a slightly concentrated economy but diversification amongst certain economic sectors. The inclusion of additional subsectors to represent either 22 or 50 industries (74.2 and 76.7 respectively), result in rather different outcomes, whereby the local economy is more vulnerable and susceptible to exogenous factors.

The district's Tress Index of around 43 as measured by 10 industries suggests that the district economy is slightly more diversified in terms of this metric. The measurements by 22 and 50 industries show largely the same pattern as in the local economy of Cederberg Municipality

Employment

The graph below shows a slight decrease since 1995 in the number of the persons (formally) employed in Cederberg Municipality. The 2017 figure was, however, substantially higher than in 2010, i.e. more job opportunities available and taken-up in 2017. The unemployment rate of 7.3% in 2017 was slightly higher than the rate of 7.0% in 2010 and in 2019 this rate increased to 7.9%. It is estimated that Cederberg's total labour force will in 2019 amount to 46 837 workers of which 36 897 (78.8%) are in the formal sector while 9 940 (21.2%) are informally employed.

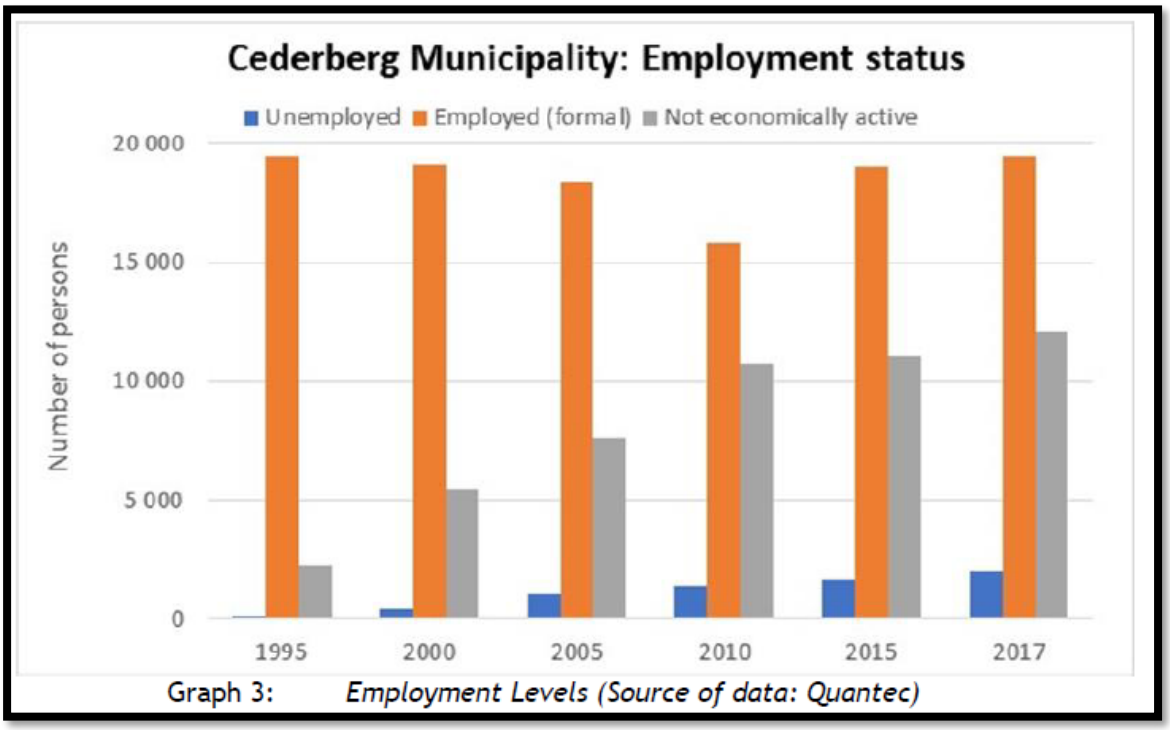

Figure 18: Employment Levels in the Cederberg Municipality (image obtained from the Cederberg IDP 2023 - 2024).

(b) Description of the current land uses

Portion 2 (Remaining Extent) of Farm 199 RD is situated in a rural setting intersected by the N7 national road along the north-eastern boundary. The land use of the property mainly comprises of potato/wheat farming under irrigation and grazing of the uncultivated areas. The centre pivot irrigated lands, across which the S1 footprint extends, was developed from before 2012 to 2013, and has been used for the cultivation of potatoes, wheat and perennial pastures. The land use of the property was also extended to include small scale mining

Likewise, the main land use of the surrounding properties is agricultural. The Olifants River valley is a major economic corridor mainly based on intensive irrigation farming, transport infrastructure and tourism.

The following table provides a description of the land uses and/or prominent features that currently occur within a 500 m radius of S1 & S2:

Table 15: 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. (S1 & S2)
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**	-	Site Alternative 1: The existing sand mine is ±13m from mining boundary to the proposed 1.7 ha mining area.
Quarry, sand or borrow pit	**YES**	-	Site Alternative 2: The footprint of S2 is ±32m from the existing mining area.
Dam or reservoir	-	**NO**	
Hospital/medical centre	-	**NO**	
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**	The N7 (less than 4 lanes) pass S1 ±723 m to the north, north-east, and S2 ±914 m to the north-east.
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 footprints of S1 and S2 fall over an agricultural active area. • S1 – centre pivot irrigation; • S2 – grazing.
River, stream or wetland	-	**NO**	Site Alternative 1: The non-perennial drainage line is ±926 m from the S1 footprint.
River, stream or wetland	**YES**	-	Site Alternative 2: The non-perennial drainage line is ±235 m from the S2 footprint.
Nature conservation area	-	**NO**	
Mountain, hill or ridge	-	**NO**	
Museum	-	**NO**	
Historical building	-	**NO**	

LAND USE CHARACTER	YES	NO	DESCRIPTION
Protected Area	-	**NO**	
Graveyard	-	**NO**	
Archaeological site	-	**NO**	
Other land uses (describe)	-	**NO**	

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

SPECIFIC ENVIRONMENTAL FEATURES

SITE SPECIFIC TOPOGRAPHY

The natural topography of both site alternative 1 and 2 is relatively flat, with an average slope of 0.5% applicable at S1 (122 mamsl at the northern corner to 122 mamsl at the southern corner) and a slope of 2.3% applicable to S2 (124 mamsl at the western corner to 135 mamsl at the eastern corner) as shown in the figures below.

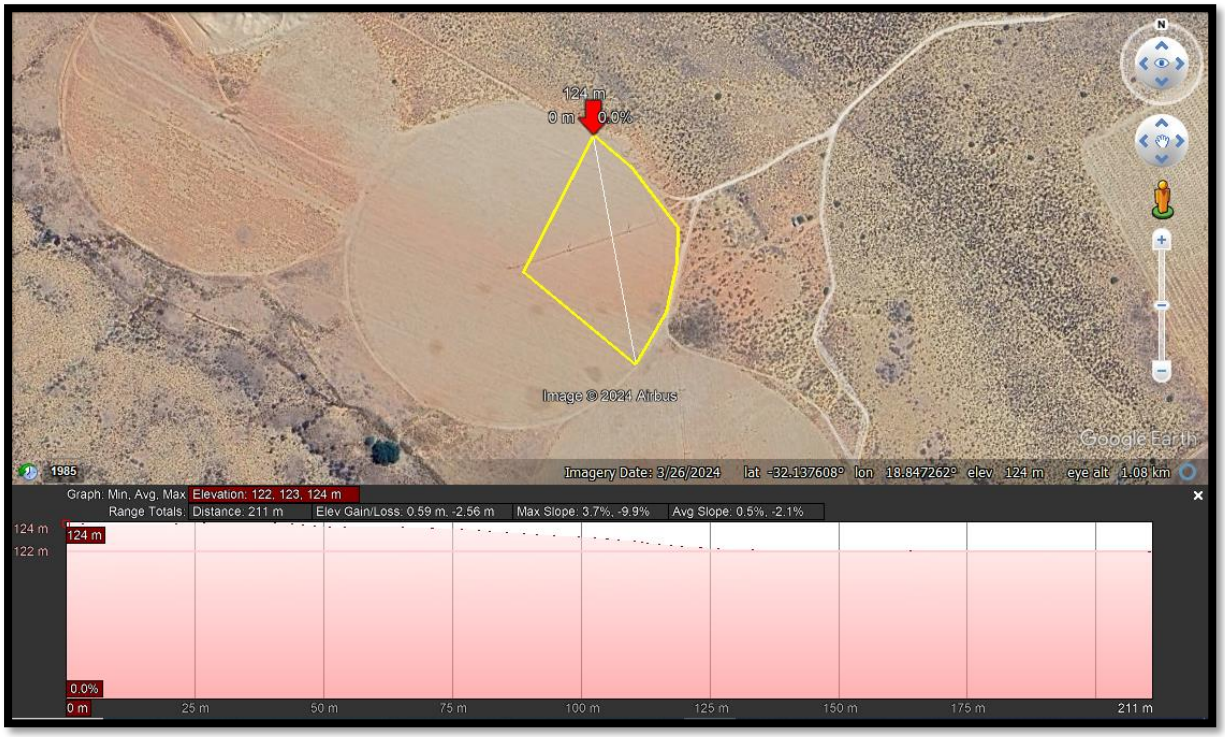

Figure 19: Elevation profile of site alternative 1 (Image obtained from Google Earth).

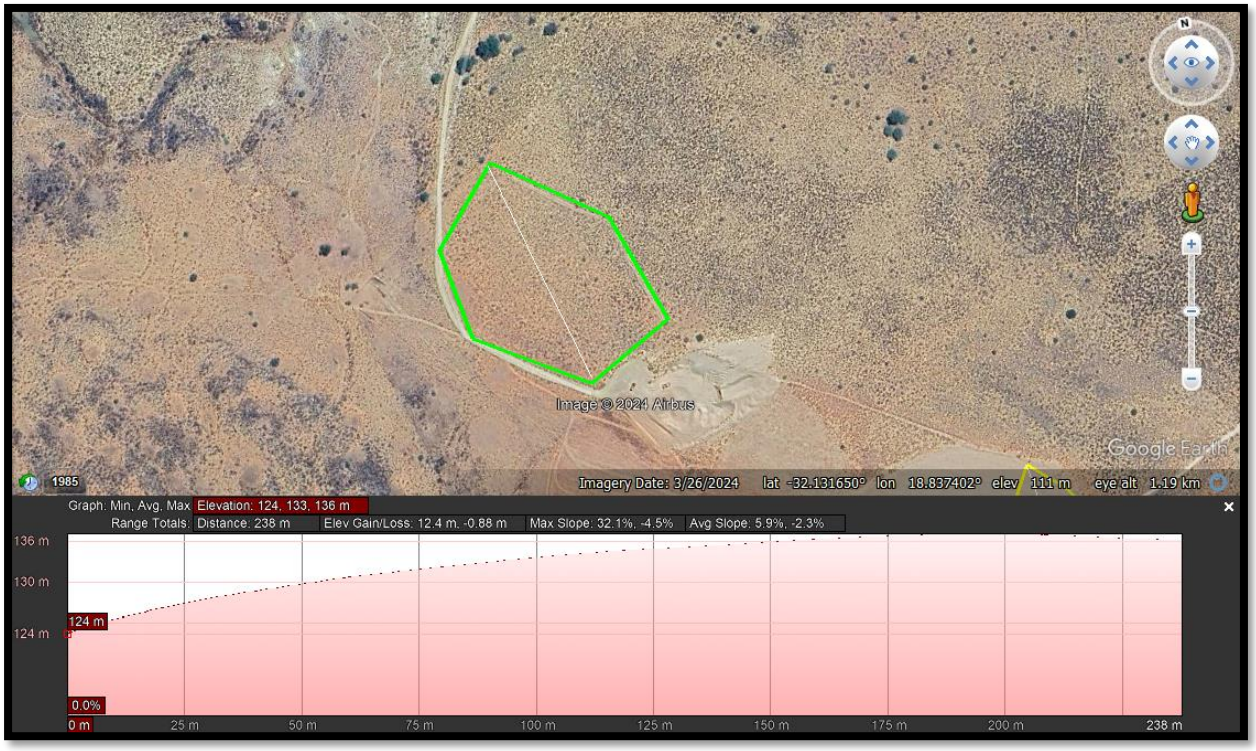

Figure 20: Elevation profile of site alternative 2 (Image obtained from Google Earth).

Therefore, drainage from S1 will be in a western direction, while S2 will drain naturally towards the non-perennial stream in the south.

SITE SPECIFIC VISUAL CHARACTERISTICS

The footprint of Site alternative 1 (S1) will mainly be visible from high-ground areas along the north-east to east, as well as a few areas within close proximity to the north-west, and/or south. The mining area (S1) will not be visible from the N7 national road.

The figure below shows the viewshed analysis for the S1 footprint within a ±10 km radius. 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 sand mining operation (S1) will be of low-medium significance, especially as it will be developed within the footprint of existing pivots. The small scale of the proposed operation, the implementation of progressive rehabilitation, as well as the fact that no infrastructure will be establish contributes to the low visual significance. As the landowner will continue with the use of the area for cultivation purposes, no residual visual impact is expected upon closure of the mine.

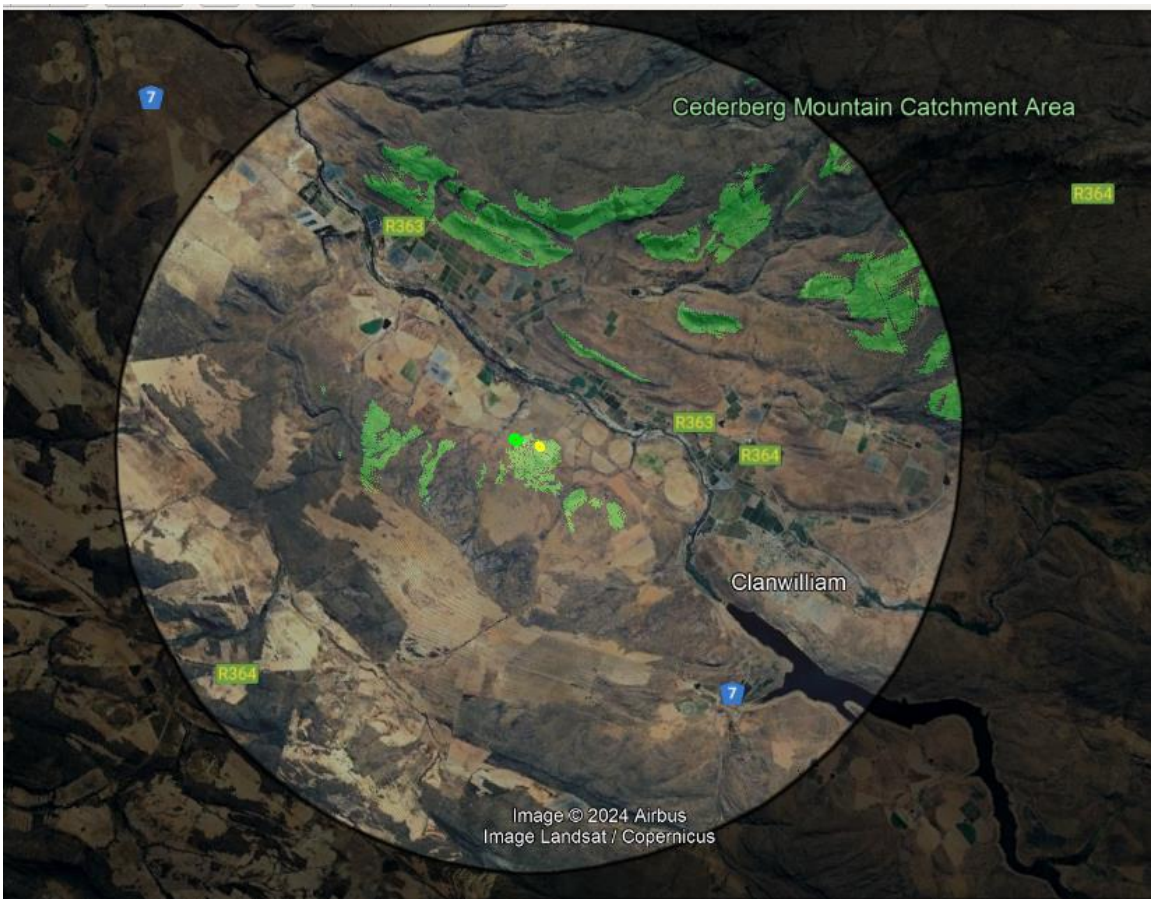

Figure 21: Viewshed of site alternative 1 and site alternative 2 where the green shaded areas show the positions from where the mining area (red polygon) will be visible. (Image obtained from Google Earth).

SITE SPECIFIC AIR AND NOISE QUALITY

The residential dwelling nearest to the proposed footprint of site alternative 1 is opposite the N7 (east) approximately 700m away. From the S2 footprint the farmyard of Mr Smith lies approximately 1.42 km towards the north (opposite the non-perennial stream). Currently the air quality of the study area is impacted on by farming operations as well as the traffic along the N7.

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 of one front-end-loader and an ADT truck 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.

As mentioned earlier, the proposed activity will require the use of one front-end-loader that will load the sand onto an ADT truck that will transport it from site. An excavator

will be used when needed. 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 (S1 & S2) from residential infrastructure further lessens the potential noise impact.

SITE SPECIFIC GEOLOGY AND SOIL

(Information extracted from the Assessment of the impact of sand mining on agricultural potential on Portion 2 of RE of Farm number 199, near Clanwilliam, 2019 report which can be made available upon request and 2024 report included as Appendix G)

The site-specific underlying geology of the area is quartzitic sandstone with minor grit, conglomerate and shale lenses of the Piekenierskloof Formation; Table Mountain Group, covered by aeolian sand. The soils are very deep, well-drained, orange-yellow coloured, very sandy soils. They are of the Clovelly 1100 soil family, as classified by the South African soil classification system. The 2019, AIA mentions that based on an investigation of the excavation at the existing mine, the sands are very uniform to a depth of about 8 metres, below which there is a gradual increase in the clay content.

The soils are limited by the very low clay content and leaching of the upper soil horizons and therefore have a low water and nutrient holding capacity. As a result, they have a low to medium agricultural potential and are rated between 4 and 5 out of 10 according to the system used by Western Cape soil scientists. However, because of their very low water holding capacity, they are highly dependent on effective irrigation for the cultivation of crops.

The land capability of the investigated area varies between land capability evaluation values of 3 and 6, but is predominantly 4 and 5, which is very low to low. The grazing capacity of the natural veld is very low at 66 hectares per large stock unit. The future agricultural potential, in terms of warming predictions, of this zone, which is Olifants irrigation, is rated as remaining viable as long as river flows and dams fill up, but it will be constrained by heat.

An assessment of soils and long-term agricultural potential is in no way affected by the season in which the assessment is made, and therefore the date on which this assessment was done has no bearing on its results. The level of agricultural assessment is considered entirely adequate for an understanding of on-site agricultural production potential for the purposes of this assessment.

SITE SPECIFIC HYDROLOGY

As mentioned earlier, the foremost watercourse within close proximity to the study area is the non-perennial drainage line towards the north. The nearest corner of S1 to the non-perennial stream lays ±793 m away, with the nearest boundary of S2 being 235 m away. The Olifants River passes the study area on the opposite side of the N7.

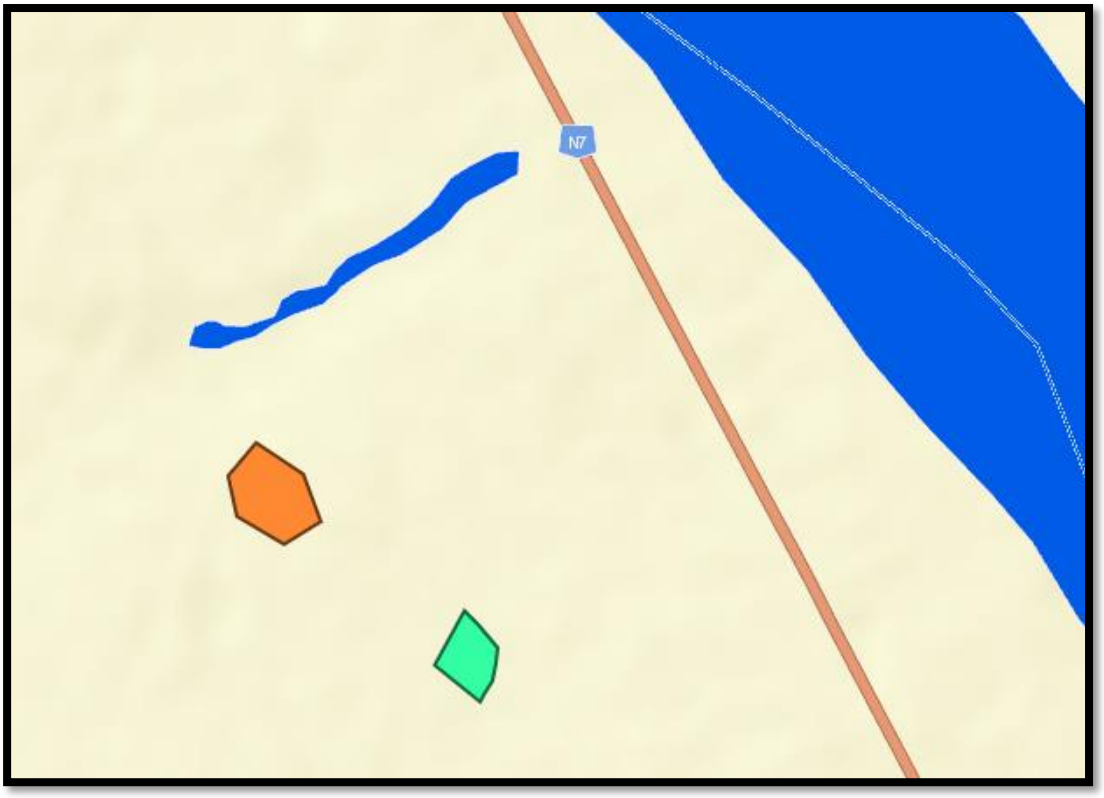

Figure 22: Satellite view showing the position of site alternative 1 (green polygon) and S2 (brown polygon) in relation to the non-perennial stream on the property. (Image obtained from Google Earth)

The drainage line is classified as a channelled valley-bottom wetland on the National Wetland and NFEPA map viewer of BGIS, and mining within 500 m of a wetland requires a water use authorisation in terms of Section 39 of the National Water Act, 1998 (Act No 36 of 1998) for water uses as defined in section 21 (c) and section 21 (i).

Should the proposed operation be established within the footprint of S1, and the permit holder contain all activities to the approved mining boundary no impact on the non-perennial stream could be identified. Due to the close proximity of S2 to the watercourse, an application in this area will require water authorisation from DWS.

As mentioned earlier, the proposed operation will require very little water. Water use will mainly be for dust suppression (when needed) along the access road. Water needed at the mining operation will be bought and transported to the farm in a water truck.

SITE SPECIFIC MINING AND BIODIVERSITY CONSERVATION AREAS

As mentioned earlier, when the mining footprints of both S1 and S2 is layered over the Mining and Biodiversity Map, it falls over and area of highest biodiversity importance with a corresponding rating of highest risk for mining. The High Biodiversity Importance area (in terms of the Mining and Biodiversity Guideline) does however not corresponds with the boundaries of the CBA's and ESA's identified in terms of the Western Cape Biodiversity Spatial Plan, which excludes the footprint of S1 from significant conservation areas (refer to Figure 15).

In order to avoid an impact on either the CBA's (terrestrial & aquatic) or the ESA's (terrestrial) it is proposed that S1 be considered for approval, as it does not extent over an area of conservation concern and has previously been disturbed by agricultural activities.

SITE SPECIFIC GROUNDCOVER

Although the earmarked mining area lays within the Leipoldtville Sand Fynbos vegetation type, the site-specific groundcover of S1 was highly altered by the cultivation of the area under centre pivot irrigation. No natural occurring fynbos remains within the footprint of S1 as shown in the photographs below.

Figure 23: Photographs of the S1 footprint showing the lack of groundcover

In contrast with the altered groundcover of S1, the groundcover of S2 is in a near-natural state with a well-established plant layer that represents the dominant vegetation of the Leipoldtville Sand Fynbos (FFd2) as classified by Mucina and Rutherford (2012).

Figure 24: Photographs showing the vegetation cover of site alternative 2.

Should the footprint of S1 be considered for approval, the potential impact on the endangered Leipoldtville Sand Fynbos is of low significance, however, should the mining area be established within the footprint of S2 the impact will be of high significance. Due to the endangered status of the Leipoldtville Sand Fynbos it is proposed that the mining activities are not developed within the footprint of S2, and that the Applicant declare all areas outside the footprint of S1 as no-go areas.

SITE SPECIFIC FAUNA

The site-specific fauna of the study area represents the fauna of the surrounding environment, and no protected or red data species were identified to be resident within the proposed footprint area.

The fauna at the site will not be impacted on by the proposed mining activity as they will be able to move away or through the site, without being harmed. Workers must be educated and managed to ensure that no fauna at the site is harmed.

SITE SPECIFIC CULTURAL AND HERITAGE ENVIRONMENT

As mentioned earlier, no sites of archaeological or cultural importance were identified during the site inspection, and consultation with the interested and affected parties also did not identify any potential area of concern. The potential impact of the proposed mining activities on the cultural and/or heritage environment is therefore deemed to be insignificant, however the Applicant will implement a chance-find protocol on site for the duration of the site establishment-, operational- and decommissioning phase.

A Needs and Desirability Application Form will be submitted to SAHRIS in October 2024 to inform them of the proposed project and obtain their comments.

SITE SPECIFIC INFRASTRUCTURE

Site alternative 1 lays over an area under pivot irrigation and the only infrastructure of importance is that of the centre pivot.

Site alternative 2 was previously dedicated to dry land sowing and potato farming.

(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 B.

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.

Alteration of the agricultural sense of place

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Partial**	
3	4	1	2.6	1	5	3	**7.8**
Rating: Medium-High			**Site Alternative 2**			**Degree of Mitigation: Partial**	
3	4	1	2.6	1	5	3	**7.8**

Loss of agricultural land for duration of mining

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
Rating: Medium-High			**Site Alternative 1**			**Degree of Mitigation: Partial**	
3	4	4	3.7	5	5	5	**18.5**
Rating: Medium-High			**Site Alternative 2**			**Degree of Mitigation: Partial**	
3	4	4	3.7	5	5	5	**18.5**

Visual intrusion as a result of site establishment

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Partial**	
1	2	2	1.7	5	5	5	**8.5**
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Partial**	
1	2	2	1.7	5	5	5	**8.5**

Loss of Leipoldtville Sand Fynbos to access the mineral

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
5	4	5	4.7	1	1	1	**4.7**
Rating: High			**Site Alternative 2**			**Degree of Mitigation: No Mitigation**	
5	4	5	4.7	5	4	4.5	**21**

Potential negative impact on the CBA's and ESA's

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
5	4	5	4.7	1	1	1	**4.7**
Rating: High			**Site Alternative 2**			**Degree of Mitigation: No Mitigation**	
5	4	5	4.7	5	4	4.5	**21**

Loss of topsoil and fertility during mining and stockpiling

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	5	1	3	4	2	3	**9**
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	5	1	3	4	2	3	**9**

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

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	4	2	3	4	2	3	**9**
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	4	2	3	4	2	3	**9**

Potential impact on fauna within the footprint area

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	4	1	2.3	3	2	3.5	**8**
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	4	1	2.3	3	2	3.5	**8**

Dust nuisance as a result of the mining activities

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	4	2	2.7	3	3	3	**8.1**
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	4	2	2.7	3	3	3	**8.1**

Noise nuisance as a result of the mining activities

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Partial**	
2	4	2	2.7	1	5	3	**8.1**
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Partial**	
2	4	2	2.7	1	5	3	**8.1**

LOADING AND HAULING OF SAND FROM THE MINING FOOTPRINT

Creating steep slopes and uneven surfaces

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

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

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	4	2	3	4	2	3	**9**
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	4	2	3	4	2	3	**9**

Soil contamination from hydrocarbon spills

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	5	1	3.3	3	1	2	**6.6**
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
4	5	1	3.3	3	1	2	**6.6**

Disturbance to fauna within the footprint area

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	4	1	2.3	3	2	3.5	**8**
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	4	1	2.3	3	2	3.5	**8**

Dust nuisance as a result of the mining activities

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	4	2	2.7	3	3	3	**8.1**
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	4	2	2.7	3	3	3	**8.1**

Noise nuisance as a result of the mining activities

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	4	2	2.7	1	5	3	**8.1**
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	4	2	2.7	1	5	3	**8.1**

Potential impact associated with littering at the mining area

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

Deterioration of the access road to the mining area

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

Potential impact on areas/infrastructure of heritage or cultural concern

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	5	5	4.7	1	1	1	**4.7**
Rating: Low			**Site Alternative 2**			**Degree of Mitigation: Full**	
4	5	5	4.7	1	1	1	**4.7**

Increase in clay content and resultant water holding capacity of the soil **(Positive Impact)**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: N/A**	
1	5	1	2.3	5	5	5	**11.5**
			Site Alternative 2				
N/A							

Work opportunities to 3 local residents **(Positive Impact)**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium-High			**Site Alternative 1**			**Degree of Mitigation: N/A**	
1	4	5	3.3	5	5	5	**16.5**
Rating: Medium-High			**Site Alternative 2**			**Degree of Mitigation: N/A**	
1	4	5	3.3	5	5	5	**16.5**

Cumulative Impact: The operation of two sand mines on the same property

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: No Mitigation**	
1	4	1	2	5	5	5	**10**
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: No Mitigation**	
1	4	1	2	5	5	5	**10**

SLOPING AND LANDSCAPING UPON CLOSURE OF THE MINING AREA

Erosion of returned topsoil after rehabilitation

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	5	2	3.3	4	2	3	**9.9**
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	5	2	3.3	4	2	3	**9.9**

Infestation of the reinstated area with invader plant species

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	3	2	2.6	4	1	2.5	**6.5**
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	4	2	3	4	2	3	**9**

Dust nuisance as a result of the decommissioning activities

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	1	2	1.6	3	3	3	**4.8**
Rating: Low			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	1	2	1.6	3	3	3	**4.8**

Noise nuisance as a result of the decommissioning activities

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Partial**	
1	1	2	1.3	1	5	3	**3.9**
Rating: Low			**Site Alternative 2**			**Degree of Mitigation: Partial**	
1	1	2	1.3	1	5	3	**3.9**

Potential impact associated with litter left at the mining area

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	5	2	3.3	4	4	4	**13.2**
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	5	2	3.3	4	4	4	**13.2**

Decreased slope of the footprint area **(Positive Impact)**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: N/A**	
1	5	1	2.3	5	5	5	**11.5**
			Site Alternative 2				
N/A							

Return of the mining area to agricultural use by the landowner **(Positive Impact)**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium-High			**Site Alternative 1**			**Degree of Mitigation: N/A**	
1	5	5	3.7	5	5	5	**18.5**
Rating: Medium-High			**Site Alternative 2**			**Degree of Mitigation: N/A**	
1	5	5	3.7	5	5	5	**18.5**

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 16: 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 17: 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 18: 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 19: 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 20: 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 21: 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 22: 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 23: 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 24: 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)

SITE ALTERNATIVE 1 (S1):

Site Alternative 1 entails the mining of sand from an area currently used for agricultural purposes. Site Alternative 1 was selected as the preferred and site alternative for the following reasons:

- The natural fynbos (Leipoldtville Sand Fynbos) of the footprint area was historically altered by the current agricultural activities, and therefore the proposed mining of sand will not disturb or result in the loss of natural fynbos.
- Access to the proposed mining area is possible via an existing farm road with a formal (existing) entrance onto the N7.
- The reduction of the upper sandy soil layer will increase the clay content and resultant water holding capacity of the soil, and if rehabilitation is successful the land is likely to have a slightly higher agricultural potential than what it was pre-mining.
- The levelling effect of excavation will contribute to a decreased slope of the pivot area.
- The quality of the sand, in the earmarked area, complies with the requirements of the Applicant's clients and/or contracts.
- No watercourse, drainage line or wetland will be affected by the proposed mining area.
- The mine will not be visible to the road users of the N7 national road.

Potential negative aspects associated with Site Alternative include:

- The footprint of the mining area will temporarily be lost to the landowner as part of his pivots will be mined by the permit holder.
- Although an existing farm road can be used to access the mining area, the road surface has to be stabilized.

SITE ALTERNATIVE 2 (S2):

Site Alternative 2 entails the mining of sand from an area directly adjacent to the current 4.9 ha mining permit footprint, lapsing in 2025. Site Alternative 2 was considered as it will afford the Applicant a mining area that is near the existing sand mine and allow access to the area via an existing road that does not require any stabilizing.

Positive aspects associated with Site Alternative 2 include:

- No road improvements are required, and the Applicant can share the maintenance of the road with the permit holder.
- The haul road to S2 will be ±380 m shorter than the road to S1.
- Mining will not affect the centre pivots (as is the case with S1).

Potential negative aspects associated with Site Alternative 2 include:

- The footprint of S2 contains natural Leipoldtville Sand Fynbos and extends over a Terrestrial Critical Biodiversity Area (CBA) as well as an area classified as an Ecological Support Area (ESA): Aquatic and Terrestrial. In order to access to the mineral, the Applicant will have to remove the fynbos, directly impacting the vulnerability of the ecosystem.
- The footprint of S2 is within 235 m from a non-perennial drainage line that passes towards the north/north-west. This area is classified as a channelled valley-bottom wetland on the National Wetland and NFEPA map viewer of BGIS. Mining within 500 m of a wetland will require a water use authorisation in terms of Section 39 of the National Water Act, 1998 (Act No 36 of 1998) for water uses as defined in section 21 (c) and section 21 (i).

PROJECT ASSOCIATED POSITIVE IMPACTS:

- Increase in clay content and resultant water holding capacity of the soil;
- Work opportunities to 3 local residents;
- Decreased slope of the footprint area (S1); and
- Return of the mining area to agricultural use by the landowner.

POTENTIAL NEGATIVE IMPACTS:

SITE ESTABLISHMENT & STRIPPING AND STOCKPILING OF TOPSOIL

- Alteration of the agricultural sense of place,
- Loss of agricultural land for duration of mining,
- Visual intrusion as a result of site establishment,
- Loss of Leipoldtville Sand Fynbos to access the mineral.
- Potential negative impact on the CBA's and ESA's,
- Loss of topsoil and fertility during mining and stockpiling,
- Infestation of the topsoil heaps and mining area with invader plant species,
- Potential impact on fauna within the footprint area,
- Dust nuisance as a result of the mining activities, and
- Noise nuisance as a result of the mining activities.

LOADING AND HAULING OF SAND FROM THE MINING FOOTPRINT

- Creating steep slopes and uneven surfaces,
- Infestation of the topsoil heaps and mining area with invader plant species,
- Soil contamination from hydrocarbon spills,
- Disturbance to fauna within the footprint area,
- Dust nuisance as a result of the mining activities,
- Noise nuisance as a result of the mining activities,
- Potential impact associated with littering at the mining area,
- Deterioration of the access road to the mining area,
- Potential impact on areas/infrastructure of heritage or cultural concern, and
- Cumulative Impact: The operation of two sand mines on the same property.

SLOPING AND LANDSCAPING UPON CLOSURE OF THE MINING AREA

- Erosion of returned topsoil after rehabilitation,
- Infestation of the reinstated area with invader plant species,
- Dust nuisance as a result of the decommissioning activities,
- Noise nuisance as a result of the decommissioning activities, and
- Potential impact associated with litter left at the mining area.

In light of the above, read together with the potential impacts associated with S1, site alternative 2 is not deemed the preferred option as this alternative is believed to have a higher ecological significance without the need or motivation justifying it.

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:

TOPOGRAPHY

<u>Landscaping of Mining Area:</u>

The risk of steep slopes or uneven surfaces resulting from the mining activity can be reduced to a Low significance though the implementation of the mitigation measures listed below:

- To ensure minimum impact on drainage, it is essential that no depressions are left in the mining floor. A surface slope (even if minimal) must be maintained across the mining floor in the drainage direction, so that all excavations are free draining. This means that mining

depths must be controlled on the down-slope side of the mine, so that the mining floor remains free-draining and above the low point for drainage out of the mining area.

- Mining depths must be controlled across the entire mine so that excavations results in a levelling of the pivot lands rather than a hole with steep edges.
- After mining, any steep slopes at the edges of excavations must be reduced to a minimum and profiled to blend with the surrounding topography and allow the travel of the centre pivot. The entire surface must be sufficiently smoothed and profiled to allow cultivation.
- The closure plan (Appendix J) must be implemented upon decommissioning of the mining area.

VISUAL CHARACTERISTICS

Visual Mitigation:

The risk of the proposed mining activities having a negative impact on the aesthetic quality of the surrounding environment can be reduced to a low-medium risk through the implementation of the mitigation measures listed below.

- The site must have a neat appearance and be kept in good condition at all times.
- Mining equipment (loader and/or excavator) must be stored neatly in a dedicated area when not in use.
- Concurrent rehabilitation must be done as strip mining progress to limit the visual impact on the aesthetic value of the area.
- The permit holder must limit vegetation removal (if applicable), and stripping of topsoil may only be done immediately prior to the mining/use of a specific area.
- Upon closure the site must be rehabilitated and levelled to ensure that the visual impact on the aesthetic value of the area is kept to a minimum.

AIR AND NOISE QUALITY

Fugitive Dust Emission Mitigation:

The risk of dust, generated from the proposed mining activities, having a negative impact on the surrounding environment can be reduced to being low through the implementation of the following 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 the dust suppression equipment to confirm its effectiveness in addressing dust suppression.
- Speed on the access road must be limited to 20 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.
- Loads must be flattened and covered to ensure that minimal spillage of material takes place during transportation, also preventing windblown dust.
- 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, loading, and transporting of the sand from site to minimize potential dust impacts.

Noise Handling:

The risk of noise, generated as a result of the proposed mining activity, having a negative impact on the surrounding environment can be reduced to being Low through the implementation of the mitigation measures listed below:

- 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.

GEOLOGY AND SOIL

Topsoil Management:

The following topsoil management mitigation measures are proposed:

- Prevent dust by means of damping down surfaces when required.
- The upper 300 mm of the soil of the strip to be mined 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 2m 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 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, 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, and any soil deficiencies must be corrected, based on a chemical analysis of the re-spread soil. A chemical analysis from an agricultural laboratory will include a recommendation of the appropriate quantities of chemical ameliorants (for example lime, phosphate etc.) that should be applied to optimize the soil chemistry for the relevant crop. 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 area should be cropped and fertilized prior to cropping for optimum growth. Any soil chemical deficiencies should be corrected, based on a chemical analysis of the re-spread soil.
- The rehabilitated area must be monitored for erosion, and appropriately stabilized if any erosion occurs for at least 12 months after reinstatement.

Mitigation of Impaired Soil Drainage:

The creation of surface and/or subsurface depressions that are not free draining, will cause water logging in the potential root zone. The retention of at least 300 mm of sandy rooting material above the clay and ensuring that depressions are free draining will keep this impact of negligible significance.

- To ensure minimum impact on drainage, no surface depressions may remain after mining. A surface slope must be maintained across the mining area, and out of it on the down-slope side.

HYDROLOGY

Storm Water Mitigation:

The following mitigation measures are proposed with regard to storm water handling:

- Soil that are to be removed must be done so at right angles to the slope, as this will slow down surface runoff and help to prevent erosion.
- Storm water must be diverted around the topsoil heaps and mining areas to prevent erosion.
- 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. These must be in place at any points where overflow out of the excavation might occur.
- 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.

MINING AND BIODIVERSITY & GROUNDCOVER

Vegetation control including the protection of Leipoldtville Sand Fynbos, and the ESA:

The risk of the proposed mining activities, as proposed in S1, having a negative impact on the fynbos of the surrounding area can be reduced to being Low through the implementation of the mitigation measures listed below:

- 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 employees must be educated accordingly.
- It is proposed that a botanist is consulted to clear uncultivated areas, where indigenous vegetation established, prior to stripping of topsoil.
- On cultivated areas that will return to being cultivated after mining, the replanting of crops must take place as soon as feasible once the topsoil was replaced.
- The invasive plant species management plan attached as Appendix K must be implement on site to control weeds and invasive plants on denuded areas, topsoil heaps and reinstated areas.

Management of Invasive Plant Species:

The risk of weeds or invader plants invading the disturbed area can be reduced to being Low through the implementation of the mitigation measures listed below:

- 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.
- 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.

FAUNA

Protection of Fauna:

The risk resulting from the proposed mining activity on the terrestrial fauna of the footprint area as well as the surrounding environment, can be reduced to Low through the implementation of the mitigation measures listed below:

- 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.
- No snares may be set, or nests raided for eggs or young.

CULTURAL AND HERITAGE ENVIRONMENT

Archaeological, Heritage and Palaeontological Aspects:

The impact on archaeological, heritage and palaeontological aspects, as a result of the proposed mining activities, can be reduced to being negligible through the implementation of the mitigation measures listed below:

- 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 Heritage Western Cape (HWC).
- Work may only continue once the go-ahead was issued by HWC.

LAND USE

Loss of agricultural land for duration of mining:

The following mitigation measures can be implemented to accommodate the landowner:

- The permit holder must present the landowner with a mining schedule, which upon agreement between the holder and the landowner, could allow the cultivation of areas not to be mined in the near future.
- Mined-out areas can be signed back to the farmer, to be used for agricultural purposes, once final rehabilitation was done, and the area vegetated.

EXISTING INFRASTRUCTURE

Access Road Mitigation:

The impact on the access road, as a result of the proposed mining activities, can be reduced to being Low through the implementation of the mitigation measures listed below:

- 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 truck must be prevented.

GENERAL

Waste Management:

The risk of uncontrolled waste generation having a negative impact on the surrounding environment can be reduced to being Low through the implementation of the mitigation measures listed below:

- Regular vehicle maintenance, repairs and services may only take place at the off-site workshop and service area of the permit holder. 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 200-litre closed container/bin to be removed from the emergency service area (same day) to the workshop in order to ensure proper disposal.
- Ablution facilities must be provided in the form of a chemical toilet. The chemical toilet shall be serviced at least once every two weeks for the duration of the mining activities.
- 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.
- 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.
- 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 appropriate disposal at a recognized facility. Proof must be filed.
- All general waste must be contained within the site vehicles and daily be removed from the mining area to the general waste storage area of the permit holder in Clanwilliam.
- No waste may be buried or burned on the site.
- It is important that any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities is reported to the Department of Water and Sanitation and other relevant authorities.

Management of Health and Safety Risks:

The following mitigation measures are proposed to minimise the potential health and safety impacts:

- 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).

ix) Motivation where no alternative sites were considered.

Not applicable.

x) Statement motivating the alternative development location within the overall site.
(Provide a statement motivating the final site layout that is proposed)

As previously mentioned, the strip mining of site alternative 1 is deemed the preferred option as it will not have an impact on any fynbos or other natural area of conservation importance; be further than 500 m from the non-perennial drainage line classified as a valley-bottom wetland, will decrease the slope of the pivot area, and increase the clay content and resultant water holding capacity of the lands. Should the conditions listed below be implemented it is believed that the potential impacts associated with the proposed project can be mitigated, and the overall impact of the proposed project on the surrounding environment can be controlled:

1. **Topography** – Mining depths must be controlled across the entire mine so that excavation results in a levelling of the centre pivot lands rather than a hole with steep edges. The mine planning of the proposed footprint must therefore be such that steep edges are reduced to a minimum and allows the travel of the centre pivot, no depression is left, the area remains free draining, and the rehabilitation objectives and mitigation measures as

proposed in this document is implemented. Upon closure, the footprint area must be returned to agricultural use.

2. **Hydrology** – The outflow of run-off water from the mining excavation must be controlled to prevent any down-slope erosion.

3. **Groundcover –** The mining area must be demarcated and all areas outside the mining footprint must be managed as no-go areas for the duration of the project. It is proposed that a botanist is consulted to clear uncultivated areas, where indigenous vegetation established, prior to stripping of topsoil.

4. **Impact on agricultural potential –** The permit holder must present the landowner with a mining schedule, which upon agreement between the holder and the landowner, could allow the cultivation of areas not to be mined in the near future. The mining area must progressively be rehabilitated according to the mitigation measures and rehabilitation plan proposed in the agricultural impact assessment (Appendix G) and closure plan (Appendix J). Mined-out areas can be signed back to the farmer once final rehabilitation was done and the area vegetated.

5. **CapeNature –** No new roads should be created and only the existing farm track should be used to access the site. Rehabilitation should occur concurrently with mining and no more than 1 ha should be exposed at any one time.

6. **Heritage Western Cape –** Should any heritage resources, including evidence of graves and human burials, archaeological material and palaeontological material be discovered during the excavation of the activities, all works must be stopped immediately and HWC must be notified without delay.

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

Alteration of the agricultural sense of place

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Partial**	
1	4	1	2	1	5	3	**6**
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Partial**	
1	4	1	2	1	5	3	**6**

Loss of agricultural land for duration of mining

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium-High			**Site Alternative 1**			**Degree of Mitigation: Partial**	
3	4	4	3.7	5	5	5	**18.5**
Rating: Medium-High			**Site Alternative 2**			**Degree of Mitigation: Partial**	
3	4	4	3.7	5	5	5	**18.5**

Visual intrusion as a result of site establishment

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low-Medium			**Site Alternative 1**			**Degree of Mitigation: Partial**	
1	2	2	1.7	5	5	5	**8.5**
Rating: Low-Medium			**Site Alternative 2**			**Degree of Mitigation: Partial**	
1	2	2	1.7	5	5	5	**8.5**

Loss of Leipoldtville Sand Fynbos to access the mineral

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
5	4	5	4.7	1	1	1	**4.7**
Rating: High			**Site Alternative 2**			**Degree of Mitigation: No Mitigation**	
5	4	5	4.7	5	4	4.5	**21**

Potential negative impact on the CBA's and ESA's

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
5	4	5	4.7	1	1	1	**4.7**
Rating: High			**Site Alternative 2**			**Degree of Mitigation: No Mitigation**	
5	4	5	4.7	5	4	4.5	**21**

Loss of topsoil and fertility during mining and stockpiling

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	1	1	1.7	3	2	2.5	**4.3**
Rating: Low			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	1	1	1.7	3	2	2.5	**4.3**

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

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	2	2	2.3	2	2	2	**4.6**
Rating: Low			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	2	2	2.3	2	2	2	**4.6**

Potential impact on fauna within the footprint area

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	4	1	2.3	2	1	1.5	**3.5**
Rating: Low			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	4	1	2.3	2	1	1.5	**3.5**

Dust nuisance as a result of the mining activities

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	1	2	1.7	2	3	2.5	**4.3**
Rating: Low			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	1	2	1.7	2	3	2.5	**4.3**

Noise nuisance as a result of the mining activities

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Partial**	
2	4	2	2.7	1	2	1.5	**4**
Rating: Low			**Site Alternative 2**			**Degree of Mitigation: Partial**	
2	4	2	2.7	1	2	1.5	**4**

LOADING AND HAULING OF SAND FROM THE MINING FOOTPRINT

Creating steep slopes and uneven surfaces

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	3	1	2.3	2	1	1.5	**3.5**
Rating: Low			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	3	1	2.3	2	1	1.5	**3.5**

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	2	2	2.3	2	2	2	**4.6**
Rating: Low			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	2	2	2.3	2	2	2	**4.6**

Soil contamination from hydrocarbon spills

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	1	1	2	2	1	1.5	**3**
Rating: Low			**Site Alternative 2**			**Degree of Mitigation: Full**	
4	1	1	2	2	1	1.5	**3**

Disturbance to fauna within the footprint area

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	4	1	2.3	2	1	1.5	**3.5**
Rating: Low			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	4	1	2.3	2	1	1.5	**3.5**

Dust nuisance as a result of the mining activities

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	1	2	1.7	2	3	2.5	**4.3**
Rating: Low			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	1	2	1.7	2	3	2.5	**4.3**

Noise nuisance as a result of the mining activities

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	4	2	2.7	1	2	1.5	**4**
Rating: Low			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	4	2	2.7	1	2	1.5	**4**

Potential impact associated with littering at the mining area

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	1	1	1.7	2	1	1.5	**2.6**
Rating: Low			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	1	1	1.7	2	1	1.5	**2.6**

Deterioration of the access road to the mining area

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

Potential impact on areas/infrastructure of heritage or cultural concern

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
4	5	5	4.7	1	1	1	**4.7**
Rating: Low			**Site Alternative 2**			**Degree of Mitigation: Full**	
4	5	5	4.7	1	1	1	**4.7**

Increase in clay content and resultant water holding capacity of the soil **(Positive Impact)**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: N/A**	
1	5	1	2.3	5	5	5	**11.5**
			Site Alternative 2				
N/A							

Work opportunities to 3 local residents **(Positive Impact)**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium-High			**Site Alternative 1**			**Degree of Mitigation: N/A**	
1	4	5	3.3	5	5	5	**16.5**
Rating: Medium-High			**Site Alternative 2**			**Degree of Mitigation: N/A**	
1	4	5	3.3	5	5	5	**16.5**

Cumulative Impact: The operation of two sand mines on the same property

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: No Mitigation**	
1	4	1	2	5	5	5	**10**
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: No Mitigation**	
1	4	1	2	5	5	5	**10**

SLOPING AND LANDSCAPING UPON CLOSURE OF THE MINING AREA

Erosion of returned topsoil after rehabilitation

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	1	2	2	2	1	1.5	**3**
Rating: Low			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	1	2	2	2	1	1.5	**3**

Infestation of the reinstated area with invader plant species

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	2	2	2.3	2	2	2	**4.6**
Rating: Low			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	2	2	2.3	2	2	2	**4.6**

Dust nuisance as a result of the decommissioning activities

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Full**	
2	1	2	1.7	2	3	2.5	**4.3**
Rating: Low			**Site Alternative 2**			**Degree of Mitigation: Full**	
2	1	2	1.7	2	3	2.5	**4.3**

Noise nuisance as a result of the decommissioning activities

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Low			**Site Alternative 1**			**Degree of Mitigation: Partial**	
1	1	2	1.3	1	5	3	**3.9**
Rating: Low			**Site Alternative 2**			**Degree of Mitigation: Partial**	
1	1	2	1.3	1	5	3	**3.9**

Potential impact associated with litter left at the mining area

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: Full**	
3	1	1	1.7	2	1	1.5	**2.6**
Rating: Medium			**Site Alternative 2**			**Degree of Mitigation: Full**	
3	1	1	1.7	2	1	1.5	**2.6**

Decreased slope of the footprint area **(Positive Impact)**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium			**Site Alternative 1**			**Degree of Mitigation: N/A**	
1	5	1	2.3	5	5	5	**11.5**
			Site Alternative 2				
N/A							

Return of the mining area to agricultural use by the landowner **(Positive Impact)**

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
Rating: Medium-High			**Site Alternative 1**			**Degree of Mitigation: N/A**	
1	5	5	3.7	5	5	5	**18.5**
Rating: Medium-High			**Site Alternative 2**			**Degree of Mitigation: N/A**	
1	5	5	3.7	5	5	5	**18.5**

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 25: Assessment of each identified potentially significant impact and risk

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
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.)	(E.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, air pollution, etc…etc…etc.)		In which impact is anticipated. (E.g. Construction, commissioning, operational Decommissioning closure, post closure.)	If not mitigated.	(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.	If not 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 phase	N/A	Control through management and monitoring.	N/A
• Site establishment & Stripping and stockpiling of topsoil	• Alteration of the agricultural sense of place.	This impact affects the agricultural operations of the property.	Site Establishment & Operational Phase	• Low-Medium (S1 & S2)	The study area does not have a high agritourism potential, and the proposed mine has a low visibility. The significance is therefore deemed to be low-medium during the operational phase and negligible upon the closure of the mine.	• Low-Medium (S1 & S2)
• Site establishment & Stripping and stockpiling of topsoil	• Loss of agricutlural land for duration of mining.	This impact affects the agricultural operations of the property.	Site Establishment & Operational Phase	• Medium-High (S1 & S2)	Should the proposed project be approved, the impact will temporarily interrupt the agricultural activities of the footprint area, only to be reversed upon the closure of the mine.	• Medium-High (S1 & S2)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
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.)	(E.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, air pollution, etc…etc…etc.)		In which impact is anticipated. (E.g. Construction, commissioning, operational Decommissioning closure, post closure.)	If not mitigated.	(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.	If not mitigated.
• Site establishment & Stripping and stockpiling of topsoil	• Visual intrusion as a result of site establishment.	The visual impact may affect the aesthetics of the landscape.	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	• Loss of Leipoldtville Sand Fynbos to access the mineral.	This will impact on the biodiversity of the receiving environment.	Site Establishment phase	• Low (S1) • High (S2)	<u>Modify & Control:</u> Implementing S1 instead of S2 and keeping mining operations to the approved boundaries.	• Low (S1) • High (S2)
• Site establishment & Stripping and stockpiling of topsoil	• Potential negative impact on the CBA's and ESA's	This will impact on the biodiversity of the receiving environment.	Site Establishment phase	• Low (S1) • High (S2)	<u>Modify & Control:</u> Implementing S1 instead of S2 and keeping mining operations to the approved boundaries.	• Low (S1) • High (S2)
• Site establishment & Stripping and stockpiling of topsoil. • Sloping and landscaping upon closure of the mining area.	• Loss of topsoil and fertility during mining and stockpiling. • Erosion of returned topsoil after rehabilitation.	Loss of topsoil will affect the rehabilitation success upon closure of the mine.	Site Establishment- and Decommissioning phase	• Low-Medium (S1 & S2) • Low-Medium (S1 & S2)	<u>Control & Remedy:</u> Proper housekeeping and storm water management.	• Low (S1 & S2) • Low (S1 & S2)

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 not mitigated.
• Site establishment & Stripping and stockpiling of topsoil. • Loading and hauling of sand from the mining footprint. • Sloping and landscaping upon closure of the mining area.	• Infestation of the topsoil heaps and mining area 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	• Low-Medium (S1 & S2) • Low-Medium (S1 & S2)	<u>Control:</u> Implementing soil- and storm water management.	• Low (S1 & S2) • Low (S1 & S2)
• Site establishment & Stripping and stockpiling of topsoil. • Loading and hauling of sand from the mining footprint.	• Potential impact on fauna within the footprint area.	This will impact on the biodiversity of the receiving environment.	Site Establishment- and Operational phase	• Low-Medium (S1 & S2)	<u>Control & Stop:</u> Implementing good management practices.	• Low (S1 & S2)
• Site establishment & Stripping and stockpiling of topsoil.	• Dust nuisance as a result of the mining activities.	Increased dust generation will impact	Site Establishment-, Operational-, and	• Low-Medium (S1 & S2) • Low (S1 & S2)	<u>Control:</u> Dust suppression methods and proper housekeeping.	• Low (S1 & S2) • Low (S1 & S2)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
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.)	(E.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, air pollution, etc…etc…etc.)		In which impact is anticipated. (E.g. Construction, commissioning, operational Decommissioning closure, post closure.)	If not mitigated.	(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.	If not mitigated.
• Loading and hauling of sand from the mining footprint. • Sloping and landscaping upon closure of the mining area.	• Dust nuisance as a result of the decommissioning activities.	on the air quality of the receiving environment.	Decommissioning Phase			
• Site establishment & Stripping and stockpiling of topsoil. • Loading and hauling of sand from the mining footprint. • 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.	Should noise levels become excessive it may have an impact on the noise ambiance of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	• Low-Medium (S1 & S2) • Low (S1 & S2)	<u>Control:</u> Noise suppression methods and proper housekeeping.	• Low (S1 & S2) • Low (S1 & S2)

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 not mitigated.
• Loading and hauling of sand from the mining footprint. • Sloping and landscaping upon closure of the mining area.	• Creating steep slopes and uneven surfaces.	The impact will prevent or hinder future cultivation.	Operational- and Decommissioning Phase.	• Medium (S1 & S2)	<u>Control:</u> Effective rehabilitation according to the closure plan.	• Low (S1 & S2)
• Loading and hauling of sand from the mining footprint. • Sloping and landscaping upon closure of the mining area.	• Soil contamination from hydrocarbon spills. • Potential impact assocaited with littering at the mining area. • 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	• 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 (S1 & S2) • Low (S1 & S2) • Low (S1 & S2)
• Loading and hauling of sand from the mining footprint.	• Deterioration of the access road to the mining area.	Collapse of the road infrastructure will affect the landowner.	Operational Phase	• Low-Medium (S1 & S2)	<u>Control & Remedy:</u> 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.	• Low (S1 & S2)

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 not mitigated.
• Loading and hauling of sand from the mining footprint.	• Potential impact on areas/infrastructure of heritage or cultural concern.	This could impact on the cultural and heritage legacy of the receiving environment.	Operational Phase	• Low (S1 & S2)	<u>Control & Stop:</u> Implementing good management practices, as well as the chance-find protocol.	• Low (S1 & S2)
• Loading and hauling of sand from the mining footprint.	• Increase in clay content and resultant water holding capacity of the soil **(Positive Impact)**	An increase in the water holding capacity of the soil improves to the agricultural potential of the lands.	Operational- and Decommissioning Phase	**Positive**: • Medium (S1)	N/A	**Positive**: • Medium (S1)
• Site establishment & Stripping and stockpiling of topsoil. • Loading and hauling of sand from the mining footprint. • Sloping and landscaping upon closure of the mining area.	• Work opportunities to 3 local residents **(Positive Impact)**	Positive impact towards the socio-economic status of the area.	Site Establishment-, Operational- and Decommissioning Phase	**Positive**: • Medium-High (S1 & S2)	N/A	**Positive**: • Medium-High (S1 & S2)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
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.)	(E.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, air pollution, etc…etc…etc.)		In which impact is anticipated. (E.g. Construction, commissioning, operational Decommissioning closure, post closure.)	If not mitigated.	(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.	If not mitigated.
• Loading and hauling of sand from the mining footprint.	• Cumulative Impact: The operation of two sand mines on the same property.	The operation of the sand mines, temporarily affects the land use of the property.	Operational Phase	• Medium (S1 & S2)	<u>Control:</u> Site management, of each mine, must implement the approved mitigation measures to minimise the impact on the receiving environment.	• Medium (S1 & S2)
• Sloping and landscaping upon closure of the mining area.	• Decreased slope of the footprint area **(Positive Impact).**	Levelling of the pivot lands will prevent irrigation run-off and improve ease of agricultural management.	Decommissioning Phase	**Positive**: • Medium (S1)	N/A	**Positive**: • Medium (S1)
• Sloping and landscaping upon closure of the mining area.	• Return of the mining area to agricultural use by the landowner **(Positive Impact).**	Continuation of agricultural activities on the property.	Decommissioning Phase	**Positive**: • Medium-High (S1 & S2)	N/A	**Positive**: • Medium-High (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):-

Table 26: Summary of specialist reports

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
Agricultural Impact Assessment Assessment of the impact of sand mining on agricultural potential on Portion 2 of RE of Farm number 199, near Clanwilliam. *(See Appendix G for a full copy of the document)*	**Recommendations:** 1. Prevent dust by means of damping down surfaces when required. 2. The upper 30 cm of the soil across the entire mining area must be stripped and stockpiled before mining. 3. Topsoil is a valuable and essential resource for rehabilitation, and it should therefore be managed carefully to conserve and maintain it throughout the stockpiling and rehabilitation processes. 4. Topsoil stockpiles should be protected against losses by water and wind erosion. Stockpiles should 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. Stockpiles should be no more than 2 metres high. 5. During mining, the outflow of run-off water from the mining excavation must be controlled to prevent any down-slope erosion. This must be done by way of the construction of temporary banks and ditches that will direct run-off water. These should be in place at any points where overflow out of the excavation might occur. 6. To ensure minimum impact on drainage, it is essential that no depressions are left in the mining floor. A surface slope (even if minimal) must be maintained across the mining floor in the drainage direction, so that all excavations are free draining. This means that mining depths will need to be controlled on the down-slope side of the mine, so that the mining floor remains free-draining and above the low point for drainage out of the mining area. 7. It is also important that mining depths are controlled across the entire mine so that excavation results in a levelling of the centre pivot lands rather than a hole with steep edges.	All the recommendations proposed by the specialist were included in the EIA report.	Part A(1)(h)(iv)(c) Description of specific environmental features and infrastructure on the site – *Site Specific Topography*. Part A(1)(h)(iv)(c) Description of specific environmental features and infrastructure on the site – *Site Specific Geology and Soil.* Part A(1)(h)(viii) The possible mitigation measures that could be applied and the level of risk. Part A(1)(h)(x) Statement motivating the alternative development location within the overall site. Part A(1)(m) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR.

	8. After mining, any steep slopes at the edges of excavations, must be reduced to a minimum and profiled to blend with the surrounding topography, and allow the travel of the centre pivot. The entire surface must also be sufficiently smoothed and profiled to allow cultivation and the travel of the centre pivot. 9. The stockpiled topsoil must then be evenly spread, to a depth of 30cm, and smoothed over the entire mining area. 10. The area should be cropped and fertilized prior to cropping for optimum growth. Any soil chemical deficiencies should be corrected, based on a chemical analysis of the re-spread soil. 11. The rehabilitated area must be monitored for erosion, and appropriately stabilised if any erosion occurs. 12. If any alien vegetation is introduced by mining activity it must be removed and on-going alien vegetation control must keep the area free of alien vegetation.		

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:

- The project entails the strip mining of site alternative 1 over an area currently used as centre pivot lands. If the footprint is apportioned into two strips mining will be start from strip 1 (1ha) working towards strip 2 (0.7ha). Using the existing access road the Applicant could access each strip without the need of driving over rehabilitated areas.

- Using the existing access road the Applicant could access the mine without the need of driving over rehabilitated areas. Strip mining the earmarked area, allows for mined-out areas to be rehabilitated / signed back to the landowner for continued cultivation without the need of mining equipment re-entering rehabilitated areas.

- The strip mining of site alternative 1 is deemed the preferred option as it will not have an impact on any fynbos or other natural area of conservation importance; be further than 500 m from the non-perennial drainage line classified as a valley-bottom wetland, will contribute to decrease the slope of the pivot area, and increase the clay content and resultant water holding capacity of the lands.

- Site alternative 2 is deemed not be the preferred option as this alternative is believed to have a higher ecological significance without the need or motivation justifying it.

- The no-go alternative was not deemed a viable option as it will prevent the mining of the available sand resource and the associated likely improvement of the agricultural potential of the footprint area.

Topography:

- The excavation of the mining area (S1) has the potential to level the centre pivot land, which will have advantages for preventing irrigation run-off and improving ease of agricultural management. It will however be important that mining depths are controlled across the entire mine so that excavations result in a levelling of the centre pivot lands rather than a hole with steep edges.

- The mine planning of the proposed footprint must therefore be such that steep edges are reduced to a minimum and allows the travel of the centre pivot, no depression is left, the area remains free draining, and the rehabilitation objectives and mitigation measures as proposed in this document is implemented.

Visual Characteristics:

- It is proposed that the visual impact of the proposed sand mining operation (S1) will be of low-medium significance, especially as it will be developed within the footprint of existing pivots.

- The small scale of the proposed operation (1 ha disturbed at a time), the implementation of progressive rehabilitation, as well as the fact that no infrastructure will be establish contributes to the low visual significance. As the landowner will continue with the use of the area for cultivation purposes, no residual visual impact is expected upon closure of the mine

Site specific air and noise quality:

- The proposed activity will contribute the emissions of one front-end-loader and an ADT truck to the receiving environment for the duration of the operational phase. An excavator will be used when needed.

- 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 machinery already operational at the property. The distance of the proposed mining area from residential infrastructure further lessens the potential noise impact

Geology and Soil:

- The classified land capability of the site ranges from 5 to 6. This assessment verifies the classified land capability, based on the assessment of the dryland cropping potential of the site in this report and therefore verifies it as being of medium agricultural sensitivity in terms of the land capability component of sensitivity.
- The dryland cropping potential of the site is limited by the arid climate. However, because irrigation is available the site is suitable and utilised for irrigated crop

production. The soils are rated 5 out of 10 according to the Western Cape 10-point rating system.

- The development will provide a resource (sand) that is required in the area without compromising the long-term agricultural production.

Hydrology:

- Should the proposed operation be established within the footprint of S1, and the permit holder contain all activities to the approved mining boundary no impact on the non-perennial stream could be identified.

Mining and Biodiversity Conservation Areas:

- When the mining footprints of both S1 and S2 is layered over the Mining and Biodiversity Map, it falls over and area of highest biodiversity importance with a corresponding rating of highest risk for mining. The High Biodiversity Importance area (in terms of the Mining and Biodiversity Guideline) does however not corresponds with the boundaries of the CBA's and ESA's identified in terms of the Western Cape Biodiversity Spatial Plan, which excludes the footprint of S1 from significant conservation areas.

- In order to avoid an impact on either the CBA's (terrestrial & aquatic) or the ESA's (terrestrial) it is proposed that S1 be considered for approval, as it does not extent over an area of conservation concern.

Groundcover:

- No natural occurring fynbos remains within the footprint of S1. Should the footprint of S1 be considered for approval, the potential impact on the endangered Leipoldtville Sand Fynbos is of low significance.

Cultural and Heritage Environment:

- No sites of archaeological or cultural importance were identified during the site inspection, and consultation with the interested and affected parties also did not identify any potential area of 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:

- Increase in clay content and resultant water holding capacity of the soil;
- Work opportunities to 3 local residents;
- Decreased slope of the footprint area; and
- Return of the mining area to agricultural use by the landowner.

The negative impacts associated with the project that was deemed to have a Low-Medium or Medium significance includes:

Alteration of the agricultural sense of place (S1 & S2)	Low-Medium
Loss of agricultural land for duration of mining (S1 & S2)	Medium-High
Visual intrusion as a result of site establishment (S1 & S2)	Low-Medium
Loss of Leipoldtville Sand Fynbos to access the mineral (S2)	High
Potential negative impact on the CBA's and ESA's (S2)	High
Cumulative Impact: The operation of two sand mines on the same property (S1 & S2)	**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 27: Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
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.	• Do not leave depressions in the mining floor. Maintain a surface slope (even if minimal) across the mining floor in the drainage direction, so that all excavations are free draining. Control mining depths on the down-slope side of the mine, so that the mining floor remains free-draining and above the low point for drainage out of the mining area. • Control mining depths across the entire mine so that excavations result in a levelling of the pivot lands rather than a hole with steep edges. • Implement the closure plan upon decommissioning of the mining area.	• Return land with an improved agricultural potential or at least the same potential as prior to mining, to the landowner for continued agricultural use upon closure.
VISUAL CHARACTERISTICS Mitigating the visual impact.	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. • Implement concurrent rehabilitation as strip mining progress to limit the visual impact on the aesthetic value of the area. • Limit vegetation removal, and only strip topsoil immediately prior to the mining/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.	• Minimise the impact of the proposed project on the visual characteristics of the receiving environment during the operational phase, and ensure no residual impact remains after closure.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
AIR QUALITY Dust management	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, 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 20 km/h to prevent the generation of excess dust. • Minimise areas devoid of vegetation, and only remove vegetation immediately prior to mining. • Flatten and cover loads to prevent spillage and windblown dust during transportation. • 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, excavation, and transporting of material from site to minimize potential dust impacts.	• Dust prevention measures are applied to minimise the generation of dust.
NOISE AMBIANCE 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 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	• Prevent unnecessary noise to the environment by ensuring that noise from development activity is mitigated.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		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.	
GEOLOGY AND SOIL Topsoil management mitigation measures	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Prevent dust by means of damping down surfaces when required. • Strip and stockpile the upper 300 mm of the soil before mining. • 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 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 stockpile 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 and correct any soil deficiencies based on a chemical	• Adequate fertile topsoil is available to rehabilitate the mined area upon closure.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		analysis of the re-spread soil. Rehabilitation extends until the first cover crop is well established. • The area should be cropped and fertilized prior to cropping for optimum growth. Any soil chemical deficiencies should be corrected, based on a chemical analysis of the re-spread soil. • Monitor the rehabilitated area for erosion, and appropriately stabilize if erosion do occur, for at least 12 months after reinstatement.	
GEOLOGY AND SOIL Management of soil drainage.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Ensure no surface depressions remain after mining. Maintain a surface slope across the mining area, and out of it on the down-slope side.	• Mining does not affect soil drainage of the mined area.
HYDROLOGY 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.	• Remove soils at right angles to the slope, as this will slow down surface runoff and help to prevent erosion. • Divert storm water around the topsoil heaps and mining areas to prevent erosion. • Control all drainage from the project area to prevent off-site pollution, flooding or damage to infrastructure downstream of any storm water discharge points. • Conduct activity in terms of the Best Practice Guidelines for small-scale mining as developed by DWS.	• Impact to the environment caused by storm water discharge is avoided.
MINING AND BIODIVERSITY GROUNDCOVER Mitigating potential impact on fynbos and the ESA.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Botanist to clear uncultivated area prior to stripping of topsoil.	• Clearly demarcate the mining boundaries and contain all operations to the approved mining area. • Declared the area outside the mining boundaries a no-go area and educate all employees accordingly. • Consult a botanist to clear uncultivated areas, where indigenous vegetation established prior to stripping of topsoil.	• Vegetation clearing is restricted to the authorised development footprint of the mine.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
	Compliance to be monitored by the Environmental Control Officer.	• Replant crops on cultivated areas that will return to being cultivated after mining as soon as feasible once the topsoil was replaced. • Implement the invasive plant species management plan on site to control weeds and invasive plants on denuded areas, topsoil heaps and reinstated areas.	
GROUNDCOVER Mitigating invader plants.	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. • Keep all stockpiles (topsoil) free of invasive plant species. • Control declared invader or exotic species on the rehabilitated areas.	• Mining area is kept free of invasive plant species.
FAUNA Mitigating the fauna component.	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. • 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.	• Disturbance to fauna is minimised.
CULTURE/HERITAGE Mitigating cultural/heritage 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: ▪ 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.	• Impact to cultural/heritage resources is avoided or at least minimised.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		▪ 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 Heritage Western Cape (HWC). ▪ Work may only continue once the go-ahead was issued by HWC.	
LAND USE Use 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.	▪ Present the landowner with a mining schedule that upon agreement between the holder and the landowner, could allow the cultivation of areas not to be mined in the near future. ▪ Sign mined-out areas back to the farmer, to be used for agricultural purposes, once final rehabilitation was done, and the area vegetated.	▪ Mining has the least possible impact on the operations of the farm.
EXISTING INFRASTRUCTURE Control of access road.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	▪ 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.	▪ The access road remains accessible to the landowner 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 takes place at the off-site workshop and service area of the permit holder. Make sure drip trays are used when emergency repairs have to be done on equipment not able to move to the workshop. ▪ Provide ablution facilities in the form of a chemical toilet. Ensure the toilet is serviced at least once a week 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	▪ Wastes are appropriately stored, handled and safely disposed of at a recognised waste facility.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		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. • Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either for 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. • Contain all general waste within the site vehicles and daily remove it from the mining area to the general waste storage area of the permit holder in Clanwilliam. • 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 Department of Water and Sanitation and other relevant authorities.	
GENERAL Health and safety aspects.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• 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).	• Employees work in a healthy and safe environment.

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 with regard to 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 in order 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 annual amount required to manage and rehabilitate the environment was estimated to be R 10 000. Please see the explanation as to how this amount was derived at attached as Appendix I – 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).

Skemervlei Trust will be responsible for the financial and technical aspects of the proposed mining project. The operating expenditure is provided for as such in the Financial and Technical Competence Report attached as Appendix I 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:

- **Potential alteration of the agricultural sense of place:**

  The study area does not have a high agritourism potential, and the proposed mine has a low visibility. The significance is therefore deemed to be low-medium during the operational phase and negligible upon the closure of the mine.

- **Loss of agricultural land for the duration of mining:**

  Should the proposed project be approved, the impact will temporarily interrupt the agricultural activities of the footprint area, only to be reversed upon the closure of the mine.

However, the AIA showed that the proposed mining project may also have two positive effects on the agricultural potential of the area:

- Increase in clay content and resultant water holding capacity of the soil; and
- Decreased slope.

- **Visual intrusion associated with the proposed mining activities:**

From the analysis it is proposed that the visual impact of the proposed sand mining operation (S1) will be of low-medium significance, especially as it will be developed within the footprint of existing pivots. The small scale of the proposed operation (1 ha disturbed at a time), the implementation of progressive rehabilitation, as well as the fact that no infrastructure will be establish contributes to the low visual significance. As the landowner will continue with the use of the area for cultivation purposes, no residual visual impact is expected upon closure of the mine.

- **Dust nuisance caused as a result of the proposed mining activities:**

The residential dwelling nearest to the proposed footprint of site alternative 1 is opposite the N7 (east) approximately 1.2 km away. The proposed activity will contribute the emissions of one front-end-loader and an ADT truck 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. There will be no residual impact after closure.

- **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 (S1) from residential infrastructure further lessens the potential noise impact. There will be no residual impact after closure.

(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).

No sites or artefacts classified as national estate as referred to in section 3(2) of the NHRA, 1999 were identified within the footprint of the proposed mining area.

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 4)

The site alternatives investigate during the impact assessment process were done at the hand of information obtained during the site investigation, public participation process, specialist study, as well as desktop studies conducted of the study area. As discussed earlier the following alternatives were considered:

1. Site Alternative 1 – Mining of sand from an area currently used for agricultural purposes (centre pivots).

2. Site Alternative 2 – Mining of sand from an area directly adjacent to the current 4.9 ha mining permit footprint with natural occurring fynbos.

3. No-go Alternative: No mining of sand.

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 Mrs. Murchellin Saal 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 end objective is for the entire mining area to return to agricultural use (as agreed with the landowner). The closure specific objectives entail progressive rehabilitation of each 1 ha strip as mining continues.

The Applicant proposes the following with regard to rehabilitation of the mined-out strips (see Appendix J for the Closure Plan):

- The mine plan will be such that topsoil is stockpiled for the minimum possible time through rehabilitating each mining block as mining continues.

- To ensure minimum impact on drainage, the applicant will take care not to leave any depressions in the mining floor. A surface slope (even if minimal) will be maintained across the mining floor in the drainage direction, so that all excavations are free draining. The mining depths will be controlled (on the down-slope side of the mine) so that the mining floor remains free-draining and above the low point for drainage out of the mining area.

- After mining, any steep slopes at the edges of excavations will be reduced to a minimum and profiled to blend with the surrounding topography and allow the travel of the centre pivot. The entire surface will be sufficiently smoothed and profiled to allow cultivation and the travel of the centre pivot.

- The stockpiled topsoil will then be evenly spread, to a depth of 300 mm, and smoothed over the entire mining area.

- The Applicant will strive to (when possible) spread topsoil at a time of the year when vegetation cover can be established as quickly as possible afterwards, so that erosion of returned topsoil by both rain and wind, is minimized.

- A cover crop that ties in with the proposed land use will be planted, irrigated and established, immediately after spreading of topsoil to stabilize the soil and protect it from erosion. The cover crop will be fertilised for optimum biomass production, and any soil chemical deficiencies will be corrected, based on a chemical analysis of the re-spread soil.

- The rehabilitated area as well as the land down slope of it will monthly be monitored for erosion, and appropriately stabilized if any erosion occurs.

- The Applicant will ensure monthly monitoring of weeds/invader plants that may germinated within the rehabilitated area. The invasive plant species management plan (Appendix K) will continually be implemented on site.

Final rehabilitation will entail removal of the mining equipment from the site according to the closure objectives stipulated in the attached closure plan (Appendix J). Final landscaping, levelling and top dressing will be done on all areas not yet rehabilitated. Control of weeds and invasive plant species is an important aspect after topsoil replacement and seeding has been done in an area. Site management will implement an alien invasive plant species management plan during a 12 months' aftercare period to address germination of problem plants in the area.

The Applicant will also comply with the minimum closure objectives as prescribed by DMR and detailed below:

- Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required), maintenance, and clearing of invasive plant species.
- All 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) need to be eradicated from the site.
- Final rehabilitation must be completed within a period specified by the Regional Manager (DMR).

ii) Volume and rate of water use required for the operation

Due to the nature of the sand to be mined (heavy), very little to no water is needed as dust levels are typically low. Dust generated on the access road will as far as possible be managed through alternative dust suppression methods in order to restrict water use 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 water will be bought and transported to the farm in a water truck that will moisten the problem area. A maximum of 10 000 l/month is expected to be needed during the dry months.

iii) Has a water use licence has been applied for?

The proposed project Site Alternative 1 (S1) does not require a water use licence as it does not trigger the NWA, 1998.

iv) Impacts to be mitigated in their respective phases

Table 28: Impact to be mitigated in their respective phases

ACTIVITIES (as listed in 2.11.1)	PHASE of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	SIZE AND SCALE OF DISTURBANCE (volumes, tonnages and hectares or m^2)	MITIGATION MEASURES (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (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)	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.
• Demarcation of site with visible beacons.	Site Establishment phase	1.7 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 sand 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; & Stripping and stockpiling of topsoil.	Site Establishment & Operational Phase	±1 ha	**<u>Loss of agricultural land for duration of mining:</u>** • The permit holder must present the landowner with a mining schedule, which upon agreement between the holder and the landowner, could allow the cultivation of areas not to be mined in the near future. • Mined-out areas can be signed back to the farmer, to be used for agricultural purposes,	Use of agricultural land must be managed in accordance with the: • CARA, 1983 • Requirements of the agricultural impact assessment (Appendix G) • Closure Plan (Appendix J)	Throughout the site establishment-, and operational phase.

ACTIVITIES (as listed in 2.11.1)	PHASE of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	SIZE AND SCALE OF DISTURBANCE (volumes, tonnages and hectares or m^2)	MITIGATION MEASURES (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (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)	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.
			once final rehabilitation was done, and the area vegetated.		
• Site establishment & Stripping and stockpiling of topsoil	Site Establishment & Operational Phase	±1 ha	**<u>Visual Mitigation</u>** ℑ The site must have a neat appearance and be kept in good condition at all times. ℑ Mining equipment (loader and/or excavator) must be stored neatly in a dedicated area when not in use. ℑ Concurrent rehabilitation must be done as strip mining progress to limit the visual impact on the aesthetic value of the area. ℑ The permit holder must limit vegetation removal (if applicable), and stripping of topsoil may only be done immediately prior to the mining/use of a specific area. ℑ Upon closure the site must be rehabilitated and levelled to ensure that the visual impact on the aesthetic value of the area is kept to a minimum.	Management of the mining area must be in accordance with the: • MPRDA, 2008 • NEMA, 1998	Throughout the site establishment-, and operational phase.

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• Site establishment & Stripping and stockpiling of topsoil	Site Establishment phase	±1 ha	**<u>Vegetation Management including the protection of Leipoldtville Sand Fynbos, and the ESA:</u>** • 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 employees must be educated accordingly. • It is proposed that a botanist is consulted to clear uncultivated areas, where indigenous vegetation established, prior to stripping of topsoil. • On cultivated areas that will return to being cultivated after mining, the replanting of crops must take place as soon as feasible once the topsoil was replaced. • The invasive plant species management plan attached as Appendix K must be implement on site to control weeds and invasive plants	Natural vegetated areas must be managed in accordance with the: • NEM:BA 2004 • Western Cape Biodiversity Spatial Plan	Throughout the site establishment phase.

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			on denuded areas, topsoil heaps and reinstated areas.		
• Site establishment & Stripping and stockpiling of topsoil. • Sloping and landscaping upon closure of the mining area.	Site Establishment- and Decommissioning phase	±1 ha	**<u>Topsoil Management:</u>** • 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	Topsoil must be managed in accordance with the: • CARA, 1983 • NEM:BA, 2004 • MPRDA, 2008 • Agricultural Impact Assessment (Appendix G) • Closure Plan (Appendix J) • Western Cape Noise Control Regulations (PN 200/2013), June 2013	Throughout the site establishment-, operational, and decommissioning phase.

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			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 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		

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			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, and any soil deficiencies must be corrected, based on a chemical analysis of the re-spread soil. A chemical analysis from an agricultural laboratory will include a recommendation of the appropriate quantities of chemical ameliorants (for example lime, phosphate etc.) that should be applied to optimize the soil chemistry for the relevant crop. 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		

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			erosion occurs for at least 12 months after reinstatement.		
• Site establishment & Stripping and stockpiling of topsoil. • Loading and hauling of sand from the mining footprint. • Sloping and landscaping upon closure of the mining area.	Site Establishment-, Operational- and Decommissioning phase	±1 ha	**<u>Management of Invader Plant Species:</u>** • 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. • 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.	Invader plants must be managed in accordance with the: • CARA, 1983 • NEM:BA 2004 • Invasive Plant Species Management Plan (Appendix K)	Throughout the site establishment-, operational, and decommissioning phase.

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			▪ 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 & Stripping and stockpiling of topsoil. ▪ Loading and hauling of sand from the mining footprint.	Site Establishment- and Operational phase	±1 ha	**<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. ▪ No snares may be set, or nests raided for eggs or young.	Fauna must be managed in accordance with the: ▪ NEM:BA 2004	Throughout the site establishment-, and operational phase.
▪ Site establishment & Stripping and	Site Establishment-, Operational-, and	±1 ha	**<u>Fugitive Dust Emission Mitigation:</u>** ▪ The liberation of dust into the surrounding environment must be effectively controlled by	Dust generation must be managed in accordance with the:	Throughout the site establishment-, operational, and decommissioning phase.

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stockpiling of topsoil. • Loading and hauling of sand from the mining footprint. • Sloping and landscaping upon closure of the mining area.	Decommissioning Phase		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 20 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. • Loads must be flattened and covered to ensure that minimal spillage of material takes place during transportation, also preventing windblown dust. • Weather conditions must be taken into consideration upon commencement of daily operations. Limiting operations during very	• NEM:AQA. 2004 Regulation 6(1) • National Dust Control Regulations, GN No R827 • ASTM D1739 (SANS 1137:2012)	

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			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, loading, and transporting of the sand from site to minimize potential dust impacts.		
• Site establishment & Stripping and stockpiling of topsoil. • Loading and hauling of sand from the mining footprint.	Site Establishment-, Operational-, and Decommissioning Phase	±1 ha	**<u>Noise Handling:</u>** • 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 (PN 200/2013), June 2013	Throughout the site establishment-, operational-, and decommissioning phase.

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• 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.		
• Loading and hauling of sand from the mining footprint. • Sloping and landscaping upon closure of the mining area.	Operational- and Decommissioning Phase.	±1 ha	**<u>Landscaping of Mining Area:</u>** • To ensure minimum impact on drainage, it is important that no depressions are left in the mining floor. A surface slope (even if minimal) must be maintained across the mining floor in the drainage direction, so that all excavations are free draining. This means that mining depths must be controlled on the down-slope side of the mine, so that the mining floor remains free-draining and above the low point for drainage out of the mining area.	Management of the mining area must be in accordance with the: • CARA, 1983 • NEM:BA, 2004 • MPRDA, 2008 • Closure Plan	Throughout the operational-, and decommissioning phase.

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			• Mining depths must be controlled across the entire mine so that excavations result in a levelling of the pivot lands rather than a hole with steep edges. • After mining, any steep slopes at the edges of excavations must be reduced to a minimum and profiled to blend with the surrounding topography and allow the travel of the centre pivot. The entire surface must be sufficiently smoothed and profiled to allow cultivation. • The closure plan (Appendix J) must be implemented upon decommissioning of the mining area.		
• Loading and hauling of sand from the mining footprint. • Sloping and landscaping upon	Site Establishment-, Operational-, and Decommissioning Phase	±1 ha	**<u>Waste Management:</u>** • Regular vehicle maintenance, repairs and services may only take place at the off-site workshop and service area of the permit holder. 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 200-litre closed	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.

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closure of the mining area.			container/bin to be removed from the emergency service area (same day) to the workshop in order to ensure proper disposal. • Ablution facilities must be provided in the form of a chemical toilet. The chemical toilet shall be serviced at least once a week for the duration of the mining activities. • 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. • 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.		

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			• Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site. • 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 appropriate disposal at a recognized facility. Proof must be filed. • All general waste must be contained within the site vehicles and daily be removed from the mining area to the general waste storage area of the permit holder in Clanwilliam. • No waste may be buried or burned on the site. • It is important that any significant spillage of chemicals, fuels etc. during the lifespan of the		

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			mining activities is reported to the Department of Water and Sanitation and other relevant authorities.		
• Loading and hauling of sand from the mining footprint.	Operational Phase	±1 ha	**<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. • 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.	The access road must be managed in accordance with the: • NRTA, 1996	Throughout the operational phase.

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• Loading and hauling of sand from the mining footprint.	Operational Phase	±1 ha	**<u>Archaeological, Heritage and Palaeontological Aspects:</u>** • 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	Cultural/heritage aspects must be managed in accordance with the: • NHRA, 1999	Throughout the operational phase.

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			contact a professional archaeologist for an assessment of the finds who must notify Heritage Western Cape (HWC). • Work may only continue once the go-ahead was issued by HWC.		
• Site establishment and stripping of topsoil • Loading and hauling of sand from the mining footprint • Sloping and landscaping upon closure of the mining area.	Site Establishment-, Operational-, and Decommissioning phase	±1 ha	**<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).	Health and safety aspects must be managed in accordance with the: • MHSA, 1996 • OHSA, 1993 • OHSAS, 18001	Throughout the decommissioning phase.

ACTIVITIES (as listed in 2.11.1)	PHASE of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	SIZE AND SCALE OF DISTURBANCE (volumes, tonnages and hectares or m^2)	MITIGATION MEASURES (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (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)	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.
• Loading and hauling of sand from the mining footprint • Sloping and landscaping upon closure of the mining area.	Operational-, and Decommissioning phase	±1 ha	**<u>Storm Water Mitigation:</u>** • Soil that are to be removed must be done so at right angles to the slope, as this will slow down surface runoff and help to prevent erosion. • Storm water must be diverted around the topsoil heaps and mining areas to prevent erosion. • 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. These must be in place at any points where overflow out of the excavation might occur. • 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),	Storm water must be managed in accordance with the: • CARA, 1983 • NEMA, 1998 • NWA, 1998	Throughout the decommissioning phase.

ACTIVITIES (as listed in 2.11.1)	PHASE of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	SIZE AND SCALE OF DISTURBANCE (volumes, tonnages and hectares or m^2)	MITIGATION MEASURES (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (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)	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.
			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		

ACTIVITIES (as listed in 2.11.1)	PHASE of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	SIZE AND SCALE OF DISTURBANCE (volumes, tonnages and hectares or m^2)	MITIGATION MEASURES (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (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)	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.
			incorporated into a storm water management plan.		
• Sloping and landscaping upon closure of the mining area.	Decommissioning phase	±1 ha	**<u>Mitigation of Impaired Soil Drainage:</u>** • To ensure minimum impact on drainage, no surface depressions may remain after mining. A surface slope must be maintained across the mining area, and out of it on the down-slope side	Soil drainage must be managed in accordance with the: • CARA, 1983	Throughout the decommissioning phase.

e) Impact Management Outcomes

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

Table 29: 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 sand is only allowed within the boundaries of the approved area. MPRDA, 2008 NEMA, 1998
Site establishment & Stripping and stockpiling of topsoil	Alteration of the agricultural sense of place.	This impact affects the agricultural operations of the property.	Site Establishment & Operational Phase	The study area does not have a high agritourism potential, and the proposed mine has a low visibility. The significance is therefore deemed to be low-medium during the operational phase and negligible upon the closure of the mine.	Mining of agricultural land must be managed in accordance with the: MPRDA, 2002 NEMA, 1998 CARA, 1983 Requirements of the agricultural impact assessment (Appendix G) Closure Plan (Appendix J)

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.**
Site establishment & Stripping and stockpiling of topsoil	Loss of agricutlural land for duration of mining.	This impact affects the agricultural operations of the property.	Site Establishment & Operational Phase	Should the proposed project be approved, the impact 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 Requirements of the agricultural impact assessment (Appendix G) Closure Plan (Appendix J)
Site establishment & Stripping and stockpiling of topsoil	Visual intrusion as a result of site establishment.	The visual impact may affect the aesthetics of the landscape.	Site Establishment & Operational Phase	Control: Implementing proper housekeeping.	Management of the mining area must be in accordance with the: MPRDA, 2008 NEMA, 1998
Site establishment & Stripping and stockpiling of topsoil	Loss of Leipoldtville Sand Fynbos to access the mineral.	This will impact on the biodiversity of the receiving environment.	Site Establishment phase	Modify & Control: Implementing S1 instead of S2 and keeping mining operations to the approved boundaries.	Natural vegetated areas must be managed in accordance with the: NEM:BA 2004 Western Cape Biodiversity Spatial Plan
Site establishment & Stripping and stockpiling of topsoil	Potential negative impact on the CBA's and ESA's.	This will impact on the biodiversity of the receiving environment.	Site Establishment phase	Modify & Control: Implementing S1 instead of S2 and keeping mining operations to the approved boundaries.	Natural vegetated areas must be managed in accordance with the: NEM:BA 2004 Western Cape Biodiversity Spatial Plan

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.**
• Site establishment & Stripping and stockpiling of topsoil. • Sloping and landscaping upon closure of the mining area.	• Loss of topsoil and fertility during mining and stockpiling. • Erosion of returned topsoil after rehabilitation.	Loss of topsoil will affect the rehabilitation success upon closure of the mine.	Site Establishment- and Decommissioning phase	Control & Remedy: Proper housekeeping and storm water management.	Topsoil must be managed in accordance with the: • CARA, 1983 • NEM:BA, 2004 • MPRDA, 2008 • Agricultural Impact Assessment (Appendix G) • Closure Plan (Appendix J) • Western Cape Noise Control Regulations (PN 200/2013), June 2013
• Site establishment & Stripping and stockpiling of topsoil. • Loading and hauling of sand from the mining footprint. • Sloping and landscaping upon closure of the mining area.	• Infestation of the topsoil heaps and mining area 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	Control: 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 K)
• Site establishment & Stripping and stockpiling of topsoil. • Loading and hauling of sand from the mining footprint.	• Potential impact on fauna within the footprint area.	This will impact on the biodiversity of the receiving environment.	Site Establishment- and Operational phase	Control & Stop: Implementing good management practices.	Fauna must be managed in accordance with the: • NEM:BA 2004

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.**
• Site establishment & Stripping and stockpiling of topsoil. • Loading and hauling of sand from the mining footprint. • 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 decommissioning activities.	Increased dust generation will impact on the air quality of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	Control: 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. • Loading and hauling of sand from the mining footprint. • 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.	Should noise levels become excessive it may have an impact on the noise ambiance of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	Control: Noise suppression methods and proper housekeeping.	Noise generation must be managed in accordance with the: • NEM:AQA. 2004 Regulation 6(1) • NRTA, 1996 • Western Cape Noise Control Regulations (PN 200/2013), June 2013
• Loading and hauling of sand from the mining footprint. • Sloping and landscaping upon closure of the mining area.	• Creating steep slopes and uneven surfaces.	The impact will prevent or hinder future cultivation.	Operational- and Decommissioning Phase.	Control: Effective rehabilitation according to the closure plan.	Management of the mining area must be in accordance with the: • CARA, 1983 • NEM:BA, 2004 • MPRDA, 2008 • Closure Plan

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.**
• Loading and hauling of sand from the mining footprint. • Sloping and landscaping upon closure of the mining area.	• Soil contamination from hydrocarbon spills. • Potential impact assocaited with littering at the mining area. • 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	<u>Control & Remedy:</u> 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)
• Loading and hauling of sand from the mining footprint.	• Deterioration of the access road to the mining area.	Collapse of the road infrastructure will affect the landowner.	Operational Phase	<u>Control & Remedy:</u> 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
• Loading and hauling of sand from the mining footprint.	• Potential impact on areas/infrastructure of heritage or cultural concern.	This could impact on the cultural and heritage legacy of the receiving environment.	Operational Phase	<u>Control & Stop:</u> Implementing good management practices, as well as the chance-find protocol.	Cultural/heritage aspects must be managed in accordance with the: • NHRA, 1999

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.**
• Loading and hauling of sand from the mining footprint.	• Increase in clay content and resultant water holding capacity of the soil **(Positive Impact)**	An increase in the water holding capacity of the soil improves to the agricultural potential of the lands.	Operational- and Decommissioning Phase	N/A	The mining area must be returned to a status that complies with: • CARA, 1983 • MPRDA, 2002 • NEMA, 1998 • Closure Plan (Appendix J)
• Site establishment & Stripping and stockpiling of topsoil. • Loading and hauling of sand from the mining footprint. • Sloping and landscaping upon closure of the mining area.	• Work opportunities to 3 local residents **(Positive Impact)**	Positive impact towards the socio-economic status of the area.	Site Establishment-, Operational- and Decommissioning Phase	N/A	Work conditions must be managed in accordance with the: • MHSA, 1996 • OHSA, 1993 • OHSAS, 18001
• Loading and hauling of sand from the mining footprint.	• Cumulative Impact: The operation of two sand mines on the same property.	The operation of the sand mines, temporarily affects the land use of the property.	Operational Phase	<u>Control:</u> Site management, of each mine, must implement the approved mitigation measures to minimise the impact on the receiving environment.	Mining must be conducted in accordance with: • MPRDA, 2002 • NEMA, 1998

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.**
• Sloping and landscaping upon closure of the mining area.	• Decreased slope of the footprint area **(Positive Impact).**	Levelling of the pivot lands will prevent irrigation run-off and improve ease of agricultural management.	Decommissioning Phase	N/A	The mining area must be returned to a status that complies with: • CARA, 1983 • MPRDA, 2002 • NEMA, 1998 • Closure Plan (Appendix J)
• Sloping and landscaping upon closure of the mining area.	• Return of the mining area to agricultural use by the landowner **(Positive Impact).**	Continuation of agricultural activities on the property.	Decommissioning Phase	N/A	The mining area must be returned to a status that complies with: • CARA, 1983 • MPRDA, 2002 • NEMA, 1998 • Closure Plan (Appendix J)
• Site establishment and stripping of topsoil • Loading and hauling of sand from the mining footprint • Sloping and landscaping upon closure of the mining area.	• Health and safety risks to employees.	Impact will negatively affect the workforce.	Operational Phase	<u>Control:</u> Adhering to the requirements of the MHSA, 1996.	Health and safety aspects must be managed in accordance with the: • MHSA, 1996 • OHSA, 1993 • OHSAS, 18001

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.**
• Loading and hauling of sand from the mining footprint • Sloping and landscaping upon closure of the mining area.	• Storm water management	Uncontrolled storm water runoff can facilitate erosion.	Operational & Decommissioning Phase	Control: Implementing storm water control measures.	Storm water must be managed in accordance with the: • CARA, 1983 • NEMA, 1998 • NWA, 1998
• Sloping and landscaping upon closure of the mining area.	• Soil drainage	Impaired soil drainage may impact the future agricultural potential of the lands.	Decommissioning Phase	Control: Implement proper rehabilitation mitigation measures as proposed in the closure report.	Soil drainage must be managed in accordance with the: • CARA, 1983

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 30: 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.	Control through management and monitoring.	Beacons need to be in place throughout the life of the activity.	Mining of sand is only allowed within the boundaries of the approved area. • MPRDA, 2008 • NEMA, 1998
• Site establishment & Stripping and stockpiling of topsoil	• Alteration of the agricultural sense of place.	The study area does not have a high agritourism potential, and the proposed mine has a low visibility. The significance is therefore deemed to be low-medium during the operational phase and negligible upon the closure of the mine.	Site Establishment & Operational Phase	Mining of agricultural land must be managed in accordance with the: • MPRDA, 2002 • NEMA, 1998 • CARA, 1983 • Requirements of the agricultural impact assessment (Appendix G) • Closure Plan (Appendix J)

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)
• Site establishment & Stripping and stockpiling of topsoil	• Loss of agricutlural land for duration of mining.	Should the proposed project be approved, the impact will temporarily interrupt the agricultural activities of the footprint area, only to be reversed upon the closure of the mine.	Throughout the site establishment-, and operational phase.	Use of agricultural land must be managed in accordance with the: • CARA, 1983 • Requirements of the agricultural impact assessment (Appendix G) • Closure Plan (Appendix J)
• Site establishment & Stripping and stockpiling of topsoil	• Visual intrusion as a result of site establishment.	<u>Control:</u> Implementing proper housekeeping.	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	• Loss of Leipoldtville Sand Fynbos to access the mineral.	<u>Modify & Control:</u> Implementing S1 instead of S2 and keeping mining operations to the approved boundaries.	Throughout the site establishment phase.	Natural vegetated areas must be managed in accordance with the: • NEM:BA 2004 • Western Cape Biodiversity Spatial Plan

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)
• Site establishment & Stripping and stockpiling of topsoil	• Potential negative impact on the CBA's and ESA's.	Modify & Control: Implementing S1 instead of S2 and keeping mining operations to the approved boundaries.	Throughout the site establishment phase.	Natural vegetated areas must be managed in accordance with the: • NEM:BA 2004 • Western Cape Biodiversity Spatial Plan
• Site establishment & Stripping and stockpiling of topsoil. • Sloping and landscaping upon closure of the mining area.	• Loss of topsoil and fertility during mining and stockpiling. • Erosion of returned topsoil after rehabilitation.	Control & Remedy: Proper housekeeping and storm water management.	Throughout the site establishment-, operational, and decommissioning phase.	Topsoil must be managed in accordance with the: • CARA, 1983 • NEM:BA, 2004 • MPRDA, 2008 • Agricultural Impact Assessment (Appendix G) • Closure Plan (Appendix J) • Western Cape Noise Control Regulations (PN 200/2013), June 2013
• Site establishment & Stripping and stockpiling of topsoil.	• Infestation of the topsoil heaps and mining area with invader plant species.	Control: Implementing soil- and storm water management.	Throughout the site establishment-, operational, and decommissioning phase.	Invader plants must be managed in accordance with the: • CARA, 1983

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)
• Loading and hauling of sand from the mining footprint. • Sloping and landscaping upon closure of the mining area.	• Infestation of the reinstated area with invader plant species.			• NEM:BA 2004 • Invasive Plant Species Management Plan (Appendix K)
• Site establishment & Stripping and stockpiling of topsoil. • Loading and hauling of sand from the mining footprint.	• Potential impact on fauna within the footprint area.	<u>Control & Stop:</u> Implementing good management practices.	Throughout the site establishment-, and operational phase.	Fauna must be managed in accordance with the: • NEM:BA 2004
• Site establishment & Stripping and stockpiling of topsoil. • Loading and hauling of sand from the mining footprint.	• Dust nuisance as a result of the mining activities. • Dust nuisance as a result of the decommissioning activities.	<u>Control:</u> Dust suppression methods and proper housekeeping.	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 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)
• Sloping and landscaping upon closure of the mining area.				
• Site establishment & Stripping and stockpiling of topsoil. • Loading and hauling of sand from the mining footprint. • 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.	Control: Noise suppression methods and proper housekeeping.	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 • Western Cape Noise Control Regulations (PN 200/2013), June 2013
• Loading and hauling of sand from the mining footprint. • Sloping and landscaping upon closure of the mining area.	• Creating steep slopes and uneven surfaces.	Control: Effective rehabilitation according to the closure plan.	Throughout the operational-, and decommissioning phase.	Management of the mining area must be in accordance with the: • CARA, 1983 • NEM:BA, 2004 • MPRDA, 2008 • Closure Plan

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)
• Loading and hauling of sand from the mining footprint. • Sloping and landscaping upon closure of the mining area.	• Soil contamination from hydrocarbon spills. • Potential impact assocaited with littering at the mining area. • Potential impact associated with litter left at the mining area.	<u>Control & Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.	Throughout the site establishment-, operational-, and decommissioning phase.	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)
• Loading and hauling of sand from the mining footprint.	• Deterioration of the access road to the mining area.	<u>Control & Remedy:</u> 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.	Throughout the operational phase.	The access road must be managed in accordance with the: • NRTA, 1996
• Loading and hauling of sand from the mining footprint.	• Potential impact on areas/infrastructure of heritage or cultural concern.	<u>Control & Stop:</u> Implementing good management practices, as well as the chance-find protocol.	Throughout the operational phase.	Cultural/heritage aspects must be managed in accordance with the: • NHRA, 1999
• Loading and hauling of sand from the mining footprint.	• Increase in clay content and resultant water holding capacity of the soil **(Positive Impact)**	N/A	Operational- and Decommissioning Phase	The mining area must be returned to a status that complies with: • CARA, 1983

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)
				• MPRDA, 2002 • NEMA, 1998 • Closure Plan (Appendix J)
• Site establishment & Stripping and stockpiling of topsoil. • Loading and hauling of sand from the mining footprint. • Sloping and landscaping upon closure of the mining area.	• Work opportunities to 3 local residents **(Positive Impact)**	N/A	Site Establishment-, Operational- and Decommissioning Phase	Work conditions must be managed in accordance with the: • MHSA, 1996 • OHSA, 1993 • OHSAS, 18001
• Loading and hauling of sand from the mining footprint.	• Cumulative Impact: The operation of two sand mines on the same property.	<u>Control:</u> Site management, of each mine, must implement the approved mitigation measures to minimise the impact on the receiving environment.	Throughout the operational phase.	Mining must be conducted in accordance with: • MPRDA, 2002 • NEMA, 1998
• Sloping and landscaping upon closure of the mining area.	• Decreased slope of the footprint area **(Positive Impact).**	N/A	Decommissioning Phase	The mining area must be returned to a status that complies with: • CARA, 1983

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)
				• MPRDA, 2002 • NEMA, 1998 • Closure Plan (Appendix J)
• Sloping and landscaping upon closure of the mining area.	• Return of the mining area to agricultural use by the landowner **(Positive Impact).**	N/A	Decommissioning Phase	The mining area must be returned to a status that complies with: • CARA, 1983 • MPRDA, 2002 • NEMA, 1998 • Closure Plan (Appendix J)
• Site establishment and stripping of topsoil • Loading and hauling of sand from the mining footprint • Sloping and landscaping upon closure of the mining area.	• Health and safety risks to employees.	Control: Adhering to the requirements of the MHSA, 1996.	Throughout the decommissioning phase.	Health and safety aspects must be managed in accordance with the: • MHSA, 1996 • OHSA, 1993 • OHSAS, 18001
• Loading and hauling of sand from the mining footprint	• Storm water management	Control: Implementing storm water control measures.	Throughout the decommissioning phase.	Storm water must be managed in accordance with the:

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)
• Sloping and landscaping upon closure of the mining area.				• CARA, 1983 • NEMA, 1998 • NWA, 1998
• Sloping and landscaping upon closure of the mining area.	• Soil drainage	<u>Control</u>: Implement proper rehabilitation mitigation measures as proposed in the closure report.	Throughout the decommissioning phase.	Soil drainage must be managed in accordance with the: • CARA, 1983

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.

As a strip/block is mined-out the area will be rehabilitated prior to the opening of another strip. The stockpiled topsoil will be spread over the mined area to a depth of at least 300 mm.

Final rehabilitation will entail the removal of all equipment from the mining area. Final landscaping, levelling and top dressing will be done on all areas not yet rehabilitated. Control of weeds and alien invasive plant species is an important aspect after topsoil replacement and seeding has been done in an area. Site management will implement an alien invasive plant species management plan (Appendix K) 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 DMR.

(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 on all areas not yet rehabilitated. 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 DMR and detailed below, and therefore is deemed to be compatible:

- Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required), maintenance, and clearing of invasive plant species.
- All 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) need to be eradicated from the site.
- Final rehabilitation must be completed within a period specified by the Regional Manager (DMR).

(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	Sand
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	-	NO
11	River diversions	-	NO
12	Fencing	-	NO

Component No.	Main description	Applicability of closure components (Circle Yes or 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	-	NO

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	319 431.00	0.04
7	Sealing of shafts, adits and inclines	-	-
8(A)	Rehabilitation of overburden and spoils	-	-
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	-	-
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	-	-

Determine weighting factors

According to Tables B.7 and B.8

Weighting factor 1: Nature of terrain/accessibility	1.00 (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 31: Calculation of closure cost

CALCULATION OF THE QUANTUM							
Mine:	Skemervlei Trust Sand Mine			**Location:**	Clanwilliam		
Evaluators:	M Saal			**Date:**	20 October 2024		
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	22	1.00	1.00	R 0.00
2(A)	Demolition of steel buildings and structures	m^2	0	305	1.00	1.00	R 0.00
2(B)	Demolition of reinforced concrete buildings and structures	m^2	0	449	1.00	1.00	R 0.00
3	Rehabilitation of access roads	m^2	0	55	1.00	1.00	R 0.00
4(A)	Demolition and rehabilitation of electrified railway lines	m	0	529	1.00	1.00	R 0.00
4(B)	Demolition and rehabilitations of non-electrified railway lines	m	0	289	1.00	1.00	R 0.00
5	Demolition of housing and/or administration facilities	m^2	0	609	1.00	1.00	R 0.00
6	Opencast rehabilitation including final voids and ramps	ha	1	319,431.00	0.04	1.00	R 12 777.24
7	Sealing of shaft, audits and inclines	m^3	0	164	1.00	1.00	R 0.00
8(A)	Rehabilitation of overburden and spoils	ha	0	212954	1.00	1.00	R 0.00
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing waste)	ha	0	265230	0.51	1.00	R 0.00
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)	ha	0	770354	0.51	1.00	R 0.00
9	Rehabilitation of subsided areas	ha	0	178317	1.00	1.00	R 0.00
10	General surface rehabilitation	ha	0	168695	1.00	1.00	R 0.00
11	River diversions	ha	0	168695	1.00	1.00	R 0.00

12	Fencing	m	0	192	1.00	1.00	R 0.00
13	Water Management	ha	0	64143	0.17	1.00	R 0.00
14	2 to 3 years of maintenance and aftercare	ha	2	22450	1.00	1.00	R 44 900.00
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 57 677.24
Multiply Sum of 1-15 by Weighting factor 2 (Step 4.4)		1.05		R 43 099.88		**Sub Total 1**	R 60 5621.10

1	Preliminary and General	6% of Subtotal 1 if Subtotal 1 <R100 000 000.00	R 3 633.67
		12% of Subtotal 1 if Subtotal 1 >R100 000 000.00	-
2	Contingency	10.0% of Subtotal 1	R 6 056.11
		Sub Total 2 (Subtotal 1 plus management and contingency)	R 70 250.88
		Vat (15%)	R 10 537.63
		GRAND TOTAL (Subtotal 3 plus VAT)	**R 80 788.51**

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 80 788.51.**

(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 32: 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	Maintenance of beacons	• Visible beacons need to be placed at the corners of the mining area.	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 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.
• Site establishment & Stripping and stockpiling of topsoil	• Loss of agricutlural land for duration of mining.	• Mining schedule.	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.	Throughout the site establishment-, and operational phase. • 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
			Responsibility: • Present the landowner with a mining schedule that upon agreement between the holder and the landowner, could allow the cultivation of areas not to be mined in the near future. • Sign mined-out areas back to the farmer, to be used for agricultural purposes, once final rehabilitation was done, and the area vegetated.	
• Site establishment & Stripping and stockpiling of topsoil	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: • 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. • Implement concurrent rehabilitation as strip mining progress to limit the visual impact on the aesthetic value of the area. • Limit vegetation removal, and only strip topsoil immediately prior to the mining/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.
• Site establishment & Stripping and stockpiling of topsoil	**Mining and Biodiversity, Groundcover**	• Visible beacons indicating the boundary of the mining area.	Role: • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Botanist to clear uncultivated area prior to stripping of topsoil.	Applicable throughout site establishment-, and 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
	• Loss of Leipoldtville Sand Fynbos to access the mineral. • Potential negative impact on the CBA's and ESA's.	• Walkthrough with botanist should mining extend into areas not cultivated at the time of extension. • Removal permit should protect, or red data species be relocated. • Cover crop to seed reinstated areas.	• Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Responsibility:</u> • Clearly demarcate the mining boundaries and contain all operations to the approved mining area. • Declared the area outside the mining boundaries a no-go area, and educate all employees accordingly. • Consult a botanist to clear uncultivated areas, where indigenous vegetation established prior to stripping of topsoil. • Replant crops on cultivated areas that will return to being cultivated after mining as soon as feasible once the topsoil was replaced. • Implement the invasive plant species management plan on site to control weeds and invasive plants on denuded areas, topsoil heaps and reinstated areas.	• Annual compliance monitoring of site by an Environmental Control Officer.
• Site establishment & Stripping and stockpiling of topsoil. • Sloping and landscaping upon closure of the mining area.	**<u>Geology and Soil:</u>** • Loss of topsoil and fertility during mining and stockpiling. • 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)	<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> • Strip and stockpile the upper 300 mm of the soil before mining. • Carefully manage and conserve the topsoil throughout the stockpiling and rehabilitation process.	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
			• 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 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 stockpile 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 a cover crop immediately after spreading topsoil to stabilise the soil and protect it from erosion. Fertilise the cover crop for optimum 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
• Site establishment & Stripping and stockpiling of topsoil. • Loading and hauling of sand from the mining footprint. • Sloping and landscaping upon closure of the mining area.	**Groundcover:** • Infestation of the topsoil heaps and mining area 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.
• Site establishment & Stripping and stockpiling of topsoil. • Loading and hauling of sand from the mining footprint.	**Fauna:** • Potential impact on 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-, and operational 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
• Site establishment & Stripping and stockpiling of topsoil. • Loading and hauling of sand from the mining footprint. • Sloping and landscaping upon closure of the mining area.	**Air Quality:** • Dust nuisance as a result of the mining activities. • Dust nuisance as a result of the decommissioning 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 20 km/h to prevent the generation of excess dust. • Minimise areas devoid of vegetation, and only remove vegetation immediately prior to mining. • Flatten and cover loads to prevent spillage and windblown dust during transportation. • 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, excavation, 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.

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
• Site establishment & Stripping and stockpiling of topsoil. • Loading and hauling of sand from the mining footprint. • Sloping and landscaping upon closure of the mining area.	**Noise Ambiance:** • Noise nuisance as a result of the mining activities. • Noise nuisance as a result of the decomissiononig activities.	• Silencers fitted to all project related vehicles, and the use of vehicles that are in road worthy condition in terms of the National Road Traffic Act, 1996.	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 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.	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.
• Loading and hauling of sand from the mining footprint. • Sloping and landscaping upon closure of the mining area.	**Topography:** • Creating steep slopes and uneven surfaces.	• Earthmoving equipment to reinstate mined-out 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.	Applicable throughout 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
			Responsibility: • Do not leave depressions in the mining floor. Maintain a surface slope (even if minimal) across the mining floor in the drainage direction, so that all excavations are free draining. Control mining depths on the down-slope side of the mine, so that the mining floor remains free-draining and above the low point for drainage out of the mining area. • Control mining depths across the entire mine so that excavations result in a levelling of the pivot lands rather than a hole with steep edges. • Reduce and profile any steep slopes at the edges of excavations, after mining to blend with the surrounding topography and allow the travel of the centre pivot. Ensure the entire surface is sufficiently smoothed and profiled to allow cultivation. • Implement the closure plan upon decommissioning of the mining area.	
• Loading and hauling of sand from the mining footprint. • Sloping and landscaping upon closure of the mining area.	**Waste Management:** • Soil contamination from hydrocarbon spills. • Potential impact assocaited with littering at the mining area. • Potential impact associated with litter left at the mining area.	• Oil spill kit. • Sealed drip trays. • Formal waste disposal system with waste registers.	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 regular vehicle maintenance, repairs and services takes place at the off-site workshop and service area of the permit holder. Make sure drip trays are used when emergency repairs have to be done on equipment not able to move to the workshop.	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
			• Provide ablution facilities in the form of a chemical toilet. Ensure the toilet is serviced at least once a week 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. • Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either for 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. • Contain all general waste within the site vehicles and daily remove it from the mining area to the general waste storage area of the permit holder in Clanwilliam. • Prevent the burning or burying of waste on site. • Report any significant spillage of chemicals, fuels etc. during the lifespan of the mining	

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
			activities to the Department of Water and Sanitation and other relevant authorities.	
• Loading and hauling of sand from the mining footprint.	• Deterioration of the access road to the mining area.	• 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. • 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.	Applicable throughout operational phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.
• Loading and hauling of sand from the mining footprint.	• 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. • 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	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
			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 Heritage Western Cape (HWC). ▪ Work may only continue once the go-ahead was issued by HWC.	
▪ Loading and hauling of sand from the mining footprint.	▪ Cumulative Impact: The operation of two sand mines on the same property.	▪ Copy of the Environmental Management Programme	<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 that the approved mitigation measures are implemented on site.	Applicable throughout operational phase. ▪ Daily compliance monitoring by site management. ▪ Annual compliance monitoring of site by an Environmental Control Officer.
▪ Site establishment and stripping of topsoil	▪ Health and safety risks to employees.	▪ Stocked first aid box. ▪ Level 1 certified first aider.	<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.	Applicable throughout 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
• Loading and hauling of sand from the mining footprint • Sloping and landscaping upon closure of the mining area.		• All appointments in terms of the Mine Health and Safety Act, 1996.	<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).	• Annual compliance monitoring of site by an Environmental Control Officer.
• Loading and hauling of sand from the mining footprint • Sloping and landscaping upon closure of the mining area.	• Storm water management	• Storm water management structures such as berms to direct storm- and runoff water around the stockpiled topsoil area (when needed).	<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> • Remove soils at right angles to the slope, as this will slow down surface runoff and help to prevent erosion. • Divert storm water around the topsoil heaps and mining areas to prevent erosion. • Control all drainage from the project area to prevent off-site pollution, flooding or damage to infrastructure downstream of any storm water discharge points. • Conduct activity in terms of the Best Practice Guidelines for small-scale mining as developed by DWS.	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.
• Sloping and landscaping upon closure of the mining area.	• Soil drainage	• Earthmoving equipment to reinstate and landscape mined-out areas.	<u>Role:</u> • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.	Applicable throughout decommissioning phase. • 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
			• Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Responsibility:</u> • Ensure no surface depressions remain after mining. Maintain a surface slope across the mining area, and out of it on the down-slope side.	• 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 DMR 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 firewood.
- 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 DMR 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:

09 October 2024

Date:

-END-

APPENDIX A

REGULATION 2(2) MINE MAP

APPENDIX B

1:250 000 LOCALITY AND LANDUSE MAP

APPENDIX C
SITE ACTIVITIES PLAN

APPENDIX D

LAND USE MAP

APPENDIX E
REHABILITATION PLAN

APPENDIX F1 & F2

COMMENTS AND RESPONSE REPORT

&

PROOF OF PUBLIC PARTICIPATION

APPENDIX G

AGRICULTURAL IMPACT ASSESSMENT

APPENDIX H

SUPPORTING IMPACT ASSESSMENT

ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, herewith please receive an environmental impact statement that summarises the impact that the proposed activity may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

ENVIRONMENTAL IMPACT STATEMENT			
SITE ALTERNATIVE 1			
TYPE OF IMPACT	**DURATION**	**LIKELIHOOD**	**SIGNIFICANCE**
Site Establishment & Stripping and Stockpiling of Topsoil:	**Duration of site establishment phase (<1 month)**		
ℑ Alteration of the agricultural sense of place		**Low Possibility**	**Medium-Low Concern**
ℑ Loss of agricultural land for duration of mining.		**Definite**	**Medium-High Concern**
ℑ Visual intrusion as a result of site establishment.		**Possible**	**Low-Medium Concern**
ℑ Loss of Leipoldtville Sand Fynbos to access the mineral.		**Low Possibility**	**Low Concern**
ℑ Potential impact on the CBA's and ESA's.		**Low Possibility**	**Low Concern**
ℑ Loss of topsoil and fertility during mining and stockpiling.		**Low Possibility**	**Low Concern**
ℑ Infestation of the topsoil heaps and mining area with invader plant species.		**Low Possibility**	**Low Concern**
ℑ Potential impact on fauna within the footprint area.		**Low Possibility**	**Low Concern**
ℑ Dust nuisance as a result of the mining activities.		**Low Possibility**	**Low Concern**
ℑ Noise nuisance as a result of the mining activities.		**Low Possibility**	**Low Concern**
Loading and Hauling of Sand from the Mining Footprint:	**Duration of operational phase (5 years maximum)**	**LIKELIHOOD**	**SIGNIFICANCE**
ℑ Creating steep slopes and uneven surfaces.		**Low Possibility**	**Low Concern**
ℑ Infestation of the topsoil heaps and mining area with invader plant species.		**Low Possibility**	**Low Concern**
ℑ Soil contamination from hydrocarbon spills.		**Low Possibility**	**Low Concern**
ℑ Disturbance to fauna within the footprint area.		**Low Possibility**	**Low Concern**
ℑ Dust nuisance as a result of the mining activities.		**Low Possibility**	**Low Concern**

ENVIRONMENTAL IMPACT STATEMENT			
ℑ Noise nuisance as a result of the mining activities. ℑ Potential impact associated with littering at the mining area. ℑ Deterioration of the access road to the mining area. ℑ Potential impact on areas/infrastructure of heritage or cultural concern. ℑ Increase in clay content and resultant water holding capacity of the soil **(Positive Impact)**. ℑ Working opportunities to 3 local residents **(Positive Impact)**. ℑ Cumulative Impact: The operation of two sand mines on the same property.		**Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Definite** **Definite** **Definite**	**Low Concern** **Low Concern** **Low Concern** **Low Concern** **Medium (+)** **Medium-High (+)** **Medium Concern**
<u>Sloping and Landscaping upon Closure of the Mining Area:</u> ℑ Erosion of returned topsoil after rehabilitation. ℑ Infestation of the reinstated area with invader plant species. ℑ Dust nuisance as a result of the decommissioning activities. ℑ Noise nuisance as a result of the decommissioning activities. ℑ Potential impact associated with litter left at the mining area. ℑ Return of the mining area to agricultural use by the landowner **(Positive Impact)**.	**Duration of decommissioning phase (±2 months)**	**<u>LIKELIHOOD</u>** **Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Definite**	**<u>SIGNIFICANCE</u>** **Low Concern** **Low Concern** **Low Concern** **Low Concern** **Low Concern** **Medium-High (+)**
SITE ALTERNATIVE 2			
<u>TYPE OF IMPACT</u> <u>Site Establishment & Stripping and Stockpiling of Topsoil:</u> ℑ Alteration of the agricultural sense of place ℑ Loss of agricultural land for duration of mining. ℑ Visual intrusion as a result of site establishment. ℑ Loss of Leipoldtville Sand Fynbos to access the mineral.	**Duration of site establishment phase (<1 month)**	**<u>LIKELIHOOD</u>** **Low Possibility** **Definite** **Possible** **Definite**	**<u>SIGNIFICANCE</u>** **Low-Medium Concern** **Medium-High Concern** **Low-Medium Concern** **High Concern**

ENVIRONMENTAL IMPACT STATEMENT			
ℑ Potential impact on the CBA's and ESA's.		**Definite**	**High Concern**
ℑ Loss of topsoil and fertility during mining and stockpiling.		**Low Possibility**	**Low Concern**
ℑ Infestation of the topsoil heaps and mining area with invader plant species.		**Low Possibility**	**Low Concern**
ℑ Potential impact on fauna within the footprint area.		**Low Possibility**	**Low Concern**
ℑ Dust nuisance as a result of the mining activities.		**Low Possibility**	**Low Concern**
ℑ Noise nuisance as a result of the mining activities.		**Low Possibility**	**Low Concern**
<u>Loading and Hauling of Sand from the Mining Footprint:</u>	**Duration of operational phase (5 years maximum)**	**<u>LIKELIHOOD</u>**	**<u>SIGNIFICANCE</u>**
ℑ Creating steep slopes and uneven surfaces.		**Low Possibility**	**Low Concern**
ℑ Infestation of the topsoil heaps and mining area with invader plant species.		**Low Possibility**	**Low Concern**
ℑ Soil contamination from hydrocarbon spills.		**Low Possibility**	**Low Concern**
ℑ Disturbance to fauna within the footprint area.		**Low Possibility**	**Low Concern**
ℑ Dust nuisance as a result of the mining activities.		**Low Possibility**	**Low Concern**
ℑ Noise nuisance as a result of the mining activities.		**Low Possibility**	**Low Concern**
ℑ Potential impact associated with littering at the mining area.		**Low Possibility**	**Low Concern**
ℑ Deterioration of the access road to the mining area.		**Low Possibility**	**Low Concern**
ℑ Potential impact on areas/infrastructure of heritage or cultural concern.		**Low Possibility**	**Low Concern**
ℑ Working opportunities to 3 local residents **(Positive Impact)**.		**Definite**	**Medium-High (+)**
ℑ Cumulative Impact: The operation of two sand mines on the same property.		**Definite**	**Medium Concern**
<u>Sloping and Landscaping upon Closure of the Mining Area:</u>	**Duration of decommissioning phase (±2 months)**	**<u>LIKELIHOOD</u>**	**<u>SIGNIFICANCE</u>**
ℑ Erosion of returned topsoil after rehabilitation.		**Low Possibility**	**Low Concern**
ℑ Infestation of the reinstated area with invader plant species.		**Low Possibility**	**Low Concern**
ℑ Dust nuisance as a result of the decommissioning activities.		**Low Possibility**	**Low Concern**
		Low Possibility	**Low Concern**

ENVIRONMENTAL IMPACT STATEMENT			
ℑ Noise nuisance as a result of the decommissioning activities. ℑ Potential impact associated with litter left at the mining area. ℑ Return of the mining area to agricultural use by the landowner **(Positive Impact)**.		**Low Possibility** **Definite**	**Low Concern** **Medium-High (+)**

APPENDIX I
FINANCIAL AND TECHNICAL COMPETENCE

APPENDIX J

CLOSURE PLAN

APPENDIX K

INVASIVE PLANT SPECIES MANAGEMENT PLAN

APPENDIX L

PHOTOGRAPHS OF THE PROPOSED SITE

APPENDIX M

CV AND EXPERIENCE RECORD OF EAP

APPENDIX N

SCREENING REPORT

APPENDIX O

SENSITIVITY REPORT

APPENDIX P

NOTICE OF INTENT TO DEVELOP (SAHRA)

APPENDIX Q

NOTICE OF LAND USE APPLICATION FOR THE PROPOSED CONSENT USE ON PORTION 2 OF THE FARM 199, CLANWILLIAM THAT WILL BE LODGED TO THE MUNICIPALITY OF CEDERBERG MUNICIPALITY.