mineral resources & energy
Department:
Minerals Resources and Energy
REPUBLIC OF SOUTH AFRICA

# DRAFT INTEGRATED SCOPING REPORT FOR THE UPGRADE OF THE APPROVED ENVIRONMENTAL MANAGEMENT PROGRAMME FOR DIAMOND, DIAMOND (GENERAL), DIAMOND (ALLUVIAL), DIAMOND (IN KIMBERLITE), PEBBLE STONES MINING ACTIVITIES ON THE REMAINDER OF HONDEKLIPBAAI AND SEAWARD TO 31.4 KM BELOW LOW WATER MARK IN THE ADMINISTRATIVE DISTRICT NAMAQUALAND NORTHERN CAPE PROVINCE OF SOUTH AFRICA.

SUBMITTED FOR ENVIRONMENTAL AUTHORIZATIONS IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (AS AMENDED IN 2021), NATIONAL ENVIRONMENTAL MANAGEMENT: INTEGRATED COASTAL MANAGEMENT ACT 24 OF 2008 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).

Compiled For

**MOONSTONE DIAMOND MARKETING (PTY) LTD**

By:

**Archean Resources (Pty) Ltd**

**Release Date: 15 September 2021**

**REPORT INFORMATION**

| | | |
|---|---|---|
| **Report Title:** | Upgrade of the approved Environmental Management Programme in terms section 12 (s) of the National Environmental Management Act, 2008 (Act No. 62 of 2008) approved mining rights in terms of the MPRDA Act 28 Of 2002, National Environmental Management Waste Act, 2008, National Environmental Management Act (NEMA) (Act No 107 Of 1998): in line with the Environmental Impact Assessment (EIA) Regulations, 2014 as amended were again amended in 2021 (Government Gazette No. 44701, GNR 517) and the National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008). | |
| **Report Reference:** | Draft integrated Scoping Report for integrated Scoping & Environmental Impact Assessment (S&EIR) process will be conducted for the upgrade of the approved Environmental Management Programme for Moonstone Diamond Marketing (Pty) Ltd existing Diamond, Diamond (General), Diamond (Alluvial), Diamond (In Kimberlite)and inclusion of Pebble Stones mining activities for the mining rights on the Remainder of Hondeklipbaai and Seaward to 31.4 Km below Low Water Mark in the administrative District Namaqualand Northern Cape Province of South Africa. | |
| **DMR Reference:** | NC-00211-MR/S102 and Existing ref is NC 088MR | |
| **Report Status:** | DSR- 01: Draft Report for Public review | |
| **REVISION** | DATE | REASON FOR CHANGE |
| **001** | 13th September – 13th October 2021 | Release of Draft Scoping for public review |
| **002** | TBA | Final Integrated Scoping Report: Additional Environmental information and consolidation of I&AP comments |

DETAILS OF APPLICANT AND EAP

Table 1: Applicant Details

| | |
|---|---|
| **NAME OF APPLICANT** | Moonstone Diamond Marketing (Pty) Ltd |
| **CONTACT PERSON** | Abegail Makgato and Vincent Madlela |
| **TEL NO:** | 074 733 0007 and 082 411 1058 |
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**Contact Person and correspondence address**

Table 2: EAP Details

| | |
|---|---|
| **Company:** | **ARCHEAN RESOURCES (PTY) LTD** |
| **CONTACT PERSON (S)** | Moses Mphephu and Yvonne Gutoona |
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| **CELL PHONE** | 082 970 1513 |
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EXECUTIVE SUMMARY

Moonstone Diamond Marketing Pty Ltd (Moonstone Diamond Marketing) formerly Trans Hex Operations (Pty) Ltd has appointed Archean Resources (Pty) Ltd, an independent consulting company, to conduct an integrated Scoping & Environmental Impact Assessment (S&EIR) process for the upgrade of the approved Environmental Management Programme for Moonstone Diamond Marketing (Pty) Ltd existing Diamond, Diamond (General), Diamond (Alluvial), Diamond (In Kimberlite) and inclusion of Pebble Stones mining activities for the mining rights on the Remainder of Hondeklipbaai and Seaward to 31.4 Km below Low Water Mark in the administrative District of Namaqualand , Northern Cape Province of South Africa.

Moonstone Diamond Marketing lodged an application for Environmental Authorisation (EA) in terms of Section 24 of the NEMA Act read with Section 21 of the EIA regulations to the DMR which was acknowledged. The application will involve the amendment of the existing environmental management program in terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002), National Environmental Management Act (Act No 107 of 1998) as amended, National Environmental Management Waste Act, 2008 and National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008). The report has been designed to meet the requirements for conducting an Environmental Impact Assessment (EIA) and Environmental Management Programme (EMPR) as stipulated in the Regulations contained in both the Mineral and Petroleum Resources Development Act (Act No. 28 of 2002-MPRDA) and National Environmental Management Act (NEMA) respectively.

Comments received during this phase will be considered and addressed in the Environmental Impact Assessment (EIA/EMPr) which will be submitted to the competent authority Department of Minerals (DMR) for approval.

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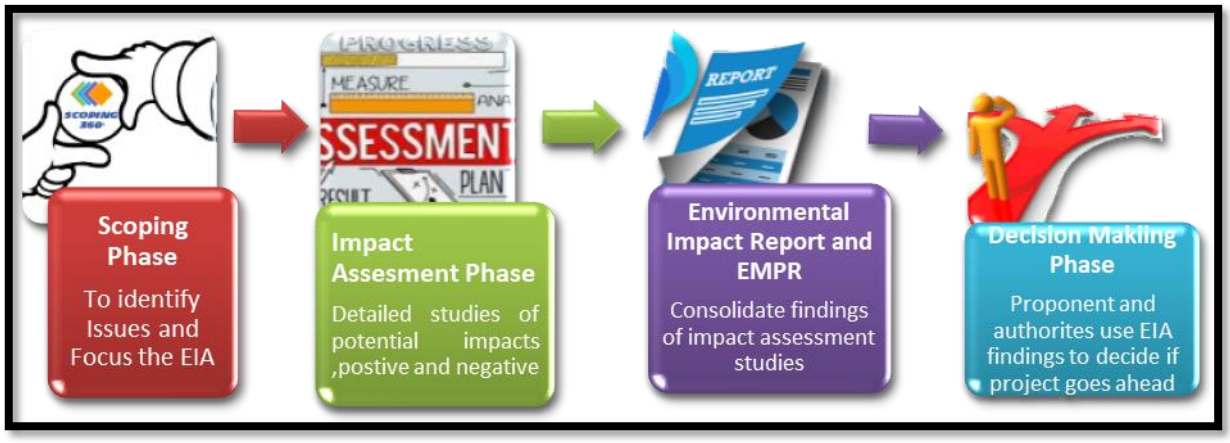
AN EIA CONSISTS OF THE FOLLOWING PHASES




**Purpose of this Report**

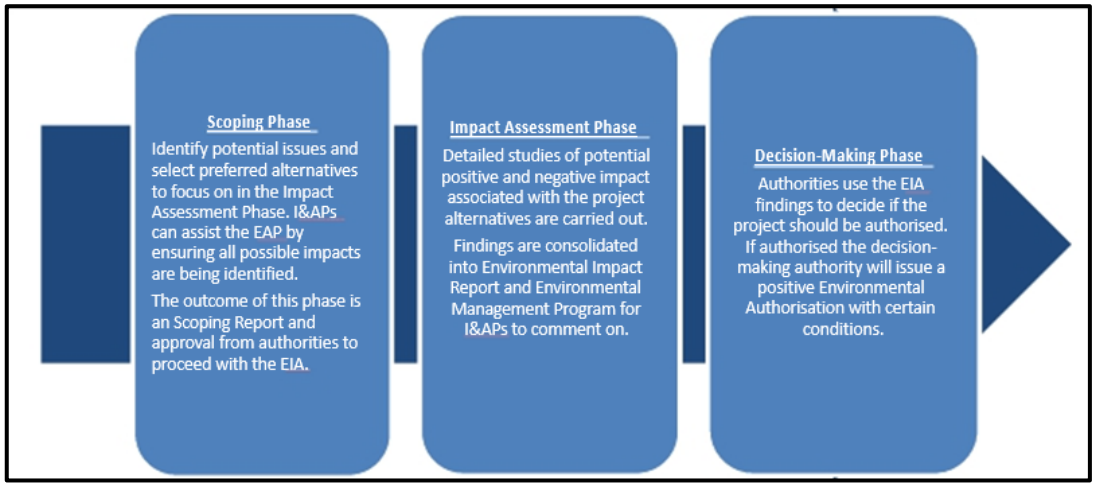
This report addresses the requirements for Scoping Phase and the Plan of Study (PoS) for the Environmental Authorisation Process as outlined in the NEMA regulations and the MPRDA regulations. The aim of this SR is to:

- Provide information to the authorities as well as interested and affected parties (I&APs) on the proposed project;
- Provide information regarding alternatives that are being considered;
- Indicate how I&APs have been and are still being afforded the opportunity to contribute to the project, verify that the issues raised during the scoping phase are incorporated in the impact assessment phase of the environmental authorization process;
- Describe the baseline receiving environment;
- Define the Terms of Reference (ToR) for specialist studies to be undertaken in the Impact Assessment Phase of the EIA; and
- Present the findings of the Scoping Phase in a manner that facilitates input by the I&AP's and decision-making by the relevant authorities.

**The Process**

As part of the project, a Scoping and Environmental Impact Assessment Process (S&EIR) is being undertaken in line with the provisions of the National Environmental Management Act (EIA regulations as amended). The S&EIR process and specialist studies to be undertaken will also support the applications for the required licenses and environmental authorizations. The EIA findings are used by the applicant and authorities to obtain an objective view of the potential environmental, social, and cultural impacts that could arise during the prospecting of the proposed area. Measures for the avoidance or mitigation of negative impacts will be proposed and positive impacts will be enhanced. The outcome of the first phase of the S&EIR is the Scoping Report, which provides the basis for undertaking the Impact Assessment Phase of the project. The draft scoping report will be available for review for at least 30 days from the 15th of September to the 15th of October 2021.

The process is summarized in the illustration below



**Environmental Baseline and Potential Impacts**

The proposed mining right area has been identified and this assessment is aimed at identifying the general environmental sensitivities across the stretch which will involve desktop plus specialist studies and draws extensively on information contained in these studies to assess these potential impacts the following baseline information will be assessed:

- Agricultural Impact Assessment
- Landscape/Visual Impact Assessment
- Archaeological and Cultural Heritage Impact Assessment
- Palaeontology Impact Assessment
- Terrestrial Biodiversity Impact Assessment
- Aquatic Biodiversity Impact Assessment
- Hydrology Assessment
- Noise Impact Assessment
- Radioactivity Impact Assessment
- Traffic Impact Assessment
- Geotechnical Assessment
- Climate Impact Assessment
- Health Impact Assessment
- Socio- Economic Assessment
- Ambient Air Quality Impact Assessment
- Seismicity Assessment
- Plant Species Assessment
- Animal Species Assessment

**Way Forward**

The EIA process is being carried out in accordance with the NEMA EIA regulations. Each of the specialists will undertake a detailed EIA assessment. Included in this report is a detailed plan of study provided by each of the appointed specialists to be implemented during the EIA phase. Potential impacts identified during the Scoping and EIA will be assessed by the specialists for each feasible development alternative and for each phase of the project. The EIA and specialist studies will provide input into the EMPR which will provide the necessary action plans and management measures to mitigate the identified impacts.

This Scoping study has been undertaken with the aim of identifying potential positive and negative impacts on the environment and gathering issues, concerns, and queries from I&APs. The Scoping report documents the process followed, the findings and recommendations of the Scoping Phase study, and the proposed Plan of Study for the EIA Phase to follow.

The way forward recommended by this study is as follows:

- Make the Scoping Report available for public comment for a period of 30 calendar days;
- Submit the Scoping Report to the competent authority for permission to undertake the Impact Assessment Phase of the project;
- Upon approval of the Scoping Report, all I&APs are to be notified of the conditions of the Department of Mineral Resources for proceeding with the Impact Assessment Phase of the project;
- Execute the Plan of Study for Impact Assessment during the Impact Assessment Phase of the project.

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**LIST OF ABBREVIATIONS**

| | |
|---|---|
| **AIA** | Archaeological Impact Assessment |
| **ASAPA** | Association of Southern African Professional Archaeologists |
| **BID** | Background Information Document |
| **CA** | Competent Authority |
| **CARA** | Conservation of Agricultural Resources Act (Act 43 of 1983) |
| **CSA** | Constitution of South Africa (Act No. 108 of 1996) |
| **DEA** | Department of Environmental Affairs |
| **DMRE** | Department of Minerals and Energy |
| **DWS** | Department of Water and Sanitation |
| **EA** | Environmental Authorisation |
| **EAP** | Environmental Assessment Practitioner |
| **ECA** | Environment Conservation Act (ECA), 1989 (Act No. 73 of 1989) |
| **EIA** | Environmental Impact Assessment |
| **EIAR** | Environmental Impact Assessment Report |
| **GN** | Government Notice |
| **HIA** | Heritage Impact Assessment |
| **I&APs** | Interested and Affected Parties |
| **IEM** | Integrated Environmental Management |
| **IWULA** | Integrated Water Use License Application |
| **IWWMP** | Integrated Water and Waste Management Plan |
| **MPRDA** | Minerals and Petroleum Resources Development Act (Act No. 28 of 2002) (as amended) |
| **NEMA** | National Environmental Management Act (EIA regulations of 4 Dec 2014 as amended in 2021) |
| **NEMAQA** | National Environmental Management: Air Quality Act (Act No. 39 of 2004) |
| **NEMBA** | National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) |
| **NEMWA** | National Environmental Management: Waste Act (Act No. 59 of 2008) |
| **NHRA** | National Heritage Resources Act, 1999 (Act No. 25 of 1999) |
| **NWA** | National Water Act, 1998 (Act No. 36 of 1998) |
| **OHSA** | Occupational Health and Safety Act (Act No. 85 of 1993) |
| **PPP** | Public Participation Process |
| **SAHRA** | South African Heritage Resources Agency |
| **SANBI** | South African National Biodiversity Institute |
| **SR /DSR** | Scoping Report / Draft Scoping |
| **UNCLOS** | United Nations Convention on the Law of the Sea |

**GLOSSARY OF TERMS**

**Anthropogenic:** Change induced by human intervention.

**Applicant**: Any person who applies for an authorisation to undertake an activity or undertake an Environmental Process in terms of the Environmental Impact Assessment (EIA) Regulations, 2014 as amended were again amended in 2021 (Government Gazette No. 44701, GNR 517); and these amendments became effective on the 11th of June 2021 which also affects mining activities.

**Archaeological resources:** This includes:

- material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years including artefacts, human and hominid remains and artificial features and structures;
- rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency, and which is older than 100 years, including any area within 10m of such representation;
- wrecks, being any vessel or aircraft, or any part thereof which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the republic as defined in the Maritimes Zones Act, and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which South African Heritage Resources Agency (SAHRA) considers to be worthy of conservation; features, structures and artefacts associated with military history which are older than 75 years and the site on which they are found.

**Biodiversity:** The variety of life in an area, including the number of different species, the genetic wealth within each species, and the natural areas where they are found.

**Cultural significance:** This means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance.

**Cumulative Impact:** In relation to an activity, cumulative impact means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

**Environment**: All physical, chemical and biological factors and conditions that influence an object.

**Environmental Impact Assessment:** In relation to an application, to which Scoping must be applied, means the process of collecting, organising, analysing, interpreting and communicating information that is relevant to the consideration of the application.

**Environmental Impact Assessment Report:** In-depth assessment of impacts associated with a proposed development. This forms the second phase of an EIA and follows on the Scoping Report (SR).

**Heritage resources:** This means any place or object of cultural significance. See also archaeological resources above.

**Precipitation:** Any form of water, such as rain, snow, sleet, or hail that falls to the earth's surface.

**Red Data species**: All those species included in the categories of endangered, vulnerable or rare, as defined by the International Union for the Conservation of Nature and Natural Resources.

**Riparian**: The area of land adjacent to a stream or river that is influenced by stream induced or related processes.

# 1 PROJECT INFORMATION

## 1.1.1 Introduction

Moonstone Diamond Marketing Pty Ltd (Moonstone Diamond Marketing) formerly Trans Hex Operations (Pty) Ltd has appointed Archean Resources (Pty) Ltd, an independent consulting company, to conduct an integrated Scoping & Environmental Impact Assessment (S&EIR) process for the upgrade of the approved Environmental Management Programme for Moonstone Diamond Marketing (Pty) Ltd existing Diamond, Diamond (General), Diamond (Alluvial), Diamond (In Kimberlite) and inclusion of Pebble Stones mining activities for the mining rights on the Remainder of Hondeklipbaai and Seaward to 31.4 Km below Low Water Mark in the administrative District Namaqualand Northern Cape Province of South Africa.

Moonstone Diamond Marketing lodged an application for Environmental Authorisation (EA) in terms of Section 24 of the NEMA Act read with Section 21 of the EIA regulations to the DMR which was acknowledged on the 7th of September 2021. The application will involve the amendment of the existing environmental management program in terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002), National Environmental Management Act (Act No 107 of 1998) as amended, National Environmental Management Waste Act, 2008 and National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008). The report has been designed to meet the requirements for conducting an Environmental Impact Assessment (EIA) and Environmental Management Programme (EMPR) as stipulated in the Regulations contained in both the Mineral and Petroleum Resources Development Act (Act No. 28 of 2002-MPRDA) and National Environmental Management Act (NEMA) respectively.

The report has been designed to meet the requirements for conducting an Environmental Impact Assessment (EIA) and Environmental Management Programme (EMPR) as stipulated in the Regulations contained in both the Mineral and Petroleum Resources Development Act (Act No. 28 of 2002-MPRDA) and National Environmental Management Act (EIA regulations as amended) respectively.

## 1.1.2 Purpose of the report

In terms of relevant legislations, the applicant may not commence with the prospecting prior to a suite of authorisations. This document is the Scoping Report, the purpose of which is to provide stakeholders with the preliminary results of the Scoping Phase of the study and with an opportunity to verify that all issues have been identified and, if not, provides an opportunity for stakeholders to raise them and for them to be captured and considered in the EIA process.

## 1.1.3 Assumptions and Limitations

As is standard practice, this Scoping Report is based on a number of assumptions and is subject to certain limitations. These are as follows:

- It is assumed that information provided by the applicant and specialists is accurate;
- A more detailed project description will be presented in the Impact Assessment Phase; and
- Detailed assessment of the potential positive and negative environmental impacts of the proposed development will only be undertaken during the Impact Assessment Phase.

Notwithstanding the above, Archean is confident that these assumptions and limitations do not compromise the overall findings of this report.

### 1.1.4 Description of the property

The areas covered by the mining rights are situated on the West Coast of South Africa within the Kamiesberg Magisterial District. Mining has been undertaken on these areas since the middle 1900s and extraction of diamonds is done by way of alluvial diggings.

The area is centrally located on the Namaqualand coastal plain of Southwestern Africa, that stretch of coast between the Olifants River in the south and the Orange River in the north. It is near the village of Hondeklip Bay and the deposits examined are situated on the farms Hondeklip and Avontuur- A. The coastal plain is mantled by Quaternary aeolian sands and exposures of the underlying deposits are only available in the "windows" provided by open- cast trenches and pits made in the process of mining marine basal gravels for their diamond content. The exposures are situated at distances of 1.5 km to -5 km from the present-day shoreline. The elevations of the Precambrian gneiss bedrock uncovered in these exposures extend from -10 m asl. (metres above sea-level, up to -50 masl.

### 1.1.5 Project Locality

| | |
|---|---|
| **Farm Name:** | Remainder of Hondeklip and Seaward to 31.4m below low water mark |
| **Application area (Ha)** | The project area covers a surface area of 2232 hectares |
| **Magisterial district:** | Magisterial/Administrative District of Namaqualand, Northern Cape Province |
| **Distance and direction from nearest town** | The application area is located and covers Hondeklip Bay town. |
| **21-digit Surveyor General Code for each farm portion** | C05300050000000100000 |

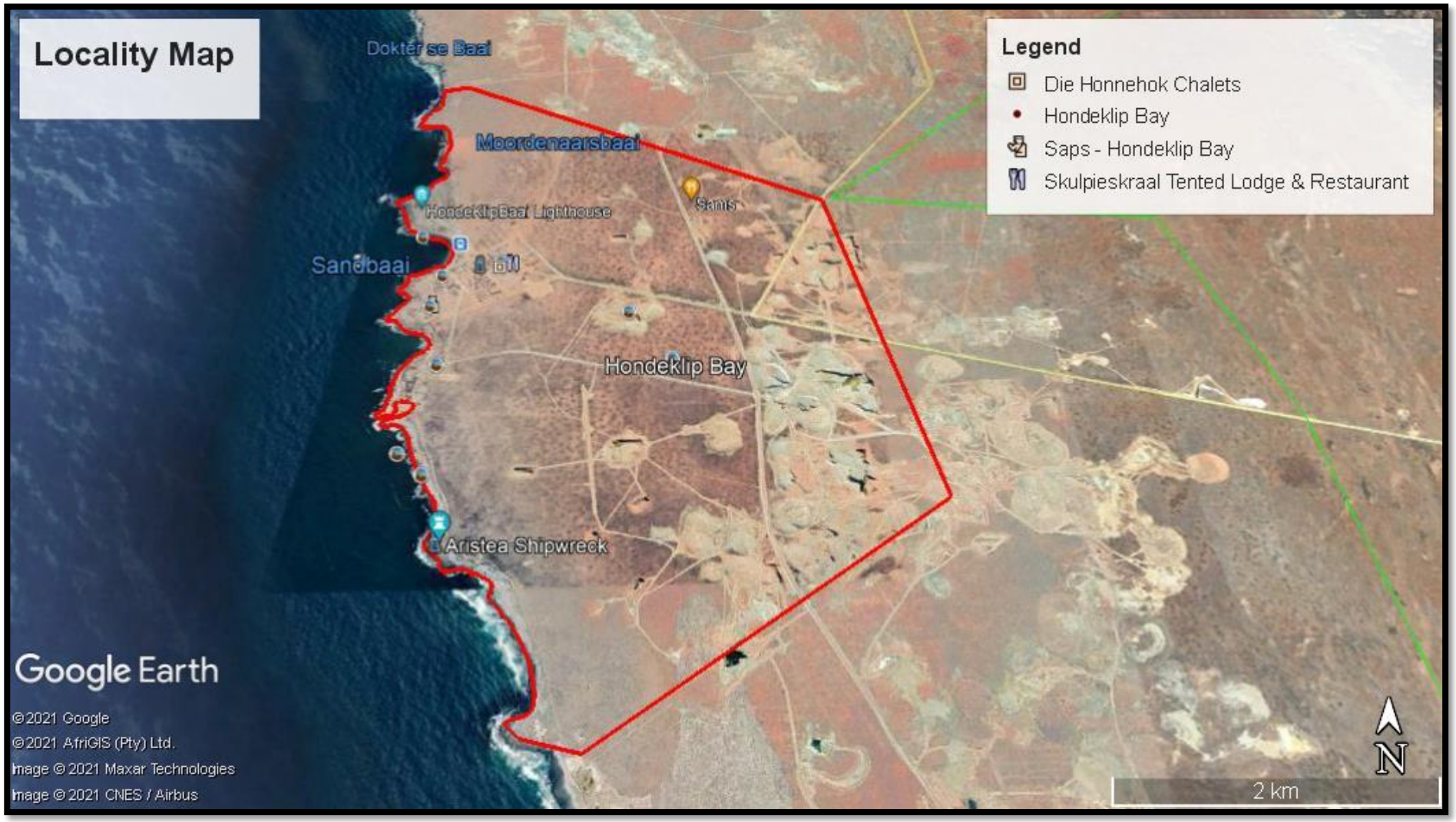



Figure 1: Locality Map

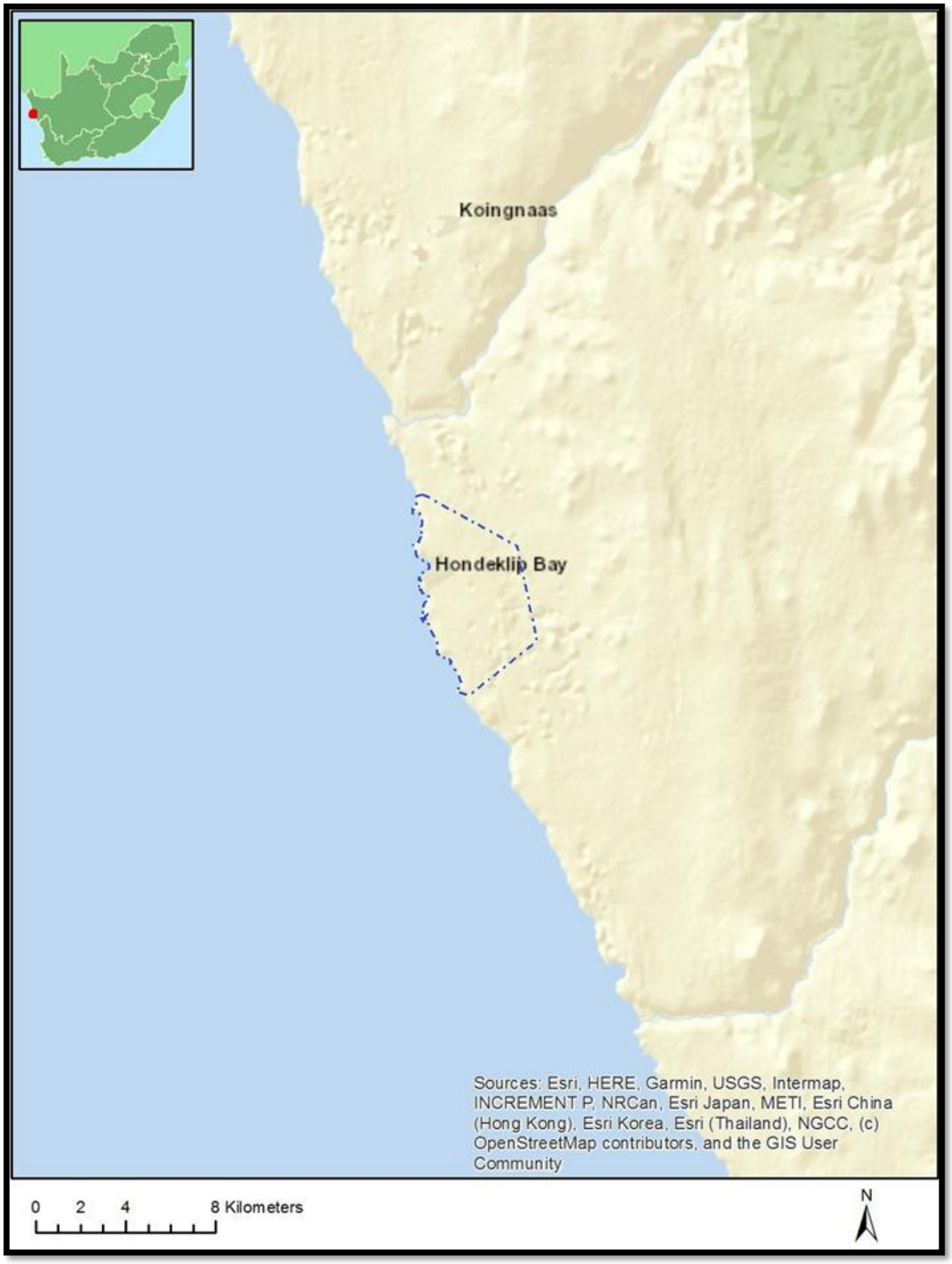



Figure 2: Locality Map

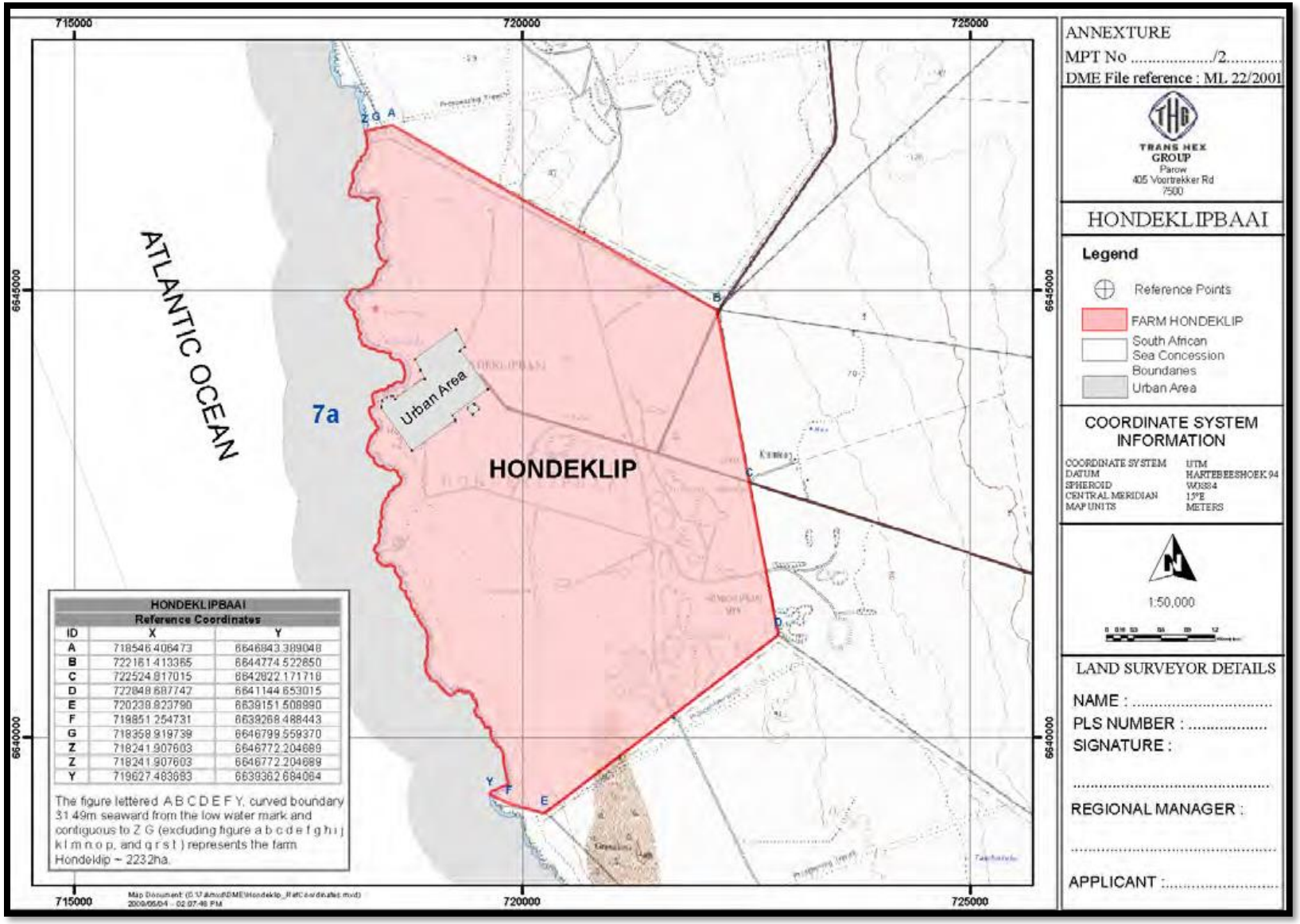



Figure 3: Regulation Map

### 1.1.6 Description why the Geological formation substantiates the minerals to be mined.

#### 1.1.6.1 Geological formation

Diamonds are the minerals that is mined on the Hondeklipbaai Right. The area is underlain by gneisses and schists. The dominant structural features are the break-up fabric when Africa split from South America about 130 million years ago (dominantly NNW – SSE). The granitic gneiss bedrock has been extensively eroded by a complex drainage network of diamond-bearing, high grade, clay-filled, fluvial channels formed during the Cretaceous period.

The basal channel gravels comprise quartz-rich gravels typical of tropical climatic regimes. Partial re-working in the marine environment has resulted in localised movement of diamonds into beaches that have formed within the depressions created by the drainage system.

The result is an absence of linear marine terraces which means that exploration strategy is less predictable. The deeper portions of specific channels have remained intact from marine re-working and in specific locations this has resulted in two diamondiferous gravel horizons (one fluvial and one marine) at different elevations in the same location. Although extensively mined, the Hondeklipbaai is still prospective on a local scale and is typified by high stone densities but a small average stone size (~0.25 ct/stone).

Depending on the age of the channels, they either eroded existing diamondiferous gravels leaving only barren bedrock or acted as traps for diamonds in original fluviai deposits or marine sediments deposited during subsequent sealevel high stands. The result is that none of the packages are continuous along the entire Namaqualand coastline; they are preserved as erosional remnants in geographically favourable areas, covered by younger terrestrial deposits. River point sources are marked by significant increased diamond content and size in the immediately adjoining terrace and surf zone deposits. Both diamond size and content decrease steadily away from the river entry points, more so to the south than to the north - a result of the prevailing northerly wave, wind, and current action along the west coast (cf. Rogers et al., 1990). Longshore sand transport by these same agents results in blockages of river mouths and a general northward migration of river entry points (e.g the Olifants and Orange Rivers).

## 2 DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY

### 2.1.1 Listed and specified activities

Table 3: Listed and specified activities

| **NAME OF ACTIVITY**<br>**(E.g. For prospecting -** drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc**<br>**E.g. for mining**,- excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.) | **Aerial extent of the Activity**<br>**Ha or m²** | **LISTED ACTIVITY**<br>(Mark with an **X** where applicable or affected). | **APPLICABLE LISTING NOTICE**<br>**(*GNR 983, 984, 985*** | **WASTE MANAGEMENT AUTHORISATION**<br>(Indicate whether an authorisation is required in terms of the Waste Management Act). **(Mark with an X)** |
|---|---|---|---|---|
| **GNR 983 Listing Notice 1: Activities requiring an environmental authorisation subject to a Basic Assessment** | | | | |
| The development of –<br>(ii) channels exceeding 100 square metres in size<br>(iv) dams where the dam including infrastructure and water surface area, exceeds 100 square meters in size<br>(vi) bulk storm water outlet structures exceeding 100 square metres in size;<br>(xii) Infrastructure or structures with a physical footprint of 100 square meters or more.<br>***Relevance: Slimes dams will be constructed.*** | 10 ha | X | **GNR 983 Listing Notice 1:** Activity 12 | N/A |
| The development of a road where no reserve exists where the road is wider than 8 meters but excluding roads which are identified and included in activity 27 in listing Notice 2 of 2014.<br>***Relevance: Access roads will be upgraded, and mine haul roads constructed.*** | 20km | X | **GNR 983 Listing Notice 1:** Activity 24 | N/A |
| **GNR 984Listing Notice 2: Activities requiring an environmental authorisation subject to a Scoping and Environmental Impact Assessment.** | | | | |
| The development of facilities or infrastructure, for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of more than 500 cubic metres.<br>***Relevance: Hydrocarbon fuels*** | 1000m³ | X | **GNR 984 Listing 2:** Activity 4 | N/A |
| The clearance of an area of 20 hectares or more of indigenous vegetation<br>***Relevance: clearing of mining area*** | 2232 ha | X | GNR 984 Listing 2: Activity 15 | N/A |
| Any activity including the operation of that activity which requires a mining right as contemplated in section 22 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource..<br>***Relevance: Mining activity*** | 2232 ha | X | GNR 984 Listing 2: Activity 17 | N/A |
| Any activity including the operation of that activity associated with the primary processing of a mineral resource including winning, reduction, extraction, classifying, concentrating, crushing, screening, and washing<br>**Processing Plant and Mobile Plant** | 5 ha | X | GNR 984 Listing 2: Activity 21 | N/A |
| **National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) GN 921** | | | | |

| | | |
|---|---|---|
| CATEGORY B<br>Disposal of waste on land<br>(7) The disposal of any quantity of hazardous waste to land.<br>(8) The disposal of general waste to land covering an area in excess of 200m2 and with a total capacity exceeding 25 000 tons | There will be disposal of slimes, effluent, wastewater from the processing plant to coffer dams | X |
| B (10) The construction of a facility for a waste management activity listed in Category B of this Schedule (not in isolation to associated waste management activity). | There will be construction of waste management facilities | X |
| B (11) The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a mining right, exploration right or production right in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002). Residue stockpiles or residue deposits | Reside deposit will be deposited onto the beach and other mined out areas for rehabilitation purposes. | X |

### 2.1.2 Description of the activities to be undertaken

#### 2.1.2.1 Basic overview of the mining method

##### 2.1.2.1.1 Methodology for Diamond mining

The in-situ gravel orebody, although discontinuous, is near surface and relatively flat lying with a large horizontal extent, making it amenable to strip mining. Strip mining defines the mineable area as a series of parallel strips and the mining sequence is as follows:

- overburden stripping
- mechanical extraction of ore
- bedrock cleaning.

Initially, before any mining takes place in a strip, the topsoil or other growth medium will be salvaged (stripped) and either stockpiled or placed directly in another part of the mine undergoing reclamation. The first strip is referred to as the "box cut" as the overburden is placed on surface on the opposite side of overall mining advancement, creating a four-sided trench (box). Mining of overburden will start at the end of the first strip and progress along the strip exposing the ore for eventual mining. Waste overburden from subsequent strips will be placed in adjacent mined out strips.

Stripping will be carried out in advance of ore excavation with the objective of creating a six-month reserve of pre-stripped area. This will allow blending of ore to match plant and production requirements. Overburden excavation is more difficult when calcretised, compacted and cemented layers are encountered and, at times, this will require drilling and blasting. In certain areas, large cobbles and boulders may also hinder stripping efforts.

Exposed ore, which in general is a metre or more thick, will be extracted using track dozers and mechanical excavators. This diamond-bearing gravel will be piled into windrows ahead of loading into ADT's for transport to a nearby mobile screening plant. The screened ore product will then be transported to the designated treatment plant.

The final mining stage is sweeping of the exposed bedrock surface to remove all ore that may contain diamonds. The richest concentrations of gems are often found in potholes and gullies and bedrock cleaning teams will use both mechanical and manual methods to clean the bedrock. Equipment used will include pneumatic drills, compressed air blowpipes, picks, shovels and large vacuum cleaners.

#### 2.1.2.1.2 Processing of tailings to extract Pebbles

An appointed local contractor will rework the tailings to extract different sizes of pebble stones.

#### 2.1.2.1.3 Method of operation:

In order to screen out the material, two-barrel classifiers will be used with the primary classifier screen being -1mm and +1mm -5mm. The secondary classifier fractions are -8mm +5mm; -12mm +8mm; -20mm +12mm; -50mm +20mm. The screened material will be discharged onto conveyors and stockpiled in various size fractions. This material is then packed in 20kg plastic bags in the different size fractions and stored in the stores building until shipment.

The size fractions are -5mm +1mm; -8mm +5mm; -12mm +8mm; -20mm +12mm; -50mm +20mm. Some material will be shipped in bulk 1 tonne bags. This would also be in the same size fractions as indicated. Stones of +50mm will be hand sorted and packed.

Quantities: The estimated volume for sale is 80 tonnes per month at an average of R2 300 per ton.

### 2.1.3 High level description of the processing plant

#### 2.1.3.1 Processing of tailings to extract Pebbles

#### 2.1.3.1.1 **Basic plant design.** (supported by a process flow diagram, of the plant).

Mined gravel will be tipped into the front-end tipping bin. The very coarse +150 mm material will be discarded by means of a static grizzly and the -150 mm material will feed through a jaw crusher. The jaw crusher product will be washed into a scrubber which feeds onto a double set of screens, with the -12 +1 mm screened product conveyed to a 50 tph DMS plant for concentration. The +12 mm material will be discarded onto the tailings dump and the -1 mm slimes material pumped to the slimes dam.

. The DMS concentrate is then processed through a final recovery plant using X-ray technology to extract the diamonds from the concentrate. These plants have been well maintained since suspension of operations by West Coast Resources and has operated efficiently and effectively at the mentioned throughputs.

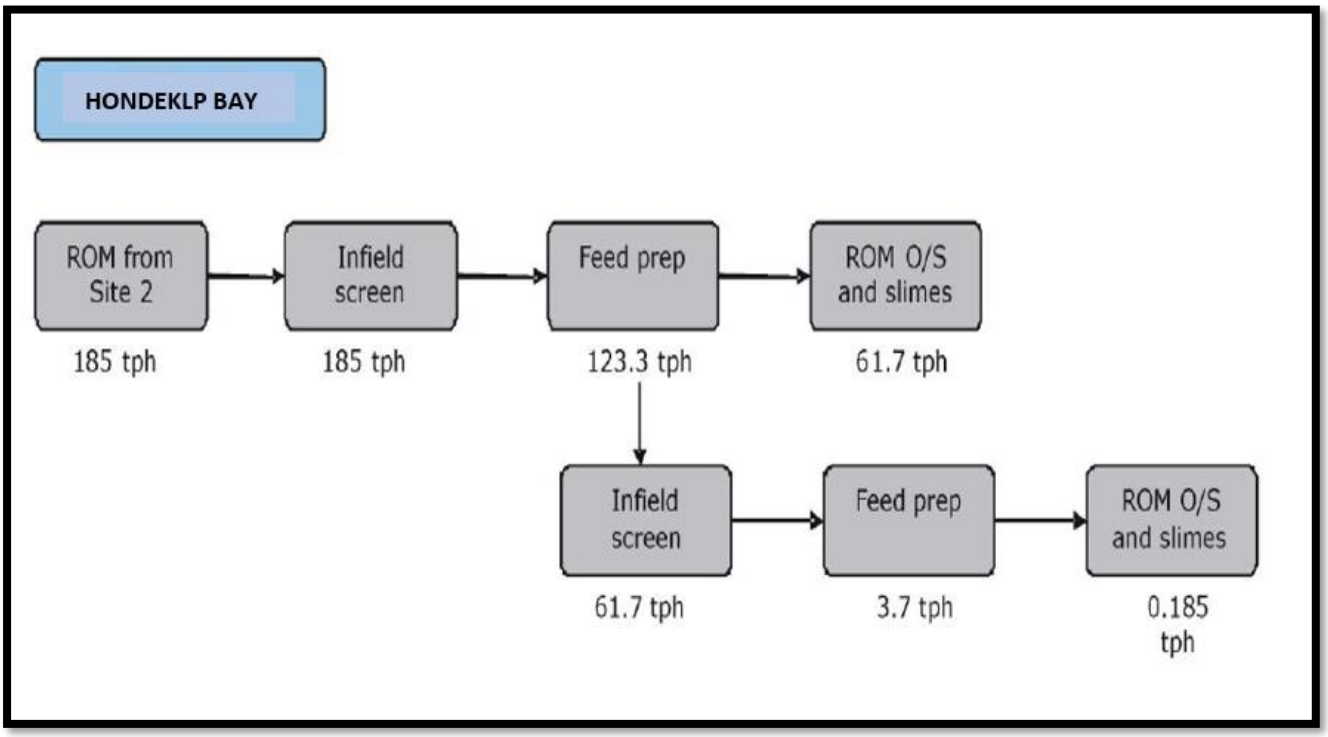



Figure 4: Process flow diagram of the plant flowsheet.

#### 2.1.3.2 Efficiency of the process. (Together with an estimate of the mineral recovery rate, and the expected mass or volume of mine waste or residues together with the manner in which it would be disposed of.)

The diamond recovery process in uncemented alluvial deposit using the plant as described above are proven to have a recovery rate in excess of 98% of the diamonds.

### 2.1.4 Minerals applied for:

- Diamond,
- Diamond (General)
- Diamond (Alluvial)
- Diamond (In Kimberlite)
- Pebble Stones.

## 3 POLICY AND LEGISLATIVE CONTEXT

### 3.1.1 The South African Constitution

This section provides an overview of the legislative requirements applicable to this project and it includes the Acts, guidelines and policies considered in the compilation of this report. The legislative motivation for this project is underpinned by the Constitution of South Africa, 1996 (Act No. 108 of 1996), which states that:
The State must, in compliance with Section 7(2) of the Constitution, respect, protect, promote and fulfil the rights enshrined in the Bill of Rights, which is the cornerstone of democracy in South Africa. Section 24 of the Constitution:

**24. Environment**

*-Everyone has the right-*

*(a) to an environment that is not harmful to their health or well-being; and*

*(b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that-*

*(i) prevent pollution and ecological degradation;*

*(ii) promote conservation; and*

*(iii) secure ecologically sustainable development and use of natural resources while promoting a justifiable economic and social development*.

Section 24 of the Constitution of South Africa (Act No. 108 of 1996) requires that all activities that may significantly affect the environment and require authorisation by law must be assessed prior to approval. In addition, it provides for the Minister of Environmental Affairs or the relevant provincial Ministers to identify:

- new activities that require approval;
- areas within which activities require approval; and
- existing activities that should be assessed and reported on.

Section 28(1) of the Constitution of South Africa (Act No. 108 of 1996) states that: *"every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring".* If such pollution or degradation cannot be prevented, then appropriate measures must be taken to minimise or rectify such pollution or degradation. These measures may include:

- Assessing the impact on the environment;
- Informing and educating employees about the environmental risks of their work and ways of minimising these risks;
- Ceasing, modifying or controlling actions which cause pollution/degradation;
- Containing pollutants or preventing movement of pollutants;
- Eliminating the source of pollution or degradation; and
- Remedying the effects of the pollution or degradation.

**Applicability: Public participation process and consultation at every stage of the EIA phase. A public participation process will be followed and consultations to be done regarding the proposed project. An EMP and awareness plan will be designed according to the issues raised during this process**

### 3.1.2 National Environmental Management Act

The NEMA Act under sections 24(2), 24(5), 24D and 44, read with section 47A (1) (b) of National Environmental Management Act (107/1998): Environmental Impact Assessment Regulations, 2014 as amended in April 2017, is regarded as one of the important pieces of general environmental legislation as it provides a framework for environmental law reform. The main objective of this act is to ensure that ecosystem services and biodiversity are protected and maintained for sustainable development. Furthermore, Section 28 (1) of the NEMA requires that "every person who causes has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring".

NEMA strives to regulate national environmental management policy and is focussed primarily on co-operative governance, public participation and sustainable development. NEMA makes provisions for co-operative environmental governance by establishing principles for decision making on matters affecting the environment, institutions that will promote co-operative governance and procedures for co-ordinating environmental functions exercised by Organs of State and to provide for matters connected therewith.

A scoping report must contain the information that is necessary for a proper understanding of the process, informing all preferred alternatives, including location alternatives, the scope of the assessment, and the consultation process to be undertaken through the environmental impact assessment process, and must include-

(a) details of-
   - *I. the EAP who prepared the report; and*
   - *II. the expertise of the EAP, including a curriculum vitae;*

(b) the location of the activity, including-
   - *I. the 21 digit Surveyor General code of each cadastral land parcel;*
   - *II. where available, the physical address and farm name;*
   - *III. where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;*

(c) a plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is-
   - *I. a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or*
   - II. *on land where the property has not been defined, the coordinates within which the activity is to be undertaken*;

(d) a description of the scope of the proposed activity, including-
   - *I. all listed and specified activities triggered;*
   - *II. a description of the activities to be undertaken, including associated structures and infrastructure;*

(e) 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;

(f) a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;

(h) a full description of the process followed to reach the proposed preferred activity, site and location within the site, including-

*I. details of all the alternatives considered;*

*II. details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;*

*III. a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;*

*IV. the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;*

*V. the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts-*

*a) can be reversed;*

*b) may cause irreplaceable loss of resources; and*

*c) can be avoided, managed or mitigated;*

*VI. the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;*

*VII. positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;*

*VIII. the possible mitigation measures that could be applied and level of residual risk;*

*IX. the outcome of the site selection matrix;*

*X. if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such and*

*XI. a concluding statement indicating the preferred alternatives, including preferred location of the activity;*

**Applicability: Baseline environmental information of the project area will be assessed. Mitigation measures and recommendations were provided according to best practice standards. This scoping report complies with the requirements of the NEMA act. The specialist report will also be compiled in line with the regulations.**

### 3.1.3 Mineral and Petroleum Resources Development Act

The MPRDA makes provision, for persons to apply for a mining right. A mining right granted in terms of the MPRDA is a limited real right in respect of the type of resources and the land to which the right relates. The holder of a mining right is entitled to the rights referred to in the MPRDA or any other law.

The applicant requires a mining right and environmental authorisation from the DMRE. Acceptance of the application by DMRE only permits the applicant to continue with the necessary process and does not constitute authorisation. The acceptance details the outstanding requirements for the application, which includes:

- the submission of an EMP; and
- notification and consultation with IAPs, including landowners or lawful occupiers of land, on which the proposed mining is to be conducted;
- Details on how the applicant will substantially and meaningfully expand opportunities for historically disadvantaged persons.

**Applicability: A mining right must have an environmental management plan that meets the requirements of applicable legislation in relation to the activities being undertaken. This report will update the EMPr.**

### 3.1.4 National Environmental Management: Integrated Coastal Management Act 24 of 2008 (as amended)

The National Environmental Management: Integrated Coastal Management Act 24 of 2008 aims:

- to establish a system of integrated coastal and estuarine management in the Republic, including norms, standards, and policies, in order to promote the conservation of the coastal environment, and maintain the natural attributes of coastal landscapes and seascapes, and to ensure that development and the use of natural resources within the coastal zone is socially and economically justifiable and ecologically sustainable;
- to define rights and duties in relation to coastal areas;
- to determine the responsibilities of organs of state in relation to coastal areas;
- to prohibit incineration at sea;
- to control dumping at sea, pollution in the coastal zone, inappropriate development of the coastal environment and other adverse effects on the coastal environment;
- to give effect to South Africa's international obligations in relation to coastal matters; and
- to provide for matters connected therewith.

The National Environmental Management: Integrated Coastal Management Amendment Act 36 of 2014 aims:

- to amend the National Environmental Management: Integrated Coastal Management Act, 2008, so as:
- to amend certain definitions;
- to clarify coastal public property and the ownership of structures erected on and in coastal public property;
- to remove the power to exclude areas from coastal public property;
- to clarify and expand the provisions on reclamation;
- to clarify definitions and terminology;
- to simplify the administration of coastal access fee approvals;
- to simplify and amend powers relating to coastal authorisations;
- to replace coastal leases and concessions with coastal use permits;

- to extend the powers of MECs to issue coastal protection notices and coastal access notices;
- to limit the renewal of dumping permits;
- to simplify the composition and functions of the National Coastal Committee;
- to clarify the powers of delegation by MECs;
- to revise offences and increase penalties;
- to improve coastal authorisation processes;
- to provide for exemptions;
- to provide for transitional matters;
- to effect certain textual alterations; and
- to provide for matters connected therewith.

**Applicability: The mining will have adverse impacts on coastal processes both social and environmental which need to be assessed and mitigated in terms of the National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008.**

### 3.1.5 National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004)

The overarching aim of the National Environmental Management: Biodiversity Act, 2004 (NEMBA), within the framework of NEMA, is to provide for:

- *The management and conservation of biological diversity within South Africa as well as for the components of such biological diversity;*
- *The use of indigenous biological resources in a sustainable manner and*
- *The fair and equitable sharing among stakeholders of benefits arising from bio-prospecting involving indigenous biological resources.*

As part of its implementation strategy of NEMBA, the National Spatial Biodiversity Assessment was developed. This assessment classifies areas as worthy of protection based on its biophysical characteristics, which are ranked according to priority levels. The approach used for biodiversity planning is systematic and entails the following three key principles:

- *The need to conserve a representative sample of biodiversity pattern, such as species and habitats (the principle of representation);*
- *The need to conserve the ecological and evolutionary processes that allow biodiversity to persist over time (the principle of persistence); and*
- *The need to set quantitative biodiversity targets that quantifies the degree of conservation required for each biodiversity feature in order to maintain functioning landscapes and seascapes.*

Furthermore, the South African National Biodiversity Institute (SANBI) was established by the NEMBA, its purpose being (*inter alia*) to report on the status of the country's biodiversity and the conservation status of all listed threatened or protected species and ecosystems. NEMBA provides for a range of measures to protect ecosystems and for the protection of species that are threatened or in need of protection to ensure their survival in the wild, including a

prohibition on carrying out a "restricted activity" involving a specimen of a listed threatened or protected species without a permit issued in terms of Chapter 8 of the Act. Lists of critically endangered, endangered, vulnerable and protected species have been published and a permit system for listed species has been established.

It is also appropriate to undertake a Biodiversity Impact Assessments for developments in an area that is considered ecologically sensitive, and which requires environmental authorisation in terms of NEMA, with such assessment taking place during the Scoping or EIA phase. The Applicant is therefore required to take appropriate reasonable measures to limit the impacts on biodiversity, to obtain permits if required.

**Applicability: Terrestrial Biodiversity Impact Assessment with a Plant and Animal Species Assessment, Aquatic Biodiversity Impact Assessment, will be undertaken.**

### 3.1.6 National Forest Act, 1998 (Act 84 of 1998)

The purposes of National Forest Act, 1998 (act 84 of 1998) (NFA) includes *inter alia:*

(*c) provide special measures for the protection of certain forests and trees:*

*(d) promote the sustainable use of forests for environmental, economic, educational, recreational, cultural, health and spiritual purposes.*

**Applicability: Impact and mitigation measures to be implemented for plant species in the assessment.**

### 3.1.7 National Environmental Management: Air Quality Act (Act No 39 of 2004)

Section 28 (1) of NEMA places a general duty of care on any person who causes pollution, to take reasonable measures to prevent such pollution from occurring. The objective of the National Environmental Management: Air Quality Act, 2004 (NEM: AQA) is to regulate air quality to protect, restore and enhance the quality of air in the Republic, considering the need for sustainable development. Furthermore, the provision of national norms and standards regulating air quality monitoring, management and the control by all spheres of government determine that specific air quality measures should be adhered to. Dust created during the construction and operational phases of the proposed prospecting could influence air quality and thus make this legislation relevant to this development. Air quality management and mitigation measures during the operational phase will be considered to be a measure to exercise this duty of care, since it aim to minimise volumes of dust emissions emanating from the operational activities.

**Applicability: An air emission license will not be required but air quality monitoring will be implemented.**

### 3.1.8 Conservation of Agricultural Resources Act (Act 43 of 1983)

The aim of the Conservation of Agricultural Resources Act,1983 (Act 43 of 1983) (CARA) is to provide for control over the utilisation of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants and for matters connected therewith. The EIA phase of the project will take into account the requirements of CARA as well as determine the potential direct and indirect impacts on agricultural resources as a result of the proposed prospecting development.

**Applicability: The project will impact on soils and land use in the area. An Agricultural Assessment will be undertaken or motivation for exemption..**

### 3.1.9 National Environmental Management: Waste Act (Act 59 of 2008) as amended

The National Environmental Management: Waste Act, 2008 (Act 59 of 2008) (NEM:WA) and Waste Classification and Management Regulations, 2003 (GNR: 634 – 635): To reform the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development; to provide for institutional arrangements and planning matters; to provide for national norms and standards for regulating the management of waste by all spheres of government; to provide for specific waste management activities; to provide for the remediation of contaminated land; to provide for the national waste information system; to provide for compliance and enforcement; and to provide for matters connected therewith.

The operational activities associated with the proposed mine works program shall be in accordance with the requirements of National Environmental Management: Waste Act, 2008 (Act 59 of 2008) (NEM: WA) and Waste Classification and Management Regulations, 2003 (GNR: 634 – 635). The proposed project requires a waste management licence.

**Applicability: A waste license is required for the Residue Stockpiles Waste classification and Waste Management Plan will be compiled and will be integrated in the Draft EIAr which will be available for public review during the EIA phase**

### 3.1.10 Occupational Health and Safety Act (Act 85 of 1993)

The aim of the Occupational Health and Safety Act, 1993 (act 85 of 1993) (OHSA) is to provide for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery ; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work; to establish an advisory council for occupational health and safety as well as to provide for matters connected therewith.

Section 8 which deals with the general duties of employers and their employees states that:

1) *"Every employer shall provide and maintain, as far as is reasonably practicable, a working environment that is safe and without risk to the health of the employees."*
2) *''Without derogating from the generality of an employer's duties under subsection (1), the matters to which those duties refer include in particular:*
    a. *The provision and maintenance of systems of work, plant and machinery that, as far as reasonably practicable, are safe and without risk to health;*
    b. *Taking such steps as may be reasonably practicable to eliminate or mitigate any hazard or potential hazard to the safety and health of employees;*
    c. *Making arrangement for ensuring as far as reasonably practicable, the safety and absence of risks to health relating to the production, processing, use, handling, storage and transport of articles or substances;*
    d. *Establishing, as far as reasonably practicable, what hazards to the health or safety of persons are attached to any work which is performed, any article or substance which is produced, processed, used, handled, stored or*

*transported and any plant or machinery which is used in his business, and he shall, as far as reasonably practicable, further establish what precautionary measures should be taken with respect to such work, article, substance, plant or machinery in order to protect the health and safety of persons, and he shall provide the necessary means to apply such precautionary measures;*

e. *Providing such information, instruction, training and supervision as may be necessary to ensure, as far as reasonably practicable, the health and safety of employees;*
f. *As far as reasonably practicable, not permitting any employee to do any work or to produce, process, use, handle, store, or transport any article or substance or to operate any plant or machinery, unless precautionary measures contemplated in paragraph (b) and (d), or any precautionary measures which may be prescribed, have been taken;*
g. *Taking all necessary measures to ensure that the requirements of this act are complied with by every person in his employment or on the premises under his control where plant and machinery is used;*
h. *Enforcing such measures as may be necessary in the interest of health and safety;*
i. *Ensuring that work is performed, and that plant and machinery is used under the general supervision of a person trained to understand the hazards associated with it and who has the authority to ensure that precautionary measures taken by the employer are implemented and*
j. *Causing any employees to be informed regarding the scope of their authority as contemplated in section 37(1)(b).''*

### 3.1.11 National Heritage Resources Act

**National Heritage Resource Act, 1999 (Act No. 25 of 1999)**

The proposed diamond prospecting project by Moonstone Diamond Marketing must comply with the requirements stipulated in the National Heritage Resources Act, 1999 (Act 25 of 1999) (NHRA). The NHRA legislates the necessity for cultural and Heritage Impact Assessment (HIA) in areas earmarked for development, which exceed 0.5 ha or linear development exceeding 300 metres in length. The Act makes provision for the potential destruction to existing sites, pending the archaeologist's recommendations through permitting procedures. Permits are administered by the South African Heritage Resources Agency (SAHRA).

Section 38(1) of NHRA, subject to the provisions of subsections (7), (8) and (9), requires that any person who intends to undertake a development categorised as:

*(a) The construction of **a road**, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;*
*(b) The construction of a bridge or similar structure exceeding 50m in length;*
*(c) Any development or other activity which will change the character of a site-*

*(i)Exceeding 5 000 $m^2$ in extent; or*

*(ii)Involving three or more existing erven or subdivisions thereof; or*

*(iii)Involving three or more erven or divisions thereof which have been consolidated within the past five years; or*

*(iv)The costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;*

*(d) The re-zoning of a site exceeding 10 000 $m^2$ in extent; or*

*(e) Any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.*

Archaeological impact assessments (AIAs) are often commissioned as part of the heritage component of an EIA and are required under Section 38(1) of the NHRA of 1999, Section 38(8) of the NEMA and the MPRDA.

The process of archaeological assessment usually takes the form of:

1. A scoping or initial pre-assessment phase where the archaeologist and developer's representative establish the scope of the project and terms of reference for the project;
2. A Phase 1 AIA;
3. A Phase 2 archaeological mitigation proposal; and
4. A Phase 3 heritage site management plan.

**Phase 1: Archaeological Impact Assessment**

A Phase 1 AIA generally involves the identification and assessment of sites during a field survey of a portion of land that is going to be affected by a potentially destructive or landscape altering activity. The locations of the sites are recorded, and the sites are described and characterised. The archaeologist assesses the significance of the sites and the potential impact of the development on the sites and makes recommendations. It is essential that the report supply the heritage authority with sufficient information about the sites to assess, with confidence, whether or not it has any objection to a development, indicate the conditions upon which such development might proceed and assess which sites require permits for destruction, which sites require mitigation and what measures should be put in place to protect sites that should be conserved.

Minimum standards for reports, site documentation and descriptions are clearly set out by the SAHRA and supported by the Association of Southern African Professional Archaeologists (ASAPA). The sustainable conservation of archaeological material (*in situ*) is always the best option for any sites that are deemed to be of importance. The report needs to indicate which sites these are, explain why they are significant and recommend management measures. In certain kinds of developments which involve massive intervention (prospecting, dam construction, etc.), it is not possible to reach a conservation solution other than to develop a programme of mitigation which is likely to involve the total or partial "rescue" of archaeological material and its indefinite storage in a place of safety.

**Phase 2: Archaeological Mitigation Proposal**

If the Phase 1 report finds that certain archaeological sites in a development area are of low significance, it is possible to seek permission from the heritage authority for their destruction. The final decision is then taken by the heritage resources authority, which should give a permit or a formal letter of permission, or in the case of an EIA issue a comment allowing destruction.

Phase 2 archaeological projects are primarily based on salvage or mitigation excavations preceding development that will destroy or impact on a site. This may involve collecting of artefacts from the surface, excavation of representative samples of the artefact material to allow characterisation of the site and the collection of suitable materials for dating the sites. The purpose is to obtain a general idea of the age, significance and meaning of the site that is to be lost and to store a sample that can be consulted at a later date for research purposes. Phase 2 excavations should be done under a permit issued by SAHRA, or other appropriate heritage agency, to the appointed archaeologist. Permit conditions are prescribed by SAHRA, or other appropriate heritage agencies. Conditions may include as minimum requirements reporting back strategies to SAHRA, or other appropriate heritage agencies and/or deposition of excavated material at an accredited repository.

Should further material be discovered during development, this must be reported to the archaeologist or to the heritage resources authority and it may be necessary to give the archaeologist time to rescue and document the findings. In situations where the area is considered archaeologically sensitive the developer will be asked to have an archaeologist monitor earth-moving activity.

**Phase 3: Management plan for conservation and planning, site museums and displays**

On occasion Phase 2 may require a Phase 3 program involving one of the following:

- The modification of the site;
- The incorporation of the site into the development itself as a site museum;
- A special conservation area; or
- A display.

Alternatively, it is often possible to re-locate or plan the development in such a way as to conserve the archaeological site or any other special heritage significance the area may have. For example, in a wilderness or open space areas where such sites are of public interest, the development of interpretative material is recommended since it adds value to the development. Permission for the development to proceed can be given only once the heritage resources authority is satisfied that measures are in place to ensure that the archaeological sites will not be damaged by the impact of the development or that they have been adequately recorded and sampled. Careful planning can minimise the impact of archaeological surveys on development projects by selecting options that cause the least amount of inconvenience and delay. The process as explained above allows the rescue and preservation of information relating to our past heritage for future generations. It balances the requirements of developers and the conservation and protection of our cultural heritage as required of SAHRA and the provincial heritage resources authorities.

**Applicability: Heritage and palaeontology assessment will be conducted Proper management and mitigation measures will be recommended in the EIAR including chance find protocols.**

### 3.1.12 National Water Act, 1998 (Act No.36 of 1998)

The National Water Act, 1998 (Act 36 of 1998) (NWA) aims to provide management of the national water resources to achieve sustainable use of water for the benefit of all water users. This requires that the quality of water resources is protected as well as integrated management of water resources with the delegation of powers to institutions at the regional or catchment level.

The purpose of the NWA is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in ways, which take into account:

- Meeting the basic human needs of present and future generations;
- Promoting equitable access to water;
- Redressing the results of past racial discrimination;
- Promoting the efficient, sustainable and beneficial use of water in the public interest;
- Facilitating social and economic development;
- Providing for growing demand for water use;
- Protecting aquatic and associated ecosystems and their biological diversity;
- Reducing and preventing pollution and degradation of water resources;
- Meeting international obligations and
- Managing floods and droughts.

Section 21 of the National Water Act, 1998 (No. 36 of 1998) (NWA) lists water uses for which a Water Use License (WUL) must be obtained. Uses with potential relevance to the proposed prospecting include:

*Section 21 (a) Taking of water from a water resource (surface or groundwater).*
*Section 21 (b) Storing of water (not containing waste).*
*Section 21 (c) Impeding or diverting the flow of water in a water course.*
*Section 21 (e) Engaging in a controlled activity:*
*Section 21 (i) altering the beds, banks, course or characteristics of a water course.*

The Department of Water and Sanitation (DWS) has published various General Authorizations (GA) in terms of Section39 of the NWA which, replace the need for a water user to apply for a license in terms of the NWA for specific activities. The GAs have been revised and amended at different times.

The GAs set out specific conditions under which a water use may occur without a license and also specify the conditions or thresholds at which a user must register the use with the DWS.

**Applicability: There is an existing water use and Due to the nature of activities no amendment to water use license will be required however mitigation measures for protection of water resources will be implemented.**

**Other Applicable National legislations**

- Hazardous Substances Act, 1973 (Act No. 15 of 1973);

- Roads Ordinance Amendment Act, 1998 (Act No. 17 of 1998);
- South African National Roads Agency Limited and National Roads Act, 1998 (Act No. 7 of 1998);

### 3.1.13 Provincial Legislative Framework

**Table 4: Provincial legislation, policies and guidelines considered**

| | | |
|---|---|---|
| NAMAKWA DISTRICT MUNICIPALITY Integrated Development Plan 2017 – 2022 | Source of background demographic and socio-economic information | Utilized as a source of demographic and socio-economic information for the Namakwa Municipal area. |
| National Environmental Management: Biodiversity Act, 2004 (ACT NO. 10 OF 2004) Threatened or Protected Marine Species Regulations | Some of the Marine TOPS species occur on or close to the prospecting area | Sensitivity maps and baseline information (African Fur Seal, Damara Tern, cormorants). |
| 2016 Northern Cape Critical Biodiversity Areas | The Northern Cape CBA Map identifies biodiversity priority areas, called Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs), | Sensitive area and conservation of vulnerable and threatened biodiversity areas |
| The National Environmental Management: Integrated Coastal Management Act 24 of 2008 | The application covers areas along the coast. Source of buffer zones and access to the beach areas. | To control dumping at sea, pollution in the coastal zone, inappropriate development of the coastal environment and other adverse effects on the coastal environment. |
| The National Environmental Management: Protected Areas Act 57 of 2003 (NEMPAA) | Identification of protected areas and ecological support areas. | Assessment and mitigation of direct impacts and cumulative impacts on protected areas. |
| Spatial Planning Land Use and Management Act, 2013 (No 16 of 2013)<br>National Environmental Management: Waste Act, 2008;<br>List of waste management activities promulgated in GN No. 921 of 29 November 2013 (as amended);<br>National Waste Information Regulations promulgated in GN No. R. 625 of 13 August 2012;<br>National Norms and Standards for the Storage of Waste promulgated in GN No. 926 of 29 November2013; and<br>Waste Classification and Management Regulations promulgated in GN No. R. 634 of 23 August 2013. | | |

### 3.1.14 Applicable Legislation and Approvals Required

- Mining right and Environmental authorization from the Department of Mineral Resources in terms of the MPRDA (Act 28 of 2002) and National Environmental Management Act (107/1998): Environmental Impact Assessment Regulations as amended.
- Approval of an environmental management programme, in terms of the **Mineral and Petroleum Resources Development Act** (No 28 of 2002) (MPRDA), by the Department of Mineral Resources.

In addition to the main legal approvals, the following approvals will be required:

- The South African Heritage Resources Agency needs to approve a heritage assessment, to be conducted as part of the overall EIA process, in terms of the **National Heritage Resources Act** (No 25 of 1999). Permits will be required for the destruction or removal of any heritage resources affected by the development if any.
- Should protected species be affected, permits will have to be obtained for their removal, relocation or destruction. This is in terms of the **National Environmental Management: Biodiversity Act** (No 10 of 2004).

## 4 PROJECT ALTERNATIVES

Feasible and reasonable alternatives must be identified for a development as required by the NEMA EIA Regulations and applicable to EIA. Each alternative is to be accompanied by a description and comparative assessment of the advantages and disadvantages that such development and activities will pose on the environment and socio-economy. When no feasible and/or reasonable alternatives could be identified and investigated in terms of a comparative assessment during the Scoping phase, the EIAR will then not contain a section with alternative. Alternatives forms a vital part of the initial assessment process through the consideration of modifications in order to prevent and/or mitigate environmental impacts associated with a particular development. Alternatives are to be amended when the development's scope of work is amended. It is vital that original as well as amended alternative identification, investigation and assessment together with the generation and consideration of modifications and changes to the development and activities are documented.

The EIA Regulations defines alternatives as the different means of meeting the general purpose and requirements of the activity, which may include alternatives 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.

Although an array of alternatives could be investigated for each project, such alternatives will not necessarily be applicable to each project and/or project phase. However, there must always be strived to seek alternatives that maximises efficient and sustainable resource utilisation and minimise environmental impacts.

### 4.1.1 Motivation for the overall preferred site, activities and technology alternative.

The rights are already operation and granted hence no alternatives of the overall sites have not been considered as this is an update of the environmental management plan to be in line with the relevant legislations. Best practice alternatives will be considered in the specialist studies including buffer zones from protected and sensitive areas.

### 4.1.2 Feasible alternatives

| **TYPE OF ALTERNATIVE: property on which or location where it is proposed to undertake the activity** |
|---|
| **Develop on an alternative property**<br>No alternatives have been investigated in terms of location due to the geological formation of the area as well as relevant studies have been done and show of the availability of a deposit as this is an EMP update for the existing operations. Extensive mining activities have been ongoing on the right. |
| **TYPE OF ALTERNATIVE: type of activity to be undertaken** |
| **Mining Methods** |

The areas covered by the mining rights are situated on the West Coast of South Africa within the Kamiesberg Magisterial District. Mining has been undertaken on these areas since the middle 1900s and extraction of diamonds is done by way of alluvial diggings.

**4.1.3 Activity**

The current mine plan schedules the probable reserves of the Hondeklipbaai deposits with a Life of Mine of 10 years. Treatment of the Hondeklipbaai Tailings Mineral Resource will be undertaken from year 8 onwards and will continue for 2 years. Ongoing exploration in the area will focus on evaluation of other known orebodies and it is anticipated that mining activities will continue in the Hondeklipbaai Mining Rights for much longer than the currently scheduled 10 years.

**4.1.4 Design**

Water management infrastructure (Slimes Dams and Coffer Dams)

The coffer dams will be sized to accommodate all dirty storm water and mine water throughout the life of mine and post closure. No other alternatives can be considered for the existing dams as it is essential in mine water management.

**4.1.5 Technological**

The diamond recovery process in uncemented alluvial deposit using the plant is proven to have a recovery rate in excess of 98% of the diamonds. The +16mm material will be discarded onto existing tailings dumps or backfilled to mining voids and the -1.6mm slimes material will be pumped to the licenced slimes dams.

***Recycling:***

The mining project will implement recycling policies and measures for optimal utilisation of resources and minimisation of waste generation.

***Water and Energy:***

Seawater is used as the service water for the processing facility.

Electricity is supplied by Eskom to the main intake sub-station located at Gromis close to Kleinzee with distribution lines to the different mines branching out from there.

**Access routes**

Infrastructural requirements at each mine site and processing operation comprise power, roads, electricity supply, potable and fresh water supply, fuel supply and storage and workshops that have been established by DBCM over the past 50 years.

**TYPE OF ALTERNATIVE: No-Go, *the option of not undertaking and implementing the activity at all.***

The NO Go alternative is not an option as this is an existing operation that requires an update to the environmental management program.

### 4.1.6 Need and desirability of the proposed activities.

When considering an application for Environmental Authorisation (EA), the competent authority must comply with section 24O of the National Environmental Management Act, no 107 of 1998 (NEMA), and must have regard for any

guideline published in terms of section 24J of the Act and any minimum information requirements for the application. This includes this need and desirability guideline. Additionally, the Environmental Impact Assessment (EIA) regulations require environmental assessment practitioners (EAPs) who undertake environmental assessments, to have knowledge and take into account relevant guidelines. A person applying for an EA must abide by the regulations, which are binding on the applicant.

This guideline contains information on best practice and how to meet the peremptory requirements prescribed by the legislation and sets out both the strategic and statutory context for the consideration of the need and desirability of a development involving any one of the NEMA listed activities. Need and desirability is based on the principle of sustainability, set out in the Constitution and in NEMA, and provided for in various policies and plans, including the National Development Plan 2030 (NDP). Addressing the need and desirability of a development is a way of ensuring sustainable development – in other words, that a development is ecologically sustainable and socially and economically justifiable – and ensuring the simultaneous achievement of the triple bottom-line. The Guideline sets out a list of questions which should be addressed when considering need and desirability of a proposed development. These are divided into questions that relate to ecological sustainability and justifiable economic and social development. The questions that relate to ecological sustainability include how the development may impact ecosystems and biological diversity; pollution; and renewable and non-renewable resources. When considering how the development may affect or promote justifiable economic and social development, the relevant spatial plans must be considered, including Municipal Integrated Development Plans (IDP), Spatial Development Frameworks (SDF) and Environmental Management Frameworks (EMF). The assessment reports will need to provide information as to how the development will address the socio-economic impacts of the development, and whether any socio-economic impact resulting from the development impact on people's environmental rights. Considering the need and desirability of a development entails the balancing of these factors.

The identified specialist will use the following to assess the impacts of the proposed projects on the following aspects to determine the recommendation of the project go-ahead in terms of need and desirability:

- "Securing ecological sustainable development and use of natural resources"
- How will this development (and its separate elements/aspects) impact on the ecological integrity of the area?
- How were the following ecological integrity considerations taken into account?
    1. Threatened Ecosystems
    2. Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure
    3. Critical Biodiversity Areas ("CBAs") and Ecological Support Areas ("ESAs"),
    4. Conservation targets,
    5. Ecological drivers of the ecosystem,

6. Environmental Management Framework,
7. Spatial Development Framework, and
8. Global and international responsibilities relating to the environment (e.g. RAMSAR sites, Climate Change, etc.)

- How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity? What measures were explored to firstly avoid these negative impacts, and where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts
- How will this development pollute and/or degrade the biophysical environment? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?
- What waste will be generated by this development? What measures were explored to firstly avoid waste, and where waste could not be avoided altogether, what measures were explored to minimise, reuse and/or recycle the waste? What measures have been explored to safely treat and/or dispose of unavoidable waste?
- How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?
- How will this development use and/or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?
- How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and/or impact on the ecosystem jeopardise the integrity of the resource and/or system taking into account carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimise the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts?
- Does the proposed development exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e. de-materialised growth)? (note: sustainability requires that settlements reduce their ecological footprint by using less material

and energy demands and reduce the amount of waste they generate, without compromising their quest to improve their quality of life)

- Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra- and intergenerational equity, and are there more important priorities for which the resources should be used (i.e. what are the opportunity costs of using these resources this the proposed development alternative?)

## 5 PUBLIC PARTICIPATION (Refer to Appendices for proof of preliminary consultation)

### 5.1.1 Public Participation Process to be followed

This section of the report provides an overview of the tasks undertaken for the PPP to date. All PPP undertaken is in accordance with the requirements of the EIA Regulations (as amended). It further provides an outline of the next steps in the PPP and makes recommendations for tasks to be undertaken during the environmental assessment phase of the environmental authorisation process.

Adjacent concession holders were identified through a search conducted via online search engines accessing the DMR database. In addition to concession holders, other relevant organisations were identified and notified of the application. This includes municipal and State departments with jurisdiction in the area and Non-governmental Organisations (NGOs) with an interest.

The PPP tasks conducted for the proposed project to date include:

1. Identification of key Interested and Affected Parties (affected and adjacent landowners) and other stakeholders (organs of state and other parties);
2. Formal notification of the application to key Interested and Affected Parties (all adjacent landowners) and other stakeholders;
3. Consultation and correspondence with I&AP's and Stakeholders and the addressing of their comments; and
4. Newspaper adverts.

**I&AP and Stakeholder identification, registration and the creation of an electronic database**

Public Participation is the involvement of all parties who are either potentially interested and or affected by the proposed development. The principle objective of public participation is to inform and enrich decision-making. This is also its key role in this Environmental Impact Assessment (EIA) process.

Interested and Affected parties (I&APS) representing the following sectors of society has been identified:

- National, provincial, and local government;
- Agriculture, including local landowners;
- Community Based Organisations;
- Non-Governmental Organisations;
- Water bodies;
- Fisheries:
- Tourism;
- Industry and mining;
- Commerce; and
- Other stakeholders.

### 5.1.2 Formal notification of the application to key Interested and Affected Parties (adjacent landowners) and other stakeholders

The project was announced as follows:

1. Newspaper advertisement

An advertisement was placed in a local newspaper in both English and Afrikaans announcing the release of the scoping report and the project announcement. The local newspaper will publish the advert on the 17th of September 2021.

2. Site notice placement

To inform surrounding communities and adjacent landowners of the proposed development, site notices in both English and Afrikaans were erected on site and at visible locations close to the site. Site Notices were placed near the project area on the 14th of Sep 2021 in Hondeklip bay and surrounding areas.

3. Written notification

I&AP's and other key stakeholders will be notified of the project. A background information document was sent out to the identified I&AP's. The draft scoping report is available for comment for at least 30 days from 15th of September to the 18th of October 2021.

4. Background Information Document

A Background Information Document (BID) in English and Afrikaans was distributed (on the 15th of September 2021). The BID provides information concerning the proposed project and invites IAPs to register and to attend the public meeting. IAPs should distribute the documents to other parties who may be interested or affected by the project.

5. Public Meeting

Due to Covid -19 the Public Participation Meetings for the scoping phase will be held online. Interested and affected parties are requested to register so that they can receive a link prior to the meeting planned to be held on the 8th of October 2021. Another public meeting will be held regarding the EIA phase and I&AP's will be notified via email and newspaper advertisement.

### 5.1.3 Consultation and correspondence with I&AP's and Stakeholders and the addressing of their comments (continuous).

To date there has been a few acknowledgements from I&APs, queries or registration requests have been received from stakeholders.

### 5.1.4 Release of the revised and amended Scoping Report to I&AP's and stakeholders for review and comment.

This scoping report has been released to the public for public review and comment. All stakeholders and I&AP's were notified of the report's availability for comment for 30 days from the 15th of September to the 18th of October 2021.

Additional electronic and or hard copies will be made available to interested and affected parties and stakeholders who request for them.

### 5.1.5 Next Phases of the Public Participation Process

All comments and responses received and sent throughout the entire process will be updated and included in the comments and responses report which will be submitted to the Department of Mineral Resources. Note that this PPP Report shall be updated at each phase as required.

The draft and final EIAR/EMPr will be released for public review for 30 days each excluding public holidays. A final Consultation report with stakeholder comments from each phase will be submitted.

### 5.1.6 Summary of issues raised by I&AP's

All comments and responses received and sent throughout the entire process will be updated and included in the comments and responses report which will be submitted to the Department of Mineral Resources. Note that this PPP Report shall be updated at each phase as required.

## 6 BASELINE RECEIVING ENVIRONMENT

### 6.1.1 Regional Setting

This chapter provides a description of the biophysical and socio-economic environment likely to be affected by the proposed project in the study area.

Area: 14 210km². The Kamiesberg Local Municipality is a Category B municipality situated within the Namakwa District in the Northern Cape Province. It is one of the smaller municipalities of the six that make up the district. Kamiesberg Local Municipality provides services to 16 small towns – Kamassies Rooifontein, Nourivier, Leliefontein, Paulshoek, Kamieskroon, Kharkams, Tweervier, Koiingnaas, Kheis, Soebatsfontein, Spoegrivier, Klipfontein, Garies, Hondeklipbaai and Lepelfontein. The nearest business centre is Springbok 120km away.

The municipality spans three topographic zones: from the sandy coastal lowlands (Sandveld) to the mountainous central Kamiesberg escarpment (Hardveld), and to the eastern plateau of Bushmanland. There are no perennial rivers in the area. Water is obtained from subterranean sources. Some of the water is pumped up by windmills, but most of the water to the communal areas comes from natural springs. Many of these springs are semi-perennial and the salt content of the water can vary from year to year, causing problems. Four main types of vegetation are found in the area: Mountain Renosterveld, Succulent Karoo, False Succulent Karoo and Namaqualand Broken Veld. However, overall plant life is in a deteriorating state and non-edible, undesirable and poisonous vegetation is taking over.

The Kamiesberg Local Municipality is divided into four municipal wards and provides services to the towns and settlements of Kamassies, Rooifontein, Nourivier, Leliefontein, Paulshoek, (Ward 4), Kamieskroon, Kharkams, Tweerivier (Ward 3) Koiingnaas, Hondeklipbaai, Soebatsfontein, Spoegrivier, Klipfontein (Ward 1) Garies, Lepelfontein and Kheis (Ward 2).

Hondeklipbaai is a seaside town and has a harbour which serves fishing and diamond-mining boats. It is also a mariculture (i.e. crayfish) and tourist centre (i.e. scenic drives and 4 x 4 routes). Garies and Kamieskroon situated along the N7 Highway are known for their abundance of spring wildflowers. Koiingnaas is a mining town for alluvial diamonds. Kamieskroon, Kharkams and Paulshoek are tourist destinations.

Hondeklip Bay or Hondeklipbaai as it is known in Afrikaans is a small, picturesque village on the West Coast of Namaqualand and lies about 95 km South West of Springbok. Nestled between the Namaqua National Park and the South Atlantic Ocean, Hondeklip Bay can be reached by different routes, the Messelpad, The Wildeperdehoekpas, through Soebatsfontein, or Kamieskroon, or from Garies. Hondeklip Bay was formerly a favoured holiday destination for fishermen, divers and farmers. Nowadays, holiday makers from all over the country enjoy their holidays here. During the flower season, Hondeklip Bay is spectacular to behold with all the orange and yellow flowers blooming towards the sun.


Figure 5: Municipal Location

### 6.1.2 Topography and Geography

The topography of the area consists of valleys and plain at a very low level with the Zwart Lintjes River flowing in Langklip and Koingnaas farm north of the application farm. The relief ranges from 20 to 160msl.

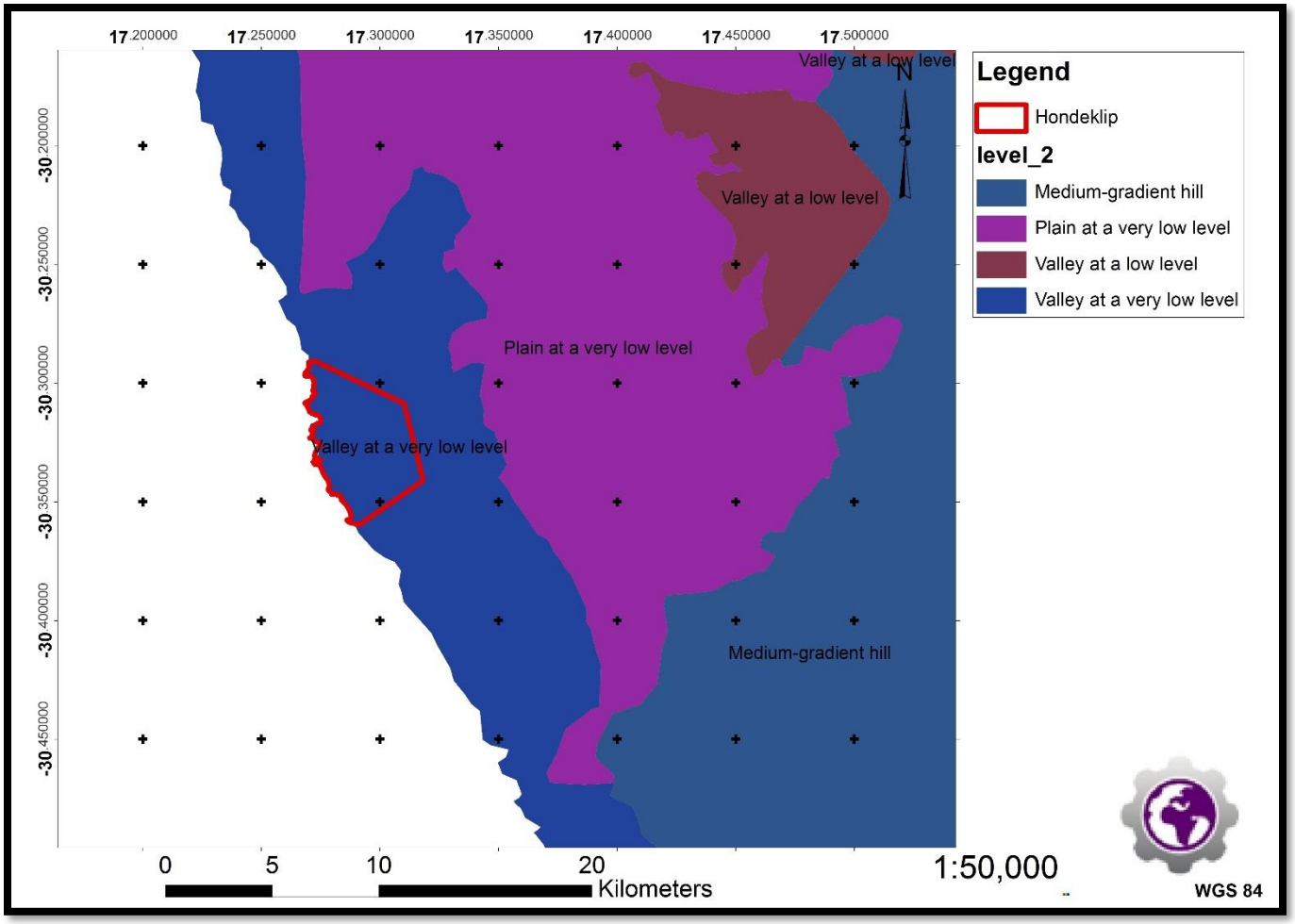



Figure 6: Relief Map

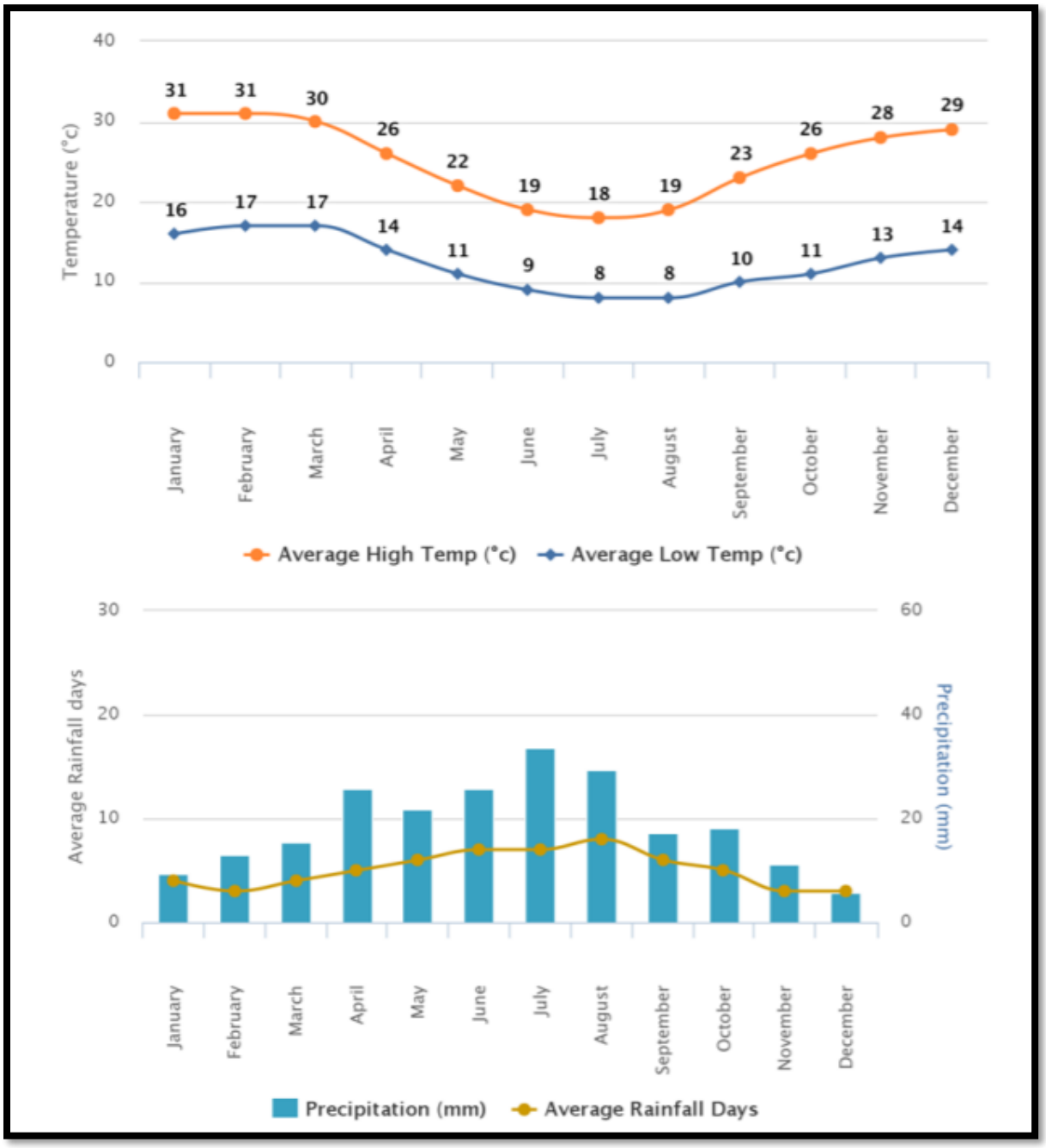
### 6.1.3 Climate

Most of the mining areas are next to the coast and therefore experience the moderating effects of the ocean. Rainfall falls during the autumn and winter months (i.e. from May to August). Coastal fogs occur year-round but are more frequent during the winter period. Temperatures are relatively cool but increase markedly during berg wind conditions. The predominant wind direction is southerly.

Average temperatures in the Hondeklip Bay area are moderate and range from 13-31°C in summer and 8-23°C in winter. The cold ocean current tends to keep coastal air temperatures moderate although Berg wind (offshore) conditions occur occasionally and result in very dry hot conditions. At the coast banks of morning sea-fog frequently develop, which dissolve around midday.

Namaqualand is classified as semi-desert because it has an annual rainfall of less than 200 mm. In parts of the region and particularly along the coast the mean annual rainfall is less than 100 mm. The catchments of the Swartlintjies all experience about 100 mm of rainfall per annum. The cold Benguela current flowing northward along the coast is partly responsible for

dry weather conditions, as air over the cold water absorbs only small amounts of moisture. Thus, rain clouds rarely form and even if there is moisture in the air there is no significant inland escarpment which would force moisture laden air upwards, causing it to cool and release its moisture. On average, the Swartlintjies Estuary experiences highest precipitation levels from April-August. However, the average number of rainfall days is not much higher in winter, indicating that rainfall events are episodic rather than constant




### 6.1.4 Air Quality

The diffusion of pollutants into the atmosphere is dependent on climatic conditions and local atmospheric stability, which may vary on a daily and seasonal basis.

Potential sources of dust may be caused by moving vehicles and earthworks during drilling and pit sampling. Dust could also emanate from mining activities on the adjoining area.

### 6.1.5 Hydrology and Geohydrology

The Zwart Lintjes River originates in the high ground of the escarpment, between Springbok and Kamieskroon. The River makes its way south westward, through Koignaas and into the Atlantic Ocean. An estuary is present at the mouth which is situated 6km north of Hondeklip Bay. Strong flow can occur after prolonged rains, but the river isusually dry (except for a few pools of standing water, due to the high-water table, near themouth). The Zwart Lintjes River traverse through the two quaternary catchments, F40B (draining in the South Westerly direction) and F40C (draining in the North Westerly direction), to the F40D catchment where Zwart Lintjes river transverse Koingnaas farm 475 to Zwartlintjies River 484 farm before it discharges to the sea in the south westerly direction. The river is 70 km long in extent from F40C while it extent to 64km from the F40B.

Due to the extent of the effective catchment area, strong flow can occur after prolonged rains. But the River is usually dry. Except for a few pools of standing water, due to the high-water table towards the mouth of the River. The Zwart Lintjes Estuary has been classified as a small ephemeral river outlet and is not considered one of the 289 functional estuaries in South Africa (Van Niekerk & Turpie, 2012).

The Zwart Lintjes Estuary is situated on the West Coast of South Africa, approximately 6.5 km south of Hondeklip Bay within a strict security area of the Koignaas mining concession, which was previously mined by De Beers and where WCR is currently re-establishing diamond mining operations. The estuary is situated within the cool temperate biogeographic region of South Africa (Harrison, Cooper, & Ramm, 2000) and spans the Kamiesberg and Nama Khoi Local Municipalities (part of the Namaqua District Municipality) in the Northern Cape Province. The estuary is fed by the Zwart Lintjes River, which is approximately 65 km long with a catchment size of 1748.48 km2 (RSA DWA, 2009). The ephemeral Zwart Lintjes River only flows for short periods of time after rainfall events which occurring mostly between April and August.

The Zwart Lintjes River and its tributaries have zero flow for more than 75% of the time and hence the catchment receives a low Mean Annual Runoff (MAR) of 1.45 Mm3 (RSA DWA, 2009). The riverbed in the upper catchment is deeply incised and the presence of braided channels indicates that the river should, if unhindered, come down in flood during episodic rainfall events (Heinecken, 1980). As is the case with other west coast rivers, the Zwart Lintjes is young in geological terms and is fast flowing when in flood. Such floods cause considerable erosion and the river is expected to deposit its silt load in the coastal flood plain (Heinecken, 1980; RSA Department of Agricultural Technical Services, 1975).

### 6.1.6 Geology

Cenozoic sediments ranging from marine to terrestrial in origin rest on metasediments of the Kamiesberg Group and various granites and gneisses of the Little Namaqualand Suite within the application area. The Cenozoic sediments are the only deposits of interest here as they contain potentially economical heavy mineral placer deposits. A host of diamond placers of variable age have been deposited on the Namaqualand coastal plain. These diamond placers are complex as there was continuous reworking of deposited diamondiferous fluvial and alluvial sediments of Cretaceous to Plio-Pleistocene age which resulted in a highly variable suite of deposits in terms of mode of deposition, diamond grade (stone density and stone size) within the marine terraces and fluvial channels of the Koingnaas Complex (KNC, the general name for the diamondiferous deposits in the application area. In addition, many of the initial sedimentary deposits have been reworked extensively.

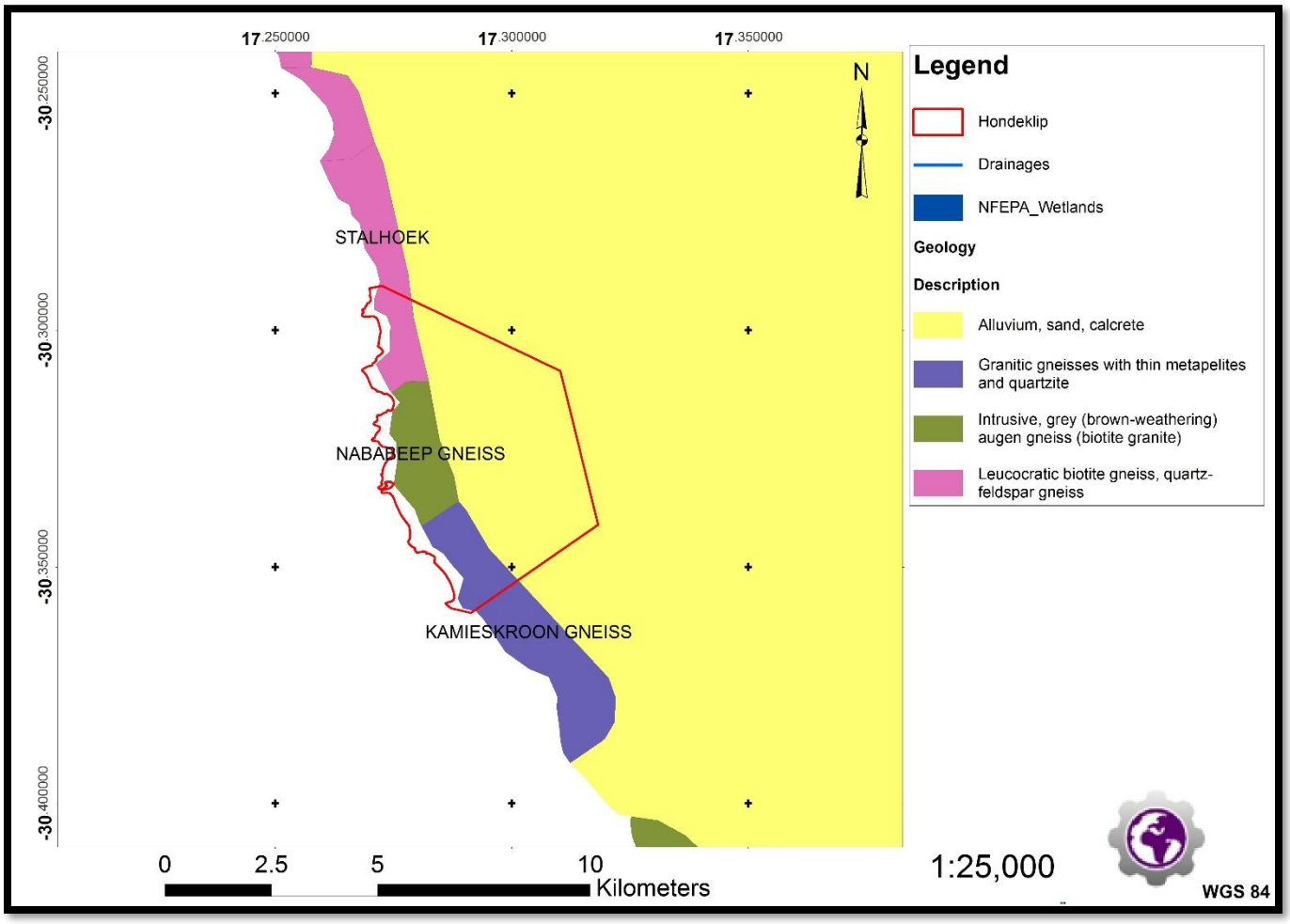



Figure 7: Simplified Geology Map

### 6.1.7 Soils

The site has historically been used for mining and agriculture purposes. The soil type on site is AR Arenols which are red-yellow and greyish excessively drained sandy soils with relatively low/ limited agricultural potential.

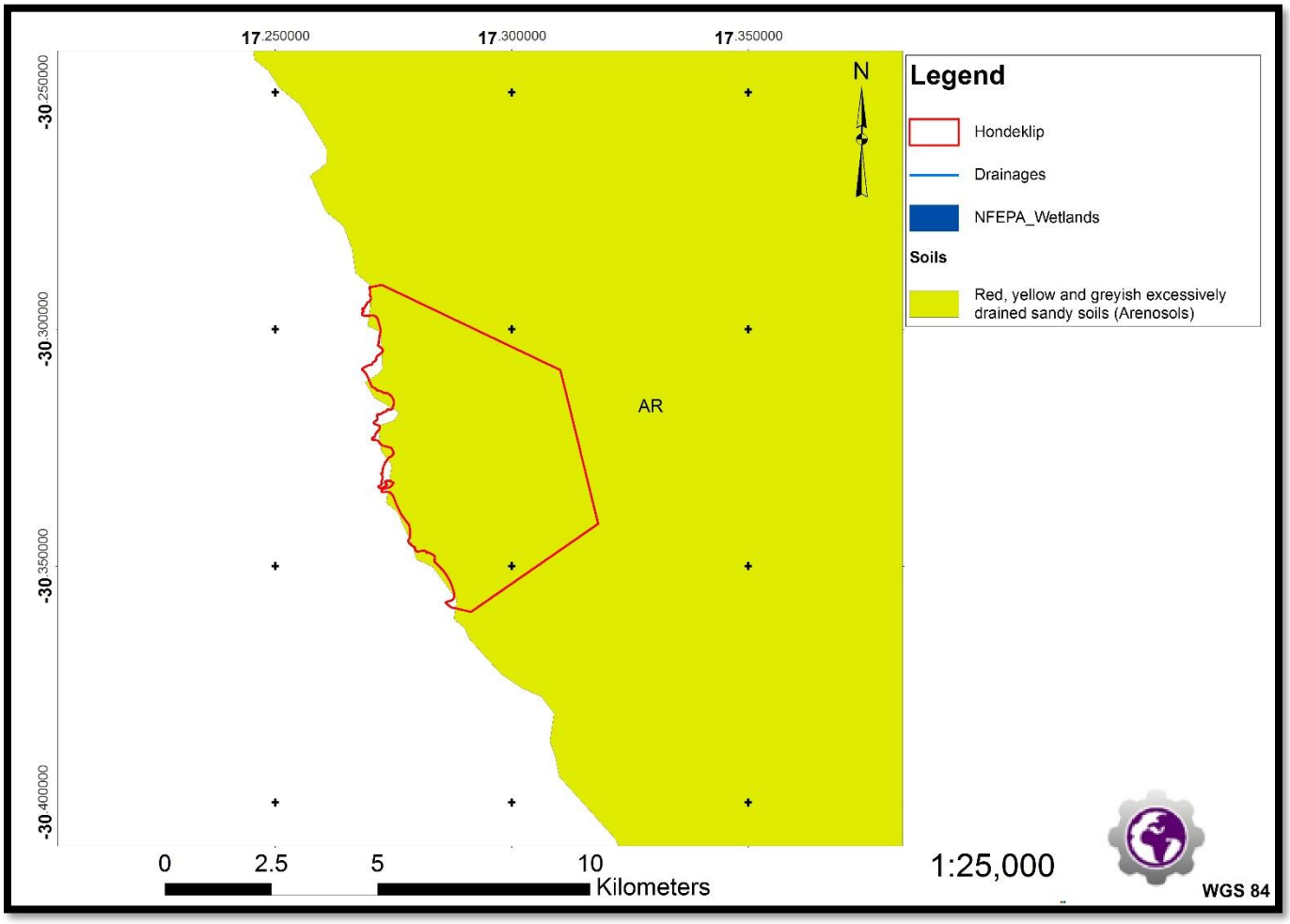



Figure 8: Soil Types

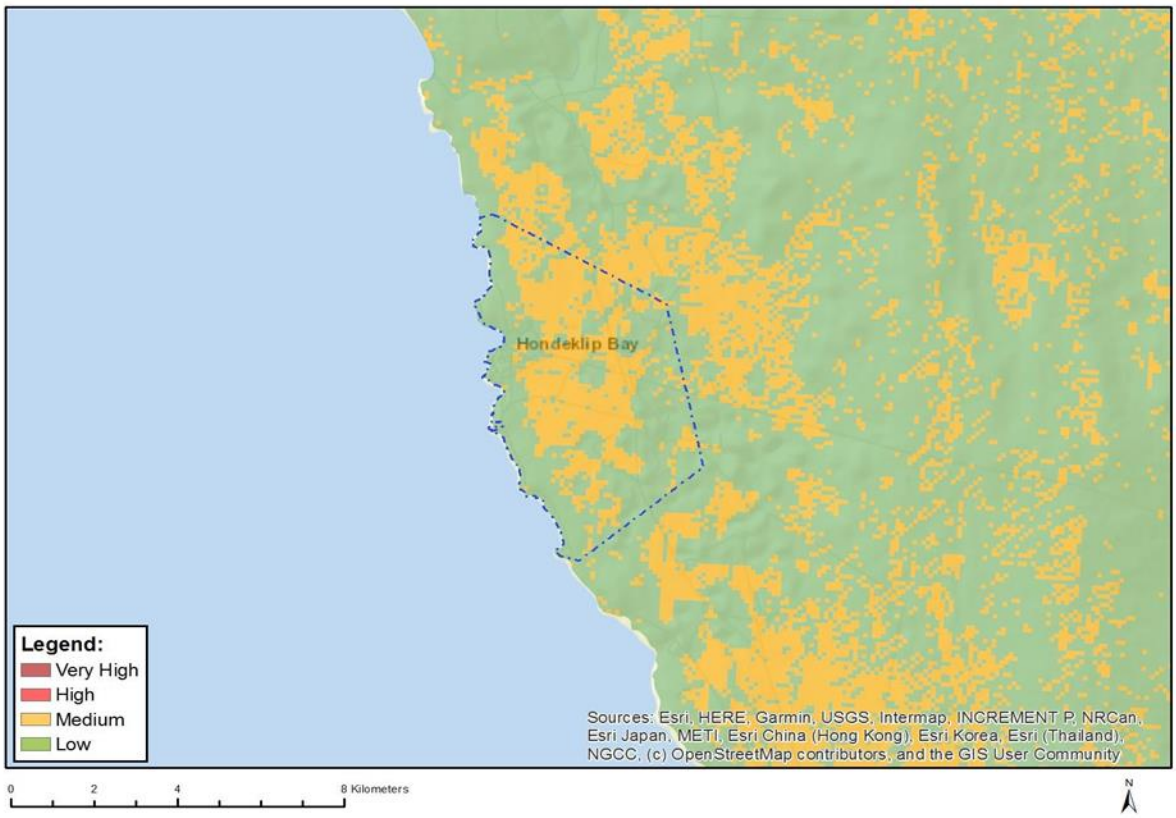



Figure 9: Map of relative Agriculture Theme Sensitivity

### 6.1.8 Vegetation

There are 2 main vegetation types in the application area viz. Namaqualand Coastal Duneveld and Namaqualand Seashore Vegetation.

#### 6.1.8.1 Namaqualand Coastal Duneveld (SKs8)

This vegetation type occurs in the Western and Northern Cape along the coastal plains. The vegetation is typically dwarf shrubland dominated by erect succulent shrubs and non-succulent shrubs. Spiny grasses are common on the windblown semi-stable dunes. The Namaqualand Coastal Duneveld is classified as Least Threatened with a conservation target of 26%. As of 2004 none was statutorily conserved, but the Namaqua National Park has recently incorporated a significant but unknown area of this vegetation type (estimated at about 20% of its total original extent). Some 8% of its original extent has been transformed through diamond mining, mainly in the Hondeklipbaai area (Mucina & Rutherford 2006).

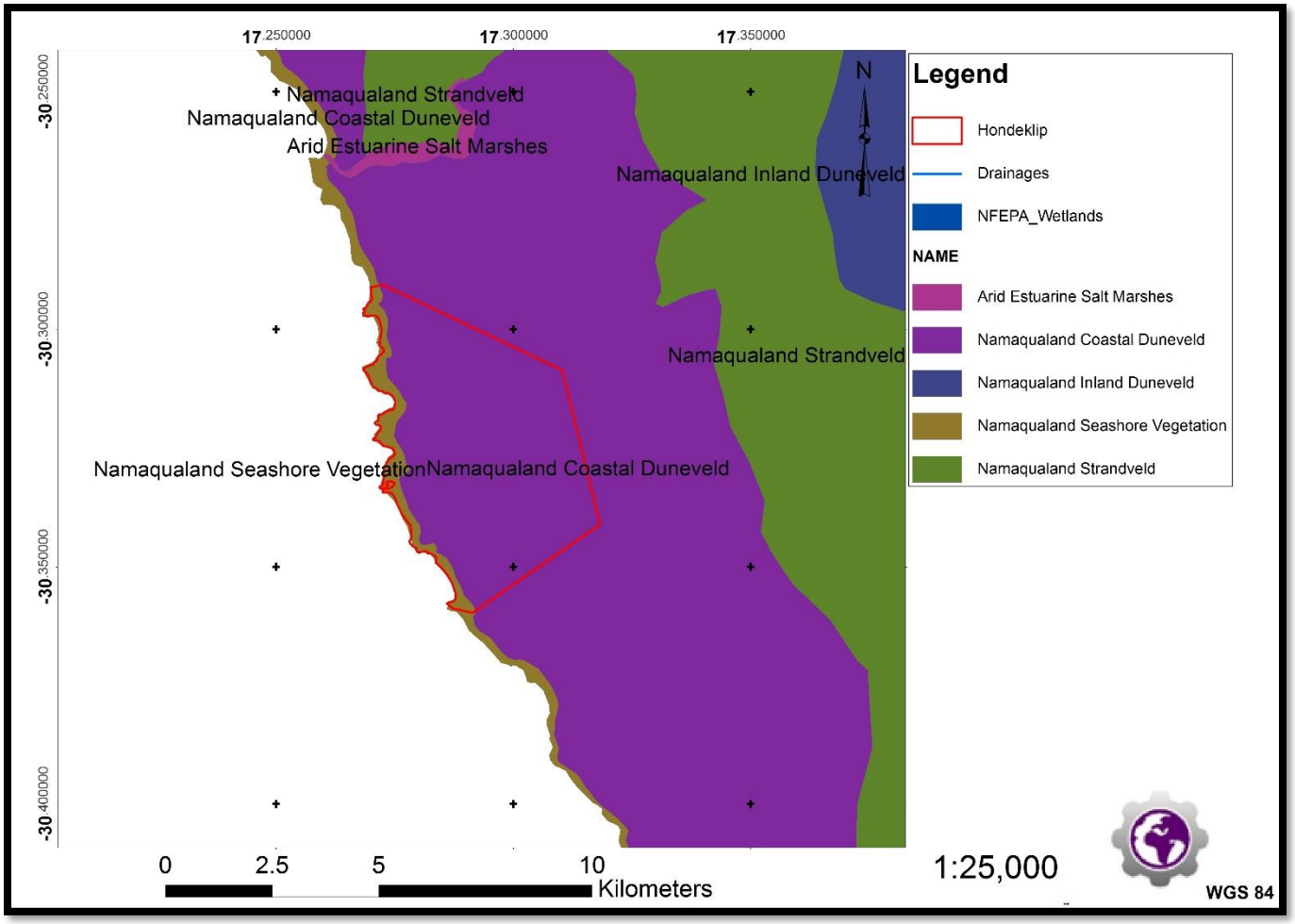



Figure 10: Vegetation Map

Namaqualand Seashore Vegetation (AZd2) Namaqualand Seashore Vegetation is distributed along the Northern Cape coastline, in a very narrow strip above the high water mark, from Holgat River to Olifants River. It is typically found on alkaline coastal dunes, and is typically a sparse vegetation community of partly succulent hummock-forming and spreading dwarf shrubs, grasses and herbs. Namaqualand Seashore Vegetation is classified as Least Threatened with a conservation target of 26%. As of 2004 none was statutorily conserved, but the Namaqua National Park has recently incorporated a significant but unknown area of this vegetation type. About 5% has been transformed through diamond mining (Mucina & Rutherford 2006). This widespread vegetation type occurs between the high water mark and the Namaqualand Coastal Duneveld, along the coast between Island Point and Khnyp Point.

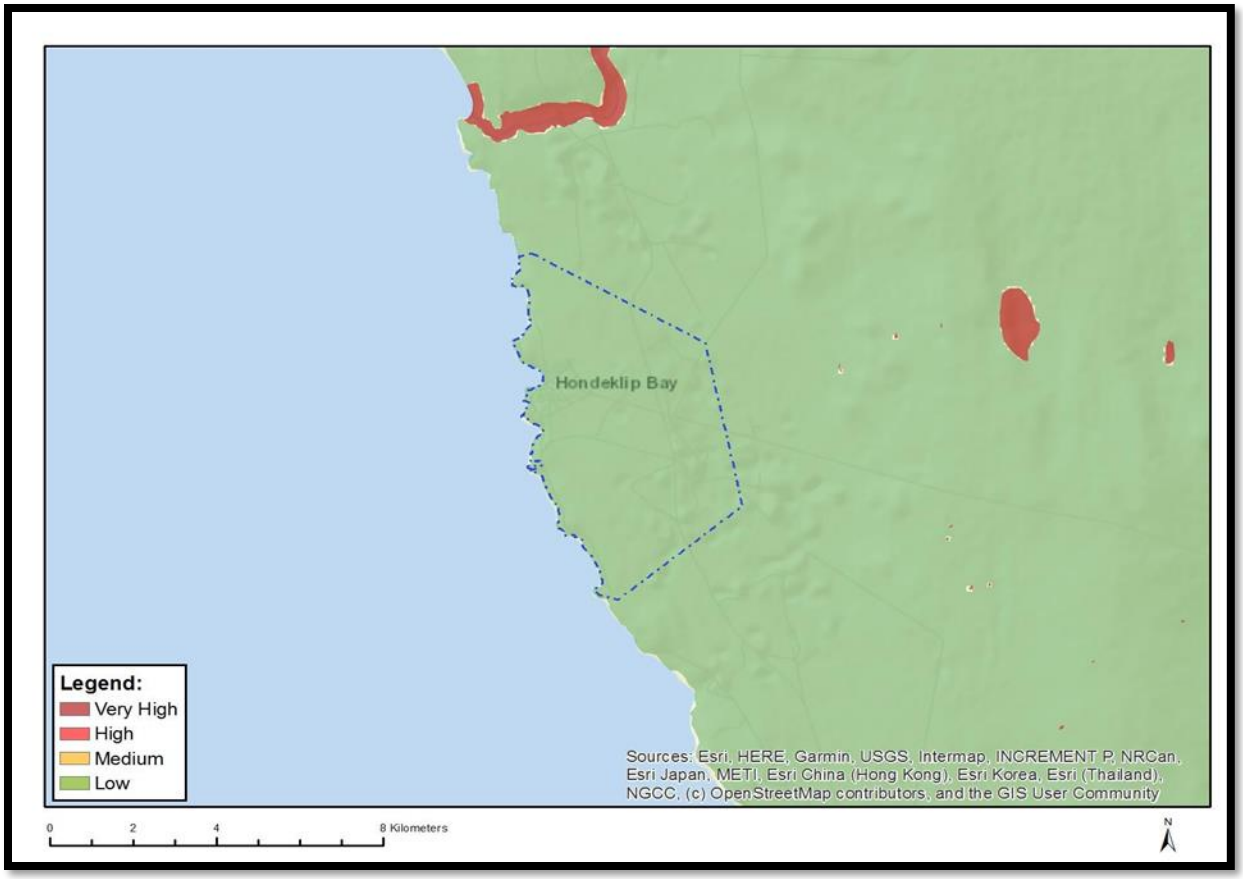



Figure 11: Conservation Status

The project lies within a non-threatened conservation status area with riparian areas notable classified as vulnerable.


### 6.1.9 Heritage Resources

Late Stone Age sites along the coast of the project area are represented by scatters of marine shell. Areas immediately adjacent to the coast, especially where there are rocky shorelines, are often covered by extensive shell middens resulting from hundreds of visits by groups of pre-colonial people. These sites which overlie and overlap each other are very difficult to resolve archaeologically. Fortunately, this is a near shore phenomenon and further inland, sites have more defined boundaries. Unlike those sites along the immediate shoreline which contain few artefacts, occupation sites are generally believed to show a much wider range of artefactual material, with spatial arrangements indicating specific activity areas. Items that may be expected on such sites include stone artefacts, ostrich eggshell - particularly beads and water containers, grindstones, discrete shell piles, hearths, bone and whale bone structures. (Archaeology Report, ACO Associates 2016)

There seems to be no specific location which only attracts occupation sites however it has been observed that deflation bays along the coast or further inland were frequently selected for camping sites, and often contain suites of microlithic artefacts. Within a kilometre of the shore, pre-colonial camp sites are found in a variety of environments and locations, some of which appear to have been favoured over others. Dune tops, dune lees, deflation bays and areas around sheltered bays appear to have strongly attracted pre-colonial people. We have noted clusters of middens and artefact scatters associated with coastal

dune seas. These areas seem to have been popular 3000-5000 years ago. There are, however, a significant number of sites that are not located at obvious natural foci and can be found on featureless coastal flatlands. This variability makes accurate prediction of location very difficult. What is clear is that people in this marginal landscape were attracted to the coast where food resources were the most reliable. (Archaeology Report, ACO Associates 2016).

Later Stone Age sites along the coast are largely identified by scatters of marine shell. In some cases, these dumps (called middens by archaeologists) are associated with domestic artefactual debris and are believed to represent occupation sites of long duration. Other sites, lacking a formal stone artefact component may represent visits of short duration. Shell Middens typically occur within 1 km of the coast and tend to be prolific near estuaries and in dune fields, and adjacent to rocky shores. The immediate coastal dunes, especially close to rocky shorelines were greatly favoured by prehistoric people as marine food was close by. Areas close to sheltered bays contain so many middens that at times it is difficult to distinguish one from the next. Inland of the coast the frequency of shell middens drop away, however the pattern is not always predictable as an area with good game and a source of fresh water can result in middens existing kilometres inland.

### 6.1.10 Maritime archaeology

There are shipwrecks in the surf zones on the west coast. Shipwrecks greater than 60 years of age and within the territorial waters of South Africa are protected under the National Heritage Resources Act and considered to be part of the National Estate. There are an estimated 3000 known shipwrecks off the coast of South Africa, the earliest of which date to those of Portuguese mariners who rounded the Cape after 1500 AD. The amount of unknown or undocumented shipwrecks is unclear. Numerous vessels have been documented as leaving port bound past the Cape but have failed to arrive at their destinations, their whereabouts is unknown. Inevitably records of the location of documented wrecks are poor as in a disaster situation ships'masters and navigators had other priorities than documenting the ships position at time of sinking. Positions tend to be estimates obtained from survivors and can be scores of kilometres off, even in sight of land. Ships that were wrecked off-shore can be incorrectly positioned in the order of hundreds of kilometres. Ships that were abandoned at sea can drift for many kilometres before they sink, and even then, may drift below the ocean surface before the timbers get water-logged.

Given these uncertainties assessing the impacts of a given development project is fraught with difficulties. Pro-active searches for wrecks over vast tracts of oceans is a technically demanding and laborious task, hence one is compelled to use what historical evidence there is available. The data bases that are available (namely the national shipwreck database) reflects the estimated positions of wrecks where the provenance is known or can be roughly estimated. There are numerous shipwrecks off the west coast that potentially range in age from the days of the Portuguese navigators and Dutch East India Company to the late 20th century, the hotspots for these wrecks are rocky shorelines and inlets and peninsulas, off-shore reefs. Further out at sea the coastal shipping route was subject to wartime casualties and ships that were abandoned at sea due to foundering, collision or fire on board. The majority of wrecks however are caused when ships hit a reef, an obstacle or are

driven on shore. While a number of late 20th century casualties are reflected on the databases and maps, it is only wrecks that are greater than 60 years of age that are formally protected. The recent discovery of the oldest shipwreck south of the equator is that of the Portuguese galleon, the Born Jesus (ran aground 1533) found in a beach mining operation north of Oranjemund attests to the fact that this possibility exists in any place where beach mining takes place. (Archaeology Report, ACO Associates 2016).

### 6.1.11 Regional Socio-Economic Structure

Namakwa District Municipality is located in the Northern Cape Province and is comprised of six local municipalities: Nama Khoi, Hantam, Khai-Ma, Kamiesberg, Karoo Hoogland, and Richtersveld. It is bordered by the republic of Namibia in the north, ZF Mgcawu Local Municipality (previously Siyanda Local Municipality) in the north-east, Pixley Ka Seme District Municipality in the east, Central Karoo District Municipality in the south-east, Cape Winelands District Municipality in the south, West Coast District Municipality in the south-west, and the Atlantic Ocean in the west.

Namakwa combines the unspoilt expanses of Namaqualand and Hantam Karoo to form a region of exquisite natural beauty and contrast. Once the domain of the Khoi-San, an ancient, indigenous culture, the seemingly arid, semi desert soil hides huge reservoirs of mineral and floral wealth. With almost tangible allure, Namakwa‘s soft, semi desert winds entice you into exploring her innermost secrets. This is a land where ancient history, modern technology and the universe join in harmonious concord. Lava mountains display impossible rock formations, nature reserves abound with game and birdlife, unusual vegetation blankets huge tracts of land and the magic of spring paints the desert‘s canvas with a brilliant palette of flowers that has become world renowned (IDP 2017-2022).

#### 6.1.11.1 Main Economic Sectors

- Agriculture

The Namakwa District can be divided into a few agricultural types. Isolated cultivated land is located along the Orange River with reference to Henkries, Onseekpans, Coboop and Pella were dates and a verity of fruits are produced. Most parts of the southern and eastern areas focus on sheep and wool farming. Numerous economic opportunities exist within the Abalone and Oyster production industry within the western areas of the district that can boost the District Economy.

- Stock Farming

Stock farming takes place throughout the whole region and is mainly focussed on small stock, consisting of sheep and goats. The sheep farming produces mutton and wool. The agricultural sector is one of the most important sub-sectors in the District and the second largest employer of labour. Although the livestock industry is seen as very competitive, especially at the local level, opportunities for expansion are limited due to natural resource base constraints. The district is one of very few areas

in South Africa where high quality arable land together with water licenses from the Orange River are readily available for the economic development of local communities.

- Mari-Culture

The Namakwa Distric offers favourable biological conditions, excellent shorebased infrastructure, the presence of a number pioneer private sector mariculturalists and a strong research and development base offer an ideal environment for investment and growth in this Oyster production industry within the western areas of the district that can boost the District Economy.

- Tourism

The Namakwa District Municipality is geographically the largest district in the country. The natural landscape ranges from an untapped coastal strip in the west to semidesert areas in the north-east; and the open fields of the Boesmanland span the east. These contrasting realities present an interesting combination for any tourist willing to be engulfed by peace and tranquillity in a natural environment. Tourism in the district is strengthened by several government owned projects, such as the Namakwa National Park; the Richtersveld National Park and the Tankwa Karoo National Park.

- Industry

The agriculture industry of Namakwa was dominated by Hantam and Karoo Hoogland, with the other four local municipalities combined, contributing less than 20 per cent to the Namakwa District‘s agricultural output. The mining industry in Namakwa is led by the Nama Khoi region, with the Richtersveld region in second. Nama Khoi and Hantam LM‘s is dominant within the manufacturing sector.

- Electricity

The Namakwa District has a competitive advantage in the energy sector, with wind, solar, wave, nuclear and natural gas energy plants all having been identified for the area:

- Natural Gas plant South of Hondeklipbaai;
- Eskom Nuclear plant: potentially to be constructed at Kleinzee;
- The Namakwa area has the highest solar radiation intensity in Southern Africa; which makes private and large-scale solar energy appropriate: Biomass: energy production from river reed, kraalbos and manure.
- Large coastal strip: appropriate for wind and wave energy.

Towns with in the Richtersveld and Hantam LM‘s are supplied by Eskom, with the exception of Nieuwoudtville. In the Kamiesberg Local Municipality the electricity grid is fragmented and does not form a coherent backbone connected to the National Grid.

- Mineral Resource

Mining is one of the major economic sectors in the NDM and is found in all municipalities except the Hantam and Karoo Hoogland Municipalities. Mining has occurred for more than 120 years. A number of mines have reached the end of their economic life resulting in a number of mines having closed or about to close. The closure of one of the largest mines, O'kiep Copper Company, north of Springbok, has had in a large negative impact on the economy and social dislocation. Mining activities include:

- Diamond Mining;
- Copper, Zink and Lead Mining; and
- Granite Mining.

➢ Economic Functionality

Namakwa has an undiversified economy with heavy reliance on the primary sectors of mining for sectoral contribution and GGP and both mining and agriculture to employment. The key strengths of Namakwa's economy are, agriculture, hunting and fishing followed by mining and quarrying.

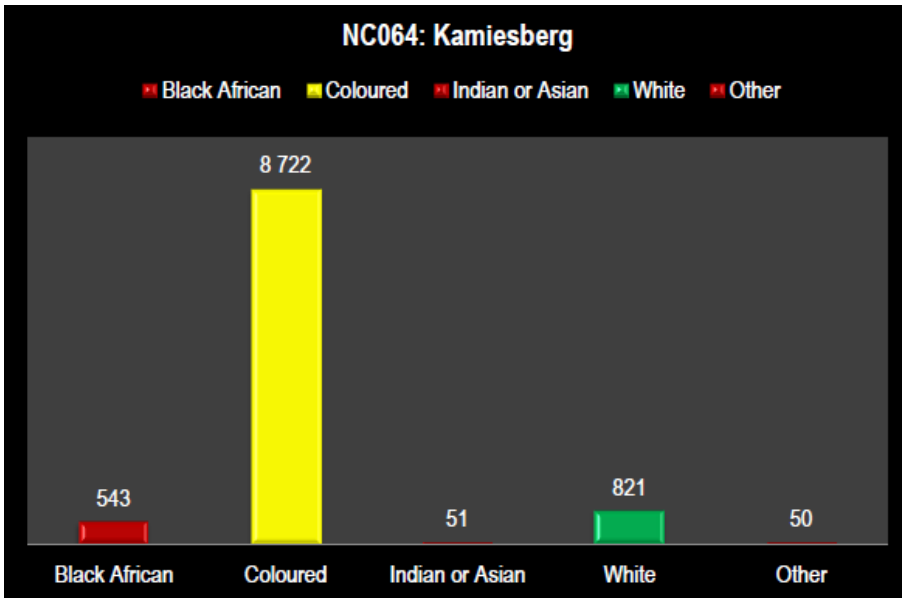
#### 6.1.11.2 Demographic Profile

Hondeklip Bay was formerly a favoured holiday destination for fishermen, divers and farmers. Nowadays, holiday makers from all over the country enjoy their holidays here. Hondeklip Bay lies about 104 km Southwest of Springbok and can be reached by different routes, the Messelpad, The Wildeperdehoekpas, through Soebatsfontein, or Kamieskroon, or from Garies. However, it usually takes about two hours to reach the town. Thomas Grace (a ship's captain) came upon the town in 1846 and established a trading station. He named the town after a gneiss rock which vaguely resembles a dog. The first eleven tons of copper ore was shipped in 1852. Later Port Nolloth became the export harbor. The harbor in Hondeklipbaai now serves fishing and diamond boats. South of Hondeklip Bay lies what remains of the wreck of the Aristea, which was built in Scotland as a fishing vessel. In 1934, the Aristea served as a minesweeper during World War 2. Tragically, the Aristea ran aground on 4 July 1945 on its maiden voyage as trawler. Fortunately, there was only one loss of life. About 18 km SSE down the coast from Hondeklip Bay the mouth of the Spoeg River is located. Here you will find caves of archaeological interest.

The total population of the Kamiesberg Municipal area was 10 187 in 2011.

- The average growth rate of the population from 2001-2011 is -0, 54%. This indicate and confirms that:
    - The average growth rate of households from 2001-2011 is 3.9%
- The Coloured population dominates the municipal area making up 85.61% of the population and the second most dominant population in the area being the white population making up 8,06% of the total population and thirdly the black population of 5,32 of the total population.
- The Gini-coefficient, which is the international standard for measuring the distribution (or dispersion) of income and wealth in a country or demarcated area, Kamiesberg has a Gini-coefficient of 0.56.The Gini coefficient is a ratio between 0 and 1, where 0 implies that each individual receives the same „income" and 1 imply that only one

individual receives all the „income". The co-efficient for South Africa is 0.56 therefore Kamiesberg has a similar distribution of wealth as experienced nationally, which implies that Kamiesberg Municipality is still a relatively unequal society in terms of wealth distribution.




**Source: Census 2011 figures for Kamiesberg**

Figure 12: Number of individuals by population group.

| Census 2011 figures for Namakwa and Kamiesberg | | | | | | |
|---|---|---|---|---|---|---|
| Number of individuals by population group | | | | | | |
| | DC6: Namakwa | NC064: Kamiesberg | 30604001: Ward 1 | 30604002: Ward 2 | 30604003: Ward 3 | 30604004: Ward 4 |
| Black African | 7,904 | 543 | 71 | 192 | 170 | 109 |
| Coloured | 96,360 | 8,722 | 1,792 | 2,514 | 2,312 | 2,103 |
| Indian or Asian | 612 | 51 | 15 | 19 | 6 | 10 |
| White | 10,113 | 821 | 140 | 502 | 135 | 44 |
| Other | 853 | 50 | 9 | 34 | 6 | 1 |
| **Total** | **115,842** | **10,187** | **2,027** | **3,262** | **2,630** | **2,268** |
| **Percentage of Population** | | **9%** | **20%** | **32%** | **26%** | **22%** |

**Source: StatsSA Census 2011**

Figure 13: Population

### 6.1.12 Screening tool Description of specific environmental features and infrastructure on the site.

| Theme | Very High sensitivity | High sensitivity | Medium sensitivity | Low sensitivity |
|---|---|---|---|---|
| **Agriculture Theme** | | | **X** | |
| **Animal Species Theme** | | | **X** | |
| **Aquatic Biodiversity Theme** | | | | **X** |
| **Archaeological and Cultural Heritage Theme** | **X** | | | |
| **Civil Aviation Theme** | | **X** | | |
| **Defence Theme** | | | | **X** |
| **Paleontology Theme** | **X** | | | |
| **Plant Species Theme** | | | **X** | |
| **Terrestrial Biodiversity Theme** | **X** | | | |

#### 6.1.12.1 Environmental sensitivity screening.

(Show all environmental, and current land use features)

The Screening Tool Report generated from the National Web Based Environmental Screening Tool in accordance with the latest NEMA Minimum Requirements and Protocol for Specialist Impact Assessment as contained in the "Procedures to be followed for the assessment and minimum criteria for reporting of identified environmental themes of Section 45 (a) and (h) of the National Environmental Management Act, 1998, when applying for Environmental Authorization" (10 May 2020).

##### 6.1.12.1.1 Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

No nearby wind or solar developments found.

##### 6.1.12.1.2 Environmental Management Frameworks relevant to the application

No intersections with EMF areas found.

#### 6.1.12.2 Specialist assessments identified

Based on the selected classification, and the environmental sensitivities of the proposed development footprint, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

- Agricultural Impact Assessment
- Landscape/Visual Impact Assessment
- Archaeological and Cultural Heritage Impact Assessment

- Palaeontology Impact Assessment
- Terrestrial Biodiversity Impact Assessment
- Aquatic Biodiversity Impact Assessment
- Hydrology Assessment
- Noise Impact Assessment
- Radioactivity Impact Assessment
- Traffic Impact Assessment
- Geotechnical Assessment
- Climate Impact Assessment
- Health Impact Assessment
- Socio- Economic Assessment
- Ambient Air Quality Impact Assessment
- Seismicity Assessment
- Plant Species Assessment
- Animal Species Assessment

## 7 ENVIRONMENTAL IMPACT ASSESSMENT

### 7.1.1 Assessment Criteria

The assessment of the impacts will be conducted according to a synthesis of criteria required by the integrated environmental management procedure.

### 7.1.2 Extent

The physical and spatial scale of the impact is classified as:

a) Footprint

The impacted area extends only as far as the activity, such as footprint occurring within the total site area.

b) Site

The impact could affect the whole, or a significant portion of the site.

c) Regional

The impact could affect the area including the neighbouring properties, the transport routes and the adjoining towns.

d) National

The impact could have an effect that expands throughout the country (South Africa).

e) International

Where the impact has international ramifications that extent beyond the boundaries of South Africa.

### 7.1.3 Duration

The lifetime of the impact, that is measured in relation to the lifetime of the proposed development.

a) Short term

The impact would either disappear with mitigation or will be mitigated through natural processes in a period shorter than that of the construction phase.

b) Short to Medium term

The impact will be relevant through to the end of the construction phase.

c) Medium term

The impact will last up to the end of the development phases, where after it will be entirely negated.

d) Long term

The impact will continue or last for the entire operational lifetime of the development, but will be mitigated by direct human action or by natural processes thereafter.

e) Permanent

This is the only class of impact, which will be non-transitory. Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient,

### 7.1.4 Intensity

The intensity of the impact is considered by examining whether the impact is destructive or benign, whether it destroys the impacted environment, alters its functioning, or slightly alters the environment itself. The intensity is rated as:

a) Low

The impact alters the affected environment in such a way that the natural processes or functions are not affected.

b) Medium

The affected environment is altered, but functions and processes continue, albeit in a modified way.

c) High

Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.

### 7.1.5 Probability

This describes the likelihood of the impacts actually occurring. The impact may occur for any length during the life cycle of the activity, and not at any given time. The classes are rated as follows:

a) Impossible

The possibility of the impact occurring is none, due either to the circumstances, design or experience. The chance of this impact occurring is zero (0%).

b) Possible

The possibility of the impact occurring is very low, due either to the circumstances, design or experience. The chances of this impact occurring is defined as 25%.

c) Likely

There is a possibility that the impact will occur to the extent that provisions must therefore be made. The chances of this impact occurring is defined as 50%.

d) Highly likely

It is most likely that the impacts will occur at some stage of the development. Plans must be drawn up before carrying out the activity. The chances of this impact occurring is defined as 75%.

e) Definite

The impacts will take place regardless of any provisional plans, and or mitigation actions or contingency plans to contain the effect can be relied on. The chance of this impact occurring is defined as 100%.

### 7.1.6 Mitigation

The impacts that are generated by the development can be minimised if measures are implemented in order to reduce the impacts. The mitigation measures ensure that the development considers the environment and the predicted impacts in order to minimise impacts and achieve sustainable development.

### 7.1.7 Determination of significance – Without Mitigation

Significance is determined through a synthesis of impacts as described in the above paragraphs. It provides an indication of the importance of the impact in terms of both tangible and intangible characteristics. The significance of the impact "without mitigation" is the prime determinant of the nature and degree of mitigation required. Where the impact is positive, significance is noted as "positive". Significance is rated on the following scale:

a) No significance

The impact is not substantial and does not require any mitigation action.

b) Low

The impact is of little importance, but may require limited mitigation.

c) Medium

The impact is of importance and is therefore considered to have a negative impact. Mitigation is required to reduce the negative impacts to acceptable levels.

d) High

The impact is of major importance. Failure to mitigate, with the objective of reducing the impact to acceptable levels, could render the entire development option or entire project proposal unacceptable. Mitigation is therefore essential.

### 7.1.8 Determination of significance – With Mitigation

Determination of significance refers to the foreseeable significance of the impact after the successful implementation of the necessary mitigation measures. Significance with mitigation is rated on the following scale:

a) No significance

The impact will be mitigated to the point where it is regarded as insubstantial.

b) Low

The impact will be mitigated to the point where it is of limited importance.

c) Low to Medium

The impact is of importance however, through the implementation of the correct mitigation measures such potential impacts can be reduced to acceptable levels.

d) Medium

Notwithstanding the successful implementation of the mitigation measures, to reduce the negative impacts to acceptable levels, the negative impact will remain of significance. However, taken within the overall context of the project, the persistent impact does not constitute a fatal flaw.

e) Medium to High

The impact is of major importance but through the implementation of the correct mitigation measures, the negative impacts will be reduced to acceptable levels.

f) High

The impact is of major importance. Mitigation of the impact is not possible on a cost-effective basis. The impact is regarded as high importance and taken within the overall context of the project, is regarded as a fatal flaw. An impact regarded as high significance, after mitigation could render the entire development option or entire project proposal unacceptable.

### 7.1.9 Assessment weighting

Each aspect within the impact description was assigned a series of quantitative criteria. Such criteria are likely to differ during the different stages of the project's life cycle. In order to establish a defined base upon which it becomes feasible to make an informed decision, it is necessary to weigh and rank all criteria.

### 7.1.10 Ranking, Weighting and Scaling

For each impact under scrutiny, a scale weighting Factor is attached to each respective impact (refer to Figure 14: Description of biophysical assessment parameters with its respective weighting), The purpose of assigning such weight serve to highlight those aspects considered most critical to the various stakeholders and ensure that each specialist's element of bias is taken into account. The weighting factor also provides a means whereby the impact assessor can successfully deal with the complexities that exist between the different impacts and associated aspects criteria.

Simply, such a weighting factor is indicative of the importance of the impact in terms of the potential effect that it could have on the surrounding environment. Therefore, the aspects considered to have a relatively high value will score a relatively higher weighting than that which is of lower importance.

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

Figure 14: Description of biophysical assessment parameters with its respective weighting

### 7.1.11 Identifying the Potential Impacts without Mitigation (WOM)

Following the assignment of the necessary weights to the respective aspects, criteria are summed and multiplied by their assigned weightings, resulting in a value for each impact (prior to the implementation of mitigation measures).

Equation 1:

Significance Rating (WOM) = (Extent + Intensity + Duration + Probability) x Weighting Factor

### 7.1.12 Identifying the Potential Impacts with Measures (WM)

In order to gain a comprehensive understanding of the overall significance of the impact, after implementation of the mitigation measures, it was necessary to re-evaluate the impact.

a) Mitigation Efficiency (ME)

The most effective means of deriving a quantitative value of mitigated impacts is to assign each significance rating value (WOM) a mitigation effectiveness (ME) rating. The allocation of such a rating is a measure of the efficiency and effectiveness, as identified through professional experience and empirical evidence of how effectively the proposed mitigation measures will manage the impact.

Thus, the lower the assigned value the greater the effectiveness of the proposed mitigation measures and subsequently, the lower the impacts with mitigation.

Equation 2:

Significance Rating (WM) = Significance Rating (WOM) x Mitigation Efficiency

Or WM = WOM x ME

b) Significance Following Mitigation (SFM)

The significance of the impact after the mitigation measures are taken into consideration. The efficiency of the mitigation measure determines the significance of the impact. The level of impact is therefore seen in its entirety with all considerations taken into account.

### 7.1.13 Impacts identified

A number of negative impacts on the bio-physical environment could result from disturbances during prospecting. The significance of any potential impact is largely limited by the small physical size and short duration of the prospecting, but also by the sensitivity of the receiving environment or receptor(s).

Potential impacts resulting from the proposed project were identified using input from the following:

- Views of I&APS which will be ascertained during the consultation process;
- Existing information;
- Screening report and
- Legal and policy requirements that need to be fulfilled for the proposed project

**Impact statement**

The following key issues and potential impacts (direct and cumulative) were identified during the Scoping phase, which will together with potential cumulative impacts, be assessed during the Environmental Impact Assessment phase of the project and appropriate mitigation measures to reduce the identified impacts will be proposed.

**Table 5: List of Potential Impacts**

| Activity | Alternative | Aspect | Potential Positive and negative impacts |
|---|---|---|---|
| Basic overview of the mining method | Type of mining and areas mineable | Geology | (-) Due to the shallow nature of ore body, it is only feasible to mine opencast |
| | | Groundwater | (-) groundwater quality will also be affected by polluting elements |
| | | Surface water | (-) Increased sedimentation due to erosion |
| | | Topography | (-) The topography of the coastal area is altered by the mining<br>(-) temporary storage of stockpiles and topsoil will temporarily distort the topography |
| | | Soil | (-) Excluding riparian areas from the open pit mining will reduce the footprint of the mining area.<br>(-) Soil will be lost during excavations and erosion even if mitigation measures are implemented |

| Activity | Alternative | Aspect | Potential Positive and negative impacts |
|---|---|---|---|
| | | Land Capability | (-) The land capability will be lost in areas where excavation and open pits will be located.<br>(-) the chemical properties of the soil will be altered due to pollution from hydrocarbons, oils, overspills etc |
| | | Land Use | (-) the land use will be lost from that of a conservation value, however with proper mitigation the land can be rehabilitated to an acceptable level |
| | | Flora | (-) Not mining in CBA and protected areas minimises impacts on flora<br>(-) the vegetation clearing will lead to significant loss of indigenous species<br>(-) increased encroachment of alien invasive species on cleared land |
| | | Fauna | (-) the loss of these vegetation leads to loss of habitats for birds, mammals and herpetofauna<br>(-) displacement of fauna due to increased human activity like noise, vehicles, human behaviour and poaching |
| | | Air | (-) Increased air pollution from the mining activities, site clearing, vehicle movement and fumes and fugitive dust |
| | | Noise | (-) Increased noise polluting from earthmoving equipment, heavy vehicles and machinery, processing plant. |
| | | Heritage | (-) Artefacts unearthed during construction and operations can be lost if no proper heritage induction is undertaken and proper mitigation measures are not put in place |
| | | Climate change | (-) Due to vegetation clearing, particulate matter from vehicles and machinery, increased fugitive dust it is expected that the climate will be locally affected by the increase in aerosols in the atmosphere as well as increased reflective surfaces |
| | | Socio- Economic | (-) I&AP's concerned over the pollution of coastal areas and loss of tourism revenue<br>(+) Through local hiring and promoting of local SME's the project will have a positive impact on the local economy. |
| Slimes dams and related infrastructur | Location and size | Geology | (-) The excavations will remove certain bedrock which will be discarded or used to rehabilitate the open pits but will be lost to the original stratigraphy |

| Activity | Alternative | Aspect | Potential Positive and negative impacts |
|---|---|---|---|
| e | | Groundwater | (-) The excavation of the area will change drainage patterns as well as infiltration and runoff |
| | | Surface water | (-) The CD with a 110% capacity will be located at least 500m from the rivers with a dirty water containment system in place in case of spillage |
| | | Topography | (-) The CD will be constructed in a low lying flat area and will not alter the topography |
| | | Soil | (-) Soil loss through clearing of land for the pollution control dam |
| | | Land Capability | (-) Land capability lost for the pollution control dam |
| | | Land Use | (-) Current land use lost as land capability is directly affected by the reduction in area due to infrastructure as well as loss in visual appearance land for infrastructure and roads |
| | | Flora | (-) Vegetation will be lost during site clearing and construction. |
| | | Fauna | (-) The clearance of vegetation will lead to a loss in habitat for birds, mammals and herpetofauna<br>(-) displacement of fauna due to increased activity and noise |
| | | Air | (-) increased dust levels, PM10, fumes during the construction phase |
| | | Heritage | (-) The CD will be located at least a 100m from heritage buffer zones.<br>(-) loss of archaeological artefacts might be lost due to poor environmental management during the construction phase |
| | | Noise | (-) Increased noise levels are expected during construction |
| | | Social | (-) Increased visual disturbance to the residents and tourists<br>(-) I&AP concerns for overspills and spillages contaminating the groundwater<br>(+) Potential local economy growth through hiring of architectural and engineering companies in the areas to provide the services<br>(+) Skilled and unskilled labour creations |
| Storm Water Management features (Clean and dirty water | | Geology | (0) the stormwater management features will have negligible effect on the geology as there will be no alterations to the bedrock |
| | | Groundwater | (+) The stormwater management features will contain contaminated water separating it from clean water which is released to rivers. This contains contaminated water in a localised area |

| Activity | Alternative | Aspect | Potential Positive and negative impacts |
|---|---|---|---|
| separation) | | Surface water | (+) The stormwater management features will contain contaminated water separating it from clean water which is released to the rivers<br>(-) the construction of the stormwater management features will alter drainage patterns |
| | | Soil | (-) Soils will be lost albeit in minimal quantities where the features will be built |
| | | Land Capability | (-) There will be minimal land use lost due to the infrastructure |
| | | Land Use | (-) There will be minimal land capability lost due to the infrastructure |
| | | Flora | (-)Where possible the features will be constructed around vegetation of high conservation value. In cases where this is not possible there will be loss in flora |
| | | Fauna | (-) the construction of the features will cause a loss in vegetation therefore habitats are lost<br>(-) changes in animal routine might be affected by the features |
| | | Air | (-) Aside from temporary fugitive dust and PM10 emissions during construction no residual air quality impacts are anticipated |
| | | Heritage | (0) Storm water features will be designed around heritage features |
| | | Noise | (-) There will be temporary noise pollution during construction but this will subside once complete |
| | | Social | (+) Potential local economic growth through hiring of architectural and engineering companies in the areas to provide the services<br>(+) Skilled and unskilled labour creations |
| Processing plant | | Geology | (+) The processing plant will not affect the geology |
| | | Groundwater | (-) the vegetation clearing, compaction and infrastructure will change drainage patterns and rates of infiltration |
| | | Surface water | (-) the vegetation clearing, compaction and infrastructure will change drainage patterns and rates of infiltration |
| | | Topography | (0) The plant is on relatively low flat land which has already been disturbed and this will not impact the topography |
| | | Land Capability | (-) The land capability of the plant footprint will be altered and lost |
| | | Land Use | (-) The operations of the plant will have an impact on coastal access. |
| | | Flora | (-) Vegetation loss due to site clearing and construction. However, it is recommended that the plant be constructed on already existing |

| Activity | Alternative | Aspect | Potential Positive and negative impacts |
|---|---|---|---|
| | | | clearances to minimise vegetation loss |
| | | Fauna | (-) The clearance of vegetation will lead to a loss in habitat for birds, mammals and herpetofauna<br>(-) displacement of fauna due to increased activity and noise |
| | | Heritage | (0) The processing plant will be located at least a 100m away from any areas of cultural significance |
| | | Air | (-) Air emissions from the use of chemicals and generators |
| | | Noise | (-) Increased noise levels from the processing plant |
| | | Social | (-) Increased visual disturbance to the communities from the plant<br>(-) Increase noise levels in the area might disturb the community (+) Potential local economy growth through hiring of architectural and engineering companies in the areas to provide the services (+) Skilled and unskilled labour creations |
| Mine related Infrastructure including Roads, Workshops, powerlines, workshops etc. | Location on site and route options | Geology | (+) The construction of infrastructure and roads will not affect the geology |
| | | Groundwater | (-) increased compaction will negatively impact runoff and infiltration which impacts the groundwater recharge.<br>(-) Oils spillages during construction and use of roads will negatively impact the groundwater quality |
| | | Surface water | (+) All of the infrastructure and roads will not be constructed within 500m of the river |
| | | Topography | (+) The infrastructure will be constructed on relatively low flat land which has already been disturbed and this will not impact the topography |
| | | Soil | (-) Soil loss through clearing of land for infrastructure and roads |
| | | Land Capability | (-) Land capability lost for infrastructure and roads |
| | | Land Use | (-) Current land use lost as land capability is directly affected by the reduction in area due to infrastructure as well as loss in visual appearance land for infrastructure and roads |
| | | Flora | (-) Loss of vegetation through site clearing for infrastructure |
| | | Fauna | (-) The clearance of vegetation will lead to a loss in habitat for birds, mammals and herpetofauna |

| Activity | Alternative | Aspect | Potential Positive and negative impacts |
|---|---|---|---|
| | | | (-) displacement of fauna due to increased activity and noise<br>(-) Electrocution of birds by power lines and at substations |
| | | Heritage | (+) The infrastructures will be located at least a 100m away from any areas of cultural significance |
| | | Air | (-) Increased air pollution during construction activities, site clearing and during the operation phase from vehicle movement and fumes and fugitive dust |
| | | Noise | (-) Temporary increase in levels during construction<br>(-) Noise level increases from haul trucks on and off the site |
| | | Social | (-) The I&AP's see the infrastructure as a disturbance to the visual character of the area.<br>(+) Potential local economy growth through hiring of architectural and engineering companies in the areas to provide the services<br>(+) Skilled and unskilled labour creations |
| No-go project option | Delineation of mining area that fall within protected areas. | Air | (0) Air quality would not be compromised during the construction, operations and rehabilitation through the proposed mining activities by the generation of dust from exposed surfaces as well as the generation of exhaust fumes from machinery. |
| | | Noise | (+) Noise would not be generated during the construction, operations and rehabilitation through the mining related activities. |
| | | Topography, groundwater, and surface water | (+) Sensitive landscapes will not be compromised including groundwater or surface water quality or quantity |
| | | | (+) The landscape will not be altered by the depressions which will be caused by the open pits mining and removal of ore however successfully rehabilitated. |
| | | Flora and Fauna | (+) No Loss of indigenous vegetation and habitats |
| | | Soil and Land Capability | (+) The land capability will not be changed and no soil losses through the construction, operations and rehabilitation through the mining related activities |
| | | Visual aspects | (+) The visual landscape and sense of place attributes would not be compromised. |
| | | Land Use | (+) The current land use is approved existing mining. |

| Activity | Alternative | Aspect | Potential Positive and negative impacts |
|---|---|---|---|
| | | Heritage | (+) The sites of historical and cultural importance would not be affected by the construction, operations and rehabilitation through the mining related activities |
| | | Social and Economic Impacts | (-) Loss of potential investment opportunities in the project area and income generated from the sale of the product |
| | | | (-) Loss of potential employment creation and opportunities for local service providers |
| | | | (-) There would be direct losses to government through a loss in revenue from the mine (through taxes). |
| | | | (-) There would be direct losses to government through a loss in revenue from the mine (through taxes). |
| | | I&APs | (-) / (+) I&APs may be positively or negatively affected by the various impacts described above |

**Table 6:** ***Potential Cumulative Impacts identified***

| IMPACT | |
|---|---|
| **Traffic** | Increased traffic volumes within the project area and surrounding communities. |
| **Air Quality** | Decrease in air quality in the immediate surroundings of the prospecting site |
| **Hydrological** | Cumulative loss of surface water functionality as a result of an increase in pollutants. |
| | Cumulative impact of hydrological modifications |
| **Ecology, Biodiversity** | Cumulative destruction of sensitive habitat. |
| | Cumulative impact of faunal habitat and displacement. |
| | Cumulative impact on natural migratory routes and faunal dispersal patterns. |
| **Visual** | Cumulative impact of visual distrubances |
| **Agriculture** | Cumulative impact on loss of agriculture land capability |
| **Coastal Access** | Cumulative negative loss of coastal access to the public |
| **Tourism** | Cumulative loss in tourism revenue form loss of coastal access and mining related impacts onshore and offshore |
| **Climate** | Cumulative impacts on global warming stressors |
| **Noise** | Cumulative impact of construction and operational noise |
| | Cumulative impact of noise and vibrations |

| IMPACT | |
|---|---|
| **Socio-Economical** | Postivie - Cumulative impact of development on the surrounding communities. |
| | Positive - Cumulative impact of development on the economic environment. |
| | Positive - Cumulative impact of the employment opportunities provided. |
| | Negative – Cumulative Loss of income from tourism and other coastal activities |

#### 7.1.13.1 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.

During the EIA phase all potential negative and potential impact will be identified, ranked and mitigation measures will be prescribed. These will be developed based on the findings of the specialist studies assessments.

### 7.1.14 The possible mitigation measures that could be applied and the level of risk.

During the EIA phase all possible impacts will be assessed and an EMP outlining the risk and mitigation measures will be compiled. These will be developed based on the finding of the specialist studies assessments.

### 7.1.15 Final Site Layout Plan

The Final Layout Plan will be provided in the EIA/EMP after public consultation as well as specialist study's findings, delineation of sensitive environments and buffers.

### 7.1.16 Plan of study for the Environmental Impact Assessment process

A plan of study for undertaking the environmental impact assessment process to be undertaken will include-

- a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity;
- a description of the aspects to be assessed as part of the environmental impact assessment process;
- aspects to be assessed by specialists;
- a description of the proposed method of assessing the environmental aspects, including a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists;
- a description of the proposed method of assessing duration and significance;
- An indication of the stages at which the competent authority will be consulted;
- particulars of the public participation process that will be conducted during the environmental impact assessment process; and

- a description of the tasks that will be undertaken as part of the environmental impact assessment process;
- Identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

The EIA phase will comprise of the following activities;

- Stakeholder Engagement;
- Assessing of Alternatives;
- Baseline and consideration of potential Specialist Studies;
- Identification of potential impacts
- Impact Assessment;
- Identification and Description of mitigation measures; and
- Reporting and decision-making.

### 7.1.17 Description of the aspects to be assessed as part of the environmental impact assessment process

The authorization process to be followed has been designed to meet the requirements of the MPRDA (Act 28 of 2002) and National Environmental Management Act (107/1998): Environmental Impact Assessment Regulations, as amended. The authorization process will include:

- Scoping Phase:
- Stakeholder Notification;
- Authority Consultation;
- Capturing of Issues and Concerns;
- Compilation of a Stakeholder Database;
- Identification of Potentially Significant Impacts;
- Identification of Potentially Sensitive Environmental Aspects;
- Identification of Required Specialist Studies;
- Compilation of a Scoping Report (this document), including:
- Plan of Study for EIA/EMP Amendment.
- Issues Report; and
- Stakeholder Review of Documentation;
- Submission and approval of Scoping Report by relevant authorities.
- Impact Assessment Phase:
- Undertake necessary specialist studies;
- Assessment of environmental impacts;

- Compilation of management plans;
- Compilation of an EMP Report;
- Stakeholder document review and comment;
- Submission of final report for decision-making.

The EMP Report will include a description of the proposed project, a list of identified environmental aspects that will potentially be impacted upon by the prospecting project, an Impact Assessment for these aspects, and an Environmental Management Programme for the mitigation and management of the identified impacts.

A plan of study for undertaking the environmental impact assessment process to be undertaken will include-

- a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity;
- a description of the aspects to be assessed as part of the environmental impact assessment process;
- aspects to be assessed by specialists;
- a description of the proposed method of assessing the environmental aspects, including a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists;
- a description of the proposed method of assessing duration and significance;
- An indication of the stages at which the competent authority will be consulted;
- particulars of the public participation process that will be conducted during the environmental impact assessment process; and
- a description of the tasks that will be undertaken as part of the environmental impact assessment process;
- Identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

### 7.1.18 Specialist Studies

#### 7.1.18.1 Site Sensitivity Verification and Minimum Report Content Requirements

Prior to commencing with a specialist assessment, the current use of the land and the environmental sensitivity of the site under consideration identified by the national web based environmental screening tool (screening tool), where determined, must be confirmed by undertaking a site sensitivity verification.

The screening tool can be accessed at: https://screening.environment.gov.za/screeningtool.

- The site sensitivity verification must be undertaken by an environmental assessment practitioner or a specialist.
- The site sensitivity verification must be undertaken through the use of:

    (a) a desk top analysis, using satellite imagery;

    (b) a preliminary on-site inspection; and

(c) any other available and relevant information.

- The outcome of the site sensitivity verification must be recorded in the form of a report that--

(a) confirms or disputes the current use of the land and the environmental sensitivity as identified by the screening tool, such as new developments or infrastructure, the change in vegetation cover or status etc.;

(b) contains a motivation and evidence (e.g. photographs) of either the verified or different use of the land and environmental sensitivity; and

(c) is submitted together with the relevant assessment report prepared in accordance with the requirements of the Environmental Impact Assessment Regulations (EIA Regulations).

#### 7.1.18.2 Specialist Assessment and Minimum Report Content Requirements

Where a specialist assessment is required and no specific environmental theme protocol has been prescribed, the required level of assessment must be based on the findings of the site sensitivity verification and must comply with Appendix 6 of the EIA Regulations. In order to assess the environmental, social and cultural impacts of the proposed diamond prospecting activity, a number of specialist studies will be commissioned. The findings of these studies will be incorporated into the Environmental Impact Assessment Report (EIR). The specialist studies consider the proposed structure and activities of the operations, as well as the associated risks to the receiving physical and socio-cultural environment.

The following aspects of the biophysical environment will be considered in the baseline studies:

- Agricultural Impact Assessment
- Landscape/Visual Impact Assessment
- Archaeological and Cultural Heritage Impact Assessment
- Palaeontology Impact Assessment
- Terrestrial Biodiversity Impact Assessment
- Aquatic Biodiversity Impact Assessment
- Hydrology Assessment
- Noise Impact Assessment
- Radioactivity Impact Assessment
- Traffic Impact Assessment
- Geotechnical Assessment
- Climate Impact Assessment
- Health Impact Assessment
- Socio- Economic Assessment
- Ambient Air Quality Impact Assessment
- Seismicity Assessment

- Plant Species Assessment
- Animal Species Assessment

### 7.1.19 Description of aspects to be assessed by specialists

The identified specialists will use the following gazetted protocols available on the link provided in the table below:

| No | Specialist assessment | Assessment Protocol |
|---|---|---|
| 1 | Agricultural Impact Assessment | https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Agriculture_Assessment_Protocols.pdf |
| 2 | Landscape/Visual Impact Assessment | https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf |
| 3 | Archaeological and Cultural Heritage Impact Assessment | https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf |
| 4 | Palaeontology Impact Assessment | https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf |
| 5 | Terrestrial Biodiversity Impact Assessment | https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf |
| 6 | Aquatic Biodiversity Impact Assessment | https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf |
| 7 | Hydrology Assessment | https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf |
| 8 | Noise Impact Assessment | https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Noise_Impacts_Assessment_Protocol.pdf |
| 9 | Radioactivity Impact Assessment | https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf |
| 10 | Traffic Impact Assessment | https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf |
| 11 | Geotechnical Assessment | https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf |
| 12 | Climate Impact Assessment | https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf |
| 13 | Health Impact Assessment | https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf |
| 14 | Socio- Economic Assessment | https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf |
| 15 | Ambient Air Quality Impact Assessment | https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf |
| 16 | Seismicity Assessment | https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf |
| 17 | Plant Species Assessment | https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Plant_Species_Assessment_Protocols.pdf |

| | | |
|---|---|---|
| 18 | Animal Species Assessment | https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Animal_Species_Assessment_Protocols.pdf |

A general view of the existing socio-economic structures of the project area will be addressed to identify relevant social aspects and predict the anticipated future social developments and/or changes in the receiving human environment;

- Provide a baseline study describing the environmental socio-economic factors of the affected population;
- Assess negative and positive impacts associated with the project;
- Identify feasible mitigation measures and benefits related with the project.

### 7.1.20 Proposed method of assessing the environmental aspects including the proposed method of assessing alternatives

Methodology for Assessing Environmental Issues and Alternatives

According to National Environmental Management Act (107/1998): Environmental Impact Assessment Regulations, 2014), the environment is described as the surrounding within which human exist and that are made up of:

*(i) the land, water and atmosphere of the earth;*

*(ii) micro-organisms, plant and animal life;*

*(iii) any part or combination of (i) and (ii) and the interrelationships among and between them; and*

*(iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.*

***Impact Assessment Methodology***

**(a) Nature of the impact**

The NATURE of an impact can be defined as: "a *brief description of the impact being assessed, in terms of the proposed activity or project, including the socio-economic or environmental aspect affected by this impact*".

**(b) Extent of the impact**

The EXTENT of an impact can be defined as: "*a brief description of the spatial influence of the impact or the area that will be affected by the impact*".

| | | |
|---|---|---|
| **EXTENT** | **Footprint** | Only as far as the activity, such as footprint occurring within the total site area |

| | | |
|---|---|---|
| Extent or spatial influence of impact | **Site** | Only the site and/or 500m radius from the site will be affected |
| | **Local** | Local area / district (neighbouring properties, transport routes and adjacent towns) is affected |
| | **Region** | Entire region / province is affected |
| | **National** | Country is affected |

**(a) Magnitude of the impact**

The MAGNITUDE of an impact can be defined as: "*a brief description of the intensity or amplitude of the impact on socio-economic or environmental aspects".*

| | | |
|---|---|---|
| **MAGNITUDE**<br><br>Magnitude / intensity of impact (at the specified scale) | **Zero** | Natural and/or social functions and/or processes remain *unaltered* |
| | **Very low** | Natural and/or social functions and/or processes are *negligibly* altered |
| | **Low** | Natural and/or social functions and/or processes are *slightly* altered |
| | **Medium** | Natural and/or social functions and/or processes are *notably* altered |
| | **High** | Natural and/or social functions and/or processes *severely* altered |

**(b) Duration of the impact**

The DURATION of an impact can be defined as: "*a short description of the period of time the impact will have an effect on aspects*".

| | | |
|---|---|---|
| **DURATION**<br><br>Duration of the impact | **Short term** | Construction phase up to 3 years after construction |
| | **Medium term** | Up to 6 years after construction |
| | **Long term** | More than 6 years after construction |

**(c) Probability of the impact occurring**

The PROBABILITY of an impact can be defined as: "the *estimated chance of the impact happening*".

| | | |
|---|---|---|
| **PROBABILITY** | **Unlikely** | *Unlikely* to occur (0 – 25% probability of occurring) |

| | | |
|---|---|---|
| | **Possible** | *May* occur (26 – 50% chance of occurring) |
| | **Probable** | *Likely* to occur (51 – 75% chance of occurring) |
| | **Definite** | Will *certainly* occur (76-100% chance of occurring) |

**(d) Degree to which impact can be reversed**

The REVERSABILITY of an impact can be defined as: *"the ability of an impact to be changed from a state of affecting aspects to a state of not affecting aspects*".

| | | |
|---|---|---|
| **REVERSABILITY** | **Reversible** | Impacts can be reversed through the implementation of mitigation measures |
| | **Irreversible** | Impacts are permanent and can't be reversed by the implementation of mitigation measures |

**(e) Degree to which impact may cause irreplaceable loss of resources**

The IRREPLACEABILITY of an impact can be defined as:" the amount of resources that can (not) be replaced".

| | | |
|---|---|---|
| **IRREPLACEABILITY** Irreplaceable loss of resources | **No loss** | *No* loss of any resources |
| | **Low** | *Marginal* loss of resources |
| | **Medium** | *Significant* loss of resources |
| | **High** | *Complete* loss of resources |

**(f) Degree to which the impact can be mitigated**

The degree to which an impact can be MITIGATED can be defined as: "the effect of mitigation measures on the impact and its degree of effectiveness".

| | | | |
|---|---|---|---|
| **MITIGATION RATING** | **MITIGATED** Degree impact can be mitigated | **High** | *Impact 100% mitigated* |
| | | **Medium** | *Impact >50% mitigated* |
| | | **Low** | *Impact <50% mitigated* |

**(g) Confidence rating**

CONFIDENCE in the assessment of an impact can be defined as the:" *level of certainty of the impact occurring*".

| | | | |
|---|---|---|---|
| **CONFIDENCE RATING** | **CONFIDENCE** | **Unsure** | Amount of information on and/or understanding of the environmental factors the potentially influence the impact is *limited*. |
| | | **Sure** | Amount of information on and/or understanding of the environmental factors the potentially influence the impact is *reasonable and relatively sound.* |
| | | **Certain** | Amount of information on and/or understanding of the environmental factors the potentially influence the impact is *unlimited and sound*. |

**(h) Cumulative impacts**

The effect of CUMULATIVE impacts can be described as:" the effect the combination of past, present and "reasonably foreseeable" future actions have on aspects".

| | | | |
|---|---|---|---|
| **CUMULATIVE RATING** | **CUMULATIVE EFFECTS** | **Low** | *Minor* cumulative effects |
| | | **Medium** | *Moderate* cumulative effects |
| | | **High** | *Significant* cumulative effects |

### 7.1.21 The stages at which the competent authority will be consulted

The competent authority will be consulted during the

- Scoping phase
- Public Review of Documents
- EIA phase and release of the EMP
- Further Consultation after the EIA/EMP has been submitted if there are comments from I&AP's

## 8 PUBLIC PARTICIPATION DURING THE EIA PHASE

### 8.1.1 Particulars of the public participation process with regard to the Impact Assessment process that will be conducted

Public participation is an essential and regulatory requirement for an environmental authorization process and is guided by Regulations promulgated under NEMA, specifically the EIA Regulations. NEMA EIA Regulations defines the "Public Participation Process" as a process in which potential interested and affected parties (I&APs) are given an opportunity to comment on, or raise issues relevant to, specific matters".

The public participation process is designed to provide sufficient and accessible information to I&APs in an objective manner to assist them to:

**During the Scoping Phase:**

- Raise issues of concern and suggestions for enhanced benefits;
- Verify that their issues have been recorded;
- Assist in identifying reasonable alternatives; and
- Contribute relevant local information and traditional knowledge to the environmental assessment.

**During the Impact Assessment Phase:**

- Contribute relevant information and local and traditional knowledge to the environmental assessment;
- Verify that their issues have been considered in the environmental studies; and
- Comment on the findings of the environmental assessments.

The identified Interested and Affected Parties during the scoping phase will be made aware of the availability of the EIA report VIA

- A notification letter
- Emails and SMS
- Press advertisements
- Site Notices
- Public and Stakeholder Meetings
- The EIA will be made available for review to all IAPs for 30days. All registered IAPs will be notified by email and SMS of the report's availability. Hard copies of the draft report will be placed at:
- Public Libraries, Municipal Offices and other accessible places.

### 8.1.2 Details of the engagement process to be followed

- In addition to landowners, other relevant organisations will be identified and notified of the application. This includes municipal and State departments with jurisdiction in the area and Non-governmental Organisations (NGOs) with an interest.
- A notification letter with the details of the availability of the EIA will be distributed (by email, or hand) to all landowners. All IAPs will be asked to distribute the documents to anyone who may be interested or affected by the project.
- Site Notices
- Public and Stakeholder Meetings
- Register of IAPs during the scoping report will be used to notify the availability of the EIA
- EIAR/EMPr will be released for public review for 30 days each excluding public and school holidays.
- Hard copies of the draft report will be placed at: Public Libraries, Municipal Offices and other accessible places.
- A final Consultation report with stakeholder comments from each phase will be submitted.

Framework of a Stakeholder Engagement Plan

Regulations and requirements;

- Summary of previous engagement;
- Project stakeholders inclusive of an analysis and categorisation of all project stakeholders;
- Stakeholder engagement process inclusive of the regulatory process and separate engagement processes (i.e. with neighbouring facilities, or international NGOs);
- Timetable;
- Resources and responsibilities;
- Grievance mechanism;
- Key messages (code of conduct);
- Monitoring and reporting – i.e. comments and response tracking; and
- Management functions.

### 8.1.3 Description of the information to be provided to Interested and Affected Parties

Once the competent authority has approved the SR, the Impact Assessment Phase will commence. Stakeholders will receive notification of the start of the Impact Assessment Phase and opportunities for public review and comment.

Public participation during the Impact Assessment Phase revolves around a review of the findings of the EIA, presented in the Draft EIA Report. This report will be made available for public comment for a period of 30 days.

Stakeholders will be invited to comment on the Draft EIA Report and EMP in the following ways:

- By completing a comment sheet made available together with the report at the public places, and by submitting additional written comments, by email or fax, or by telephone, to the public participation office; and
- The Draft EIA Report and EMP Report and its accompanying Specialist Studies will be distributed for comment to public places in the project area, to everyone who requests a copy email.

The documents will contain a project location, map as well as detailed legislations triggered by the project and a project description as well as reference number of the project.

The scoping report will be made available to the public for review at public libraries. The scoping report will entail potential impacts, mitigation measures as well as specialist reports to be undertaken to supplement the background information of the proposed project.

### 8.1.4 Description of the tasks that will be undertaken during the environmental impact assessment process

The Environmental Impact Assessment Phase will include the following activities:

1) Undertake necessary specialist studies;
2) Assessment of environmental impacts;
3) Compilation of management plans;
4) Compilation of an EMP Amendment Report;
5) Stakeholder document review and comment;
6) Submission of Scoping and EIA report for decision-making

The EIA report must contain:

- A description of the property on which the activity is to be undertaken and the location of the activity on the property;
- A description of the environment that may be affected by the activity and the manner in which the physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity;
- Details of the public participation process conducted including
  - Steps undertaken in accordance with the plan of study;
  - A list of persons, organisations and organs of state that were registered as interested and affected parties;
  - A summary of comments received from, and a summary of issues raised by registered interested and affected parties, the date of receipt of these comments and the response of the EAP to those comments; and
  - Copies of any representations and comments received from registered interested and affected parties;

- A description of the need and desirability of the proposed activity;
- A description of identified potential alternatives to the proposed activity, including advantages and disadvantages that the proposed activity or alternatives may have on the environment and the community that may be affected by the activity;
- An indication of the methodology used in determining the significance of potential environmental impacts;
- A description and comparative assessment of all alternatives identified during the environmental impact assessment process;
- A summary of the findings and recommendations of any specialist report or report on a specialized process;
- A description of all environmental issues that were identified during the environmental impact assessment process, an assessment of the significance of each issue and an indication of the extent to which the issue could be addressed by the adoption of mitigation measures;
- An assessment of each identified potentially significant impact, including:
    - Cumulative impacts;
    - The nature of the impact;
    - The extent and duration of the impact;
    - The probability of the impact occurring;
    - The degree to which the impact can be reversed;
    - The degree to which the impact may cause irreplaceable loss of resources; and
    - The degree to which the impact can be mitigated;
- A description of any assumptions, uncertainties and gaps in knowledge;
- A reasoned opinion as to whether the activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;
- An environmental impact statement which contains:
    - A summary of the key findings of the environmental impact assessment; and
    - A comparative assessment of the positive and negative implications of the proposed activity and identified alternatives;

A draft environmental management programme containing;

- Copies of any specialist reports and reports on specialised processes; and
- Any specific information that may be required by the competent authority

## 9 MITIGATION MEASURES

### 9.1.1 Measures to avoid, reverse, mitigate, or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored

Table 7: Mitigation Measures

| Potential Environmental Impacts & Sources | Measures to prevent, mitigate, minimize or manage the impacts |
|---|---|
| CONSTRUCTION PHASE | |
| Activity: establishment/construction of camp site<br>Impact: **Air pollution** (dust, gaseous emissions)<br>Source: Establishment of camp site, movement of vehicles. | • Dust suppression measures such as spraying with water<br>• Speed limits will be established and enforced<br>• Equipment and vehicles equipped with standard exhaust systems which minimize the amount of emissions |
| Activity: food preparation<br>Impact: **Destruction of fauna and flora**<br>Source: Open fires | • Restrict open fires<br>• Prohibit hunting and poaching<br>• Collection of firewood will be prohibited<br>• Maintain firebreaks |
| Activity: maintenance of vehicles<br>Impact: **Water pollution (surface water, groundwater)**<br>Source: spillages from vehicles | • Use oil trays<br>• Use modern vehicles in good working condition<br>• Take vehicles to accredited workshop in town<br>• Use absorbents to trap hydrocarbons |
| Activity: Disposal of Waste<br>Impact: **Land degradation, land-use and capability**<br>Source: Poor waste management | • Place waste receptacles at strategic points<br>• Monitor housekeeping behaviour and insist on corrective action<br>• Waste will be disposed off in approved site |
| Activity: establishment/construction of camp site<br>Impact: **Safety and security**<br>Source: Employees | • Employ locals who will be transported home after hours<br>• Make necessary arrangements with the landowner for security measures, access to site and other logistical matters |
| OPERATIONAL PHASE | |
| Activity: Preparation of mining area<br>Impact: **Land degradation, land-use and capability**<br>Source: Poor waste management | • Mined areas will be rehabilitated and re-vegetated<br>• Debris will be removed and disposed off in approved site<br>• Areas which do not form part of mining site will not be disturbed. |
| Activity: Disposal of Waste<br>Impact: **Land degradation, land-use and capability**<br>Source: Poor waste management | • Place waste receptacles at strategic points<br>• Monitor housekeeping behaviour and insist on corrective action<br>• Waste will be disposed off in approved site |
| Activity: mining and lubrication of equipment<br>Impact: **water pollution** (surface water, groundwater)<br>Source: leaks, spillages from equipment and vehicles | • Operate outside 100 m distance from stream or any water body<br>• Control and manage storm water<br>• Prevent soil erosion and keep water channel clean, monitor groundwater |
| Activity: Vehicle movement during operational hours<br>Impact: **Ecological degradation**<br>Source: Uncontrolled vehicle movement and poor rehabilitation | • Most of the biodiversity will be restored after closure<br>• Re-vegetation of the sites<br>• Movement of vehicles will be restricted to designated areas |

| | |
|---|---|
| Activity: Accidental spillages<br>Impact: **Land pollution**<br>Source: Lack of proper house keeping | • Trays used to trap hydrocarbons<br>• Absorbent agents to be used to trap hydrocarbons and grease<br>• Any spillage will be recorded and remedial action taken immediately<br>• Reporting of significant hazardous spillages |
| Activity: Mining<br>Impact: **Noise**<br>Source: Machine and Vehicle engines | • The operation will comply with the provisions of the Mine Health and Safety Act, 1996 (Act 29 of 1996) and its regulations as well as other applicable legislation regarding noise control<br>• Employees will be equipped with ear plugs and other protective gear. All vehicles will be equipped with silencers and maintained in a roadworthy condition |
| Activity: Mining Impact: **Aesthetic pollution**<br>Source: visibility of site | • Site selection to prioritize areas not to exposed to the public or local residences<br>• Visual impact will be temporary |
| Activity: Establishment of tailings<br>Impact: **Land degradation**<br>Source: visibility of site | • Backfilling in accordance with original soil profile<br>• Sloping and levelling of land<br>• Re-vegetation of the sites |
| Activity: Establishment of pads<br>Impact: **Destruction of fauna and flora**<br>Source: visibility of site | • Most of the biodiversity will be restored after closure<br>• Re-vegetation of the sites<br>• Re-introduction of local species where applicable |
| Activity: Bulk Excavation<br>Impact: **Land degradation**<br>Source: visibility of site | • Backfilling in accordance with original soil profile<br>• Sloping and levelling of land<br>• Re-vegetation of the sites |
| Activity: Rehabilitation<br>Impact: **Land degradation**<br>Source: visibility of site | • Backfilling in accordance with original soil profile<br>• Sloping and levelling of land<br>• Re-vegetation of the sites |
| DECOMMISSIONING AND CLOSURE PHASE | |
| Activity: De-establishment / removal of infrastructure<br>Impact: **Air pollution** (dust, gaseous emissions)<br>Source: movement of vehicles. | • Speed limits will be established and enforced<br>• Very temporary in nature |
| Activity: De-establishment / removal of infrastructure<br>Impact: **Noise**<br>Source: vehicle movement | • The operation will comply with the provisions of the Mine Health and Safety Act, 1996 (Act 29 of 1996) and its regulations as well as other applicable legislation regarding noise control<br>• Employees will be equipped with ear plugs and other protective gear. All vehicles will be equipped with silencers and maintained in a roadworthy condition |

### 9.1.2 Other Information required by the competent Authority

Additional consultation and studies might be requested by the relevant authorities.

### 9.1.3 Impact on the socio-economic conditions of any directly affected person.

The socio-economic conditions will be identified and described as part of the EIA process. Preliminary it can be assumed that livelihoods of the adjacent landowners will be impacted by the disturbances on agriculture fisheries and tourism.

### 9.1.4 Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act.

In terms of the National Heritage Resources Act, 1999 (Act no. 25 of 1999) an Archaeological Impact Assessment will undertaken in order to establish if any localities of heritage and paloentological significane are present.

### 9.1.5 Potential Cumulative impact and mitigation measures

Table 8: Cumulative Impacts and Mitigation Measures

| TRIGGERS | POTENTIAL CUMULATIVE IMPACT | SIGNI-FICANCE | MITIGATION AND MANAGEMENT MEASURES | SIGNI-FICANCE (with mitigation) |
|---|---|---|---|---|
| Mining, use of hazardous substances (hydrocarbons), soil erosion | Contamination of water resources | Low | Avoidance of hazardous substances<br>Prevention of spillages<br>Proper house keeping<br>Prevent soil erosion<br>Concurrent rehabilitation | Low |
| Soil erosion | Reduction of land capability | High | Restriction on vehicular circulation<br>Immediate rehabilitation of disturbed sites | Low |
| Loss of sense of place and serenity | Reduction of land land-use potential<br>Reduction in tourism | High | Reduction of noise and visual aspects<br>Immediate rehabilitation of disturbed sites | Medium |
| Lack of supervision and site surveys | Loss of biodiversity, habitats, and heritage resources | Moderate | Use of existing roads and tracks. Limited vehicular movement<br>Mine in one area at a time to systematically and other land uses | Low |
| Improper use of machinery and vehicles | Generation of dust, smog and noise | Moderate | Maintenance of machinery and vehicles<br>Operate within prescribed working hours | Moderate |
| Perception of job opportunities | Conflict between project team and the local community | Moderate | Employ local people, communicate the right messages about the project | Negligible |

## 10 RECOMMENDATIONS

The scoping report outlines the studies to be undertaken and the protocols to be used in assessing the impacts and recommendation of best practice measures across the mining right. The risks that have been identified need to be mitigated.

The EAP recommends the acceptance of the scoping report and plan of study with the inputs from commenting authorities and interested and affected parties.

### 10.1.1 Undertaking Regarding Correctness of Information

DECLARATION OF INDEPENDENCE

I, Yvonne Gutoona, on behalf of Archean Resources (Pty) Ltd in my capacity as an environmental consultant, hereby declare that I:-

- Act as an independent consultant;
- Do not have any financial interest in the undertaking of this project, other than remuneration for the work performed in terms of the National Environmental Management Act EIA Regulations Amendment of 2021;
- Have and will not have vested interest in the proposed activity nor will I engage myself in any conflicting interest associated with this project
- I undertake to disclose and provide to the competent authority any material or information at my disposal regarding this project as required in terms of National Environmental Management Act (EIA regulations of June 2021);
- Based on the information provided to me by the client and in addition to information obtained during the course of this study, I have presented the results and conclusion with regard to this project to the best of my professional ability;

**I** Yvonne Gutoona **herewith undertake that the information provided in the foregoing report is correct, and that the comments and inputs from stakeholders and Interested and Affected parties has been correctly recorded in the report.**

**_____**

**Signature of the EAP**

**DATE:**

15 September 2021

**UNDERTAKING REGARDING LEVEL OF AGREEMENT**

**I** Yvonne Gutoona **herewith undertake that the information provided in the foregoing report is correct, and that the level of agreement with interested and Affected Parties and stakeholders has been correctly recorded and reported herein.**

**_____**

**Signature of the EAP**

**DATE:**

15 September 2021- Draft Release Date