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**ENVIRONMENTAL IMPACT ASSESSMENT REPORT &
 ENVIRONMENTAL MANAGEMENT PROGRAMME
 REPORT FOR:**

**THE PROPOSED DIAMONDS ALLUVIAL & DIAMONDS
 GENERAL MINING RIGHT, COMBINED WITH A WASTE
 LICENCE APPLICATION OF OKAPI DIAMONDS (PTY) LTD, ON
 PORTION OF THE REMAINING EXTENT OF PORTION 9
 (WOUTER) OF THE FARM LANYON VALE 376; REGISTRATION
 DIVISION: HAY; NORTHERN CAPE PROVINCE.**

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PROJECT INFORMATION


Project Name: Application for an Environmental Authorisation for the proposed Mining Right of Diamonds Alluvial (DA) & Diamonds General (D) combined with a Waste Licence Application on a portion of the remaining extent of portion 9 (Wouter) of the farm Lanyon Vale 376; Registration Division: Hay; Northern Cape Province

Report Title: EIR & EMPr

Prepared By: Milnex CC Environmental Consultants

Date: April 2020

QUALITY CONTROL:

	Report Author:	Report Reviewer:
Name:	Ms. Percy Sehaole EAPASA (2019/959) Pr. Sci. Nat.	N/A
Signature:		

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IMPORTANT NOTICE

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

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

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

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

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

interpreted information and that it unambiguously represents the interpretation of the applicant.

ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

- (1) The environmental impact assessment process must be undertaken in line with the approved plan of study for environmental impact assessment.
- (2) The environmental impacts, mitigation and closure outcomes as well as the residual risks of the proposed activity must be set out in the environmental impact assessment report.

OBJECTIVE OF THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

2. The objective of the environmental impact assessment process is to, through a consultative process-
 - (a) determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;
 - (b) describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
 - (c) identify the location of the development footprint within the preferred site based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;
 - (d) determine the--
 - (i) nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and
 - (ii) degree to which these impacts-
 - (aa) can be reversed;
 - (bb) may cause irreplaceable loss of resources, and
 - (cc) can be avoided, managed or mitigated;
 - (e) identify the most ideal location for the activity within the preferred site based on the lowest level of environmental sensitivity identified during the assessment;

(f) identify, assess, and rank the impacts the activity will impose on the preferred location through the life of the activity;

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

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

SCOPE OF ASSESSMENT AND CONTENT OF ENVIRONMENTAL IMPACT ASSESSMENT REPORTS

A. CONTACT PERSON AND CORRESPONDENCE ADDRESS

a) Details of:

i) The EAP who prepared the report

ii) Expertise of the EAP

Name of Practitioner	Qualifications	Contact details
Ms. Percy Sehaole Pr. Sci. Nat. EAPASA (2019/959)	Master’s Degree in Environmental Science Master’s Degree in Environmental Management (refer to Appendix 1)	Tel No.: (018) 011 1925 Fax No.: (053) 963 2009 e-mail address: percy@milnex-sa.co.za
Lizanne Esterhuizen	Honours Degree in Environmental Science (refer to Appendix 1)	Tel No.: (018) 011 1925 Fax No.: (053) 963 2009 e-mail address: lizanne@milnex-sa.co.za
Danie Labuschagne	Master’s Degree in Environmental Management and Geography (refer to Appendix 1)	Tel No.: (018) 011 1925 Fax No. : (053) 963 2009

Summary of the EAP’s past experience. (Attach the EAP’s curriculum vitae as **Appendix 2**)

Milnex CC was contracted by **Okapi Diamonds (Pty) Ltd** as the independent environmental consultant to undertake the Scoping and EIA process for a Mining Right of Diamonds Alluvial (DA) & Diamonds General (D) combined with a Waste Licence Application on a portion of the remaining extent of portion 9 (Wouter) of the farm Lanyon Vale 376; Registration Division: Hay; Northern Cape Province. Milnex CC does not have any interest in secondary developments that may arise out of the authorisation of the proposed project.

Milnex CC is a specialist environmental consultancy with extensive experience in the mining industry which provides a holistic environmental management service, including environmental assessment and planning to ensure compliance with relevant environmental legislation. Milnex CC benefits from the pooled resources, diverse skills and experience in the environmental and mining field held by its team that has been actively involved in undertaking environmental studies for a wide variety of mining related projects throughout South Africa. The Milnex CC team has considerable

experience in environmental impact assessment and environmental management, especially in the mining industry.

Percy Schaole & Lizanne Esterhuizen have experience consulting in the environmental field. Their key focus is on environmental assessment, advice and management and ensuring compliance to legislation and guidelines. They are currently involved in undertaking EIAs for several projects across the country (refer to **Appendix 2** for CV).

B. DESCRIPTION OF THE PROPERTY

Farm Name:	1. A portion of the remaining extent of portion 9 (Wouter) of the farm Lanyon Vale 376
Application area (Ha)	2180.2624 hectares
Magisterial district:	Pixley Ka Seme
Local Municipality	Siyathemba Local Municipality
Registration Division	Hay
Distance and direction from nearest town	The area applied for is located along the North Bank of the middle Orange River between Douglas and Prieska in the Northern Cape Province of South Africa, some 100km southwest of Douglas and some 200km from Kimberley.
21 digit Surveyor General Code for each farm portion	1. C03100000000037600000
Minerals Applied For:	1. Diamonds Alluvial (DA) 2. Diamonds General (D)

iii. Farm co-ordinates

Farms		Longitude	Latitude
A portion of the remaining extent of portion 9 (Wouter) of the farm Lanyon Vale 376	0	23° 9' 22.378" E	29° 18' 43.764" S
	1	23° 9' 51.121" E	29° 18' 44.466" S
	2	23° 10' 11.801" E	29° 18' 40.610" S
	3	23° 10' 35.637" E	29° 18' 10.115" S
	4	23° 10' 55.266" E	29° 18' 30.795" S
	5	23° 11' 9.286" E	29° 18' 59.888" S
	6	23° 10' 58.420" E	29° 19' 12.507" S
	7	23° 11' 11.039" E	29° 19' 26.528" S
	8	23° 10' 47.554" E	29° 20' 13.847" S
	9	23° 10' 17.059" E	29° 20' 46.796" S

	10	23° 9' 29.739" E	29° 19' 18.816" S
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C. LOCALITY MAP

(show nearest town, scale not smaller than 1:250000 attached as **Appendix 3**).

A Locality map is attached in **Appendix 3** and on figure 1 below.

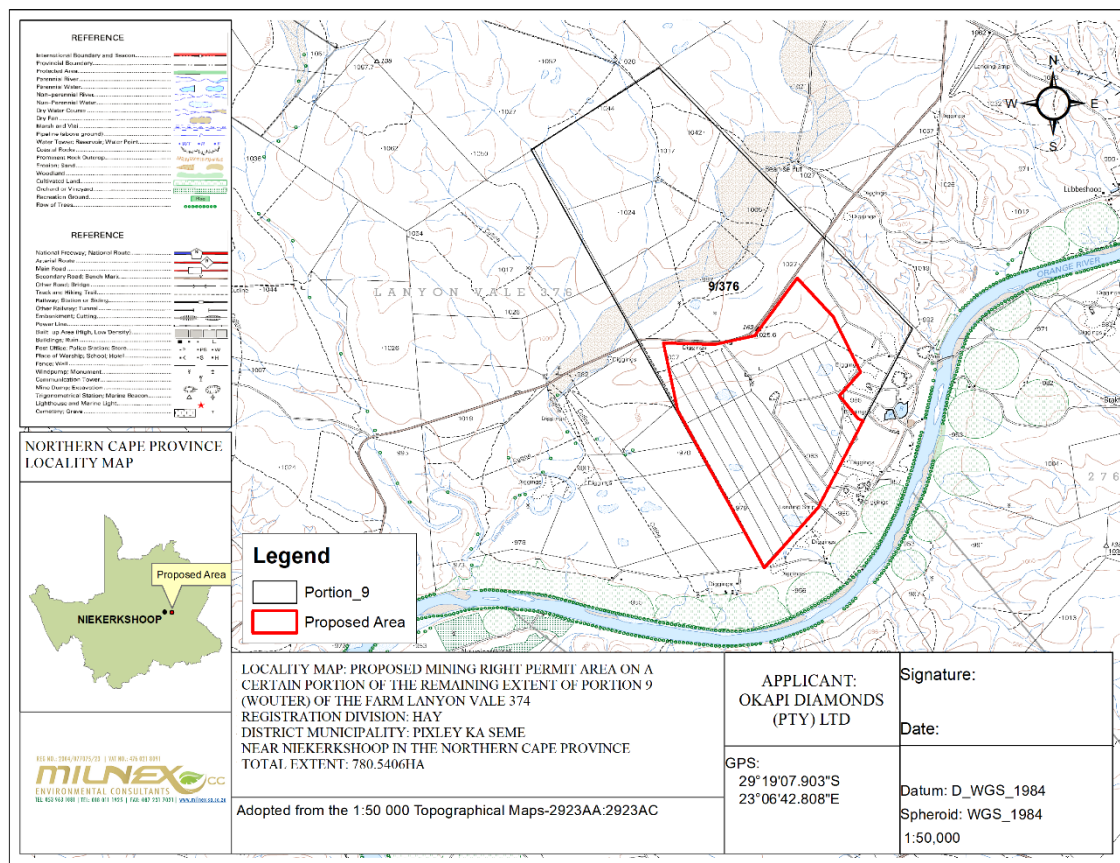


Figure 1: Locality Map

<p>Listing Notice GNR 327, Activity 45.</p>	<p>The expansion of infrastructure for the bulk transportation of water or storm water where the existing infrastructure—</p> <ul style="list-style-type: none"> i. has an internal diameter of 0,36 metres or more; or ii. has a peak throughput of 120 litres per second or more; and <p>(a) where the facility or infrastructure is expanded by more than 1 000 metres in length; or</p> <p>(b) where the throughput capacity of the facility or infrastructure will be increased by 10% or more;</p>
<p>Listing Notice GNR 325, Activity 17:</p>	<p>“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 — (a) associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource; or (b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing; but excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in this Notice applies.” – Mining right for the mining of Chrome ore and Platinum Group Metals including associated infrastructure, structure and earthworks</p>
<p>Listing Notice GNR 324, Activity 12:</p>	<p>“The clearance of an area of 300 square meters or more of indigenous vegetation i. Within any critically endangered ecosystem listed in terms of section 52 of the NEMBA. iii. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority, vi. Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland”</p>
<p>NEM:WA 59 of 2008 Category B: (1).</p>	<p>The storage of general waste in lagoons.</p>
<p>NEM:WA 59 of 2008 Category B: (5).</p>	<p>The treatment of hazardous waste in lagoons, excluding the treatment of effluent, wastewater or sewage.</p>
<p>NEM:WA 59 of 2008 Category B: (7).</p>	<p>The disposal of any quantity of hazardous waste to land.</p>
<p>NEM:WA 59 of 2008 Category B: (8).</p>	<p>The disposal of general waste to land covering an area in excess of 200m2 and with a total capacity exceeding 25 000 tons.</p>
<p>NEM:WA 59 of 2008 Category B: (9).</p>	<p>The disposal of inert waste to land in excess of 25 000 tons, excluding the disposal of such waste for the purposes of levelling and building which has been authorised by or under other legislation.</p>
<p>NEM:WA 59 of 2008 Category B: (10).</p>	<p>The construction of a facility for a waste management activity listed in Category B of this Schedule</p>
<p>NEM:WA 59 of 2008 Category B: (11).</p>	<p>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).</p>

NAME OF ACTIVITY (All activities including activities not listed) (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	Aerial extent of the Activity Ha or m²	LISTED ACTIVITY Mark with an X where applicable or affected.	APPLICABLE LISTING NOTICE (GNR 324, GNR 325 or GNR 326)/NOT LISTED
<p>Clearance of indigenous vegetation:</p> <p>"The clearance of an area of 20 hectares or more, of indigenous vegetation." – Random indigenous vegetation clearance of over a 2180.2624 hectares area.</p> <p>Approximately 2180.2624 ha of indigenous vegetation is planned to be removed for the development of the mine.</p>	<p>2180.2624 Ha Total hectares to be disturbed Concurrent backfilling will take place in order to rehabilitate.</p>	<p>X</p>	<p>Listing Notice GNR 325, Activity 15</p>
<p>The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or storm water— (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more</p> <p>Pipelines will be established for the mine infrastructure, including for potable water and storm water</p>			<p>Listing Notice GNR 327, Activity 9</p>
<p>The development and related operation of infrastructure exceeding 1 000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes</p>			<p>Listing Notice GNR 327, Activity 10</p>

<p>Various pipelines will be established for the mine infrastructure, including for the pumping and transportation of tailings and process water.</p>			
<p>The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.</p> <p>This includes explosives, solvents, lubricants, vehicle and generator fuel, waste oils etc. Various storage containers and storage areas, each of different sizes will be required for the different dangerous goods that will be necessary for the mining activity.</p>			<p>Listing Notice GNR 327, Activity 14:</p>
<p>The expansion of infrastructure for the bulk transportation of water or storm water where the existing infrastructure—</p> <ul style="list-style-type: none"> i. has an internal diameter of 0,36 metres or more; or ii. has a peak throughput of 120 litres per second or more; and <p>(a) where the facility or infrastructure is expanded by more than 1 000 metres in length; or</p> <p>(b) where the throughput capacity of the facility or infrastructure will be increased by 10% or more;</p>			<p>Listing Notice GNR 327, Activity 45</p>

<p>Pipelines will be required for the mine infrastructure, including for potable water, storm water and dewatering mine workings. Use may be made of existing infrastructure.</p>			
<p>“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 — (a) associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource; or (b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing; but excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in this Notice applies.”</p> <p>Mining right for the mining of Diamond Alluvial & Diamond general including associated infrastructure, structure and earthworks.</p>			<p>Listing Notice GNR 325, Activity 17</p>
<p>"The development of a road with a reserve wider than 13.5 metres, or where no reserve exists where the road is wider than 8 metres." - The development of 10m wide road, with no road reserve.”</p>			<p>Listing Notice GNR 327, Activity 24</p>

<p>Residue stockpiles or residue deposits: 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).</p> <p>The waste rock and waste that is separated from the gravel during processing, is dumped away from the trenches onto a surface waste dump.</p>			<p>NEM:WA 59 of 2008 (Category B: (11))</p>
<p>Storage of hazardous waste: The storage of general waste in lagoons.</p> <p>Tailings storage facility.</p>			<p>NEM:WA 59 of 2008 (Category B: (1))</p>
<p>Disposal of waste on land: (7) The disposal of any quantity of hazardous waste to land.</p>			<p>NEM:WA 59 of 2008 (Category B: (7))</p>
<p>Disposal of waste on land: (8) The disposal of general waste to land covering an area in excess of 200m² and with a total capacity exceeding 25 000 tons.</p>			<p>NEM:WA 59 of 2008 (Category B: (8))</p>
<p>Disposal of waste on land: (9) The disposal of inert waste to land in excess of 25 000 tons, excluding the disposal of such waste for the purposes of levelling and building which has been authorised by or under other legislation.</p>			<p>NEM:WA 59 of 2008 (Category B: (9))</p>

<p>Treatment of waste: (5) The treatment of hazardous waste in lagoons, excluding the treatment of effluent, wastewater or sewage.</p>			<p>NEM:WA 59 of 2008 (Category B: (5))</p>
<p>Construction of facilities and associated structures and infrastructure: The construction of a facility for a waste management activity listed in Category B of this Schedule</p>			<p>NEM:WA 59 of 2008 (Category B: (10))</p>
<p>Clearance of indigenous vegetation:</p> <p>"The clearance of an area of 20 hectares or more, of indigenous vegetation." – Random indigenous vegetation clearance of over a 2180.2624 hectares area.</p> <p>Approximately 2180.2624 ha of indigenous vegetation is planned to be removed for the development of the mine.</p>	<p>2180.2624 Ha Total hectares to be disturbed Concurrent backfilling will take place in order to rehabilitate.</p>	<p>X</p>	<p>Listing Notice GNR 325, Activity 15</p>
<p>The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or storm water—</p> <p>(i) with an internal diameter of 0,36 metres or more; or</p> <p>(ii) with a peak throughput of 120 litres per second or more</p> <p>Pipelines will be established for the mine infrastructure, including for potable water and storm water</p>			<p>Listing Notice GNR 327, Activity 9</p>

ii) DESCRIPTION OF THE ASSOCIATED STRUCTURES AND INFRASTRUCTURE RELATED TO THE DEVELOPMENT

(Describe Methodology or technology to be employed, and for a linear activity, a description of the route of the activity)

Okapi Diamonds (Pty) Ltd has embarked on a process for applying for a Mining Right of Diamonds Alluvial (DA) & Diamonds General (D) combined with a Waste Licence Application on a portion of the remaining extent of portion 9 (Wouter) of the farm Lanyon Vale 9 (Wouter) of the farm Lanyon Vale 376; Registration Division: Hay; Northern Cape Province. These farms are preferred due to the sites expected mineral resources. **Okapi Diamonds (Pty) Ltd** requires a prospecting right in terms of NEMA and the Mineral and Petroleum Resources Development Act to mine diamonds alluvial within the Siyathemba Local Municipality, Northern Cape Province (refer to a locality map attached in **Appendix 3**).

The generic process is as follows:

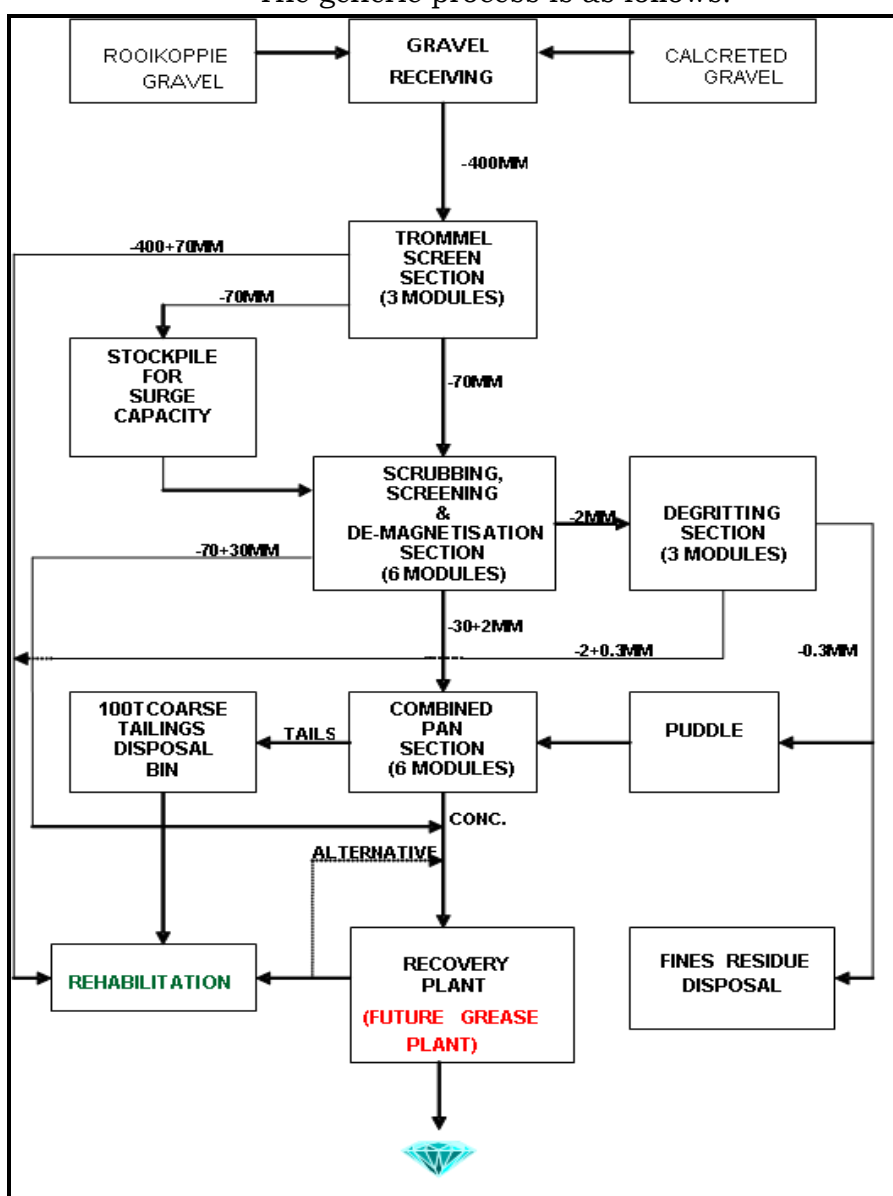


Figure 3: Mining Process

A generic map is provided due to the complexity of alluvial and kimberlite mining occurring simultaneously. It is extremely difficult to have a predetermined mine plan. Mining and mine planning are reviewed as per results achieved.

The mining schedule will follow as close as practically possible the classification of the resources, i.e. Measured to be mined out first and then Indicated. The schedule will further be dependant on additional exploration activities, and exploration results obtained, that could be undertaken in the future.

For any mine planning that is proposed, the uncertainty regarding this specific style of mineralisation has to be borne in mind, i.e. the location of the mineralised channel gravels, the character of the channel gravels, and the quality, quantity and size of the minerals (alluvial diamonds) itself. Due to economic factors being dependant on the mineralisation, the mining schedule could be required to be modified as mining progresses, and this cannot be foreseen at this stage, especially when planning a medium to long term schedule.

The below map proposes a mine planning schedule for the Measured and Indicated Resource categories, over the short and medium term, divided as follows:

- Short term (Measured Resource) – on a monthly basis (periods 1 -23), up to a maximum of two years
- Medium term (Indicated Resource) – on a six monthly basis (periods 24 – 32)

The Short and Medium term mine schedule applied to the Measured and Indicated Resource categories covers a period of seven and a half years.

No mine planning schedule has been drafted for Inferred Resources, as no modifying factors can be applied to resources classified as Inferred (as per SAMREC clauses 67, 68 and 69).

Basic overview of the mining method

Mining Methods: Although the alluvial diamond deposits and the presence of channels can be inferred, it is necessary that the mining work be accompanied by exploration work to determine the precise location and direction of the channels to follow during mining. Pits will thus be excavated by excavators as part of further exploration work and for mining purposes. Trenches will be excavated with excavators. The topsoil will be removed and stored separately. The gravel will be removed and transported by ADT to the mining plant. Here it will be stored and transported by a FEL to the washing machines.

The gravel will be washed using the so-called “dry-method” and/or “wet-method” depending on the, among others, the weather, regulatory requirements, economies of scale. Depending on the method, waste will either be washed back into the trenches and/ or re-directed to the tailings dam.

The possible diamond bearing gravel will be mortised into bins, where after the gravel will be sorted by a flow sort and/or DMS o possibly find diamonds.

OPEN CAST MINING

Open Pit



Excavator



Dumper



Front-End – Loader



16 Ft. Washing Pan



Flowsort



Water uses and Water Supply:

According to the Baseline Hydrogeological Investigation conducted by a qualified specialist, *Water is proposed to be abstracted from the Orange River for the mining operations. A water sample was therefore collected from the Orange River abstraction point to establish if any constituents pose a risk to the underlying aquifer once mining commence. The co-ordinates of the sample are presented in Table 3. Please refer to appendix 11-2*

Sample ID	Latitude	Longitude	Comments
River	-29.351671°	23.143428°	A sample was collected from the Orange river

Water Use Pan Size specifications for Alluvial Diamond Mining (DWS NC & FS, 2001).

Pan size	Water/hour (m ³)	Water/day(m ³)	Gravel/hour (tons)	Gravel/day (ton)
16	17	170	60	600

Since 4 x 16 feet washing pans will be used, the amount of water for the pans will be 68 000 L/hour from which 30% is re-used.

Figure 4 below show boreholes on site

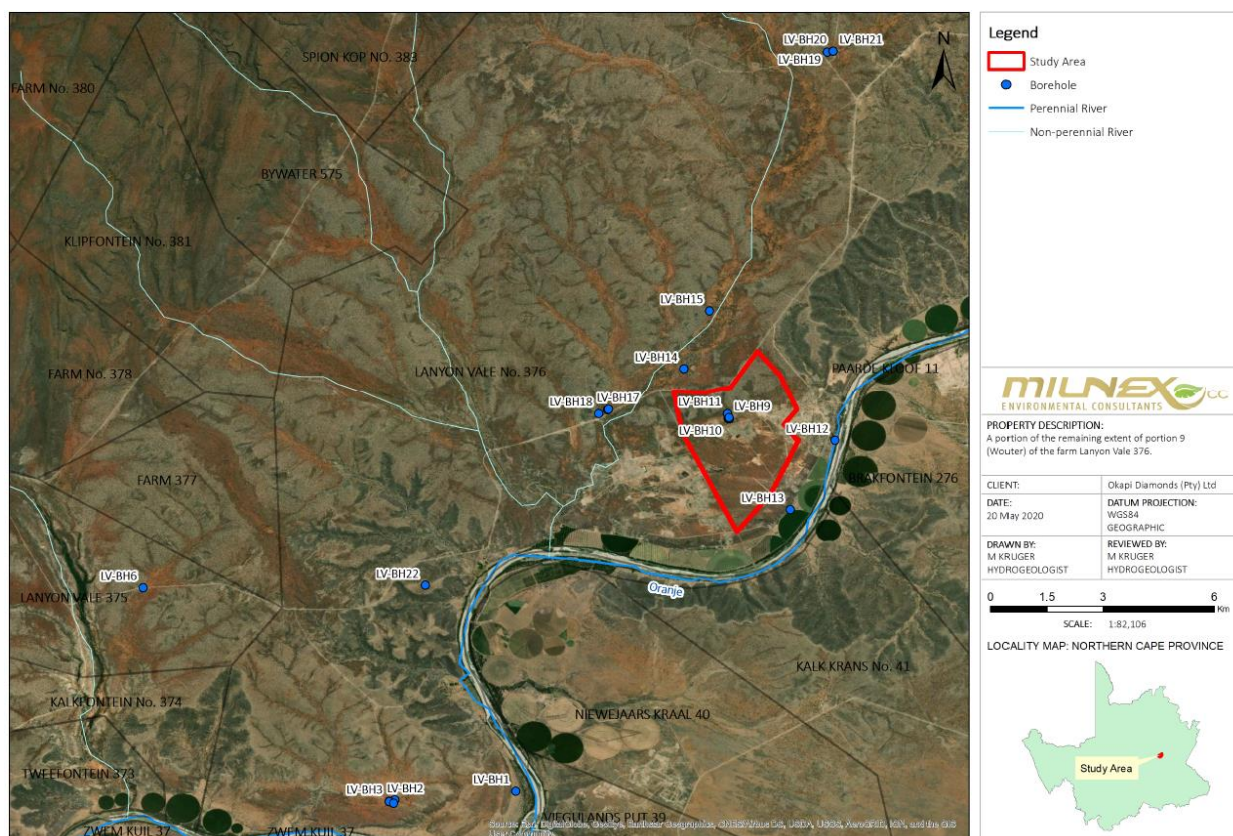


Figure 4: Tested boreholes on site (Map adapted from Baseline Hydrogeological Investigation)

Ablution

Chemical toilets shall be used where necessary, no french drains and pits shall be permitted.

Access road

Access will be obtained from Hay Besproeiing tar road which changes into a gravel road and existing roads will also be used on the proposed area.

Storage of dangerous goods

During the mining activities, limited quantities of diesel and fuel, oil and lubricants will be stored on site. These goods should be placed in a bunded area one and a half times the volume of the total amount of goods to be stored.

Electricity

The mine will require power supply from the national grid for the beneficiation plant and workshops. This will supply the washing plant, drying plant, workshops and offices and ancillary uses.

Mining activities and phases

Please find the Mining Work Programme attached as **Appendix 9**.

LIST OF EQUIPMENT
1 x Bonfilioli Crane
1 x BELL Diezelbowser
1 x Volvo EC380 Excavator
1 x Volvo EC380DL Excavator
2 x Volvo EC480DL Excavator
1 x Komatsu WA420 Front End Loader
4 x Volvo L120F Front End Loader
2 x CAT777G Dumpers
1 x Volvo A35F Dumpers
3 x Volvo A60 ADT Dumpers
1 x Komatsu D475A Bulldozer
2 x CAT D11T Bulldozer

Efficiency of the process

The diamond pan is one of the oldest methods that are used for concentrating and the recovery of diamonds in the North West region.

From the stock pile the gravel is screened. Screens are fed to a capacity of 75% for effectiveness and to obtain 80-90% efficiency.

The method is relatively cost-effective but produces a large amount of concentrate and recovery efficiencies are very sensitive to size distribution of the feed and the quality of the medium - called puddle.

Pan efficiencies are normally calculated at approximately 80% recovery of the product, provided that all operational parameters are being adhered to and medium contamination is kept to the minimum. Losses would mainly occur in the very small diamond fractions.

Description of equipment and activities impacting electricity cost (excluding the processing plant)

Equipment that may have an impact on electricity costs are listed below, and the applicant spends approximately R40 000.00 monthly on electricity.

- Welder, Grinder, Electrical driller, Lights, computers in office.

Mining activities and phases

Please find the Mining Work Programme attached as **Appendix 8**.

E. POLICY AND LEGISLATIVE CONTEXT

(a description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context;)

Title of legislation, policy or guideline:	Administering authority:	Promulgation Date:
National Environmental Management Act No. 107 of 1998 as amended.	Department of Environmental Affairs	27 November 1998
Constitution of South Africa Act 108 of 1996	National	18 December 1996
The National Heritage Resources Act (Act No. 25 of 1999)	SAHRA	1999
Mineral and Petroleum Resources Development Act (Act No. 28 of 2002)	Department of Mineral Resources & Energy (DMRE)	2002
National Infrastructure Plan	National	
National Environmental Management: Biodiversity Act No. 10 of 2004	Department of Environmental Affairs	7 June 2004
National Environmental Management Waste Act, 2008 (Act No. 59 of 2008)	National & Provincial	1 July 2009
EIA regulations under NEMA	Department of Environmental Affairs	14 December 2014
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)	Department of Agriculture Forestry and Fisheries	1 June 1984
National Environmental Management Air Quality Act, 2004 (Act No. 39 of 2004).	National and Provincial	11 September 2004
National Water Act, 1998 (Act No. 36 of 1998).	National	20 August 1998
Northern Cape Province Growth and Development Strategy	Provincial	11 August 2013
Pixley ka Seme district Municipality Integrated Development Plan (IDP)	Municipal	
Siyathemba Local Municipality Integrated Development Plan (IDP) Review	Municipal	

National Forest Act (Act 84 of 1998) (NFA)	National	30 October 1998
National Veld & Forest Fires Act (Act 101 of 1998)	National	27 November 1998

Policy and Legislative Context

<p>APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)</p>	<p>REFERENCE WHERE APPLIED</p>	<p>HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT. (E.g. In terms of the National Water Act a Water Use License has/ has not been applied for)</p>
<p>The Constitution of South Africa (Act No. 108 of 1996)</p>		<p>The Constitution is the supreme law of the Republic and all law and conduct must be consistent with the Constitution. The Chapter on the Bill of Rights contains a number of provisions, which are relevant to securing the protection of the environment. Section 24 states that “everyone has the right to (a) 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 justifiable economic and social development. The Constitution therefore, compels government to give effect to the people’s environmental right and places government under a legal duty to act as a responsible custodian of the countries environment. It compels government to pass legislation and use other measures to protect the environment, to prevent pollution and ecological degradation, promote conservation and secure sustainable development.</p>
<p>The National Environmental Management Act (Act No. 107 of 1998)</p>	<p>S24(1) of NEMA S28(1) of NEMA</p>	<p>NEMA provides for co-operative governance by establishing principles and procedures for decision-makers on matters affecting the environment. An</p>

		<p>important function of the Act is to serve as an enabling Act for the promulgation of legislation to effectively address integrated environmental management. Some of the principles in the Act are accountability; affordability; cradle to grave management; equity; integration; open information; polluter pays; subsidiary; waste avoidance and minimisation; co-operative governance; sustainable development; and environmental protection and justice.</p> <p>The mandate for EIA lays with the National Environmental Management Act (107 of 1998) and the EIA Regulations No. 982, 983, 984, and 985 promulgated in terms of Section 24 of NEMA. The EIA Regulations determine that an Environmental Authorisation is required for certain listed activities, which might have a detrimental effect on the environment. This EIA was triggered by activity 21, 24(ii) and 27 listed in Regulation R983, which requires a ‘basic assessment process.’</p>
<p>The National Water Act (Act No. 36 of 1998)</p>	<p>S21</p>	<p>Sustainability and equity are identified as central guiding principles in the protection, use, development, conservation, management and control of water resources. The intention of the Act is to promote the equitable access to water and the sustainable use of water, redress past racial and gender discrimination, and facilitate economic and social development. The Act provides the rights of access to basic water supply and sanitation, and environmentally, it provides for the protection of aquatic and associated ecosystems, the reduction and prevention of pollution and degradation of water resources.</p> <p>As this Act is founded on the principle that National Government has overall responsibility for and authority over water resource management, including the equitable allocation and beneficial use of water in the public interest, a person can only be entitled to use water if the use is permissible under the Act. Chapter 4 of the Act lays the basis for regulating water use.</p>

<p>Management: Air Quality Act (Act No. 39 of 2004)</p>	<p>S21</p>	<p>The object of this Act is to protect the environment by providing reasonable measures for the protection and enhancement of the quality of air in the Republic; the prevention of air pollution and ecological degradation; and securing ecologically sustainable development while promoting justifiable economic and social development.</p> <p>Regulations No. R248 (of 31 March 2010) promulgated in terms of Section 21(1) (a) of the National Environmental Management Act: Air Quality Act (39 of 2004) determine that an Atmospheric Emission License (AEL) is required for certain listed activities, which result in atmospheric emissions which have or may have a detrimental effect on the environment. The Regulation also sets out the minimum emission standards for the listed activities. It is not envisaged that an Atmospheric Emission License will be required for the proposed development.</p>
<p>The National Heritage Resources Act (Act No. 25 of 1999)</p>		<p>The Act aims to introduce an integrated and interactive system for the management of the heritage resources, to promote good government at all levels, and empower civil society to nurture and conserve heritage resources so that they may be bequeathed to future generations and to lay down principles for governing heritage resources management throughout the Republic. It also aims to establish the South African Heritage Resources Agency together with its Council to co-ordinate and promote the management of heritage resources, to set norms and maintain essential national standards and to protect heritage resources, to provide for the protection and management of conservation-worthy places and areas by local authorities, and to provide for matters connected therewith.</p> <p>The Act protects and manages certain categories of heritage resources in South Africa. For the purposes of the Heritage Resources Act, a "heritage resource" includes any place or object of cultural significance. In this</p>

		<p>regard the Act makes provision for a person undertaking an activity listed in Section 28 of the Act to notify the resources authority. The resources authority may request that a heritage impact assessment be conducted if there is reason to believe that heritage resources will be affected.</p>
<p>Conservation of Agricultural Resources Act (Act No. 85 of 1983)</p>		<p>The objective of the Act is to provide for control over the utilization 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.</p> <p>Consent may be required from the Department of Agriculture in order to confirm that the proposed development is not located on high potential agricultural land.</p>
<p>Mineral and Petroleum Resources Development Act (Act No. 28 of 2002)</p>		<p>The Minerals and Petroleum Resources Development Act identifies the state as the official custodian of South Africa’s Mineral and Petroleum Resources. Therefore all activities relating to the reconnaissance, prospecting rights, mining rights, mining permits and retention permits are regulated by the State.</p> <p>A mining permit application has been lodge with the Department of Mineral Resources – Northern Cape Province</p>
<p>National Infrastructure Plan</p>		<p>The National Government adopted a National Infrastructure Plan in 2012. With the plan they aim to transform the South African economic landscape while simultaneously creating significant numbers of new jobs, and strengthening the delivery of basic services.</p>

		<p>Government will over the three years from 2013/14 invest R827 billion in building and upgrading existing infrastructure.</p> <p>These investments will improve access by South Africans to healthcare facilities, schools, water, sanitation, housing and electrification. On the other hand, investments in the construction of ports, roads, railway systems, electricity plants, hospitals, schools and dams will contribute to faster economic growth.</p> <p>This mining activity will indirectly contribute to the growing of the South African economy by supplying SANRAL with material to build and upgrade road infrastructure.</p>
<p>National Forest Act 84 of 1998</p>		<p>The protection, sustainable management and use of forests and trees within South Africa are provided for under the National Forests Act (Act 84 of 1998).</p> <p>Prohibition on destruction of trees in natural forests</p> <p>(1) No person may -</p> <p>(a) cut, disturb, damage or destroy any indigenous tree in a natural forest; or</p> <p>(b) possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any tree, or any forest product derived from a tree contemplated in paragraph (a), except in terms of-</p> <p>(i) a licence issued under subsection (4) or section 23; or</p>

		(ii) an exemption from the provisions of this subsection published by the Minister in the <i>Gazette</i> on the advice of the Council.
National Environmental Management: Protected Areas Act 57 of 2003		This Act provides for the protection and conservation of ecologically viable areas representative of South Africa’s biological diversity and its natural landscapes and seascapes. It also seeks to provide for the sustainable utilization of protected areas and to promote participation of local communities in the management of protected areas.
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)		<p>Section 24S of NEMA deals with the management of residue stockpiles and residue deposits and provides that Residue stockpiles and residue deposits must be deposited and managed in accordance with the provisions of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), on any site demarcated for that purpose in the environmental management plan or environmental management programme in question</p> <p>The management of residue stockpiles and residue deposits must be done in accordance with any conditions set out and any identified measures in the environmental authorisation issued in terms of NEMA, an environmental management programme and a waste management licence issued in terms of NEMA (Regulation 3(2)).</p>
National Environmental Management: Waste Act, 2008 (Act No. 59 Of 2008) Regulations regarding the Planning & Management of Residue Stockpiles & Residue Deposits from a Prospecting, Mining, Exploration or Production Operation		The purpose of these Regulations is to regulate the planning and management of residue stockpiles and residue deposits from a prospecting, mining, exploration or production operation.

F. NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES.

(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] development footprint within the approved site as contemplated in the accepted scoping report;).

Mining has played a vital role in the economy of South Africa for over 100 years. In 2015 the mining industry contributed R286 billion towards South African Gross Domestic Product (GDP) representing 7.1% of overall GDP. Mining is a significant contributor to employment in the nation, with 457 698 individuals directly employed by the sector in 2015. This represents just over 3% of all employed nationally. Diamond mining has 17 885 direct employees.

Diamonds, arguably the ultimate luxury mineral, comprise an intricate lattice of carbon atoms, a crystalline structure that makes them harder than any other form in nature. This characteristic makes diamonds not only popular in jewellery, but also desirable in high-tech cutting, grinding and polishing tools (Chamber of Mines, South Africa, 12:2016).

According to the Chamber of Mines the country's diamond sector is far from reaching the end of its life even though diamond mining has been taking place in South Africa for almost a century and a half. The primary sources of all of South Africa's diamonds are kimberlites in ancient, vertically dipping volcanic pipes most of which were located in the vicinity of the city of Kimberley and which were initially amenable to open-cast.

Economic growth - South Africa's total reserves remain some of the world's most valuable, with an estimated worth of R20.3-trillion. Overall, the country is estimated to have the world's fifth-largest mining sector in terms of GDP value.

It has the world's largest reserves of manganese and platinum group metals (PGMs), according to the US Geological Survey, and among the largest reserves of gold, diamonds, chromite ore and vanadium.

With South Africa's economy built on gold and diamond mining, the sector is an important foreign exchange earner, with gold accounting for more than one-third of exports. In 2009, the country's diamond industry was the fourth largest in the world.

Mining is a cornerstone of the economy, making a significant contribution to economic activity, job creation and foreign exchange earnings. Mining and its related industries are critical to South Africa's socio-economic development.

G. A MOTIVATION FOR THE PREFERRED DEVELOPMENT FOOTPRINT

(-within the approved site as contemplated in the accepted scoping report;)

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

Location of the site

The location of the site is preferred due to the presence of shallow diamond. Access will be obtained from existing tar and gravel roads.

As discussed in the previous section, based on outcomes of previous studies in the vicinity of the proposed site, the possibility to encounter high volumes of of Diamonds Alluvial (DA) & Diamonds General (D) combined with a Waste Licence Application on the remaining extent of portion 9 (Wouter) of the farm Lanyon Vale 376; Registration Division: Hay; Northern Cape Province, were identified.

Preferred activity

The prospecting of diamonds alluvial is the optimum preferred activity for the site. The shallow diamond deposits makes the site ideal for alluvial diamond mining. The mine will provide significantly more job opportunities than what is providing currently.

H. A FULL DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED DEVELOPMENT FOOTPRINT

(-within the approved site as contemplated in the accepted scoping report, including:)

i) Details of the development footprint alternatives considered;

• Consideration of alternatives

The DEAT 2006 guidelines on ‘assessment of alternatives and impacts’ proposes the consideration of four types of alternatives namely, the no-go, site, activity, and technology alternatives. It is however, important to note that the regulation and guidelines specifically state that only ‘feasible’ and ‘reasonable’ alternatives should be explored. It also recognizes that the consideration of alternatives is an iterative process of feedback between the developer, the EAP and Interested and affected parties, which in some instances culminates in a single preferred project proposal. The following sections explore each type of alternative in relation to the proposed activity.

• Location alternatives

This alternative asks the question, if there is not, from an environmental perspective, a more suitable location for the proposed activity. No other properties have been secured by **Okapi Diamonds (Pty) Ltd** near Hopetown area to potentially mine diamonds alluvial. Also, it is expected that the diamonds alluvial been deposited on this farm and therefore the applicant would like to commence with their prospecting activities.

Land capability is the combination of soil suitability and climate factors. The proposed development falls within **Land in Class VII**; which has very severe limitations that makes it unsuited to cultivation and that restrict its use largely to grazing, woodland or wildlife.

- Restrictions are more severe than those for Class 6 because of one or more continuing limitations that cannot be corrected, such as:
 - Very steep slopes.
 - Erosion.
 - Shallow soil.
 - Stones.

- Wet soil.
- Salts or sodicity.
- Unfavourable climate.
- Physical conditions are such that it is impractical to apply such pasture or range improvements as seeding, liming and fertilizing.
- Depending on soil characteristics and climate, land in Class 7 may be well or poorly suited to woodland.

In unusual instances some occurrences may be used for special crops under unusual management practices. (AGIS, 2016)..

Refer to Land capability map attached as **Appendix 5 & figure 5 below.**

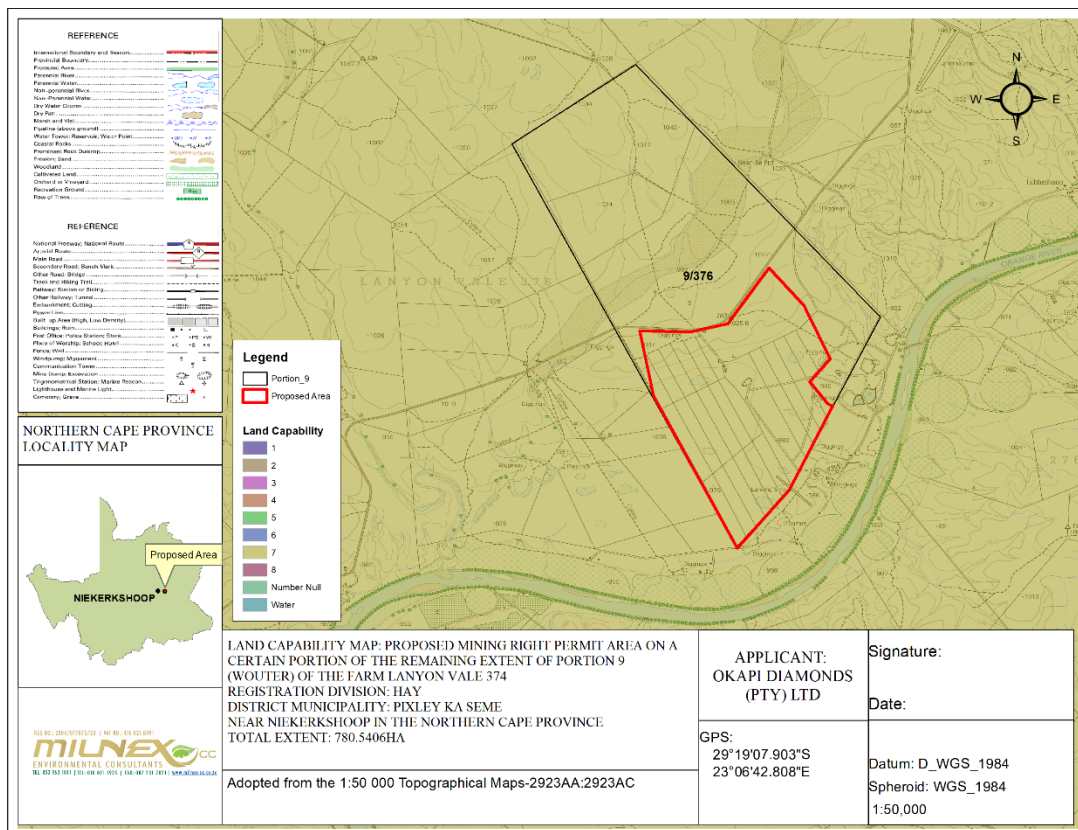


Figure 5: Land capability

● **Activity alternatives**

The environmental impact assessment process also needs to consider if the development of an alluvial diamond mine would be the most appropriate land use for the particular site.

Mining of other commodities –from the surface and desktop assessment indicates that there are no indications that there are other commodities to be mined on the site, except alluvial diamond.

● **Design and layout alternatives**

Design alternatives were considered throughout the planning and design phase (i.e. where is the diamond bearing gravel located?). In this regard discussions on the

design were held between the EAP and the developer. The layout follows the limitations of the site and aspects such as, roads, site offices and workshop area.

The proposed area consists pans, multiple reservoirs, tributaries from different pans, infrastructure & houses. Where applicable a Water Use License Application will be launched for conducting mining operations. All infrastructure will be temporary and/or mobile.

- **Operational alternatives**

Due to the nature of the prospecting activities, no permanent services in terms of water supply, electricity, or sewerage services are required.

The activities will commence with a site investigation and desktop studies, which will comprise of non-invasive techniques. This manner of survey will ensure that the applicant can clearly delineate areas which are suitable for further investigation and no unnecessary surface disturbance will be undertaken.

Based on the outcome of the desktop studies and site investigation, pits will be dug by an excavator for the purpose of soil sampling. If gravel is found, the applicant will determine the the composition and quality of the gravel.

The applicant will proceed with this way of prospecting by means of the open cast/trenching method, simultaneously or after pitting depending on the information obtained from the earlier work done. The trenches will be dug to remove and wash the gravel. It will be washed by a 10-18 feet washing pan to determine diamond proceeds per 100 tons of gravel.

All data will be consolidated and processed to determine the diamond bearing resources on the property. This will be a continuous process throughout the prospecting work programme.

No feasible alternatives to the pitting and trenching method currently exists. Impacts associated with the prospecting operations will be managed through the implementation of a management plan, developed as part of the application for authorisation.

- **No-go alternative**

This alternative considers the option of ‘do nothing’ and maintaining the status quo. The description provided in section H of this report could be considered the baseline conditions (status quo) to persist should the no-go alternative be preferred. The site is currently zoned for agricultural land uses. Should the proposed activity not proceed, the site will remain unchanged.

Technology alternatives

Based on outcomes of the geological study and the previous mining activities on/around the proposed area, the possibility to encounter further Diamonds Alluvial (DA) & Diamonds General (D) for a Mining Right were identified.

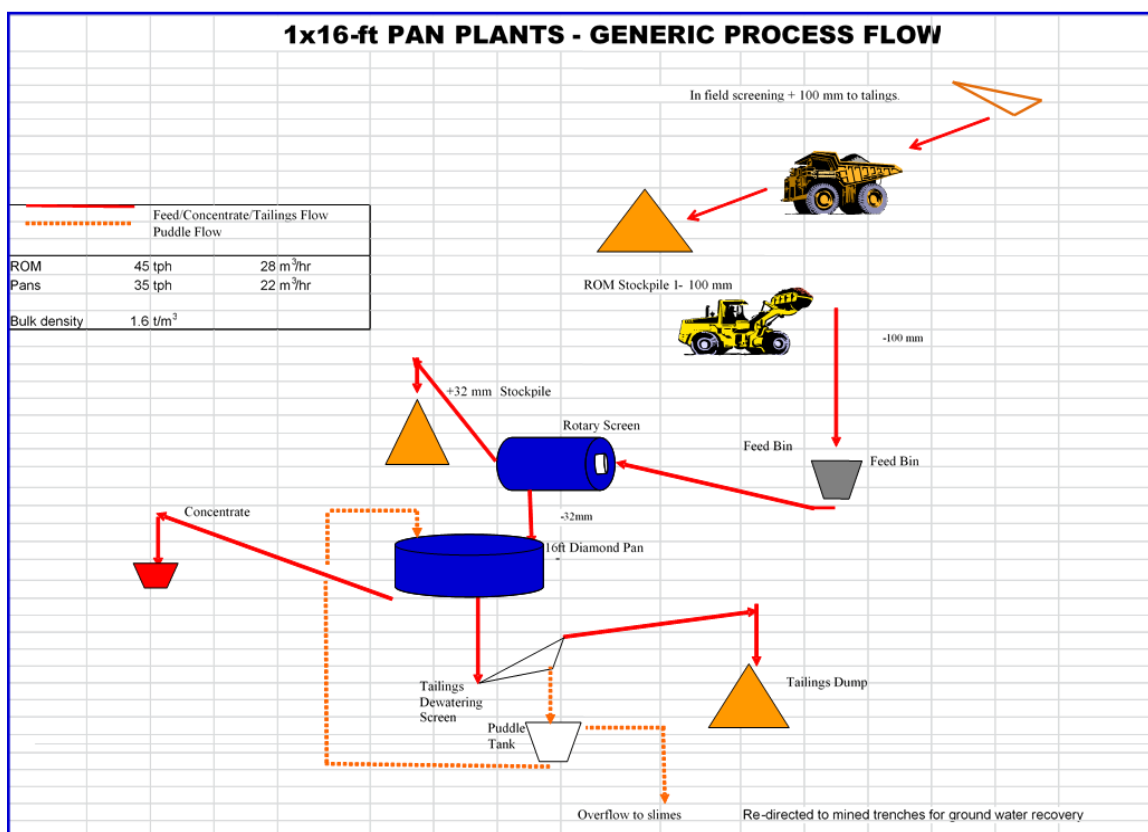


Figure 6: Mine design

In terms of the technologies proposed, these have been chosen based on the long-term success of their mining history. The mining activities proposed in the Mining Works Programme (**Appendix 9**) is dependent on the preceding phase as previously discussed, therefore no alternatives are indicated, but rather a phased approach of trusted mining techniques.

The preferred technology for the proposed mining activity, will be to remove the diamond bearing gravel with an excavator, depositing it in the 10 – 18 feet rotary pan(s) to be washed and sorted. Please find the Mining Work Programme attached as **Appendix 9**.

Pros & Cons of the alternative **Dense Media Separation (DMS)**

Advantages	Disadvantages
DMS plants is used mostly for kimberlite deposits	10 times more expensive than Rotary pan
	Water consumption is high
	Operating costs are expensive

In a Dense Media Separation (DMS) plant, powdered ferrosilicon (an alloy of iron and silicone) is suspended in water to form a fluid near the density of diamond (3.52 g/cm³), to which the diamond bearing material is added to begin the separation process of the heavier minerals from the lighter material. Additional separation of the denser material occurs by centrifuge in “cyclones” that swirl the mixture at low and high speeds, forcing the diamonds and other dense minerals to the walls and then out the bottom of the cyclone. Waste water rises at the center of the cyclones

and is sucked out and screened to remove waste particles. The DMS process results in a concentrate that generally weighs less than one percent of the original material fed into the plant at the beginning of the process.

Pros & Cons of the alternative Rotary Pan Plants

Advantages	Disadvantages
More cost effective	The industry perception that Rotary Pan Plants yield poorer diamond recoveries
Readily available	
Generate more work opportunities	
Consume less water	
Rotary Pan Plants are most often used when mining alluvial deposits	

In a Rotary Pan plant, crushed ore, when mining kimberlite, or alluvial gravel and soil is mixed with water to create a liquid slurry called “puddle” which has a density in the 1.3 to 1.5 g/cm³ range. The mix is stirred in the pan by angled rotating “teeth”. The heavier minerals, or “concentrate”, settle to the bottom and are pushed toward an extraction point, while lighter waste remains suspended and overflows out of the centre of the pan as a separate stream of material. The concentrate, representing just a small percentage of the original kimberlite ore or alluvial gravels, is drawn off for final recovery of the diamonds.

Both methods are in actual fact used for bulk material reduction and require a further process for the final diamond recovery however, for this project the Rotary Pan will be used.

When it comes to dust suppression two main methods were considered, namely molasses stillage and the wetting (water) of roads. The table below provides a short summary of the advantages and disadvantages of each.

Water	Molasses stillage
More cost effective	Much more expensive
Could lead to the depleting of water resources	Requires less water
No damage (only if used excessively)	The product may be toxic to aquatic organisms. (As this product could have physical effects on aquatic organisms for e.g. floating, osmotic damage)
No harm to humans or animals(Only a high quantity will have harm to humans or animals)	Not Hazardous or toxic. Could cause irritation to eyes, skin or when ingested and inhaled.
Non-flammable	Non-flammable
Eye-wash fountains not needed	Eye-wash fountains in the work place are strongly recommended
	Working procedures should be designed to minimize worker exposure to this product.
Basic storing methods	Storing methods are a bit more complicated. Should be stored in a plastic,

	plastic lined or stainless steel, tight closed containers between 5 and 40 degrees Centigrade.
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Considering the above mentioned information, water will be used for dust suppression purposes.

ii) Details of the Public Participation Process Followed

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

Advertisement and Notices

An advertisement was placed in English in the local newspaper (**Noordkaap**) on **13 November 2019** (see **Appendix 6**) notifying the public of the EIA process and requesting Interested and Affected Parties (I&APs) to register with, and submit their comments to Milnex CC. I&APs were given the opportunity to raise comments within 30 days of the advertisement.

Site notices

Site notices were placed (as anticipated on the coordinates below) on site in English on **22 November 2019** to inform surrounding communities and immediately adjacent landowners of the proposed development. I&APs will be given the opportunity to raise comments. Photographic evidence of the site notices will be included in **Appendix 6**. Below are the coordinates where the site notices were placed

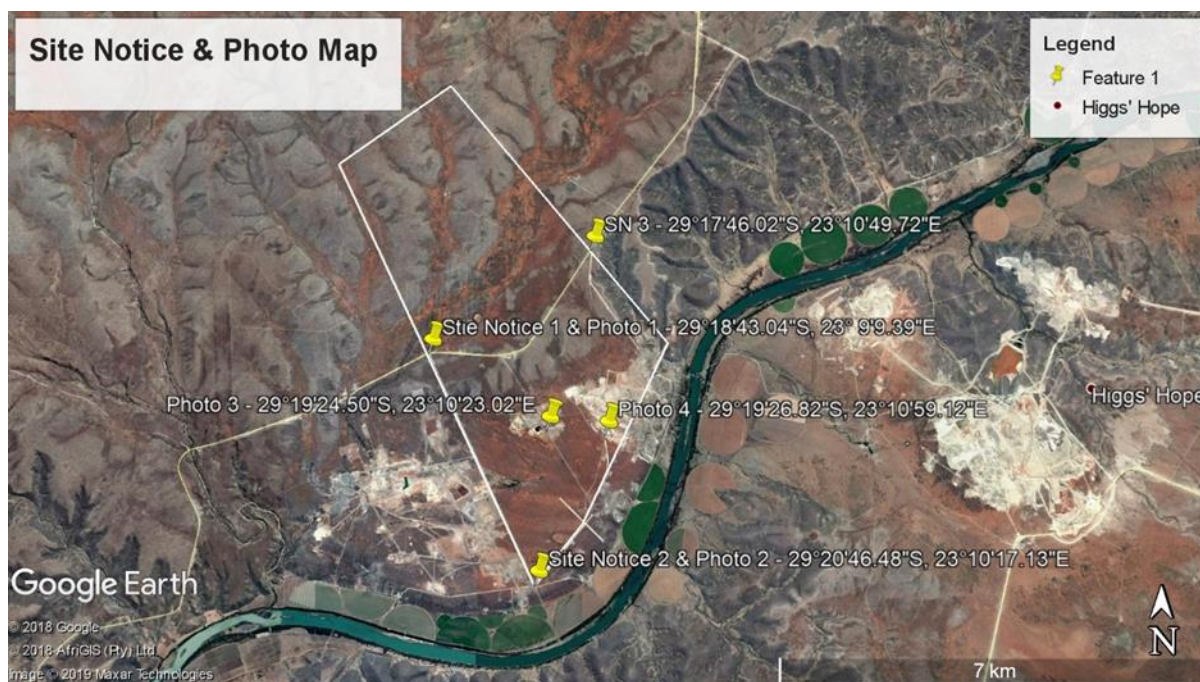


Figure 7: Site notice co-ordinates

Direct notification and circulation of Scoping Report to identified I&APs, land owners and occupiers

Identified I&APs, including key stakeholders representing various sectors, are directly informed of the proposed development and the availability of the Scoping Report via registered post on **5 November 2019** and were requested to submit comments by **5 December 2019**. A copy of the report is also available at the Milnex offices in Schweizer-Reneke, 4 Botha Street, Schweizer-Reneke and Potchefstroom (Waterberry Street, Waterberry Square, 1st floor, Office 5B, Potchefstroom), between 7:30AM and 5PM, Monday to Friday. For a complete list of stakeholder details and for proof of registered post see **Appendix 6**. The consultees included:

Table 1: List of Stakeholders, Land owners, & surrounding land owners

Stakeholders	Land owners	Surrounding Land owner
Northern Cape Department of Environmental Affairs and Nature Conservation (DENC)	PG Vlok Trust	Elsiesdrif Plase Pty Ltd
DMR Department of Mineral Resources, Northern Cape		Lanyonvale Landgoed CC
The Department of Water & Sanitation (DWS)		Atro Plase Pty Ltd
NC Department of Agriculture, Forestry and Fisheries (DAFF)		PG Vlok Trust
Northern Cape Department of Agriculture, Land Reform & Rural Development		HC Van Wyk Diamonds Ltd
Department of Public Works, Roads and Transport in NW (DPWRT)		
Northern Cape Department of Rural Development & Land Reform,		
The Wildlife and Environment Society of South Africa (WESSA)		
ZF Mgcawu District Municipality		
The Municipal Manager at the Siyathemba Local Municipality		
The Local Councilor at the Siyathemba Local Municipality		

2. Consultation

The Public Meeting was scheduled for the **22nd of November 2019 at 10:00am–11:00am** approximately 37 km from the Niekerkshoop Police Station on the gravel

road at the coordinates mentioned below. The coordinates and directions (figure1) of the public meeting follows below.

Coordinates

29° 18' 43.07" S

23° 9' 9.33" E

Directions to Public Meeting

- Drive from Niekerskshoop Police Station on the tar road which turns into a gravel road for approximately 24 km.
- Turn right after the first 24 km and continue driving for approximately 8 km.
- Turn left after the 8 km at the triangular stop and continue straight for approximately 4 km where the public meeting will be held the triangular stop.



Figure 8: Directions to the public meeting

Public meeting:

NB: The interested and affected parties were given an opportunity to register via site notice, press advert and letters.

Even though notices were sent only Milnex CC Environmental Consultants representative Miss Lizanne Esterhuizen was at the meeting.

Direct notification and circulation of Draft EIR & EMPr to identified I&APs, landowners and occupiers

Identified I&APs, including key stakeholders representing various sectors, are directly informed of the proposed development and the availability of the Draft EIR & EMPr via registered post on **24 February 2020** and were requested to submit comments by **26 March 2020**. A copy of the report is also available at the Milnex offices in Schweizer-Reneke, 4 Botha Street, Schweizer-Reneke and Potchefstroom (Waterberry Street, Waterberry Square, 1st floor, Office 5B, Potchefstroom), between 7:30AM and 5PM, Monday to Friday. For a complete list of stakeholder details and for proof of registered post see **Appendix 6**.

Issues Raised by Interested and Affected Parties

Comments received during this period are attached as comment & response report as well as populated in the table of summary of issues raised.

iii) Summary of Issues Raised by I&APs

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

Interested and Affected Parties		Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issue and or response where incorporated
List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.				
Organisation	Contact person			
Land Owner				
Lanyon Vale RE/9/376	PG Vlok Trust Petrus Gideon Vlok	No comments received		
	PG Vlok Trust Arnoldus Christiaan Vlok	No comments received	Email sent in afrikaan to Mr Vlok is summarised and translated to english stating: Dear Mr Vlok We refer to the abovementioned matter and telephone conversation between yourself and our offices Mr Broodryk on the 7th day of April 2020-04-20. During the aforesaid telephone conversation you confirmed that you and the applicant, Mr Steyn, have on numerous occasions corresponded regarding the application and aspects to draft and finalise a	

			<p>surface use agreement. Arrangements were made to meet and to subsequently finalise discussions to draft the surface use agreement, but could this meeting not take place due to the nation wide lockdown and have we discussed to meet after the upliftment of the lockdown.</p> <p>You furthermore confirmed that you do not have any objection against, but would like to finalise the surface use agreement before mining activities commence.</p> <p>We will convey the information to the applicant.</p>	
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Surrounding Land Owners

Lanyon Vale 10/376	Elsiesdrif Plase Pty Ltd	No comments received		
Lanyon Vale 22/376	Lanyonvale Landgoed Cc	No comments received		
Lanyon Vale 4/376	Atro Plase Pty Ltd	No comments received		
Lanyon Vale 14/376	Pg Vlok Trust	No comments received		
Lanyon Vale 25/376	H C Van Wyk Diamonds Ltd	No comments received		

The Municipality in which jurisdiction the development is located

Siyathemba Local Municipality	Municipal Manager: Mr I W G Stadhouer	No comments received		
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Municipal councilor of the ward in which the site is located

Siyathemba Local Municipality	Ward 4 Councillor	No comments received		
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Organs of state having jurisdiction

Northern Cape Department of Environmental Affairs and Nature Conservation (DENC)	Mrs. Doreen Werth	No comments received		
DMR Department of Mineral Resources, Northern Cape. (DMR)	Machalla Ramaboea	Letter dated 11/12/2019 acknowledged the receipt of the application. Acknowledgement does not grant permission to commence with Mining activities		
	Mmboweni Mutheiwana	letter dated 24/01/2020 stated the application is accepted. and also mentions the following: 2. In terms of section 18 (e) of the Act, you are directed to comply with the following instructions: a Notify and consult with the landowner, lawful occupier and any interested and affected party and include the result of the consultation in the environmental reports. <ul style="list-style-type: none"> • Lodge an application in terms of National Water Act No.36 of 1998 with the Department of Water Affairs with immediate effect. • BEE documents need to be submitted by 30 January 2020 		

The Department of Water & Sanitation (DWS)	Mr. G. van Dyk	No comments received		
NC Department of Agriculture, Forestry and Fisheries (DAFF)	To whom it may concern	No comments received		
	Chief forester Mrs. J. Mans	No comments received		
	Mr. Harm Vorster	No comments received		
Northern Cape Department of Agriculture, Land Reform & Rural Development	Mr. W.J.J. de Bruyn	No comments received		
Department of Roads and Public Works (DRPW)	HOD: Ms. Ruth Palm Mr Tshiamo Pitso	No comments received		
Northern Cape Department of Rural Development & Land Reform,	Nqabisa Mkalipi & Pabalelo Mokale	Letter dated 04/11/2019 states that there is no land claim on the database in respect of the properties. This includes the database for claims lodged by 31 December 1998; and those lodged between 1 July 2014 and 27 July 2016.	Enquiry sent 04/11/2019 to Pabalelo Mokale inquiring if the properties on the application area has claims on them	
Other-				
Pixley Ka Seme District Municipality	Municipal Manager: Mr Rodney Pieterse	No comments received		
WESSA (National Office)	To whom it may concern	No comments received		
South African National Roads Agency SOC Limited (SANRAL)	Nicole Abrahams	Email received on 09/03/2020 stating that The South African National Roads Agency SOC Limited (SANRAL) has		

		<p>received background information and a site layout plan for this proposed project and based on its location and proximity to the nearest national road could have an impact on SANRAL.</p> <p>If services need to be constructed over or under the national road, (in this case the N10) or within 60m measured from the road reserve fence, the service owner must apply for a written permission from SANRAL, before any work may be carried out. It would therefore trigger a SANRAL statutory process.</p>		
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iv) the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;

Baseline Environment

The baseline environment is described with specific reference to geotechnical conditions, ecological habitat and landscape features, Soil, land capability and agricultural potential, climate and the visual landscape.

Historic Mining

Some proof exists of extensive historic mining over the proposed portion.



Figure 9: Evidence of previous mining infrastructure still on site

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

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

Geology and Soils

The present Orange River between Douglas and Prieska displays a meandering channel morphology, best developed in areas underlain by the Dwyka Group. All the different fluvial terrace deposits are covered by Rooikoppie gravels, which represent mobile, multi-cycle deflation and gravitational deposits and/or elevated (inverted) fluvial

deposits and preserved and recycled repeatedly from one successive land surface to the next. Only the most durable silicic clast Branded iron formation (BIF, quartzite, chert, etc.) survived this deflation recycling and diamonds are only present where the Rooikoppie gravels recycled older diamondiferous fluvial deposits.

Palaeochannel depositional packages of the Orange River are preserved at different elevations above the present Orange River bed. Diamondiferous Rooikoppie gravel scree slopes higher than the oldest preserved fluvial deposits suggest that even older and higher elevation paleo-deposits were present and have been removed completely by erosion.

The ages of these terraces young with decreasing elevation and vary from Pleistocene-Pliocene for the lower terraces to Plio-Miocene for the upper terraces. Conversely, the probability of preservation decreases with increasing age and elevation.

The most consistent high level paleo deposit, and the one on which the geological model for this area was developed, occurs between 60-90m above river level. These deposits represent palaeomeanders exhibiting a wavelength of approximately 13km and an amplitude of about 6km, very similar to that of the modern-river. These gravel deposits occur at about 1000 masl. and generally slope slightly to the south, away from the Orange River. Both the calcrete cap and the bedrock exhibit this same slope. The meanders are generally covered entirely by either calcrete or wind-blown sand, or both, but careful mapping has defined points of entry and emergence of palaeochannel deposits from underneath the upper calcrete cap, along the valley scarps.

Frequency of occurrence suggests that the known deposits represent the complete palaeochannel profile for this section of the river. The correspondence in palaeo- and modern river morphology, for this cycle, indicates that this sector of the Orange River system remained in relative equilibrium since, probably, the Miocene. All the preserved meanders at this elevation lie to the south of the present river channel suggesting that meander cut-off occurred mostly along the northern loops of the meanders. This may be an indication of regional slope to the south or slow, continuous uplift to the north.

The primary sources of diamonds trapped in the palaeogravels of the Orange River are kimberlites and intermediate secondary sources like alluvial, colluvial and fluvial deposits in the catchment regions of the Vaal and Orange rivers. These diamonds were deposited along the course of the river in favourable trap sites either in bedrock-traps or in point-bar complexes and within-channel bars, particularly in meanders, scour pools and areas of divergent flow.

In the range of deposits on Wouterspan and within the context of the model presented diamonds were first deposited in gravel units at an elevation of + 110m above the present river. As a result of consecutive cycles of continental uplift and erosion, the oldest diamondiferous gravels deposited by the Orange River have been recycled and re-deposited repeatedly through time down to the lowest level gravels as preserved today.

Lower elevation terraces (less than about 30m above present river bed) of the Orange River are typified by up to 30% sand matrix with a high proportion of zeolite-rich sand lenses and a high proportion of red Drakensberg basalt clasts. These gravels normally exhibit intermediate to low diamond grades. They are typically cobble-peddle gravels with occasional boulders. Clast composition is dominated by BIF +60%, andesite, dolerite, shale, quartzite, riebeckite and others with a low percentage of agate and amygdals. Clast-rounding is moderate, packing is moderate to poor which impacts negatively on diamond entrapment potential. Average grades of 0.5-1.2ct/m³ or 0.23-0.54cph_t are known with the occurrence of occasional large stones. The lowest terrace does not appear to be as calcreted as the upper two terraces and mining is, therefore, easier. Lower terrace deposits are generally covered by 1-4m of sand whereas the upper terrace deposits are capped by a hard calcrete layer some 2-3m thick which protected the gravel deposits from erosion and prevented exploitation in the past.

The Wouterspan deposit comprises an extensive flat lying alluvial sequence located on the right bank of the modern Orange River extending across an area of approximately 4x3km. The bedrock is well exposed in the workings and shale and tillite of the Karoo age Dwyka Group, are common. The bedrock displays an irregular erosional surface with gully and pothole features creating high diamond trapping potential.

At Wouterspan, the gravel terrace occurs approximately 20-40m above the Orange River and appear to have been deposited in a braided river environment. These terraces are, probably, of lower to intermediate age.

Thin (<2m), extensive Rooikoppie blanket the property. The fluvial-alluvial sequence is comprised of a basal gravel overlain by a generally upward-fining sequence with hanging gravel lenses known as “Middlings”. The sequence is covered by a (non-silcreted) calcrete cap, generally less than 5m thick. Post-depositional weathering of this calcrete has formed solution hollows called “makondos” which are often filled with diamond-enriched rooikoppie gravels.

Mineralisation

The palaeochannel gravels are mineralised by diamonds derived from the weathering and erosion of kimberlites present in the headwaters of the paleo-Vaal river system. Colluvial and eluvial post-depositional modification of these fluvial-alluvial deposits resulted in the formation of the rooikoppie gravels.

Under arid conditions low stream flow typically results in wide, shallow channels. The valleys displays moderate sinuosity and braiding may be frequent. Braided streams are highly transient environments. The braided channel are unstable through time and gravel bars are formed and destroyed continuously. Shifting bars and channels cause wide variations in local flow conditions resulting in varied depositional assemblages. Common feature in braided stream deposits include irregular bed thicknesses, restricted lateral and vertical variations within the sediments, and evidence of erosion and re-deposition.

Ecological habitat and landscape features

Vegetation

The proposed site for prospecting falls within the Nama-Karoo Biome (Mucina & Rutherford 2006), which is a complex of extensive plains, dominated by low (dwarf) shrubs of <1m tall, intermixed with grasses, succulents, geophytes and annual forbs. Small trees occur mainly along drainage lines or on rocky outcrops. Biomes are further divided into bioregions, which are spatial terrestrial units possessing similar biotic and physical features, and processes at a regional scale. The study area is situated within the Upper Karoo Bioregion and the Northern Upper Karoo (NKu 4) vegetation type (Figure 8). This vegetation type is Least Threatened with a 21% conservation target.

Endemic taxa known to occur within this vegetation type include the Succulent Shrubs: *Chasmatophyllum rouxii*, *Hertia cluytiifolia*, *Rabiea albinota*, *Salsola tetrandra*; the Tall Shrub: *Phymaspermum scoparium*; and the Low Shrubs: *Aspalathus acicularis* subsp. *planifolia*, *Selago persimilis*, *S. walpersii*. The following important species are known to occur within the Northern Upper Karoo:

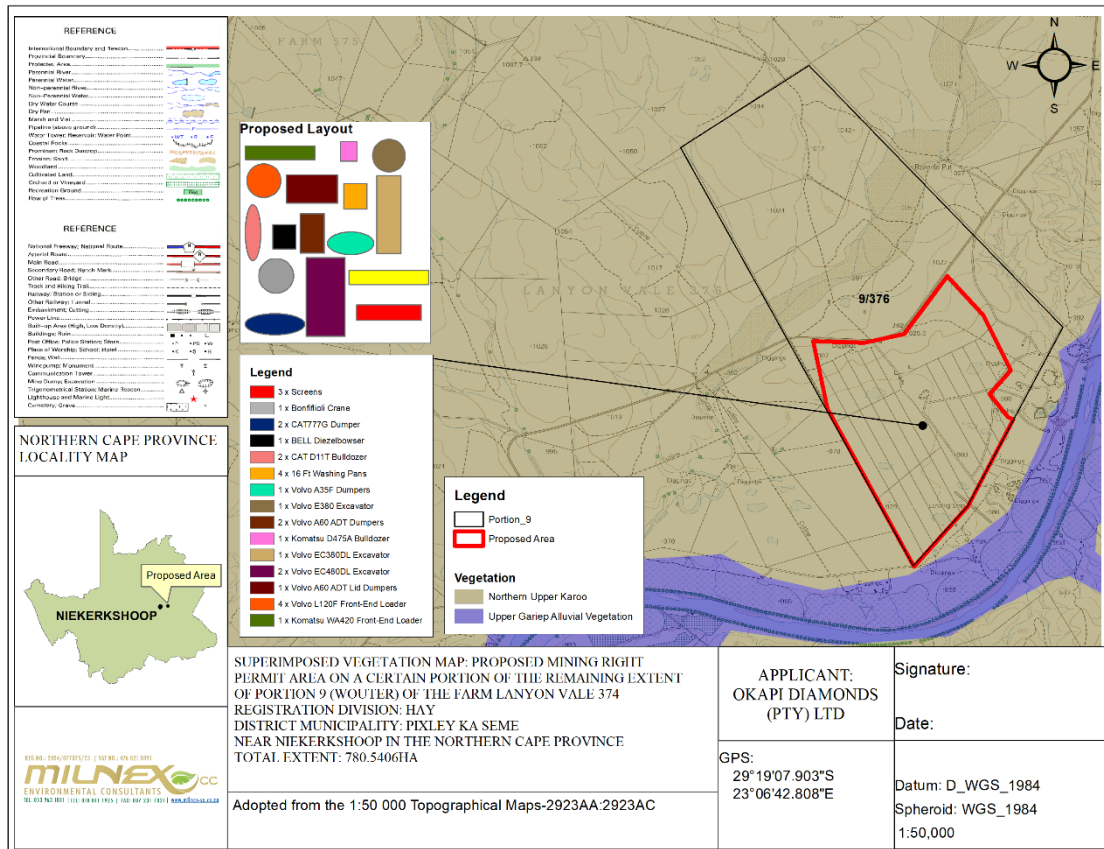


Figure 10: Vegetation Unit Map

Mined/disturbed area

This area has been heavily impacted upon by previously mining activities that has led to the removal of natural vegetation. recorded species include *Prosopis glandulosa*,

Searsia burchellii, *Ziziphus mucronata* (regenerating), *Senegalia mellifera*, *Nicotiana glauca*, *Dodonaea angustifolia*, *Vachellia karoo*, *Xanthium strumarium*. Forb and herbs species include *Bidens pilosa*, *Datura stramonium*, *Tagetes minuta*, *Argemone mexicana*, *Conyza bonariensis*, *Conyza canadensis*, and *Cosmos bipinnatus*.

Senegalia mellifera shrubland

The shrub *Senegalia mellifera* is the most conspicuous woody species. Other more sparsely distributed tall shrubs include *Phaeoptilum spinosum*, *Rhigozum obovatum*, *Searsia burchellii* and *Ziziphus mucronata*, *Vachellia karoo*. Common lower shrubs include *Rhigozum trichotomum*, *Asparagus burchellii*, *Kleinia longiflora*, *Pegolettia retrofracta*, *Pteronia glauca*, *Monechma spartioides*, *Pentzia incana*, *P. globosa*, *Aptosimum spinescens*, *A. albomarginatum*, *Aizoon asbestinum*, *Barleria rigida* and *Eriocephalus sp.*

The grass layer is well developed with rather high species richness and includes the dominant *Enneapogon scaber*, as well as other grasses such as *Cenchrus ciliaris*, *Eragrostis annulata*, *Enneapogon desvauxii*, *E. scoparius*, *Heteropogon contortus*, *Stipagrostis obtusa*, *S. ciliata var. capensis* and *Eragrostis lehmanniana*. The nationally protected tree *Boscia albitrunca* occurs widespread at medium densities. They occur primarily as young or stunted individuals, with an average height of 60 cm and 2 m in width, but taller. One *Hoodia gordonii* was encountered (-29.3064560S, 23.1845640 E).

Threatened Ecosystems

Ecosystem threat status outlines the degree to which ecosystems are still intact or alternatively losing vital aspects of their structure, function and composition, on which their ability to provide ecosystem services ultimately depends (Driver *et al.* 2011). Datasets have been developed by SANBI (2016) in order to outline threatened ecosystems, with the primary objective of limiting the rate of ecosystem extinctions. Four established categories group these ecosystems namely: Critically Endangered (CR), Endangered (EN), Vulnerable (VU) and Protected.

No threatened terrestrial ecosystems were identified within the vicinity of the proposed mining site

Protected Areas

Formally protected areas are protected either by national or provincial legislation. Based on the SANBI (2010) Protected Areas Map (**Figure 11**), the study site does not overlap with any formally protected area. Therefore, the location of the proposed mining site is not expected to have an impact on any formally protected areas.

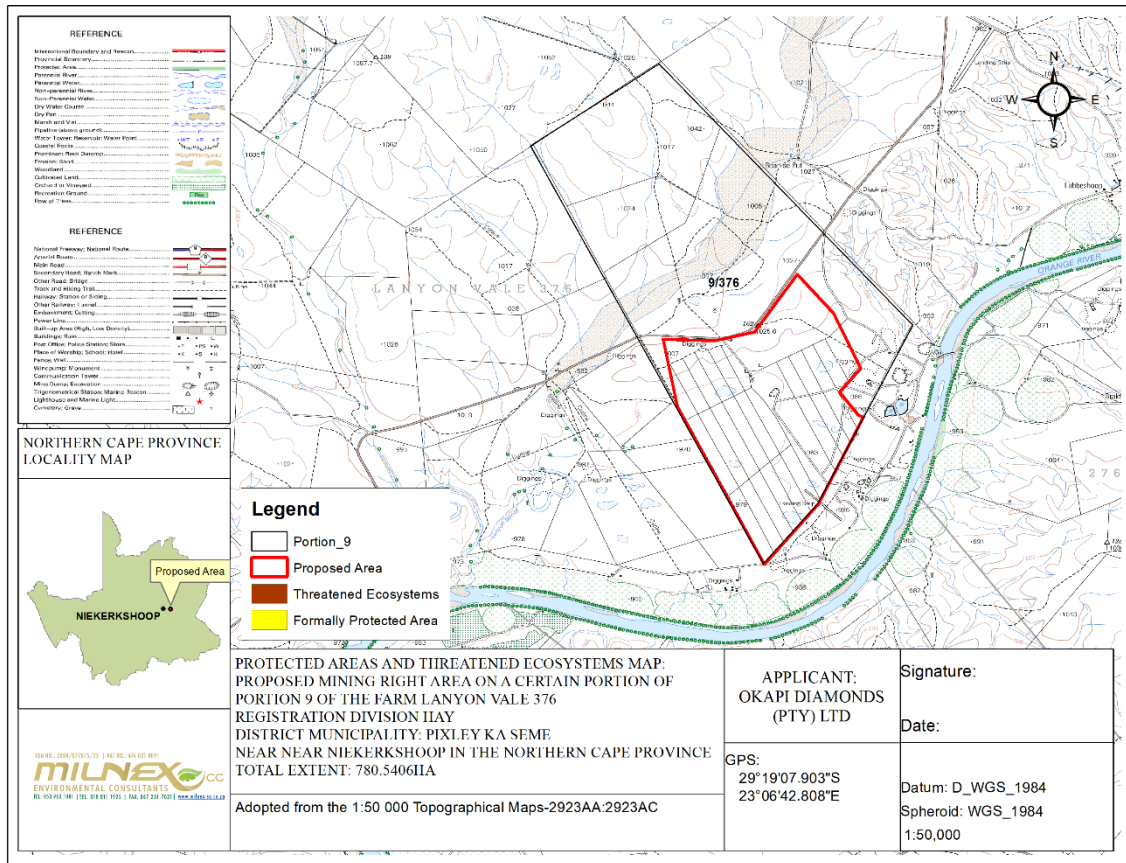


Figure 11: Protected Areas Map

Critical Biodiversity Area

Critical Biodiversity Areas (CBAs) are terrestrial and aquatic areas of high biodiversity value that need to be conserved and maintained in a natural or near-natural state to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services (MTPA, 2014). According to the National Environmental Management Act (NEMA) (Act no. 107 of 1998) certain activities have strict guidelines or are prohibited within CBAs and ESAs. Refer to the listed activities under the NEMA: Environmental Impact Assessment Regulations of 2014 (GNR 982) as promulgated in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA) [as amended] for a comprehensive breakdown. The following terms are used to categorise the various land used types according to their biodiversity and environmental importance:

- Critical Biodiversity Area One (CBA1);
- Critical Biodiversity Area Two (CBA2);
- Ecological Support Area (ESA);
- Other Natural Areas (ONA); and
- Protected Area (PA).

Based on the desktop information (**Figure 12**), much of the proposed mining site will overlap with CBA2s and ESAs. Some PAs are also evident across the central and western regions of the site.

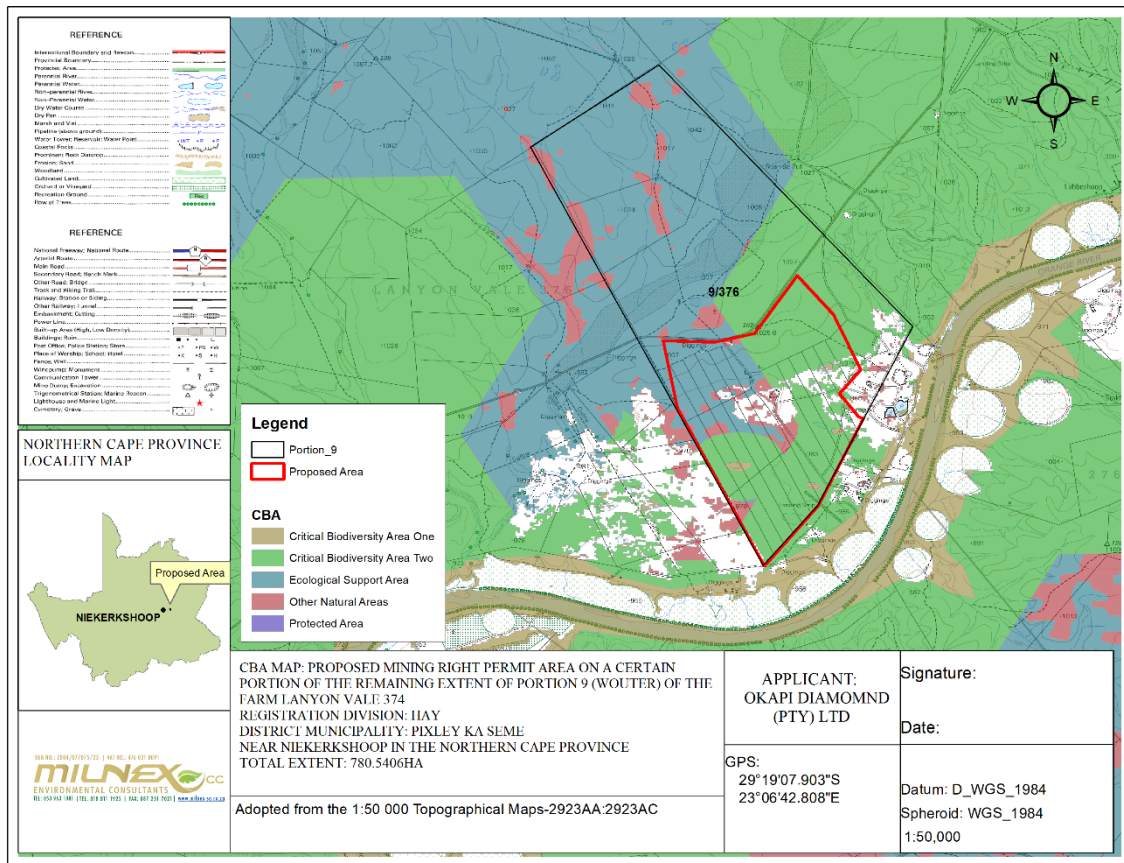


Figure 12: Critical Biodiversity Areas Map.

An Ecological and Wetland Assessment Report was conducted and based on the desktop information (Figure 12), large sections of the study site overlap with CBA2. These areas are mostly covered in natural vegetation. The depressions wetland areas are classed as CBA1 and the north western section of the study site is classed as an ESA.

Biodiversity Priority Areas for Mining

The Mining and Biodiversity Guideline was developed in 2013 for the purpose of mainstreaming biodiversity management practices into the mining sector (DEA, DMR, Chamber of Mines, SAMBF & SANBI 2013). This Guideline provides explicit direction in terms of where mining-related impacts are legally prohibited, where biodiversity priority areas may present high risks for mining projects, and where biodiversity may limit the potential for mining. The Guideline distinguishes between four categories of biodiversity

priority areas in relation to their importance from a biodiversity and ecosystem service perspective as well as the implications for mining in these areas (Table 2).

Table 1: Four categories of biodiversity priority areas in relation to their biodiversity importance and implications for mining.

Category	Biodiversity Priority Areas	Risks for Mining	Implications for Mining
A. Legally Protected	<ul style="list-style-type: none"> • Protected areas (including National Parks, Nature Reserves, World Heritage Sites, Protected Environments, Nature Reserves) • Areas declared under Section 49 of the Mineral and Petroleum Resources Development Act (No. 28 of 2002) 	Mining Prohibited	<p>Mining projects cannot commence as mining is legally prohibited. Although mining is prohibited in Protected Areas, it may be allowed in Protected Environments if both the Minister of Mineral Resources and Minister of Environmental Affairs approve it. In cases where mining activities were conducted lawfully in protected areas before Section 48 of the Protected Areas Act (No. 57 of 2003) came into effect, the Minister of Environmental Affairs may, after consulting with the Minister of Mineral Resources, allow such mining activities to continue, subject to prescribed conditions that reduce environmental impacts.</p>
B. Highest Biodiversity Importance	<ul style="list-style-type: none"> • Critically endangered and endangered ecosystems • Critical Biodiversity Areas (or equivalent areas) from provincial spatial biodiversity plans • River and wetland Freshwater Ecosystem Priority Areas (FEPAs) and a 1km buffer around these FEPAs • Ramsar Sites 	Highest Risk for Mining	<p>Environmental screening, environmental impact assessment (EIA) and their associated biodiversity specialist studies should focus on confirming the presence and significance of these biodiversity features, and to provide site-specific basis on which to apply the mitigation hierarchy to inform regulatory decision-making for mining, water use licences, and environmental authorisations.</p>

			<p>If they are confirmed, the likelihood of a fatal flaw for new mining projects is very high because of the significance of the biodiversity features in these areas and the associated ecosystem services. These areas are viewed as necessary to ensure protection of biodiversity, environmental sustainability, and human well-being. An EIA should include the strategic assessment of optimum, sustainable land use for an area and will determine the significance of the impact on biodiversity.</p> <p>This assessment should fully consider the environmental sensitivity of the area, the overall environmental and socio-economic costs and benefits of mining, as well as the potential strategic importance of the minerals to the country.</p> <p>Authorisations may well not be granted. If granted, the authorisation may set limits on allowed activities and impacts and may specify biodiversity offsets that would be written into licence agreements and/or authorisations.</p>
<p>C. High Biodiversity Importance</p>	<ul style="list-style-type: none"> • Protected area buffers (including buffers around National Parks, World Heritage Sites* and Nature Reserves) • Transfrontier Conservation Areas (remaining areas outside 	<p>High Risk for Mining</p>	<p>These areas are important for conserving biodiversity, for supporting or buffering other biodiversity priority areas, and for maintaining important ecosystem services for communities or the country.</p>

	<p>of formally proclaimed protected areas)</p> <ul style="list-style-type: none"> • Other identified priorities from provincial spatial biodiversity plans • High water yield areas • Coastal Protection Zone • Estuarine functional zone <p>*Note that the status of buffer areas of World Heritage Sites is subject to a current intra-governmental process</p>		<p>An EIA should include an assessment of optimum, sustainable land use for an area and will determine the significance of the impact on biodiversity.</p> <p>Mining options may be limited in these areas, and limitations for mining projects are possible.</p> <p>Authorisations may set limits and specify biodiversity offsets that would be written into licence agreements and/or authorisations.</p>
<p>D. Moderate Biodiversity Importance</p>	<ul style="list-style-type: none"> • Ecological support areas • Vulnerable ecosystems • Focus areas for protected area expansion (land-based and offshore protection) 	<p>Moderate Risk for Mining</p>	<p>These areas are of moderate biodiversity value.</p> <p>EIAs and their associated specialist studies should focus on confirming the presence and significance of these biodiversity features, identifying features (e.g. threatened (land-based and offshore protection) species) not included in the existing datasets, and on providing site-specific information to guide the application of the mitigation hierarchy.</p> <p>Authorisations may set limits and specify biodiversity offsets that would be written into licence agreements and/or authorisations.</p>

Based on **Figure 13**, the proposed mining site overlaps with Category B, Highest Risk for Mining, and therefore has highest biodiversity importance. Rigorous evaluation of the biodiversity content of applications is required, as well as the application of the mitigation hierarchy to reduce impacts on biodiversity in these areas

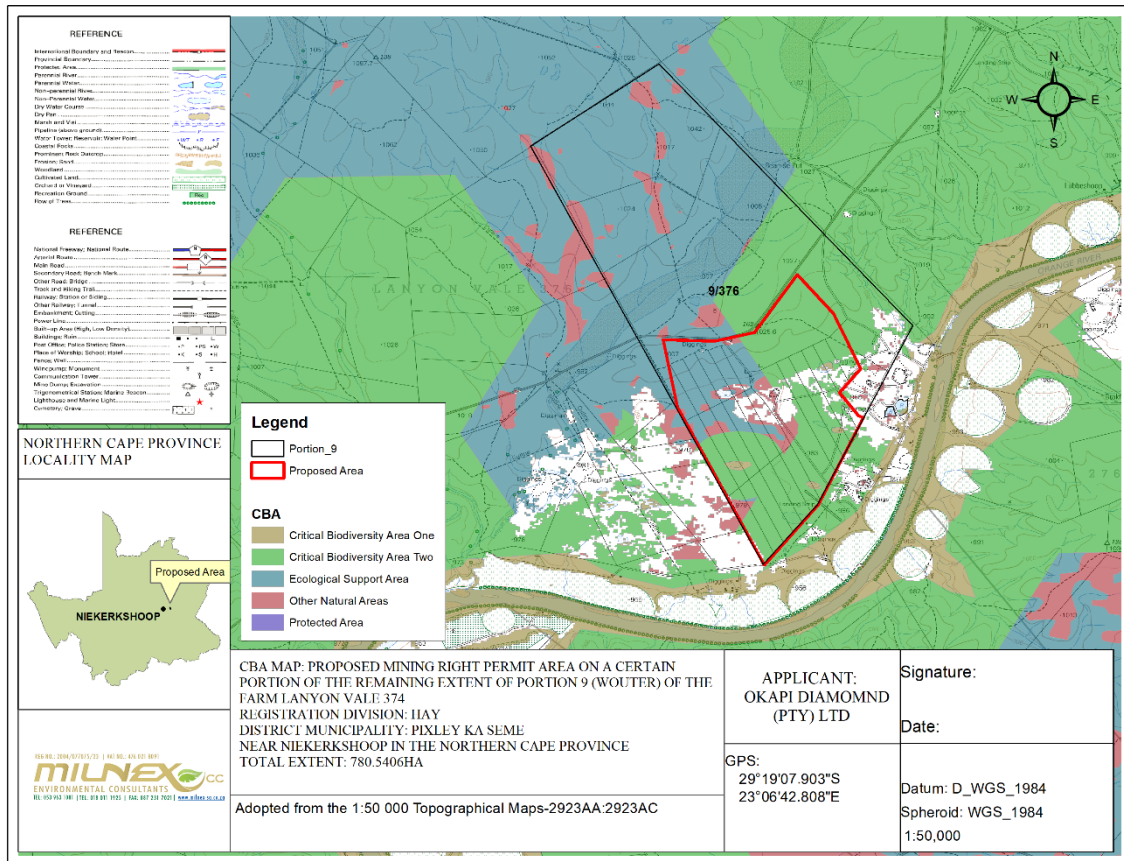


Figure 13: Sensitive area for mine

Important Bird and Biodiversity Areas

Important Bird and Biodiversity Areas (IBAs) are a network of sites that are significant for the long-term viability of naturally occurring bird populations (Birdlife 2019). Many sites are also important for other forms of biodiversity; therefore, the conservation of Important Bird & Biodiversity Areas ensures the survival of a correspondingly large number of other animals and plants.

No IBAs were identified within the vicinity of the proposed mining site (**Figure 14**).

An Ecological and Wetland Assessment Report One Perennial Riparian area (the Orange River), is situated more than 1 (one) Kilometre away from the site`s boundary towards the south and was therefore not assessed for this study. Please see **Appendix 11-1** for the full report. According to the report there are depressions or pans on the proposed area.

- The **Depression or pan** wetlands are defined as “a landform with closed elevation contours that increases in depth from the perimeter to a central area of greatest depth, and within which water typically accumulates.”

Feature	Level 1: System	Level 2: Regional Setting	Level 3: Landscape Unit	Level 4: Hydrogeomorphic (HGM) Unit
Depression Pans	<p>Inland System: An aquatic ecosystem with no existing connection to the ocean.</p>	<p>Ecoregion: Nama Karoo</p> <p>NFEPA WetVeg Group: Eastern Kalahari Bushveld Group 3</p>	<p>Plain: An extensive area of low relief. These areas are generally characterised by relatively level, gently undulating or uniformly sloping land with a very gentle gradient that is not located within a valley. Gradient is typically less than 0.01 or 1:100.</p>	<p>Depression: Small (deflationary) depressions which are circular or oval; usually found on the crest positions in the landscape. The topographic catchment area can usually be well-defined (i.e. a small catchment area following the surrounding watershed). Although often apparently endorheic (inward draining), many pans are “leaky” in the sense that they are hydrologically connected to adjacent valley bottoms through subsurface diffuse flow paths.</p> <p>All depression pans identified have closed catchments.</p>

Wetland Delineation

Calculated buffer zones for wetlands were also based on mining operations and were calculated as follows (Figure 17):

- Depressions: 50 m

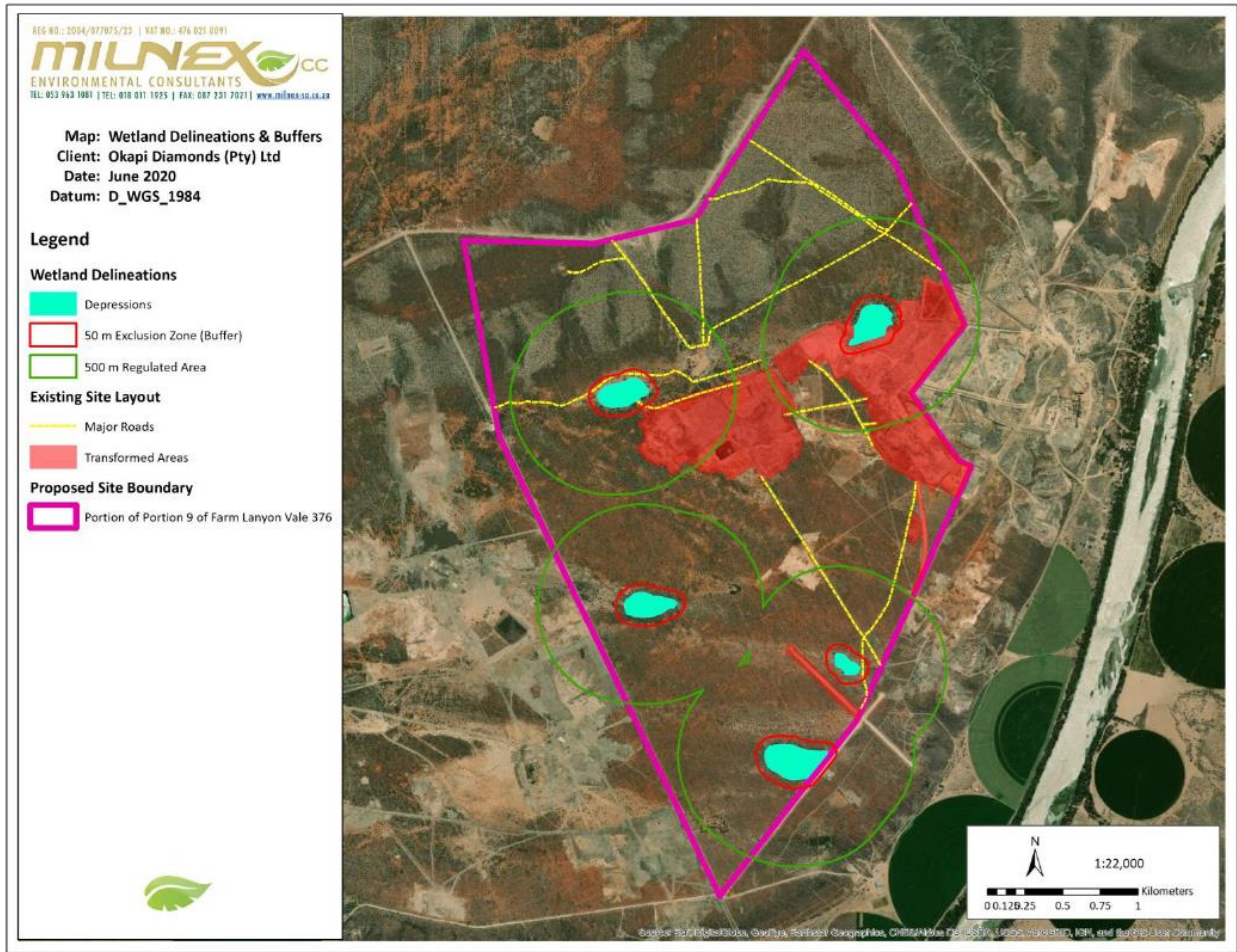
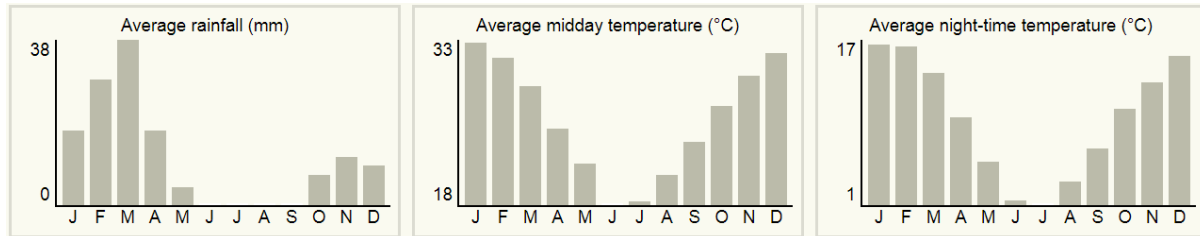


Figure 17: Wetland delineation and buffers

River Ecosystem Status

According to Figure 18, the status of the both the Orange River to the South of the proposed mining site boundary and the Lanyon Spruit on the West, are classed Moderately Modified (Class C).

in March. The monthly distribution of average daily maximum temperatures (centre chart below) shows that the average midday temperatures for Prieska range from 17.9°C in June to 32.7°C in January. The region is the coldest during July when the mercury drops to 1.3°C on average during the night. Consult the chart below (lower right) for an indication of the monthly variation of average minimum daily temperatures (SAExplorer, 2014).



Description of the socio-economic environment

- **Socio-economic conditions**

Siyathemba Municipality contributed 11.9% to the District population (i.e. the second largest Local Municipality in the District by population) and 1.9% to the population of the Northern Cape.

The most dominant population group is Coloured⁴. This group represents 80% of the total population in the municipal area. The other groups are black (12%) and white (8%).

Afrikaans is the most widely spoken language (78%). There are an insignificant number of people which speaks other languages. A total of 824 people indicated that IsiNdebele is their first language and 91 people speak Setswana.

Unemployment

There has been a decrease in the number of people employed and a concomitant increase in the number of unemployed in the district between these the 2001 and 2011 censuses. This is directly related to the number of businesses that has closed in the region during the period reflected and indicates the need for a retention or wholesale and retail strategy regarding these businesses. Unemployment reaching approximately 28.3% 2011 and Youth unemployment reaching 35.4% in 2011 as per Stats SA 2011 Census.

Regional Gross Domestic Product

The district contribution to the provincial GDP has consistently been the lowest over recent years with its contribution declining from 10,6% to 9,6% between 2003 and 2004. The economy is predominantly primary sector focused with manufacturing and tourism also contributing to the district economy.

The economic sectors that contribute the most to the GDP of Pixley Ka Seme are Agriculture, Mining, Tourism and Manufacturing.

Table 20 below represents the percentage contribution per economic sector by the district to the gross domestic product of the province for 2003 and 2004.

Table 20: % GDP of district municipalities per economic sector for 2003 and 2004

	% OF GDP									
	Primary		Secondary		Tertiary		Taxes - Subsidies		Total GDP	
	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004
Namakwa	4,3	3,8	0,5	0,4	7,3	7,0	0,7	0,8	12,8	12,1
PKSDM	3,1	2,7	1,0	0,9	5,8	5,2	0,8	0,8	10,6	9,6
Siyanda	3,8	3,3	1,3	1,3	8,0	7,7	1,1	1,2	14,2	13,5
Frances Baard	6,8	6,2	3,2	3,1	26,1	28,6	2,5	2,0	38,6	40,7
Kgalagadi	16,7	16,5	1,4	1,3	4,9	5,5	0,7	0,8	23,8	24,1
NC GDP	34,7	32,6	7,3	7,1	52,1	54,0	5,8	5,6	100,0	100,0

Pixley Ka Seme’s total percentage contribution in 2003 was 10,6% and declined to 9,64% in 2004. The district contribution to the GDP has consistently been the lowest over recent years with its contribution declining. It is evident that the tertiary sector contributes the greatest percentage to the GDP of the Northern Cape, followed by the primary sector and then the secondary sector.

The Pixley Ka Seme district displays a similar characteristic as the province with respect to its sectoral contributions to GDP; the economic sectors that contribute the most to the GDP of Pixley Ka Seme are Agriculture, Mining, Tourism and Manufacturing, with its secondary sector contribution being the least. The manufacturing sector is part of the secondary sector which indicates that it has declined over the period of 2003 (0, 97%) and in 2004 (0, 92%).

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Location Quotient

A comparative advantage indicates a relatively more competitive production function for a product or service in specific economy than the aggregate economy. This economy therefore renders this service more efficiently. The location quotient is an indication of the comparative advantage of an economy in terms of its production and employment. A location quotient greater than 1 indicates a comparative advantage regarding the sector in one location with respect to another.

The analysis below indicates the location quotient of the Pixley ka Seme District with respect to the Northern Cape Province. The table and graph below indicates the location quotients of sectors in the district municipality with respect to the Northern Cape.

Sectors in the economy of Pixley Ka Seme that have a location quotient larger than 1 are agriculture (2, 35); community, social and personal services (1, 19); transport,

storage and communication (1, 16); electricity, gas and water supply (2, 19). These indicate sectors that show potential for additional development in this does not imply that sectors, that do not feature here, should not be pursued since there may be latent potential in these sectors that could be exploited.

Table 21 below indicates the location quotients of the economic sectors in the municipalities

Table 21: Location Quotients of Economic Sectors

	Kareeberg	Emthanjeni	DMA	Renosterberg	Siyancuma	Siyathemba	Thembelihle	Ubuntu	Umsobomvu
Agriculture	1,18	0,31	1,62	0,54	1,11	1,46	1,47	1,59	0,82
Mining	0,08	0,05	0,45	0,00	4,28	0,09	0,02	0,21	0,00
Manufacturing	0,41	0,71	1,28	0,13	1,92	0,76	1,99	0,91	0,18
Electricity, gas and water supply	0,17	0,60	0,36	11,42	0,08	1,14	0,23	0,00	0,97
Construction	0,52	1,25	0,85	0,58	0,99	1,69	0,48	0,55	1,00
Wholesale and retail trade	1,12	1,05	1,20	0,56	1,02	0,94	1,17	0,79	1,13
Transport, storage and communication	0,52	1,76	0,53	0,33	0,84	0,83	1,33	0,75	0,51
Finance, insurance, real estate	1,06	1,79	0,94	0,46	0,78	0,71	0,61	0,72	0,67
Community, social and personal services	1,18	1,37	0,58	0,54	0,82	0,72	0,56	0,85	1,55

Other sectors in the district that have a distinct comparative advantage with respect to the Northern Cape and South Africa are:

- Electricity, Gas and Water supply
- Community, social and personal services
- Transport, storage and communication

The municipalities in the district that have comparative advantages with respect to the sector Electricity, Gas and Water supply are Renosterberg and Siyathemba with location quotients of 11,42 and 1,14 respectively. This resounding comparative advantage in the sector for the Renosterberg municipality is due to the presence of the Van Der Kloof Dam in the municipality. It is the only sector in which Renosterberg has a comparative advantage with respect to other municipalities in the district.

Kareeberg, Emthanjeni and Umsobomvu have location quotients, with respect to other municipalities in the district, of 1, 18, 1, 37 and 1, 55 respectively in the Community, social and personal services sector. In the Transport, storage and communication sector, Emthanjeni and Thembelihle have location quotients of 1, 76 and 1, 33 respectively, indicating a comparative advantage in this sector with respect to other municipalities in the district. The sectors that contribute significantly to the Northern Cape GDP is highlighted in the table above with agriculture having the highest LQ, Electricity, gas and water supply second highest LQ etc.

The agricultural sector has the potential for growth with a number of comparative and competitive advantages for the Northern Cape and Pixley Ka Seme in particular.

Tress Indicators

The level of diversification or concentration of a region's economy is measured by a tress index. A tress index of zero represents a totally diversified economy whilst the higher the index, the more concentrated or vulnerable the region's economy is to exogenous variables e.g. adverse climatic conditions and commodity price fluctuations.

The economy of the Pixley Ka Seme district has a tress index of 56, 18 indicating a reliance of the Pixley Ka Seme economy on the agriculture, transport and services sector. This tress index indicates that the economy is not diversified but is largely dependent on the agriculture and is vulnerable to exogenous variables such as adverse climatic conditions, commodity price fluctuations. We need to look at ways of diversifying the economy.

- Cultural and heritage aspects

A Phase 1 Cultural Heritage Impact Assessment was conducted by J.A. van Schalkwyk. Please see his findings below and **Appendix 11-3** for the full report:

Identified sites

During the physical survey, no sites, features or objects of cultural significance were identified.

- Chance finds: Stone Age artefacts, mostly dating to the Middle Stone Age occur in significant numbers all in parts of the study area. In some areas, on the hills closer to the river, the density of artefacts exceeds more than 3/2m², diminishing to 1/10m² in the more sandy regions. These are mostly made from banded iron stone and iron rich chert. Cores, flakes and tools are found. The tools are very rough and informal and only a few that can be described as typical were identified. As it is surface material and has already been disturbed by diamond prospecting activities, it is viewed to have low significance – Grade 4-C.
- 7.3.1: Old farmstead consisting of a house and some dilapidated outbuildings. The houses consist of two gable-roofed structures that were joined end-to-end. A small porch was added to one section. The house was built with concrete blocks and has a corrugated iron roof. It is evaluated to have high significance – Grade 4-A.

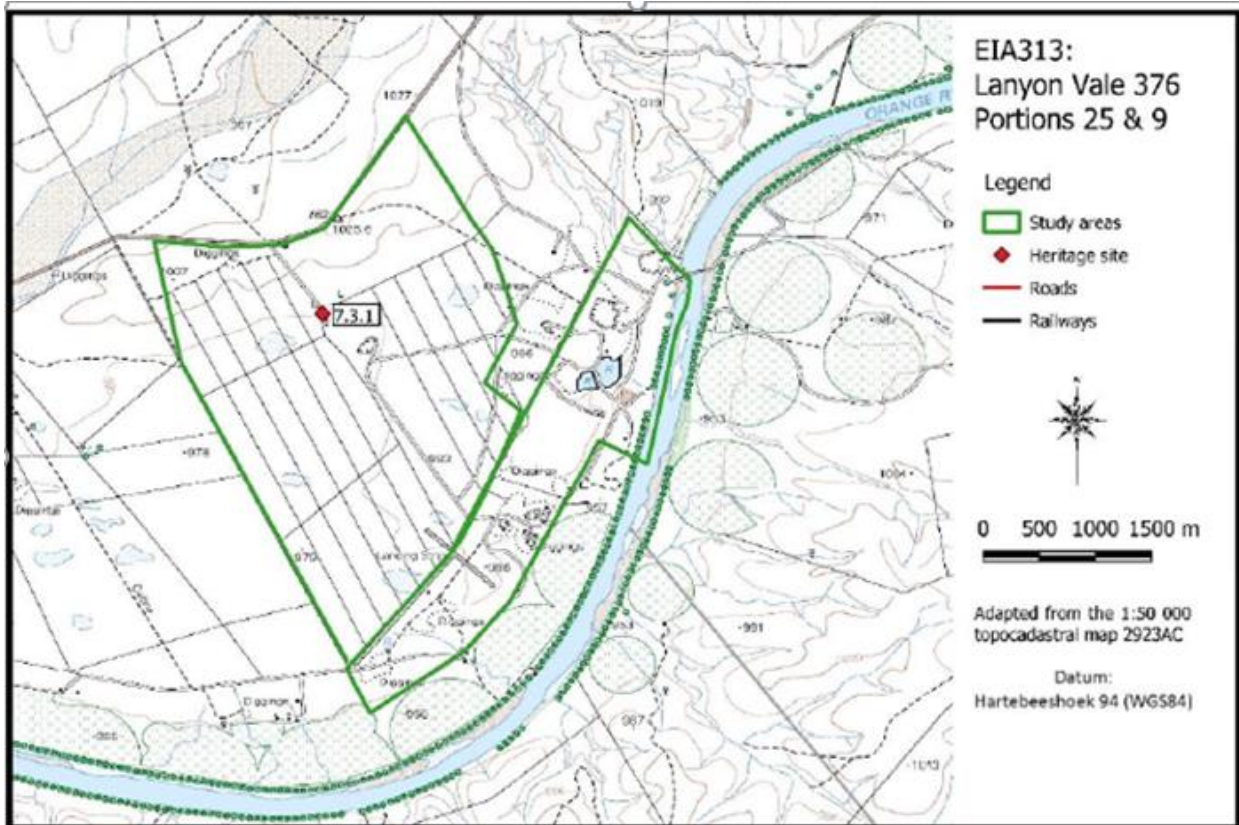


Figure 19: Cultural Heritage Sites

Impact assessment and proposed mitigation measures

Impact analysis of cultural heritage resources under threat of the proposed development, is based on the present understanding of the development:

IDENTIFIED HERITAGE RESOURCES					
Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation	Proposed mitigation (Refer to definitions in Section 12.3)
EIA318: Stone Age material					
Chance finds	Stone Age tools	Section 35	Low significance Grade 4-C	10 4	(5) No further action required.

IDENTIFIED HERITAGE RESOURCES					
Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation	Proposed mitigation (Refer to definitions in Section 12.3)
Historic house					
7.3.1	Historic structures	Section 35	High significance Grade 4-A	60 27	(1) Avoidance/Preserve; (2) Archaeological investigation

Legal requirements

The legal requirements related to heritage specifically are specified in Section 3 of this report. For this proposed project, the assessment has determined that no sites, features or objects of heritage significance occur in the study area. If heritage features are identified during construction, as stated in the management recommendation, these finds would have to be assessed by a specialist, after which a decision will be made regarding the application for relevant permits.

- If the identified structure is to be demolished, a valid permit would be required from SAHRA/PHRA prior to its destruction. Such a permit will only be issued after the site has been fully documented – mapped, photographed and described.

Reasoned opinion as to whether the proposed activity should be authorised:

- From a heritage point of view, it is recommended that the proposed development be allowed to continue on acceptance of the conditions proposed below.

Conditions for inclusion in the environmental authorisation:

- If the identified structure is to be demolished, it must be fully documented – mapped, photographed and described – beforehand.
- The Palaeontological Sensitivity Map (SAHRIS) indicate that the study area has moderate sensitivity of fossil remains to be found and therefore a desktop palaeontological study of the site is required.

Should archaeological sites or graves be exposed in other areas during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.

Palaeontological Desktop Assessment

According to the Palaeontological Desktop Assessment, *If fossil remains are discovered during any phase of construction, either on the surface or exposed by excavations the ECO/site manager in charge of these developments must be informed immediately. These discoveries ought to be secured (preferably in situ) and the ECO/site manager ought to alert SAHRA so that appropriate mitigation (documented and collection) can be undertaken by a professional palaeontologist.*

Please see findings above on **Appendix 11-4** for the full report:

(b) Description of the current land uses.

Topographical map & google earth revealed the predominant land uses identified on the day of the site visit consists mainly of commercial agricultural crop production to the south of the proposed prospecting site. Various Pivots were observed along the Orange River (**Figure 20**). Mining is taking place to the East and West of the site. The Lanyon Spruit passes the proposed prospecting site along the eastern and northern boundaries. The northern region is largely natural with Grassland and Low Shrubland dominating.

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

Method of environmental assessment

The environmental assessment aims to identify the various possible environmental impacts that could result from the proposed development. Different impacts need to be evaluated in terms of their significance and in doing so highlight the most critical issues to be addressed.

Significance is determined through a synthesis of impact characteristics which include context and intensity of an impact. Context refers to the geographical scale i.e. site, local, national or global whereas intensity is defined by the severity of the impact e.g. the magnitude of deviation from background conditions, the size of the area affected, the duration of the impact and the overall probability of occurrence. Significance is calculated as shown in the Table below.

Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact.

Impact Rating System

Impact assessment must take account of the nature, scale and duration of impacts on the environment whether such impacts are positive or negative. Each impact is also assessed according to the following project phases:

- Construction
- Operation
- Decommissioning

Where necessary, the proposal for mitigation or optimisation of an impact should be detailed. A brief discussion of the impact and the rationale behind the assessment of its significance should also be included. The rating system is applied to the potential impacts on the receiving environment and includes an objective evaluation of the mitigation of the impact. In assessing the significance of each impact the following criteria is used:

Table: The rating system

NATURE		
Include a brief description of the impact of environmental parameter being assessed in the context of the project. This criterion includes a brief written statement of the environmental aspect being impacted upon by a particular action or activity.		
GEOGRAPHICAL EXTENT		
This is defined as the area over which the impact will be experienced.		
1	Site	The impact will only affect the site.
2	Local/district	Will affect the local area or district.
3	Province/region	Will affect the entire province or region.

4	International and National	Will affect the entire country.
PROBABILITY		
This describes the chance of occurrence of an impact.		
1	Unlikely	The chance of the impact occurring is extremely low (Less than a 25% chance of occurrence).
2	Possible	The impact may occur (Between a 25% to 50% chance of occurrence).
3	Probable	The impact will likely occur (Between a 50% to 75% chance of occurrence).
4	Definite	Impact will certainly occur (Greater than a 75% chance of occurrence).
DURATION		
This describes the duration of the impacts. Duration indicates the lifetime of the impact as a result of the proposed activity.		
1	Short term	The impact will either disappear with mitigation or will be mitigated through natural processes in a span shorter than the construction phase (0 – 1 years), or the impact will last for the period of a relatively short construction period and a limited recovery time after construction, thereafter it will be entirely negated (0 – 2 years).
2	Medium term	The impact will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (2 – 10 years).
3	Long term	The impact and its effects will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter (10 – 30 years).
4	Permanent	The only class of impact that will be non-transitory. Mitigation either by man or natural process will not occur in such a way or such a time span that the impact can be considered indefinite.
INTENSITY/ MAGNITUDE		
Describes the severity of an impact.		
1	Low	Impact affects the quality, use and integrity of the system/component in a way that is barely perceptible.
2	Medium	Impact alters the quality, use and integrity of the system/component but system/component still continues to function in a moderately modified way and maintains general integrity (some impact on integrity).
3	High	Impact affects the continued viability of the system/ component and the quality, use, integrity and functionality of the system or component is severely impaired and may temporarily cease. High costs of rehabilitation and remediation.

4	Very high	Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component permanently ceases and is irreversibly impaired. Rehabilitation and remediation often impossible. If possible rehabilitation and remediation often unfeasible due to extremely high costs of rehabilitation and remediation.
REVERSIBILITY		
This describes the degree to which an impact can be successfully reversed upon completion of the proposed activity.		
1	Completely reversible	The impact is reversible with implementation of minor mitigation measures.
2	Partly reversible	The impact is partly reversible but more intense mitigation measures are required.
3	Barely reversible	The impact is unlikely to be reversed even with intense mitigation measures.
4	Irreversible	The impact is irreversible and no mitigation measures exist.
IRREPLACEABLE LOSS OF RESOURCES		
This describes the degree to which resources will be irreplaceably lost as a result of a proposed activity.		
1	No loss of resource	The impact will not result in the loss of any resources.
2	Marginal loss of resource	The impact will result in marginal loss of resources.
3	Significant loss of resources	The impact will result in significant loss of resources.
4	Complete loss of resources	The impact is result in a complete loss of all resources.
CUMULATIVE EFFECT		
This describes the cumulative effect of the impacts. A cumulative impact is an effect which in itself may not be significant but may become significant if added to other existing or potential impacts emanating from other similar or diverse activities as a result of the project activity in question.		
1	Negligible cumulative impact	The impact would result in negligible to no cumulative effects.
2	Low cumulative impact	The impact would result in insignificant cumulative effects.
3	Medium cumulative impact	The impact would result in minor cumulative effects.
4	High cumulative impact	The impact would result in significant cumulative effects
SIGNIFICANCE		
Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The calculation of the significance of an impact uses the following formula:		

(Extent + probability + reversibility + irreplaceability + duration + cumulative effect) x magnitude/intensity.

The summation of the different criteria will produce a non-weighted value. By multiplying this value with the magnitude/intensity, the resultant value acquires a weighted characteristic which can be measured and assigned a significance rating.

Points	Impact significance rating	Description
6 to 28	Negative low impact	The anticipated impact will have negligible negative effects and will require little to no mitigation.
6 to 28	Positive low impact	The anticipated impact will have minor positive effects.
29 to 50	Negative medium impact	The anticipated impact will have moderate negative effects and will require moderate mitigation measures.
29 to 50	Positive medium impact	The anticipated impact will have moderate positive effects.
51 to 73	Negative high impact	The anticipated impact will have significant effects and will require significant mitigation measures to achieve an acceptable level of impact.
51 to 73	Positive high impact	The anticipated impact will have significant positive effects.
74 to 96	Negative very high impact	The anticipated impact will have highly significant effects and are unlikely to be able to be mitigated adequately. These impacts could be considered "fatal flaws".
74 to 96	Positive very high impact	The anticipated impact will have highly significant positive effects.

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;

- Increased ambient noise levels resulting from geophysics surveys site fly-overs and increased traffic movement during all prospecting phases.
- Potential water and soil pollution impacts resulting from hydrocarbon spills and soil erosion which may impact on environmental resources utilized by communities, landowners and other stakeholders.
- Potential water and soil pollution impacts resulting from hydrocarbon spills and soil erosion which may impact on ecosystem functioning.
- Increased vehicle activity within the area resulting in the possible destruction and disturbance of fauna and flora.
- Poor access control to farms which may impact on cattle movement, breeding and grazing practices.
- Access control to portion which may impact on cattle movement, breeding and grazing practices of the surrounding community.
- Influx of persons (job seekers) to site as a result of increased activity and the possible resultant increase in opportunistic crime.
- Potential visual impacts caused by prospecting activities.

- Prospecting will be undertaken by specialist sub - contractors and it is not anticipated that employment opportunities for local and / or regional communities will result from the prospecting activities.
- Negative impacts on the groundwater resources.
- Longterm loss of indigenous vegetation.
- Airpollution due to dust to the surrounding community and hospital.
- Impact on tourism.

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

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

Adverse environmental associated with the prospecting activity have been identified through the Scoping & EIR process. Mitigation measures as set out in the Environmental Management Programme (EMPr) attached in Part B must be implemented in order to minimise any potential impacts.

All comments received during the review period of the Scoping and EIR report, as well as response provided is captured and recorded within the Comments and Response Report and will be attached in the final EIR.

ix) if no alternative development [location] footprints for the activity were investigated, the motivation for not considering such; and

As discussed in the previous section, based on outcomes of previous studies in the vicinity of the proposed site, it is expected that high volumes of Diamonds Alluvial (DA) & Diamonds General (D) combined with a Waste Licence Application on the remaining extent of portion 9 (Wouter) of the farm Lanyon Vale 376; Registration Division: Hay; Northern Cape Province

x) a concluding statement indicating the location of the preferred alternative development [location] footprint within the approved site as contemplated in the accepted scoping report;

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

Design alternatives were considered throughout the planning and design phase (i.e. where is the rock bed located?). In this regard discussions on the design were held between the EAP and the developer. The layout follows the limitations of the site and aspects such as, roads, site offices and workshop area as well as fencing.

I. A FULL DESCRIPTION OF THE PROCESS UNDERTAKEN TO IDENTIFY, ASSESS AND RANK THE IMPACTS THE ACTIVITY AND ASSOCIATED STRUCTURES AND INFRASTRUCTURE WILL IMPOSE ON THE PREFERRED [LOCATION] DEVELOPMENT FOOTPRINT ON THE APPROVED SITE

(AS CONTEMPLATED IN THE ACCEPTED SCOPING REPORT THROUGH THE LIFE OF THE ACTIVITY, INCLUDING—.)

i. A description of all environmental issues and risks that are identified during the environmental impact assessment process

Process for the identification of key issues

The methodology for the identification of key issues aims, as far as possible, to provide a user-friendly analysis of information to allow for easy interpretation.

- **Checklist:** The checklist consists of a list of structured questions related to the environmental parameters and specific human actions. They assist in ordering thinking, data collection, presentation and alert against the omission of possible impacts.
- **Matrix:** The matrix analysis provides a holistic indication of the relationship and interaction between the various activities, development phases and the impact thereof on the environment. The method aims at providing a first order cause and effect relationship between the environment and the proposed activity. The matrix is designed to indicate the relationship between the different stressors and receptors which leads to specific impacts. The matrix also indicates the specialist studies, which will be submitted as part of the Environmental Impact Report in order to address the potentially most significant impacts.

Checklist analysis

The site visit was conducted to ensure a proper analysis of the site specific characteristics of the study area. The table below provides a checklist, which is designed to stimulate thought regarding possible consequences of specific actions and so assist scoping of key issues. It consists of a list of structured questions related to the environmental parameters and specific human actions. They assist in ordering thinking, data collection, presentation and alert against the omission of possible impacts. The table highlights certain issues, which are further analysed in matrix format.

Table: Environmental checklist

Question	YES	NO	Un- - sur- e	Description
1. Are any of the following located on the site earmarked for the development?				
I. A river, stream, dam or wetland	X			An Ecological and Wetland Assessment Report was conducted by Mpho Ramalivhana from Naledzani Environmental Services. According to the report there are depressions or pans on the proposed area.
II. A conservation or open space		X		
III. An area that is of cultural importance		X		According to the Phase 1 HIA conducted by J.A. van Schalkwyk, during the physical survey, no sites, features or objects of cultural significance were identified.

IV. Site of geological significance			×	
V. Areas of outstanding natural beauty			×	According to the Ecological and Wetland Assessment Report compiled by Mpho Ramalivhana, the dominating land-use on site is mining (buildings, plant infrastructure, existing ramps (for mining), stockpiles, offices, various mining equipment, open trenches, existing roads), also reservoirs, worker accommodation, landing strip, tracks and hiking trails.
VI. Highly productive agricultural land			×	The proposed area falls within land capability Class 7. According to the Ecological and Wetland Assessment Report compiled by Mpho Ramalivhana, the dominating land-use on site is mining (buildings, plant infrastructure, existing ramps (for mining), stockpiles, offices, various mining equipment, open trenches, existing roads), also reservoirs, worker
VII. Floodplain			×	
VIII. Indigenous forest			×	
IX. Grass land	×			According to the Ecological and Wetland Assessment Report compiled by Mpho Ramalivhana, the grass layer is well developed with rather high species
X. Bird nesting sites			×	According to the Ecological and Wetland Assessment Report compiled by Mpho Ramalivhana, the project area has the propensity to harbour Red Data Bird Species however none were observed during the field surveys
XI. Red data species	×			According to the Ecological and Wetland Assessment Report compiled by Mpho Ramalivhana, two species of concern were recorded on site. These are Boscia albitrunca, Aloe claviflora and Hoodia gordonii.
XII. Tourist resort			×	
2. Will the project potentially result in potential?				
I. Removal of people			×	None.
II. Visual Impacts	×			The visual impact will be managed.

III. Noise pollution	✘			Activities are only carried out during the day no activity is done at night due to noise levels which may affect surrounding infrastructure and people.
IV. Construction of an access road		✘		Access will be obtained from Hay Besproeiing tar road which changes into a gravel road and existing roads will also be used on the proposed area.
V. Risk to human or valuable ecosystems due to explosion/fire/ discharge of waste into water or air.		✘		
VI. Accumulation of large workforce (>50 manual workers) into the site.		✘		Employment opportunities will be created during the different phase of the project.
VII. Utilisation of significant volumes of local raw materials such as water, wood etc.		✘		Additional water requirements related to the portable water supply for employees, workers, to keep the drill cool and dust suppression.
VIII. Job creation	✘			Employment opportunities will be created during the different phase of the project.
IX. Traffic generation		✘		None.
X. Soil erosion		✘		The application is for a prospecting right without bulk sampling, only drilling and pitting sampling will take place.
XI. Installation of additional bulk telecommunication transmission lines or facilities		✘		None.
3. Is the proposed project located near the following?				
I. A river, stream, dam or wetland	✘			The Orange river is approximately 1km from the proposed area.
II. A conservation or open space			✘	
III. An area that is of cultural			✘	
IV. A site of geological significance			✘	
V. An area of outstanding natural			✘	
VI. Highly productive agricultural land	✘			The proposed area falls within land capability Class 7. Central pivot irrigation systems can be found all along
VII. A tourist resort			✘	
VIII. A formal or informal settlement		✘		

Matrix analysis

The matrix describes the relevant listed activities, the aspects of the development that will apply to the specific listed activity, a description of the environmental issues and potential impacts, the significance and magnitude of the potential impacts, and the mitigation of the potential impacts. The matrix also highlights areas of particular concern, which requires more in depth assessment. Each cell is evaluated individually in terms of the nature of the impact, duration and its significance – should no mitigation measures be applied. This is important since many impacts would not be considered insignificant if proper mitigation measures were implemented. The matrix also provides an indication if mitigation measures are available.

In order to conceptualise the different impacts the matrix specify the following:

- **Stressor:** Indicates the aspect of the proposed activity, which initiates and cause impacts on elements of the environment.
- **Receptor:** Highlights the recipient and most important components of the environment affected by the stressor.
- **Impacts:** Indicates the net result of the cause-effect between the stressor and receptor.
- **Mitigation:** Impacts need to be mitigated to minimise the effect on the environment.

ii) An assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;

LISTED ACTIVITY (The Stressor)	ASPECTS OF THE DEVELOPMENT /ACTIVITY	POTENTIAL IMPACTS		SIGNIFICANCE AND MAGNITUDE OF POTENTIAL IMPACTS			MITIGATION OF POTENTIAL IMPACTS	SPECIALIST STUDIES / INFORMATION	
		Receptors	Impact description	Minor	Major	Duration	Possible Mitigation		
CONSTRUCTION PHASE									
Listing Notice GNR 325, Activity 15: "The clearance of an area of 20 hectares or more, of indigenous vegetation	Site clearing and preparation Areas earmarked for prospecting will need to be cleared, topsoil will be stockpiled separately.	BIOPHYSICAL ENVIRONMENT	Fauna & Flora	<ul style="list-style-type: none"> Loss or fragmentation of indigenous natural vegetation. Loss of sensitive species. Loss or fragmentation of habitats. 	-		M	Yes	-
			Air	<ul style="list-style-type: none"> Air and dust pollution due to the increase of traffic of construction vehicles. 	-		S	Yes	-
			Soil	<ul style="list-style-type: none"> Soil degradation, including erosion. Loss of topsoil. Disturbance of soils and existing land use (soil compaction). 	-		S	Yes	-
			Geology	<ul style="list-style-type: none"> It is not foreseen that the removal of indigenous vegetation will impact on the geology or vice versa. 	N/A	N/A	N/A	N/A	-
			Existing services infrastructure	<ul style="list-style-type: none"> Generation of waste that need to be accommodated at a licensed landfill site. Generation of sewage that need to be accommodated by the local sewage plant. 	-		S	Yes	-
			Ground water	<ul style="list-style-type: none"> Pollution due to construction vehicles. 	-		S	Yes	-
			Surface water	<ul style="list-style-type: none"> Increase in storm water run-off. Pollution of water sources due to soil erosion. Destruction of watercourses (pans/dams/streams). 		-	S	Yes	-
		SOCIAL/ECONOMIC ENVIRONMENT	Local unemployment rate	<ul style="list-style-type: none"> Job creation. Business opportunities. Skills development. 	+		S	Yes	-
			Visual landscape	<ul style="list-style-type: none"> Potential visual impact on residents of farmsteads and motorists in close proximity to proposed facility. 	-		S	Yes	-
			Traffic volumes	<ul style="list-style-type: none"> Increase in construction vehicles. 	-		S	Yes	-
			Health & Safety	<ul style="list-style-type: none"> Air/dust pollution. Road safety. Increased risk of veld fires. 	-		S	Yes	-

		Noise levels	<ul style="list-style-type: none"> The generation of noise as a result of construction vehicles, the use of machinery such as drills, excavators and people working on the site. 	-		S	Yes	-	
		Tourism industry	<ul style="list-style-type: none"> Since there are no tourism facilities in close proximity to the site, the construction activities might will not an impact on tourism in the area. 	N/A	N/A	N/A	N/A	-	
		Heritage resources	<ul style="list-style-type: none"> Removal or destruction of archaeological and/or paleontological sites. Removal or destruction of buildings, structures, places and equipment of cultural significance. Removal or destruction of graves, cemeteries and burial grounds. 	-		S	Yes	-	
<p>Listing Notice GNR 325, Activity 15: "The clearance of an area of 20 hectares or more, of indigenous vegetation</p> <p>Listing Notice GNR 327, Activity 20: "Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including—</p> <p>Listing Notice GNR 325, Activity 19: "The removal and disposal of minerals contemplated in terms of section 20 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including—</p> <p>NEM:WA 59 of 2008 Residue stockpiles or residue deposits Category A: (15) The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a prospecting</p>	<p>Site clearing and preparation Areas earmarked for prospecting will need to be cleared, topsoil will be stockpiled separately. This will inevitably result in the removal of indigenous vegetation located on the site.</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">BIOPHYSICAL ENVIRONMENT</p>	Fauna & Flora	<ul style="list-style-type: none"> Loss or fragmentation of indigenous natural vegetation. Loss of sensitive species. Loss or fragmentation of habitats. 	-		M	Yes	-
		Air quality	<ul style="list-style-type: none"> Air and dust pollution due to the increase of traffic. 	-		M	Yes	-	
		Soil	<ul style="list-style-type: none"> Soil degradation, including erosion. Disturbance of soils and existing land use (soil compaction). Loss of agricultural potential (low significance relative to agricultural potential of the site). 	-		M	Yes	-	
		Geology	<ul style="list-style-type: none"> It is not foreseen that the removal of indigenous vegetation will impact on the geology or vice versa. 	-		L	Yes	-	
		Existing services infrastructure	<ul style="list-style-type: none"> Generation of waste that need to be accommodated at a licensed landfill site. Generation of sewage that need to be accommodated by the local sewage plant. 	-		M	Yes	-	
		Ground water	<ul style="list-style-type: none"> Pollution due to construction vehicles Pollution due to blasting 	-		S	Yes	-	
		Surface water	<ul style="list-style-type: none"> Increase in storm water run-off. Pollution of water sources due to soil erosion. Destruction of watercourses (pans/dams/streams). 	-		M	Yes	-	
		<p style="writing-mode: vertical-rl; transform: rotate(180deg);">SOCIAL/ECO-NOMIC</p>	Local unemployment rate	<ul style="list-style-type: none"> Job creation. Skills development. 	+		S	N/A	-
		Visual landscape	<ul style="list-style-type: none"> Potential visual impact on visual receptors in close proximity to proposed facility. 	-		M	Yes	-	

<p><i>right or mining permit, in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).</i></p>			Traffic volumes	<ul style="list-style-type: none"> Increase in construction vehicles. 	-		S	Yes	-
			Health & Safety	<ul style="list-style-type: none"> Air/dust pollution. Road safety. 	-		S	Yes	-
			Noise levels	<ul style="list-style-type: none"> The generation of noise as a result of construction vehicles, and people working on the site. 	-		S	Yes	-
			Tourism industry	<ul style="list-style-type: none"> Since there are no tourism facilities in close proximity to the site, the construction activities will not have an impact on tourism in the area. 	N/A	N/A	N/A	N/A	-
			Heritage resources	<ul style="list-style-type: none"> Removal or destruction of archaeological and/or paleontological sites. Removal or destruction of buildings, structures, places and equipment of cultural significance. Removal or destruction of graves, cemeteries and burial grounds. 		-	S	Yes	-
OPERATIONAL PHASE									
<p>Listing Notice GNR 325, Activity 15: "The clearance of an area of 20 hectares or more, of indigenous vegetation</p> <p>Listing Notice GNR 327, Activity 20: "Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including—</p> <p>Listing Notice GNR 325, Activity 19: "The removal and disposal of minerals contemplated in terms of section 20 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including—</p>	<p>The key components of the proposed project are described below:</p> <ul style="list-style-type: none"> Supporting Infrastructure - A control facility with basic services such as water and electricity will be constructed on the site and will have an approximate footprint 50m² or less. Other supporting infrastructure includes a site office and workshop area. Roads - Access will be obtained from Hay Besproeiing tar road which changes into a gravel road and existing roads will also be used on the proposed area. Fencing - For health, safety and security reasons, the facility will be required to be fenced off from the surrounding farm. 	BIOPHYSICAL ENVIRONMENT	Fauna & Flora	<ul style="list-style-type: none"> Fragmentation of habitats. Establishment and spread of declared weeds and alien invader plants (operations). 		-	S	Yes	-
			Air quality	<ul style="list-style-type: none"> Air pollution due to the mining activity, crusher plant, transport of the gravel to the designated areas and possible blasting. 	-		M	Yes	-
			Soil	<ul style="list-style-type: none"> Soil degradation, including erosion. Disturbance of soils and existing land use (soil compaction). Loss of agricultural potential (low significance relative to agricultural potential of the site). 	-		M	Yes	-
			Geology	<ul style="list-style-type: none"> Collapsible soil. Seepage (shallow water table). Active soil (high soil heave). Erodible soil. The presence of undermined ground. Instability due to soluble rock. Steep slopes or areas of unstable natural slopes. Areas subject to seismic activity. Areas subject to flooding. Blasting 	-		L	Yes	-

<p>NEM:WA 59 of 2008 Residue stockpiles or residue deposits Category A: (15) The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a prospecting right or mining permit, in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).</p>			Existing services infrastructure	<ul style="list-style-type: none"> • Generation of waste that need to be accommodated at a licensed landfill site. • Generation of sewage that need to be accommodated by the municipal sewerage system and the local sewage plant. • Increased consumption of water. 	-		M	Yes	-	
			Ground water	<ul style="list-style-type: none"> • Leakage of hazardous materials. The machinery on site require oils and fuel to function. Leakage of these oils and fuels can contaminate water supplies. 	-		L	Yes	-	
			Surface water	<ul style="list-style-type: none"> • Increase in storm water runoff. The development will potentially result in an increase in storm water run-off that needs to be managed to prevent soil erosion. • Destruction of watercourses (pans/dams/streams). • Leakage of hazardous materials. The machinery on site require oils and fuel to function. Leakage of these oils and fuels can contaminate water supplies. 		-	L	Yes	-	
			SOCIAL/ECONOMIC ENVIRONMENT	Local unemployment rate	<ul style="list-style-type: none"> • Skills development. 	+		L	Yes	-
				Visual landscape	<ul style="list-style-type: none"> • The proposed portions are used for livestock grazing which will still take place simultaneously with the prospecting activity, however this depends on the location of the activity. 	-		L	Yes	-
				Traffic volumes	<ul style="list-style-type: none"> • Increase in vehicles collecting gravel for distribution. 	-		S	Yes	-
				Health & Safety	<ul style="list-style-type: none"> • Air/dust pollution. • Road safety. 	-		S	Yes	-
				Noise levels	<ul style="list-style-type: none"> • The proposed development will result in noise pollution during the operational phase. 	-		M	Yes	-
				Tourism industry	<ul style="list-style-type: none"> • Since there are no tourism facilities in close proximity to the site, the operational activities will not have an impact on tourism in the area. 	N/A	N/A	N/A	N/A	-
				Heritage resources	<ul style="list-style-type: none"> • It is not foreseen that the proposed activity will impact on heritage resources or vice versa. 	-		S	Yes	-
DECOMMISSIONING PHASE										
-	Mine closure	BI OP	Fauna & Flora	<ul style="list-style-type: none"> • Re-vegetation of exposed soil surfaces to ensure no erosion in these areas. 		+	L	Yes	-	

<p>During the mine closure the Mine and its associated infrastructure will be dismantled.</p> <p><u>Rehabilitation of biophysical environment</u> The biophysical environment will be rehabilitated.</p>	<p>Air quality</p> <ul style="list-style-type: none"> Air pollution due to the increase of traffic of construction vehicles. 	-		S	Yes	-	
		<p>Soil</p> <ul style="list-style-type: none"> Backfilling of all voids Placing of topsoil on backfill 	N/A	N/A	N/A	N/A	-
		<p>Geology</p> <ul style="list-style-type: none"> It is not foreseen that the decommissioning phase will impact on the geology of the site or vice versa. 	N/A	N/A	N/A	N/A	-
		<p>Existing services infrastructure</p> <ul style="list-style-type: none"> Generation of waste that need to be accommodated at the local landfill site. Generation of sewage that need to be accommodated by the municipal sewerage system and the local sewage plant. Increase in construction vehicles. 	-		S	Yes	-
		<p>Ground water</p> <ul style="list-style-type: none"> Pollution due to construction vehicles. 	-		S	Yes	-
		<p>Surface water</p> <ul style="list-style-type: none"> Increase in storm water run-off. Pollution of water sources due to soil erosion. Destruction of watercourses (pans/dams/streams). 	-		S	Yes	-
	<p>SOCIAL/ECONOMIC ENVIRONMENT</p>	<p>Local unemployment rate</p> <ul style="list-style-type: none"> Loss of employment. 	-		L	Yes	-
		<p>Visual landscape</p> <ul style="list-style-type: none"> Potential visual impact on visual receptors in close proximity to proposed facility. 	-		S	Yes	-
		<p>Traffic volumes</p> <ul style="list-style-type: none"> Increase in construction vehicles. 	-		S	Yes	-
		<p>Health & Safety</p> <ul style="list-style-type: none"> Air/dust pollution. Road safety. Increased crime levels. The presence of mine workers on the site may increase security risks associated with an increase in crime levels as a result of influx of people in the rural area. 	-		S	Yes	-
		<p>Noise levels</p> <ul style="list-style-type: none"> The generation of noise as a result of construction vehicles, the use of machinery and people working on the site. 	-		S	Yes	-
		<p>Tourism industry</p> <ul style="list-style-type: none"> Since there are no tourism facilities in close proximity to the site, the decommissioning activities will not have an impact on tourism in the area. 	N/A	N/A	N/A	N/A	-
		<p>Heritage resources</p> <ul style="list-style-type: none"> It is not foreseen that the decommissioning phase will impact on any heritage resources. 	-		S	Yes	-

(N/A) No impact (+) Positive Impact (-) Negative Impact (S) Short Term (M) Medium Term (L) Long Term

J. AN ASSESSMENT OF EACH IDENTIFIED POTENTIALLY SIGNIFICANT IMPACT AND RISK, INCLUDING—

- (i) cumulative impacts;
- (ii) the nature, significance and consequences of the impact and risk;
- (iii) the extent and duration of the impact and risk;
- (iv) the probability of the impact and risk occurring;
- (v) the degree to which the impact and risk can be reversed;
- (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and
- (vii) the degree to which the impact and risk can be mitigated;

Significance of potential impacts

The following sections present the outcome of the significance rating exercise. The results suggest that almost none of the key issues identified as part of the EIR process had a negative high environmental significance. Instead the overall score indicate a low environmental significance score.

INITIAL CLEARANCE AND SITE PREPARATION PHASE

Direct impacts: During this phase minor negative impacts are foreseen over the short term. The latter refers to a period of weeks. The site preparation may result in the loss or fragmentation of indigenous natural fauna and flora, loss or fragmentation of habitats, soil erosion, hydrology, and temporary noise disturbance, generation of waste, visual intrusions, increase in heavy vehicle traffic, and risk to safety, livestock and farm infrastructure, and increased risk of veld fires. The abovementioned impacts are discussed in more detail below:

- Loss, destruction or fragmentation of indigenous natural fauna and flora: According to the specialist study, Ecological and Wetland Assessment Report, conducted by Mpho Ramalivhana the dominating land-use on site is mining (buildings, plant infrastructure, existing ramps (for mining), stockpiles, offices, various mining equipment, open trenches, existing roads), also reservoirs, worker accommodation, landing strip, tracks and hiking trails.

Three vegetation communities were identified during the site assessment. These were recognised based on physiognomy, moisture regime, and species composition and disturbance characteristics. Vegetation communities’ area:

- Mined/disturbed area;
- *Senegalia mellifera* shrubland, and
- *Vachellia karoo* dominated riparian woodland

However, it should be noted that the *Vachellia karoo* dominated riparian woodland community is not on the proposed area.

Loss or fragmentation of indigenous natural fauna and flora	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative

Extent	Local (1)	Local (1)
Probability	Definite (4)	Possible (2)
Duration	Long term (3)	Medium term (2)
Magnitude	High (3)	Medium (2)
Reversibility	Barely reversible (3)	Partly reversible (2)
Irreplaceable loss of resources	Significant loss of resource (3)	Marginal loss of resource (2)
Cumulative impact	Medium cumulative impacts (3)	
Significance	Negative high (51)	Negative low (24)
Can impacts be mitigated?	<p>If the development is approved, contractors must ensure that no mammalian species are disturbed, trapped, hunted or killed. If the development is approved, every effort should be made to confine the footprint to the blocks allocated for the development and have the least possible edge effects on the surrounding area. The EMPr also provides numerous mitigation measures – refer to section (f) of the EMPr.</p> <p>The potential impacts associated with damage to and loss of farmland should be effectively mitigated. The aspects that should be covered include:</p> <ul style="list-style-type: none"> • The site should be fenced off prior to commencement of construction activities; • The footprint associated with the construction related activities (access roads, construction platforms, workshop etc.) should be confined to the fenced off area and minimised where possible; • An Environmental Control Officer (ECO) should be appointed to monitor the establishment phase of the construction phase; • All areas disturbed by construction related activities, such as access roads on the site, construction platforms, workshop area etc., should be rehabilitated at the end of the construction phase; • The implementation of a rehabilitation programme should be included in the terms of reference for the contractor/s appointed. Specifications for the rehabilitation are provided throughout the EMPr – section (f) of the EMPr. 	

	<ul style="list-style-type: none">• The implementation of the Rehabilitation Programme should be monitored by the ECO. <p><u>Specialist (Mpho Ramalivhana) mitigation measures</u></p> <ul style="list-style-type: none">• Supervision by an ecologist to ensure success of the rescue operation• Place drilling holes away from any red listed and/or protected plant species• Use already available farm roads to avoid trampling red listed plant species• Due to the sensitivity of the areas it is advised that areas designated for vegetation clearing should be identified and visibly marked off and also approved as part of final drilling map• Vegetation clearing areas should be kept to a minimum and restricted to the proposed drilling sites.• Exposed areas should be rehabilitated with indigenous plants to the project area as soon as construction is finished.• Do not disturb nests, breeding sites or young ones. Do not attempt to kill or capture snakes unless directly threatening the safety of employees.• Dogs or other pets are not allowed to the worksite as they are threats to the natural wild animal• A low speed limit should be enforced on site to reduce wild animal-vehicle collisions• No animals should be intentionally killed or destroyed and poaching and hunting should not be permitted on the site.• Severe contractual fines must be imposed and immediate dismissal on any contract employee who is found attempting to snare or otherwise harms remaining faunal species.• Hunting weapons are prohibited on site.• Contract employees must be educated about the value of wild animals and the importance of their conservation.• The ECO must conduct regular site inspections of removing any snares or traps that have been erected.• Employees and contractors should be made aware of the presence of, and rules regarding,
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	<p>flora and fauna through suitable induction training and on-site signage.</p> <ul style="list-style-type: none"> • Ensure that the colours used to paint the buildings including the roof are blending to the environment
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- Loss destruction or fragmentation of habitats – It is noted that the proposed prospecting site is mostly covered in natural vegetation. Faunal species will primarily be affected by the overall loss of habitat; however, this will be low since the prospecting right is without bulk sampling.

Loss or fragmentation of habitats	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Site (1)	Site (1)
Probability	Possible (2)	Possible (2)
Duration	Long term (3)	Medium term (2)
Magnitude	High (3)	Medium (2)
Reversibility	Partly reversible (2)	Completely reversible (1)
Irreplaceable loss of resources	Marginal loss of resource (2)	Marginal loss of resource (2)
Cumulative impact	Medium cumulative impacts (3)	
Significance	Negative medium (39)	Negative low (22)
Can impacts be mitigated?	<p>Exotic and invasive plant species should not be allowed to establish, if the development is approved. Where exotic and invasive plant species are found at the site continuous eradication should take place. If the development is approved, every effort should be made to confine the footprint to the blocks allocated for development – section (f) of the EMPr also provides numerous mitigation measures related to fauna and flora.</p> <p><u>Specialist (Mpho Ramalivhana) mitigation measures</u></p> <ul style="list-style-type: none"> • Do not disturb nests, breeding sites or young ones. Do not attempt to kill or capture snakes unless directly threatening the safety of employees. • Dogs or other pets are not allowed to the worksite as they are threats to the natural wild animal • A low speed limit should be enforced on site to reduce wild animal-vehicle collisions 	

	<ul style="list-style-type: none"> • No animals should be intentionally killed or destroyed and poaching and hunting should not be permitted on the site. • Severe contractual fines must be imposed and immediate dismissal on any contract employee who is found attempting to snare or otherwise harms remaining faunal species. • Hunting weapons are prohibited on site. • Contract employees must be educated about the value of wild animals and the importance of their conservation. • The ECO must conduct regular site inspections of removing any snares or traps that have been erected. • Employees and contractors should be made aware of the presence of, and rules regarding, flora and fauna through suitable induction training and on-site signage. • Ensure that the colours used to paint the buildings including the roof are blending to the environment
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- Loss of topsoil –Topsoil may be lost due to poor topsoil management (burial, erosion, etc.). The effect will be the loss of soil fertility on disturbed areas after rehabilitation. This will result in potential grazing and cultivation being lost. However, this application is only for a prospecting right without bulk sampling, only drilling and pitting will take place.

Loss of topsoil	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Geographical extent	Site (1)	Site (1)
Probability	Possible (2)	Unlikely (1)
Duration	Long term (3)	Short term (1)
Magnitude	High (3)	Medium (2)
Reversibility	Partly reversible (2)	Completely reversible (1)
Irreplaceable loss of resources	Significant loss of resource (3)	No loss of resource (1)
Cumulative impact	Medium cumulative impacts (3)	
Significance	Negative medium (45)	Negative low (16)
Can impacts be mitigated?	The following mitigation or management measures are provided: <ul style="list-style-type: none"> • If an activity will mechanically disturb below surface in any way, then any available topsoil should first be stripped 	

	<p>from the entire surface and stockpiled for re-spreading during rehabilitation.</p> <ul style="list-style-type: none"> • Topsoil stockpiles must be conserved against losses through erosion by establishing vegetation cover on them. • Dispose of all subsurface spoils from excavations where they will not impact on undisturbed land. • During rehabilitation, the stockpiled topsoil must be evenly spread over the entire disturbed surface. • Erosion must be controlled where necessary on top soiled areas. <p>Establish an effective record keeping system for each area where soil is disturbed for constructional purposes. These records should be included in environmental performance reports, and should include all the records below.</p> <ul style="list-style-type: none"> • Record the GPS coordinates of each area. • Record the date of topsoil stripping. • Record the GPS coordinates of where the topsoil is stockpiled. • Record the date of cessation of constructional (or operational) activities at the particular site. • Photograph the area on cessation of constructional activities. • Record date and depth of re-spreading of topsoil. • Photograph the area on completion of rehabilitation and on an annual basis thereafter to show vegetation establishment and evaluate progress of restoration over time. <p>Section (f) of the EMPr also provide mitigation measures related to topsoil management.</p> <p><u>Specialist (Mpho Ramalivhana) mitigation measures</u></p>
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- **Soil erosion** – Soil erosion due to alteration of the land surface run-off characteristics. Alteration of run-off characteristics may be caused by construction related land surface disturbance, vegetation removal and the establishment of roads. Erosion will cause loss and deterioration of soil resources. This will result in grazing and cultivation potential being lost.

Soil erosion	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Geographical extent	Site (1)	Site (1)
Probability	Possible (2)	Possible (2)
Duration	Long term (2)	Short term (1)
Magnitude	High (3)	Medium (2)
Reversibility	Barely reversible (3)	Partly reversible (2)
Irreplaceable loss of resources	Marginal (2)	Marginal (2)
Cumulative impact	Medium cumulative impact (2).	
Significance	Negative Medium (36)	Negative low (20)
Can impacts be mitigated?	<ul style="list-style-type: none"> • The following mitigation or management measures are provided: Implement an effective system of run-off control, where it is required, that collects and safely disseminates run-off water from all hardened surfaces and prevents potential down slope erosion. • Monitor the area regularly after larger rainfall events to determine where erosion may be initiated and then mitigate by modifying the soil micro-topography and revegetation or soil erosion control efforts accordingly. <p>Include periodical site inspection in environmental performance reporting that inspects the effectiveness of the run-off control system and specifically records the occurrence any erosion on site or downstream – refer to section (f) of the EMPr..</p>	

- **Temporary noise disturbance** - Preparation activities will result in the generation of noise over a period of months. Sources of noise are likely to include vehicles, the use of machinery such as back actors and people working on the site. The noise impact is unlikely to be significant; but activities should be limited to normal working days and hours (6:00 – 18:00).

Temporary noise disturbance	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Probable (3)	Possible (2)
Duration	Medium term (1)	Medium term (1)
Magnitude	Medium (2)	Low (1)
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources	No loss of resource (1)	No loss of resource (1)
Cumulative impact	Low cumulative impact (2).	
Significance	Negative low (20)	Negative low (9)
Can impacts be mitigated?	Yes, management actions related to noise pollution are included in section (f) of the EMPr.	

- Generation of waste - general waste, construction waste, sewage and grey water - The workers on site are likely to generate general waste such as food wastes, packaging, bottles, etc. The applicant will need to ensure that general waste is appropriately disposed of i.e. taken to the nearest licensed landfill. Sufficient ablution facilities will have to be provided, in the form of portable/VIP toilets. No pit latrines, French drain systems or soak away systems shall be allowed.

Generation of waste	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local/district (2)	Local/district (2)
Probability	Probable (3)	Possible (2)
Duration	Medium term (2)	Medium term (2)
Magnitude	Low (1)	Low (1)
Reversibility	Partly reversible (2)	Partly reversible (2)
Irreplaceable loss of resources	No loss of resource (1)	No loss of resource (1)
Cumulative impact	Low cumulative impact (2) - An additional demand for landfill space could result in significant cumulative impacts if services become unstable or unavailable, which in turn would negatively impact on the local community. If general waste is left on site livestock could mistakenly eat it, which might in turn harm or kill them.	
Significance	Negative low (12)	Negative low (11)
Can impacts be mitigated?	Yes, it is therefore important that all management actions and mitigation measures included in section (f) of the EMPr are implemented.	

Impacts on heritage objects – According to the Phase 1 HIA conducted by J.A. van Schalkwyk, during the physical survey, no sites, features or objects of cultural significance were identified.

- Chance finds: Stone Age artefacts, mostly dating to the Middle Stone Age occur in significant numbers all in parts of the study area. In some areas, on the hills closer to the river, the density of artefacts exceeds more than 3/2m², diminishing to 1/10m² in the more sandy regions. These are mostly made from banded iron stone and iron rich chert. Cores, flakes and tools are found. The tools are very rough and informal and only a few that can be described as typical were identified. As it is surface material and has already been disturbed by diamond prospecting activities, it is viewed to have low significance – Grade 4-C.
- 7.3.1: Old farmstead consisting of a house and some dilapidated outbuildings. The houses consist of two gable-roofed structures that were joined end-to-end. A small porch was added to one section. The house was built with concrete blocks and has a corrugated iron roof. It is evaluated to have high significance – Grade 4-A.

Impact assessment and proposed mitigation measures

Impact analysis of cultural heritage resources under threat of the proposed development, is based on the present understanding of the development:

IDENTIFIED HERITAGE RESOURCES					
Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation	Proposed mitigation (Refer to definitions in Section 12.3)
EIA318: Stone Age material					
Chance finds	Stone Age tools	Section 35	Low significance Grade 4-C	10 4	(5) No further action required.

IDENTIFIED HERITAGE RESOURCES					
Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation	Proposed mitigation (Refer to definitions in Section 12.3)
Historic house					
7.3.1	Historic structures	Section 35	High significance Grade 4-A	60 27	(1) Avoidance/Preserve; (2) Archaeological investigation

Impacts on heritage objects	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Possible (2)	Possible (2)
Duration	Permanent (4)	Permanent (4)
Magnitude	High (3)	Low (1)
Reversibility	Irreversible (4)	Irreversible (4)
Irreplaceable loss of resources	Complete loss of resources (4)	No loss of resource (1)

Cumulative impact	The impact would result in Medium cumulative impact (3). Loss of information regarding early settlement in the region.	
Significance	Negative medium (57)	Negative low (16)
Can impacts be mitigated?	<p>If archaeological sites or graves are exposed during construction work, it should immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made. Also refer to section (f) of the EMPr.</p> <p>According to the Phase 1 HIA the following mitigation measures are proposed:</p> <ul style="list-style-type: none"> • Chance finds: Stone Age material (5) No further action required: This is applicable only where sites or features have been rated to be of such low significance that it does not warrant further documentation, as it is viewed to be fully documented after inclusion in this report. • Site 7.3.1: Historic house (1) Avoidance/Preserve: This is viewed to be the primary form of mitigation and applies where any type of development occurs within a formally protected or significant or sensitive heritage context and is likely to have a high negative impact; or, alternatively; (2) Archaeological investigation: This is appropriate where development occurs in a context of heritage significance and where the impact is such that it can be mitigated. Mitigation is to excavate the site by archaeological techniques, document the site (map and photograph) and analyse the recovered material to acceptable standards. <p><u>Conditions for inclusion in the environmental authorisation:</u></p> <ul style="list-style-type: none"> • If the identified structure is to be demolished, it must be fully documented – mapped, photographed and described – beforehand. • The Palaeontological Sensitivity Map (SAHRIS) indicate that the study area has moderate sensitivity of fossil remains to be found and therefore a desktop palaeontological study of the site is required. 	

	<ul style="list-style-type: none"> Should archaeological sites or graves be exposed in other areas during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.
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Indirect impacts: The nuisance aspects generally associated with the installation of infrastructure or ground preparation will also be applicable to this development, which relates primarily to the increase in vehicle traffic associated with prospecting practices, the influx of job seekers to the area, risk to safety, livestock and farm infrastructure, and increased risk of veld fires.

- Increase in vehicle traffic – The movement of heavy vehicles have the potential to damage local farm roads and create dust and safety impacts for other road users in the area. Since the application is for a prospecting right without bulk sampling, only drilling and pitting sampling will take place. Access will be obtained from Hay Besproeiing tar road which changes into a gravel road. The volume of traffic along this road is low and the movement of heavy vehicles along this road is likely to damage the road surface and impact on other road users.

Increase in vehicle traffic	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Possible (2)	Unlikely (1)
Duration	Medium term (2)	Medium term (2)
Magnitude	Low (1)	Low (1)
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources	No loss of resource (1)	No loss of resource (1)
Cumulative impact	Low cumulative impact (2). If damage to roads is not repaired, then this will affect the farming activities in the area and result in higher maintenance costs for vehicles of local farmers and other road users. The costs will be borne by road users who were no responsible for the damage.	
Significance	Negative Low (10)	Negative low (9)
Can impacts be mitigated?	<p>The potential impacts associated with heavy vehicles can be effectively mitigated. The mitigation measures include:</p> <ul style="list-style-type: none"> The contractor must ensure that damage caused by construction on the off-gravel roads. The costs associated with the repair must be borne by the contractor; 	

	<ul style="list-style-type: none"> Dust suppression measures must be implemented for heavy vehicles such as wetting of gravel roads on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers; All vehicles must be road-worthy and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits. <p>Also refer section (f) of the EMPr. For mitigation measures related to traffic.</p>
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- Risk to safety, livestock and farm infrastructure - The presence on and movement of workers on and off the site poses a potential safety threat to local farmer’s, farm workers and the communities in the vicinity of the site. In addition, farm infrastructure, such as fences and gates, may be damaged and stock losses may also result from gates being left open and/or fences being damaged or stock theft linked either directly or indirectly to the presence of farm workers on the site.

Risk to safety, livestock and farm infrastructure	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Site (1)
Probability	Possible (2)	Unlikely (1)
Duration	Medium term (2)	Medium term (2)
Magnitude	Medium (2)	Low (1)
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources	Marginal loss of resource (2)	No loss of resource (1)
Cumulative impact	Low cumulative effects (2), provided losses are compensated for.	
Significance	Negative low (22)	Negative low (8)
Can impacts be mitigated?	Key mitigation measures include: <ul style="list-style-type: none"> Okapi Diamonds (Pty) Ltd should enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase will be compensated for. The agreement should be signed before the construction phase commences; The construction area should be fenced off prior to the commencement of the construction phase. The movement of 	

	<p>construction workers on the site should be confined to the fenced off area;</p> <ul style="list-style-type: none">• Contractors appointed by Okapi Diamonds (Pty) Ltd should provide daily transport for low and semi-skilled workers to and from the site. This would reduce the potential risk of trespassing on the remainder of the farm and adjacent properties;• Okapi Diamonds (Pty) Ltd should hold contractors liable for compensating farmers in full for any stock losses and/or damage to farm infrastructure that can be linked to construction workers. This should be contained in the Code of Conduct to be signed between the proponent, the contractors and neighbouring landowners. The agreement should also cover losses and costs associated with fires caused by construction workers or construction related activities (see below);• The Environmental Management Programme (EMPr) should outline procedures for managing and storing waste on site, specifically plastic waste that poses a threat to livestock if ingested;• Contractors appointed Okapi Diamonds (Pty) Ltd must ensure that all workers are informed at the outset of the construction phase of the conditions contained on the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms.• Contractors appointed by Okapi Diamonds (Pty) Ltd must ensure that construction workers who are found guilty of trespassing, stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the Code of Conduct. All dismissals must be in accordance with South African labour legislation;• The housing of construction workers on the site should be strictly limited to security personnel (if any).
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- Increased risk of veld fires - The presence of construction workers and construction-related activities on the site poses an increased risk of grass fires that could in turn pose a threat to livestock, crops, wildlife, farmsteads and the communities in the area. In the process, infrastructure may also be damaged or destroyed and human lives threatened. The potential risk of grass fires was heightened by the windy conditions in the area, especially during the dry, windy winter months from May to October. Fire-fighting equipment should be provided on site during the construction phase.

Increased risk of veld fires	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Region (3)	Local (2)
Probability	Probable (3)	Possible (2)
Duration	Medium term (2)	Medium term (2)
Magnitude	Very high (4)	Medium (2)
Reversibility	Irreversible (4)	Partly reversible (2)
Irreplaceable loss of resources	Significant loss of resource (3)	Marginal loss of resource (2)
Cumulative impact	Negligible cumulative effects (1), provided losses are compensated for.	
Significance	Negative high (64)	Negative low (22)
Can impacts be mitigated?	<p>The mitigation measures include:</p> <ul style="list-style-type: none"> • A fire-break should be constructed around the perimeter of the site prior to the commencement of the construction phase; • Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas; • Contractor to ensure that construction related activities that pose a potential fire risk, such as welding, are properly managed and are confined to areas where the risk of fires has been reduced. Measures to reduce the risk of fires include avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high risk dry, windy winter months; • Contractor to provide adequate firefighting equipment on-site, including a fire fighting vehicle; • Contractor to provide fire-fighting training to selected construction staff; • No construction staff, with the exception of security staff, to be accommodated on site over night; 	

	<ul style="list-style-type: none"> As per the conditions of the Code of Conduct, in the advent of a fire being caused by construction workers and or construction activities, the appointed contractors must compensate farmers for any damage caused to their farms. The contractor should also compensate the firefighting costs borne by farmers and local authorities.
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OPERATIONAL PHASE

Direct impacts: During the operational phase the study area will serve as a prospecting area and the impacts are generally associated with soil erosion, change in land use, impacts associated with the, increase in storm water runoff, increased consumption of water, visual intrusion, the generation of general waste, leakage of hazardous materials, and the change in the sense of place. The operational phase will also have a direct positive impact through the provision of permanent employment opportunities and facilitating a positive economic growth. The abovementioned impacts are discussed in more detail below:

- Soil erosion – There is a low to no risk factor for soil erosion for drilling and pitting. The conditions of the EMP will be adhered to throughout the prospecting operation and commitment to rehabilitation is of paramount importance in order to obtain a closure certificate from DMR.

Soil erosion	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Site (1)
Probability	Possible (2)	Unlikely (1)
Duration	Medium term (2)	Medium term (2)
Magnitude	Medium (2)	Low (1)
Reversibility	Partly reversible (2)	Completely reversible (1)
Irreplaceable loss of resources	Marginal loss of resource (2)	No loss of resource (1)
Cumulative impact	Low cumulative effects (2), should these impacts occur, there will be a cumulative impact on the air and water resources in the study area in terms of pollution.	
Significance	Negative Low (24)	Negative Low (8)
Can impacts be mitigated?	Yes, to avoid soil erosion it will be a good practice to not remove all the vegetation at once but to only clear the area as it becomes necessary and to implement concurrent rehabilitation.	

	<ul style="list-style-type: none"> • The following mitigation or management measures are provided: Implement an effective system of run-off control, where it is required, that collects and safely disseminates run-off water from all hardened surfaces and prevents potential down slope erosion. • Monitor the area regularly after larger rainfall events to determine where erosion may be initiated and then mitigate by modifying the soil micro-topography and revegetation or soil erosion control efforts accordingly <p>Also refer to section (f) of the EMPr.</p>
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- Change in land-use – According to the Ecological and Wetland Assessment Report compiled by Mpho Ramalivhana, the dominating land-use on site is mining (buildings, plant infrastructure, existing ramps (for mining), stockpiles, offices, various mining equipment, open trenches, existing roads), also reservoirs, worker accommodation, landing strip, tracks and hiking trails.

Change in land use	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Possible (2)	Possible (2)
Duration	Medium term (2)	Medium term (2)
Magnitude	Low (1)	Low (1)
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources	Marginal loss of resource (2)	Marginal loss of resource (2)
Cumulative impact	Low cumulative effects (2)	
Significance	Negative low (11)	Negative low (11)
Can impacts be mitigated?	<p>The proponent should establish a Rehabilitation Fund to be used to rehabilitate the area once the proposed facility has been decommissioned. The fund should be funded by revenue generated during the operational phase of the project. The motivation for the establishment of a Rehabilitation Fund is based on the experience in the mining sector where many mines on closure have not set aside sufficient funds for closure and decommissioning.</p> <p>Also refer to section (f) of the EMPr.</p>	

- Generation of alternative land use income – Income generated through the potential prospecting of the minerals applied for will provide the farming enterprise with increased cash flow and rural livelihood, and thereby improve the financial sustainability of farming on site.

Generation of alternative land use income	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Positive	Positive
Geographical extent	Site (1)	Local (2)
Probability	Definite (4)	Definite (4)
Duration	Long term (3)	Long term (3)
Magnitude	Medium (2)	Medium (2)
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources	No loss of resources (1)	No loss of resources (1)
Cumulative impact	Low cumulative impact (2).	
Significance	Positive Low (24)	Positive Low (26)
Can impacts be mitigated?	No mitigation required.	

- Increase in storm water runoff – The development will unlikely result in an increase in storm water run-off that needs to be managed to prevent soil erosion, since no vegetation will be cleared.

Increase in storm water runoff	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Site (1)	Site (1)
Probability	Possible (2)	Unlikely (1)
Duration	Medium term (2)	Medium term (2)
Magnitude	Medium (2)	Low (1)
Reversibility	Partly reversible (2)	Partly reversible (2)
Irreplaceable loss of resources	Marginal loss of resource (2)	No loss of resource (1)
Cumulative impact	Low cumulative impact (2) - Should these impacts occur, there will be cumulative impacts on the wider area.	
Significance	Negative low (22)	Negative low (9)
Can impacts be mitigated?	Yes. It is therefore important that all management actions and mitigation measures included in section (f) of the EMPr. are implemented to ensure that these impacts do not occur	

- Increased consumption of water – Additional water requirements related to the portable water supply for employees and workers. Water will also be used for dust suppression.

Increased consumption of water	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Site (1)	Site (1)
Probability	Definite (4)	Definite (4)
Duration	Medium term (2)	Medium term (2)
Magnitude	Medium (2)	Medium (2)
Reversibility	Irreversible (4)	Irreversible (4)
Irreplaceable loss of resources	Marginal loss of resources (2)	Marginal loss of resources (2)
Cumulative impact	Medium cumulative impacts (3) - An additional demand on water sources could result in a significant cumulative impact with regards to the availability of water.	
Significance	Negative medium (32)	Negative medium (32)
Can impacts be mitigated?	Yes, management actions and mitigation measures related to the use of water are included in section (f) of the EMPr.	

- Generation of waste –Workers will be present on site from 6:00 – 18:00, Monday to Saturday. Sources of general waste will be waste food, packaging, paper, etc. General waste will be stored on the site and removed on a weekly basis.

Generation of waste	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Definite (4)	Definite (4)
Duration	Medium term (2)	Medium term (2)
Magnitude	Low (1)	Low (1)
Reversibility	Partly reversible (2)	Partly reversible (2)
Irreplaceable loss of resources	No loss of resource (1)	No loss of resource (1)
Cumulative impact	Medium cumulative impact (3) - An additional demand for landfill space could result in significant cumulative impacts with regards to the availability of landfill space. If general waste is left on site livestock could mistakenly eat it, which might in turn harm or kill them.	
Significance	Negative low (14)	Negative low (14)

Can impacts be mitigated?	Yes, management actions related to waste management are included in section (f) of the EMPr.
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- Leakage of hazardous materials - The proposed prospecting activity will make use of machinery that use fuel and oil. Leakage of these oils and fuel can contaminate water supplies and must be prevented by constructing oil and diesel permeable bunds to ensure that any spills are suitably attenuated and not released into the environment.

Leakage of hazardous materials	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Site (1)	Site (1)
Probability	Possible (2)	Unlikely (1)
Duration	Medium term (2)	Short term (1)
Magnitude	Medium (2)	Medium (2)
Reversibility	Partly reversible (2)	Completely reversible (1)
Irreplaceable loss of resources	Significant loss of resource (3)	Marginal loss of resource (2)
Cumulative impact	The impact would result in negligible to no cumulative effects (1)	
Significance	Negative low (22)	Negative low (14)
Can impacts be mitigated?	Yes. It is therefore important that all management actions and mitigation measures included in the section (f) of EMPr are implemented to ensure that these impacts do not occur.	

- Noise disturbance - Prospecting activities will result in the generation of noise over a period of 2-3 years. Sources of noise are likely to include vehicles, the use of machinery such as drills and people working on the site; but prospecting activities should be limited to normal working days and some Saturdays and hours (6:00 – 18:00).

Temporary noise disturbance	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Probable (3)	Possible (2)
Duration	Medium term (1)	Medium term (1)
Magnitude	Medium (2)	Low (1)
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources	No loss of resource (1)	No loss of resource (1)
Cumulative impact	Low cumulative impact (2).	
Significance	Negative low (20)	Negative low (9)
Can impacts be mitigated?	Yes, management actions related to noise pollution are included in section (f) of the EMPr.	

Indirect impacts: The operational phase will have an indirect negative impact through the change in the sense of place and an indirect positive impact through the provision of additional electrical infrastructure.

- Potential impact on tourism – There are no tourist facilities in close proximity to the proposed area.

Potential impacts on tourism	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Unlikely (1)	Unlikely (1)
Duration	Medium term (2)	Medium term (2)
Magnitude	Low (1)	Low (1)
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources	N/A	N/A
Cumulative impact	N/A	
Significance	Negative low (6)	Negative low (6)
Can impacts be mitigated?	No mitigation required	

DECOMMISSIONING PHASE (MINE CLOSURE AND REHABILITATION)

Direct impacts: Typically, the major social impacts associated with the decommissioning phase are linked to the loss of jobs and associated income. This has implications for the households who are directly affected, the communities within which they live. If infrastructures are removed after a 3/5 year period, the site will be returned to its natural state. Therefore, the physical environment will benefit from the closure of the prospecting area.

- Rehabilitation of the physical environment – The physical environment will benefit from the closure of the prospecting area. There is a slight chance to restore the site to its natural state, however rehabilitation will be done concurrently with all activities

Rehabilitation of the physical environment	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Positive	Positive
Extent	Site (1)	Site (1)
Probability	Definite (4)	Definite (4)
Duration	Long term (3)	Long term (3)
Magnitude	High (3)	High (3)
Reversibility	N/A	N/A
Irreplaceable loss of resources	N/A	N/A

Cumulative impact	The impact would result in negligible to no cumulative effects (1)	
Significance	Positive low (27)	Positive low (27)
Can impacts be mitigated?	No mitigation measures required.	

- Loss of employment - The decommissioning of the facility has the potential to have a negative social impact on the local community.

Loss of employment	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Possible (2)	Possible (2)
Duration	Medium term (2)	Medium term (1)
Magnitude	Medium (2)	Medium (2)
Reversibility	Partly reversible (2)	Partly reversible (2)
Irreplaceable loss of resources	No loss of resource (1)	No loss of resource (1)
Cumulative impact	The impact would result in negligible to no cumulative effects (1)	
Significance	Negative low (20)	Negative low (18)
Can impacts be mitigated?	<p>The following mitigation measures are recommended:</p> <ul style="list-style-type: none"> • All structures and infrastructure associated with the proposed facility should be dismantled and transported off-site on decommissioning; • Okapi Diamonds (Pty) Ltd should establish an Environmental Rehabilitation Trust Fund to cover the costs of decommissioning and rehabilitation of disturbed areas. 	

Indirect impacts: No indirect impacts are anticipated from the decommissioning phase of the proposed development.

Proposed management measures relevant to the proposed mining operations as compiled by Me. Liezl Landman for the purpose of Watercourse Delineation and Ecological Impact Assessment Report

Impact	Source of Impact	Recommended Mitigation Measures
<p>Alteration of the flow regime of the watercourse</p>	<p><u>Construction:</u></p> <ul style="list-style-type: none"> • Infrastructure development within watercourses • Removal and disturbance of watercourse habitat and vegetation • Habitat fragmentation • Impoundments within the watercourse • Lack of adequate rehabilitation resulting in colonization by invasive plants <p><u>Operational:</u></p> <ul style="list-style-type: none"> • Excavation from the watercourses • Clearing of vegetation • Vehicles driving in and through watercourses <p><u>Decommissioning:</u></p> <ul style="list-style-type: none"> • Damage to vegetated areas • Ineffective rehabilitation measures • Vehicles driving in and through watercourses 	<ul style="list-style-type: none"> • Any activities that take place within 32 meters of a wetland or watercourse or the 1:100 year flood lines will require authorisation in terms of the relevant regulations of NEMA, however as far as possible infrastructure should be placed outside of buffer lines. • Demarcate the watercourse areas and buffer zones to limit disturbance, clearly mark these areas as no-go areas. • Where construction occurs in the demarcated watercourse and buffer areas, additional precautions should be implemented to minimise watercourse loss. • No stockpiling should take place within a watercourse or the calculated buffers. • All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds. • Erosion and sedimentation into channels must be minimised through the effective stabilisation and the re-vegetation of any disturbed stream banks. • Ensure that erosion management and sediment controls are strictly implemented from the beginning of site clearing activities. • All areas should be re-sloped and top-soiled where necessary and reseeded with indigenous grasses to stabilise the loose material. • Monitor the occurrence of erosion during the rainy season and take immediate corrective action where needed.

		<ul style="list-style-type: none"> • A sensitivity map has been developed for the study area, indicating the drainage lines and riparian systems, and their relevant buffer zones. It is recommended that this sensitivity map be considered during all phases of the development and with special mentioning of the planning of infrastructure, in order to aid in the conservation of and minimise impact on the riparian and aquatic habitat and resources within the study site. • Any areas where bank failure is observed, due to the prospecting impacts, should be immediately repaired. • As far as possible the existing road network should be utilised, minimising the need to develop new access routes resulting in an increased impact on the local environment. • Operational phase activities should not take place within watercourses or buffer zones. • The duration of impacts on the drainage line should be minimised as far as possible by ensuring that the duration of time in which flow alteration and sedimentation will take place is minimised. • Alien and invasive vegetation control should take place throughout all phases to prevent loss of floral habitat. • All rehabilitation activities should occur in the dry season. • Rehabilitation of disturbed areas as a result of construction must be implemented immediately upon completion of construction.
<p>Changing the physical structure within a water resource (habitat)</p>	<p><u>Construction:</u></p> <ul style="list-style-type: none"> • Infrastructure development within watercourses • Loss of vegetation 	<ul style="list-style-type: none"> • Other than approved and authorized structures, no other development or maintenance infrastructure is allowed within the delineated watercourse and riparian areas or their associated buffer zones.

	<ul style="list-style-type: none"> • Flow alteration • Erosion <p><u>Operational:</u></p> <ul style="list-style-type: none"> • Excavation from the watercourses leading to degraded river channels. • Removal of substrate within drainage lines and streams • Clearing of vegetation – vegetation loss • Loss of biodiversity • Alteration and/or loss of hydrological flow classes • Vehicles driving in and through watercourses <p><u>Decommissioning:</u></p> <ul style="list-style-type: none"> • Damage to vegetated areas • Ineffective rehabilitation measures • Vehicles driving in and through watercourses 	<ul style="list-style-type: none"> • Alien and invasive vegetation control should take place throughout all phases to prevent loss of floral habitat. • Monitor the occurrence of erosion during the rainy season and take immediate corrective action where needed. • No stockpiling should take place within a watercourse or the calculated buffers. • All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds. • Bi-annual biomonitoring of aquatic macro-invertebrates and diatoms within the riverine systems is essential. • All maintenance within watercourses must be restricted to the dry season. • Maintenance activities should not impact on rehabilitated or naturally vegetated areas. • Rehabilitation should limit fragmentation and isolation of sections of the non-perennial drainage line systems. • The duration of impacts on the riverine and drainage line systems should be minimised as far as possible by ensuring that the duration of time in which flow alteration and sedimentation will take place is minimised. • Rehabilitation must ensure that riparian structure and function are reinstated in such a way as to ensure the ongoing functionality of the larger riparian systems at pre-mining levels. • All rehabilitation activities should occur in the dry season.
<p>Alteration of the amount of sediment entering the water resource and</p>	<p><u>Construction:</u></p> <ul style="list-style-type: none"> • Vegetation clearance causing sedimentation 	<ul style="list-style-type: none"> • Buffer zones should be maintained, in order to minimise sedimentation of the downstream areas.

<p>associated change in turbidity</p>	<ul style="list-style-type: none"> • Earthworks activities • Disturbance of soil surface and runoff characteristics • Erosion <p><u>Operational:</u></p> <ul style="list-style-type: none"> • Excavation from the watercourses leading to degraded river channels. • Removal of substrate within drainage lines and streams • Clearing of vegetation – vegetation loss • Loss of biodiversity • Alteration and/or loss of hydrological flow classes • Vehicles driving in and through watercourses <p><u>Decommissioning:</u></p> <ul style="list-style-type: none"> • Damage to vegetated areas • Ineffective rehabilitation measures • Vehicles driving in and through watercourses 	<ul style="list-style-type: none"> • No stockpiling should take place within a watercourse or the calculated buffers. • Ensure that erosion management and sediment controls are strictly implemented from the beginning of site clearing activities. • All areas should be re-sloped and top-soiled where necessary and reseeded with indigenous grasses to stabilise the loose material. • All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds. • Erosion and sedimentation into channels must be minimised through the effective stabilisation and the re-vegetation of any disturbed stream banks. • As far as possible the existing road network should be utilised, minimising the need to develop new access routes resulting in an increased impact on the local environment. • Erosion control measures, such as berms, must be implemented to manage runoff from roads to prevent erosion and pollution. • Silt screens should be used where necessary. • Rehabilitation of disturbed areas as a result of construction must be implemented immediately upon completion of construction. • Rehabilitation must ensure that riparian structure and function are reinstated in such a way as to ensure the ongoing functionality of the larger riparian systems at pre-mining levels. • All rehabilitation activities should occur in the dry season.
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		<ul style="list-style-type: none"> • The duration of impacts on the riverine and drainage line systems should be minimised as far as possible by ensuring that the duration of time in which flow alteration and sedimentation will take place is minimised; • Maintain flood capacity, particularly in areas with significant flood hazards.
<p>Alteration of water quality</p>	<p><u>Construction:</u></p> <ul style="list-style-type: none"> • Runoff from road surfaces • Discharge of sewage • Discharge of solvents, chemicals and hydrocarbons <p><u>Operational:</u></p> <ul style="list-style-type: none"> • Maintenance of vehicles and machinery • Runoff from road surfaces • Discharge of sewage • Discharge of solvents, chemicals and hydrocarbons • Excavation from the watercourses and the release of nutrients and pollutants from disturbed soils • Removal of substrate within drainage lines and streams <p><u>Decommissioning:</u></p> <ul style="list-style-type: none"> • Damage to vegetated areas • Ineffective rehabilitation measures • Vehicles driving in and through watercourses 	<ul style="list-style-type: none"> • All vehicles must be regularly inspected for leaks. • Re-fuelling must take place on a sealed surface area to prevent hydrocarbon pollution. • All spills should be cleaned up immediately and disposed of. • Spill kits should be readily available and easily accessible throughout the site. • All chemicals must be stored safely on site, outside the buffer areas and surrounded by bunds. Chemical storage containers must be regularly inspected for early leak detection. • Littering must be prevented by effective site management and the provision of bins. • Provision of adequate sanitation facilities located outside of the delineated buffer zones. • An emergency spill procedure should be developed and implemented. • No stockpiling should take place within a watercourse. • All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds. • Stockpiles must be located away from river channels and drainage lines.

		<ul style="list-style-type: none"> • Erosion and sedimentation into channels must be minimised through the effective stabilisation and the re-vegetation of any disturbed riverbanks.
<p>Loss of terrestrial habitat</p>	<p><u>Construction:</u></p> <ul style="list-style-type: none"> • Clearing of vegetation – vegetation loss <p><u>Operational:</u></p> <ul style="list-style-type: none"> • Removal of substrate within watercourses • Clearing of vegetation during prospecting operations <p><u>Decommissioning:</u></p> <ul style="list-style-type: none"> • Damage to vegetated areas • Ineffective rehabilitation measures • Vehicles driving in and through watercourses 	<ul style="list-style-type: none"> • Areas that are stripped during construction and operation should be re-vegetated with indigenous vegetation. • It is recommended that areas to be developed be specifically demarcated so that during the construction phase, only the demarcated areas be impacted upon (including fencing off the defined project area) and preventing movement of workers into natural areas. • The duration of the prospecting should be minimized to as short term as possible, in order to reduce the period of disturbance on fauna and flora. • Areas of indigenous vegetation should under no circumstances be fragmented or disturbed for used as an area for dumping of waste. • As far as possible the existing road network should be utilised, minimising the need to develop new access routes resulting in an increased impact on the local environment. • All staff and visitors to the site must undergo an induction process and must be made aware of the sensitive nature of the environment and floral species which occur there. • The area must be re-vegetated with plant and grass species which are endemic to the exact vegetation types. • Rehabilitation measures that are implemented must be continually monitored for a minimum period of four years to ensure that proper succession has occurred and that there is no erosion occurring. • An alien invasive vegetation management plan should be developed and implemented.

		<ul style="list-style-type: none"> • Alien and invasive vegetation control should take place throughout all phases to prevent loss of floral habitat.
<p>Loss of Aquatic Biota</p>	<p><u>Construction:</u></p> <ul style="list-style-type: none"> • Runoff from road surfaces • Sedimentation • Discharge of sewage • Discharge of solvents, chemicals and hydrocarbons <p><u>Operational:</u></p> <ul style="list-style-type: none"> • Maintenance of vehicles and machinery • Runoff from road surfaces • Discharge of sewage • Discharge of solvents, chemicals and hydrocarbons • Excavation from the watercourses and the release of nutrients and pollutants from disturbed soils • Removal of substrate within drainage lines and streams • Sedimentation 	<ul style="list-style-type: none"> • Bi-annual biomonitoring of aquatic macro-invertebrates and diatoms within the riverine systems is essential. • Refer to Mitigation Measures regarding water quality and sedimentation as listed above.
<p>Loss of Terrestrial Fauna</p>	<p><u>Construction and Operational:</u></p> <ul style="list-style-type: none"> • Vegetation loss and disturbance – clearing of vegetation • Excessive noise disturbances • Illegal hunting • Habitat fragmentation destruction • Vehicles driving through natural vegetated areas 	<ul style="list-style-type: none"> • Site clearing to take place in a phased manner (where possible) to allow for any faunal species present to move away from the study site to the surrounding open space areas. • Prior and during vegetation clearance any larger fauna species noted should be given the opportunity to move away from the construction machinery. • Fauna species such as frogs and reptiles that have not moved away should be carefully and safely removed to a

		<p>suitable location beyond the extent of the development footprint by a suitably qualified ECO trained in the handling and relocation of animals.</p> <ul style="list-style-type: none">• Fencing should be erected around the project area to prevent workers and members of the public from entering the surrounding environments. This fence should have small openings to allow wildlife to pass through.• Waste management must be a priority and all waste must be collected and stored adequately. It is recommended that all waste be removed from site on a weekly basis to prevent rodents and pests entering the site.• Should any sensitive or Red Data animal or bird species be encountered during the construction, operation and decommissioning activities, these should be relocated to natural areas in the vicinity. Any sensitive fauna that are inadvertently killed during earthmoving operations should be preserved as museum voucher specimens.• No hunting, trapping or killing of fauna are allowed.• Any lizards, snakes or monitors encountered should be allowed to escape to a suitable habitat away from disturbance.• General avoidance of snakes is the best policy if encountered. Snakes should not be intentionally harmed or killed and allowed free movement away from the area.• Trenches and deep excavations should not be left open for extended periods of time as fauna may fall in and become trapped in them. Trenches which are exposed should contain soil ramps allowing fauna to escape the trench.• Noise must be kept to an absolute minimum at night to minimise all possible disturbances to amphibian species and nocturnal mammals.
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<p>Loss of Terrestrial Flora</p>	<p><u>Construction and Operational:</u></p> <ul style="list-style-type: none"> • Vegetation clearance • Vehicles driving through natural vegetated areas • Habitat fragmentation and destruction 	<ul style="list-style-type: none"> • Areas that are stripped during construction and operation should be re-vegetated with indigenous vegetation as soon as possible. This will also reduce the likelihood of encroachment by alien invasive plant species. • Protected trees and plants shall not be removed or damaged without prior approval, permits or licenses from the relevant authority, this is especially applicable to the Protected Witgat (<i>Boscia albitrunca</i>), which were present on site.
<p>Introduction and spread of alien vegetation</p>	<p><u>Construction:</u></p> <ul style="list-style-type: none"> • Clearing of vegetation <p><u>Operational:</u></p> <ul style="list-style-type: none"> • Removal of substrate within watercourses • Clearing of vegetation during prospecting operations • Vehicles driving in and through watercourses <p><u>Decommissioning:</u></p> <ul style="list-style-type: none"> • Damage to vegetated areas • Ineffective rehabilitation measures • Vehicles driving in and through watercourses 	<ul style="list-style-type: none"> • Proliferation of alien and invasive species is expected within any disturbed areas particularly as there are some alien and invasive species present within the study site. These species should be eradicated and controlled to prevent further spread beyond. • An alien invasive vegetation management plan should be developed and implemented. • Alien and invasive vegetation control should take place throughout all phases to prevent loss of floral habitat. • Footprint areas should be kept as small as possible when removing alien plant species. • No vehicles should be allowed to drive through designated sensitive drainage lines and riparian areas during the eradication of alien and weed species. • All alien vegetation in the riparian zone should be removed upon completion of prospecting activities and reseeded with indigenous grasses as specified by a suitably qualified specialist (ecologist).

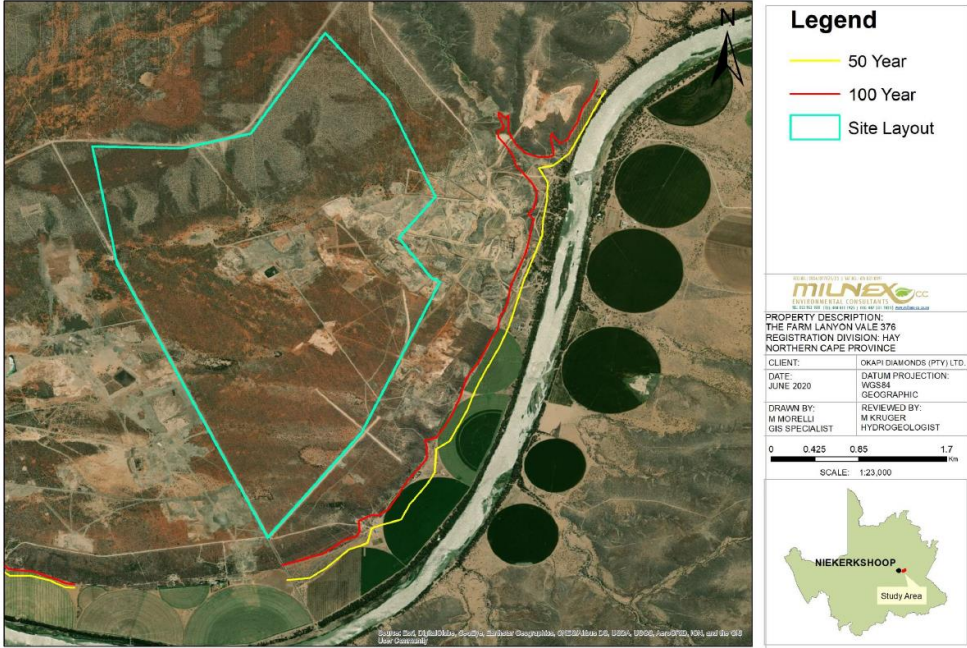
K. SUMMARY OF THE FINDINGS AND RECOMMENDATIONS OF ANY SPECIALIST REPORT

(where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report);-

<p>LIST OF STUDIES UNDERTAKEN</p>	<p>RECOMMENDATIONS OF SPECIALIST REPORTS</p>	<p>SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)</p>
<p>Ecological and Wetland Assessment Report</p>	<p>The following were concluded by the specialist:</p> <ul style="list-style-type: none"> • According to the National Threatened Ecosystem database (2011), no threatened ecosystems overlaps with the study site, however, the vulnerable classed Upper Gariiep Alluvial Vegetation Ecosystem was identified adjacent to the study site on the southern boundary. • According to the Northern Cape Biodiversity Sector Plan (2016), large sections of the study site overlap with CBA2. These areas are mostly covered in natural vegetation. The depressions wetland areas are classed as CBA1. • According to the National Freshwater Ecosystem Priority Areas Database (NFEP, 2011), six (6) Depressions are present on site. • Shepard`s Tree (<i>Boscia albitrunca</i>), a Protected Tree species of South Africa, was recorded on site, along with the protected Cannon Aloe (<i>Aloe claviflora</i>) and Bushman`s Hat (<i>Hoodia gordonii</i>). • Several Alien and Invasive Vegetation Species were recorded on site. • Two avifauna species potentially occurring on site, enjoys conservation status in the IUCN Red List, namely Ludwig`s Bustard (<i>Neotis ludwigii</i>) and Verreaux`s Eagle 	<p style="text-align: center;">X</p>

	<p>(Aquila verreauxii). Ludwig`s Bustard is also listed and protected under the Threatened and Protected Species list (ToPS, 2013) which is enforceable under the National Environmental Management: Biodiversity Act, 2004.</p> <ul style="list-style-type: none"> • Several species possibly occurring on site are protected under NEMBA. Although not listed in the species list. • All Amphibian species are of Least Concern (LC), except for the Giant Bullfrog (Pyxicephalus adspersus) which is of special conservation concern and protected under NEMBA. • Six (6) Depression wetlands were recorded on the study site. 	
<p>Baseline Hydrogeological Investigation</p>	<p>According to the Baseline Hydrogeological Investigation conducted by a qualified specialist <i>“Twenty-two (22) boreholes (LV-BH1 – BH22) were identified during field investigation conducted between the 26th and 27th May 2020. Groundwater was mainly used for stock watering purposes and domestic use. Irrigation water is mainly sourced from the Orange River. Groundwater samples were collected from LV-BH9, LV-BH12, LV-BH13 and LV-BH19. Based on elevated and non-compliant chloride, sulphate and nitrate groundwater abstracted from LVBH9, LV-BH13 and LV-BH19 is not suitable for human consumption without treatment.</i></p> <p><i>The Mining Work Programme (MWP) does not specify the depth of trenches and pits. It was assumed, based on mining on surrounding properties, that mining will be 5m deep with possible maximum depth of 8m. Due to groundwater levels ranging between 10.1 and 26.9mbgl, measured during the borehole survey, no groundwater inflow is expected. Process water will be sourced from the Orange River. Based on the laboratory analysis of the Orange River abstraction point no major constituents of concern were identified. The water from the Orange River is therefore suited for use during mining activities</i></p> <p>The following was recommended:</p>	

	<ul style="list-style-type: none"> • <i>It is recommended that stormwater management and water recycling be implemented to ensure water runoff are limited to downgradient water bodies or water users;</i> • <i>Based on the groundwater laboratory results, consumption of water from LV-BH9, LVBH13 and LV-BH19 is not suitable for human consumption without treatment;</i> • <i>Given the low likelihood for the tailings material to impact on the groundwater, it is recommended that motivation is provided for a Type 4 Classification;</i> • <i>Groundwater Monitoring should be undertaken in accordance with SANS and DWS requirements in line with the recommended schedule. LV-BH12 and BH13 are recommended to be monitored; and</i> • <i>An annual compliance report should be compiled and submitted to the authorities for evaluation and comment. The monitoring network should be updated annually, and this report should be submitted annually.</i> 	
<p>Phase 1 Heritage Impact Assessment</p> <p>Conducted by J.A. van Schalkwyk</p>	<p>Findings:</p> <p>According to the Phase 1 Heritage Impact Assessment conducted by Mr. J.A. van Schalkwyk, the following were findings and the recommendations on the application area</p> <p><u>Identified sites</u></p> <p>During the physical survey, no sites, features or objects of cultural significance were identified.</p> <ul style="list-style-type: none"> • Chance finds: Stone Age artefacts, mostly dating to the Middle Stone Age occur in significant numbers all in parts of the study area. In some areas, on the hills closer to the river, the density of artefacts exceeds more than 3/2m², diminishing to 1/10m² in the more sandy regions. These are mostly made from banded iron stone and iron rich chert. Cores, flakes and tools are found. The tools are very rough and informal and only a few that can be described as typical were identified. As it is surface material and has already been disturbed by diamond prospecting activities, it is viewed to have low significance – Grade 4-C. 	<p>X</p>

	<ul style="list-style-type: none"> 7.3.1: Old farmstead consisting of a house and some dilapidated outbuildings. The houses consist of two gable-roofed structures that were joined end-to-end. A small porch was added to one section. The house was built with concrete blocks and has a corrugated iron roof. It is evaluated to have high significance – Grade 4-A. 	
<p>Palaeontological Desktop Assessment</p>	<p>The following are the findings of the Palaeontological Desktop Assessment, <i>It is therefore considered that the proposed mining development is deemed appropriate and feasible and will not lead to detrimental impacts on the palaeontological resources of the area. Thus, the construction and operation of the mine may be authorised as the development footprint is not considered sensitive in terms of palaeontological resources.</i></p>	
<p>Floodline Assessment Report</p>	<p>According to this study, part of the 1:50 and 1:100 flood peaks extend across the farm boundaries adjacent to the river as seen on figure below</p>  <p>The figure is an aerial photograph of a farm area with a river on the right. A cyan line outlines the 'Site Layout'. Two floodlines are shown: a yellow line for the '50 Year' flood and a red line for the '100 Year' flood. The 100-year floodline extends further inland than the 50-year floodline. A legend in the top right corner identifies these lines. Below the legend is a scale bar from 0 to 1.7 km and an inset map of the Northern Cape province with a red dot indicating the 'Study Area' near NIEKERKSHOOP. Metadata text at the bottom of the map includes the Milnex CC logo, property description (THE FARM LANYON VALE 376), registration division (HAY), client (OKAPI DIAMONDS (PTY) LTD), date (JUNE 2020), datum projection (WGS84 GEOGRAPHIC), and drawing/reviewing specialists (M MORELLI and M KRUGER).</p>	

	<p><i>It is recommended that the placement of infrastructure should adhere to the GN704 of the South African National Water Act (36 of 1998) and not be located within the 1:100- year Return Period flood line. This is essential for the safety of human life as well as for the protection of infrastructure from flood inundation and destruction.</i></p>	
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L. AN ENVIRONMENTAL IMPACT STATEMENT WHICH CONTAINS—

(i) a summary of the key findings of the environmental impact assessment:

This section provides a summary of the assessment and conclusions drawn from the proposed prospecting area. In doing so, it draws on the information gathered as part of the environmental impact assessment process and the knowledge gained by the environmental consultant during the course of the process and presents an informed opinion on the environmental impacts associated with the proposed project. The following conclusions can be drawn for the proposed prospecting activity:

- Potential impacts on biodiversity: According to the Ecological and Wetland Assessment Report compiled by Mpho Ramalivhana:

During site assessment, three vegetation unit were noticed on site and these are *Senegalia mellifera* Shrubland, and mined/disturbed area. The *Senegalia mellifera* Shrubland was found to having conservation status of medium to high due to the presence of protected plant species (*hoordia gordonii* and *Boscia albitrunca*) and also being able to provide habitat for the identified faunal species. Therefore, when choosing areas to be prospected, the applicant should take into account to avoid these species. A permit application regarding protected flora as well as the harvesting of indigenous vegetation need to be lodged with the Northern Cape Department of Environment and Nature Conservation prior to any clearance of vegetation

It is recommended that the management measures stipulated in this report be included into the proposed projects official EMP and that these are assessed for efficacy during all phases of the project and adapted accordingly to ensure minimal disturbance of the study areas' ecology.

Other specific conclusions and recommendations are listed below.

- All licences must be obtained prior to mining;
- All ablution facilities must be placed far away from the water bodies including their buffer zone;
- Where possible, construction along water bodies should proceed during the dry winter months (low or zero flow periods) in order to limit the potential for erosion linked to high runoff rates;
- An alien and invasive management plan must be adhered to at all times; and
- Ensure active re-vegetation of cleared/mined areas as being important in-order to limit erosion potential.
- Where possible, mining along water bodies should proceed during the dry winter months (low or zero flow periods) in order to limit the potential for erosion linked to high runoff rates, as to prevent sedimentation on the Orange River

it is clear that the destruction of the natural habitat within the mining area is inevitable. The significance of the impacts will be affected by the success of the mitigation measures implemented and the rehabilitation programme for the mining area.

➤ Potential impact on heritage resources:

According to the Phase 1 HIA the following were identified:

During the physical survey, no sites, features or objects of cultural significance were identified.

- Chance finds: Stone Age artefacts, mostly dating to the Middle Stone Age occur in significant numbers all in parts of the study area. In some areas, on the hills closer to the river, the density of artefacts exceeds more than 3/2m², diminishing to 1/10m² in the more sandy regions. These are mostly made from banded iron stone and iron rich chert. Cores, flakes and tools are found. The tools are very rough and informal and only a few that can be described as typical were identified. As it is surface material and has already been disturbed by diamond prospecting activities, it is viewed to have low significance – Grade 4-C.
- 7.3.1: Old farmstead consisting of a house and some dilapidated outbuildings. The houses consist of two gable-roofed structures that were joined end-to-end. A small porch was added to one section. The house was built with concrete blocks and has a corrugated iron roof. It is evaluated to have high significance – Grade 4-A.

Reasoned opinion as to whether the proposed activity should be authorised:

- From a heritage point of view, it is recommended that the proposed development be allowed to continue on acceptance of the conditions proposed below.

Conditions for inclusion in the environmental authorisation:

- If the identified structure is to be demolished, it must be fully documented – mapped, photographed and described – beforehand.
- The Palaeontological Sensitivity Map (SAHRIS) indicate that the study area has moderate sensitivity of fossil remains to be found and therefore a desktop palaeontological study of the site is required.
- Should archaeological sites or graves be exposed in other areas during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.

➤ Potential impact on Palaeontological resources: Should fossils be exposed during construction work, it must immediately be reported to a palaeontologist so that an investigation and evaluation of the finds can be made.

➤ Potential impacts on land use: According to the Ecological and Wetland Assessment Report compiled by Mpho Ramalivhana, the dominating land-use on site is mining (buildings, plant infrastructure, existing ramps (for mining), stockpiles, offices, various mining equipment, open trenches, existing roads), also reservoirs, worker accommodation, landing strip, tracks and hiking trails.

- Potential social impacts: The presence of construction workers poses a potential risk to family structures and social networks. While the presence of construction workers does not in itself constitute a social impact, the manner in which construction workers conduct themselves can impact on local communities. The most significant negative impact is associated with the disruption of existing family structures and social networks.
- Potential negative impacts: (noise, dust, soil degradation, storm water, traffic, health and safety) associated with the operation of the facility are expected to be of low-high impact, of medium terms and site specific. These can be mitigated or negated through the implementation of practical and appropriate mitigation measures.
- Positive impacts: The prospecting of Diamonds Alluvial (DA) and Diamonds General (D), without bulk sampling, may result in socio-economic benefit to the area.

All possible negative impacts and risks that have been identified in this report can be effectively mitigated and managed by implementing the migratory measures as set out in the Environmental Management Programme (EMPr) attached in Part B.

- (i) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred [site] development footprint on the approved site as contemplated in the accepted scoping report indicating any areas that should be avoided, including buffers; and**

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

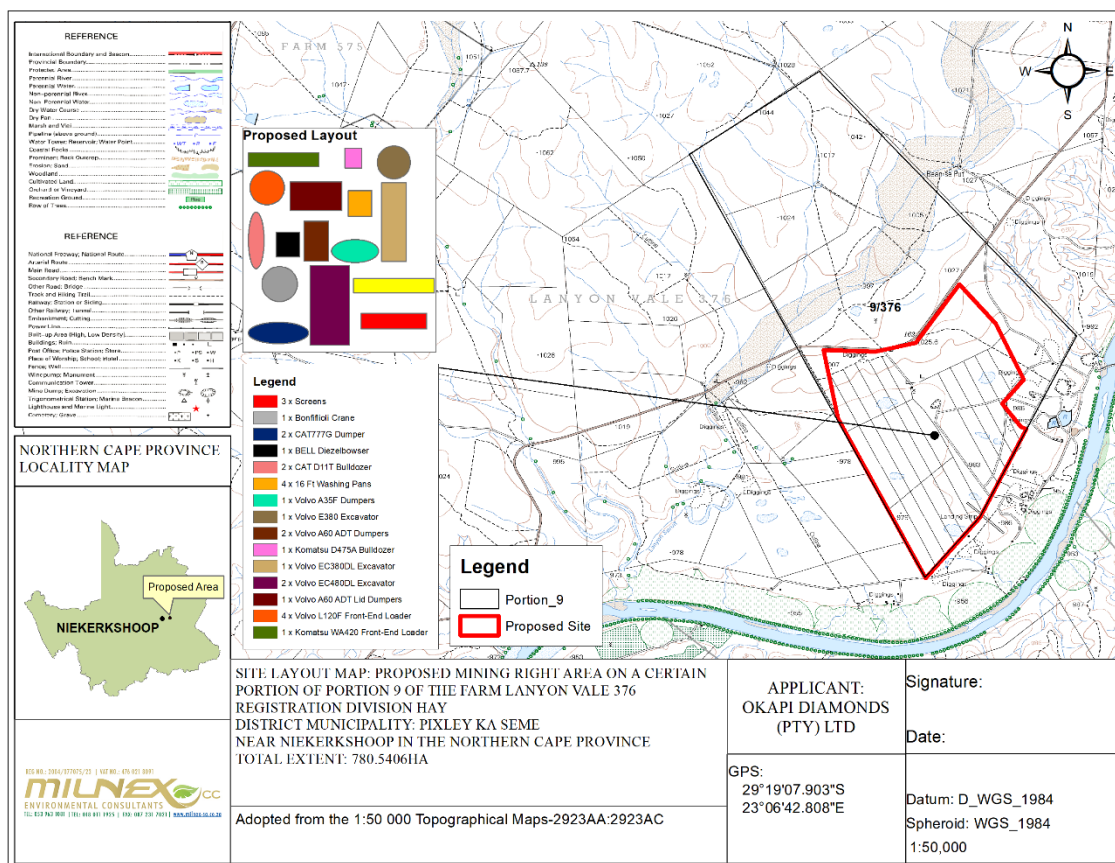


Figure 16: Site Plan

Refer to Site layout Map attached in **Appendix 4**.

(ii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;

There are regional socio economic benefits due to the alluvial diamonds being prospected in the Northern Cape Province and greater knowledge is gained on the mineralogy of South Africa. All possible negative impacts and risks that have been identified in this report can be effectively mitigated and managed by implementing the mitigation measures as set out in the Environmental Management Programme (EMPr) attached in Part B. Significant adverse social environmental impacts are anticipated.

M. PROPOSED IMPACT MANAGEMENT OBJECTIVES AND THE IMPACT MANAGEMENT OUTCOMES FOR INCLUSION IN THE EMPR

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

Management objectives include:

- Ensure that the prospecting activity does not cause pollution to the environment or harm to persons.

- Minimise production of waste.
- All prospecting activities must be conducted in a manner that minimises noise impact, litter, environmental degradation and health hazards i.e. injuries.
- The mine must be kept neat and tidy during waste handling to prevent unsightliness and accidents.

Expected outcomes include:

- Minimum impacts on the environment as a result of alluvial diamond prospecting.
- Compliance with legislative requirements.
- Mine is neat and tidy and well managed.

N. FINAL PROPOSED ALTERNATIVES.

(Provide an explanation for the final layout of the infrastructure and activities on the overall site as shown on the final site map together with the reasons why they are the final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment)

This alternative asks the question, if there is not, from an environmental perspective, a more suitable location for the proposed activity. The remaining extent of portion 9 (Wouter) of the farm Lanyon Vale 376 are preferred due to the sites underlying alluvial diamond bearing gravel, therefore there will be no other alternative (i.e. to facilitate the movement of machinery, equipment, infrastructure).

O. ASPECTS FOR INCLUSION AS CONDITIONS OF AUTHORISATION.

(Any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation;)

- The operational activities and relevant rehabilitation of disturbed areas should be monitored against the improved EMPr and all other relevant environmental legislation.
- A copy of the EMP should be made available onsite at all times.
- Implementation of the proposed mitigation measures set out in the EMPr.

P. DESCRIPTION OF ANY ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE.

(Which relate to the assessment and mitigation measures proposed)

The uncertainties in results are mostly related to the availability of information, time available to gather the relevant information as well as the sometimes subjective nature of the assessment methodology. In terms of addressing the key issues the EAP is satisfied that there are no major gaps in knowledge and that the report provide sufficient information to conduct the significance rating and provide the environmental authority with sufficient information to make an informed decision.

Q. REASONED OPINION AS TO WHETHER THE PROPOSED 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;)

Reasons why the activity should be authorized or not.

Based on the outcomes of the prospecting activities, the possibility to encounter further Diamond Reserves were identified.

The proposed Mining area is targeted as, historically, several Diamonds (Alluvial) and Diamonds (General) occurrences are known in the area, and a number of these have been exploited in the past. There are also various alluvial diamond operations within the vicinity of the exploration area.

The option of not approving the activities will result in a significant loss of valuable information regarding the mineral status (in terms of diamonds) present on these properties. Also, the investment made in the current prospecting right will also go to waste.

Conditions that must be included in the authorisation

- The operational activities and relevant rehabilitation of disturbed areas should be monitored against the improved EMPr and all other relevant environmental legislation.
- A copy of the EMP should be made available onsite at all times.
- Implementation of the proposed mitigation measures set out in the EMPr.

The EMPr should be binding on all managers and contractors operating/utilizing the site.

The applicant shall familiarize himself with the content of this document and the attached specialist studies and the requirements/conditions thereof.

R. PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED.

For a minimum of 30 years.

S. AN UNDERTAKING UNDER OATH OR AFFIRMATION BY THE EAP IN RELATION TO:

Confirm that the undertaking required to meet the requirements of this section is provided at the end of the EMPr and is applicable to both the Basic assessment report and the Environmental Management Programme report.

The undertaking required to meet the requirements of this section is provided at the end of the EMPr and is applicable to both the Environmental Impact Assessment report and the Environmental Management Programme report.

I, Percy Schaole Pr. Sci. Nat. EAPASA (2019/959) herewith confirms

- A.** the correctness of the information provided in the reports
- B.** the inclusion of comments and inputs from stakeholders and I&APs ;

- C. the inclusion of inputs and recommendations from the specialist reports where relevant; and
- D. the acceptability of the project in relation to the finding of the assessment and level of mitigation proposed;

Rehoolle.

Signature of the environmental assessment practitioner:

Milnex CC – Environmental Consultants

Name of company:

09 – 04 - 2020

Date:

T. FINANCIAL PROVISION

(where applicable, details of any financial provision[s] for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;)

CALCULATION OF THE QUANTUM

Applicant: **Okapi Diamonds (Pty) Ltd**
 Evaluators: **Milnex CC Environmental Consultants**

Ref No.: **NC30/5/1/2/2/10171MR**
 Date: **17-04-2020**

No.	Description	Unit	A	B	C	D	E=A*B*C*D
			Quantity	Master Rate	Multiplication factor	Weighting factor 1	Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	0	14,05	1	1	0
2 (A)	Demolition of steel buildings and structures	m2	214,5	195,76	1	1	41990,52
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	288,49	1	1	0
3	Rehabilitation of access roads	m2	7100,9	35,03	1	1	248744,527
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	340,01	1	1	0
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0	185,46	1	1	0
5	Demolition of housing and/or administration facilities	m2	0	391,53	1	1	0
6	Opencast rehabilitation including final voids and ramps	ha	3,36	205242,16	0,04	1	27584,5463
7	Sealing of shafts adits and inclines	m3	0	105,09	1	1	0
8 (A)	Rehabilitation of overburden and spoils	ha	0,346	136828,1	1	1	47342,5226
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0,2	170416,93	1	1	34083,386
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0	494971,55	1	1	0
9	Rehabilitation of subsided areas	ha	0	114572,93	1	1	0
10	General surface rehabilitation	ha	0	108390,94	1	1	0
11	River diversions	ha	0	108390,94	1	1	0
12	Fencing	m	436,4	123,64	1	1	53956,496
13	Water management	ha	0,1	41213,28	1	1	4121,328
14	2 to 3 years of maintenance and aftercare	ha	0	14424,65	1	1	0
15 (A)	Specialist study	Sum	0			1	0
15 (B)	Specialist study	Sum				1	0
Sub Total 1							457823,3259
1	Preliminary and General		54938,79911		weighting factor 2		54938,79911
					1		
2	Contingencies			45782,33259			45782,33259
Subtotal 2							558544,46
VAT (15%)							83781,67
Grand Total							642326

A. Explain how the aforesaid amount was derived.

The closure cost estimate provided above is aligned with the Guideline Document for the Evaluation of Quantum of Closure related Financial Provision Provided by a Mine, by the DMR (January, 2005). The amount was calculated by Milnex CC.

B. Confirm that this amount can be provided for from operating expenditure.

(Confirm that the amount, is anticipated to be an operating cost and is provided for as such in the Mining work programme, Financial and Technical Competence Report or Prospecting Work Programme as the case may be).

Financial Guarantee

The financial guarantee for the rehabilitation for land disturbed by **Okapi Diamonds (Pty) Ltd** will be submitted

Rehabilitation Fund

Okapi Diamonds (Pty) Ltd will also make provision for rehabilitation during closure by establishing a rehabilitation trust.

U. DEVIATIONS FROM THE APPROVED SCOPING REPORT AND PLAN OF STUDY.

(i) Any deviation from the methodology used in determining the significance of potential environmental impacts and risks; and

None of the methodologies approved for the scoping report were deviated

(ii) Motivation for the deviation.

Not applicable

V. ANY SPECIFIC INFORMATION THAT MAY BE REQUIRED BY THE COMPETENT AUTHORITY; AND

W. COMPLIANCE WITH THE PROVISIONS OF SECTIONS 24(4)(A) AND (B) OF THE ACT

Read with Section 24 (3) (A) and (7) of the National Environmental Management Act (Act 107 of 1998). The EIA Report must include the:

- ii. Impact on the socio-economic conditions of any directly affected person.** (Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any directly affected person including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim, attach the investigation report as

Appendix 2.19.1 and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6.and 2.12.herein).

The diamonds alluvial prospecting will not impact directly on any socio-economic aspects. Indirect socio-economic benefits are expected to be associated with the creation of employment.

- iii. Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act.** (Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) with the exception of the national estate contemplated in section 3(2)(i)(vi) and (vii) of that Act, attach the investigation report as **Appendix 2.19.2** and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6.and 2.12.herein).

The diamonds alluvial prospecting will not impact on any heritage estate referred to in section 3(2) of the National Heritage Resources Act. In terms of the National Heritage Resource Act no 25 of 1999. Heritage resources including archaeological and paleontological sites over 100 years old, graves older than 60 years, structure older than 60 years are protected. They may not be disturbed without a permit from the relevant heritage resource Authority, which means that before such sites are disturbed by development it is incumbent on the developer to ensure that a heritage impact assessment is done and the Provincial Heritage Resources Authority and SAHRA will be contacted immediately and work will stop.

Accordinging the Phase 1 HIA the following sites were identified:

During the physical survey, no sites, features or objects of cultural significance were identified.

- Chance finds: Stone Age artefacts, mostly dating to the Middle Stone Age occur in significant numbers all in parts of the study area. In some areas, on the hills closer to the river, the density of artefacts exceeds more than 3/2m², diminishing to 1/10m² in the more sandy regions. These are mostly made from banded iron stone and iron rich chert. Cores, flakes and tools are found. The tools are very rough and informal and only a few that can be described as typical were identified. As it is surface material and has already been disturbed by diamond prospecting activities, it is viewed to have low significance – Grade 4-C.
- 7.3.1: Old farmstead consisting of a house and some dilapidated outbuildings. The houses consist of two gable-roofed structures that were joined end-to-end. A small porch was added to one section. The house was built with concrete blocks and has a corrugated iron roof. It is evaluated to have high significance – Grade 4-A.

Reasoned opinion as to whether the proposed activity should be authorised:

- From a heritage point of view, it is recommended that the proposed development be allowed to continue on acceptance of the conditions proposed below.

Conditions for inclusion in the environmental authorisation:

- If the identified structure is to be demolished, it must be fully documented – mapped, photographed and described – beforehand.
- The Palaeontological Sensitivity Map (SAHRIS) indicate that the study area has moderate sensitivity of fossil remains to be found and therefore a desktop palaeontological study of the site is required.

Should archaeological sites or graves be exposed in other areas during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.

Other matters required in terms of sections 24(4)(a) and (b) of the Act.

(the EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by section 24(4)(b)(i) of the Act and motivation if no reasonable or feasible alternatives, as contemplated in sub-regulation 22(2)(h), exist. The EAP must attach such motivation as **Appendix 4**).

The remaining extent of portion 9 (Wouter) of the farm Lanyon Vale 376; Registration Division: Hay; Northern Cape Province are preferred due to the sites underlying geology and the shallowness of the diamond bearing gravel to the surface as well as site access (i.e. to facilitate the movement of machinery, equipment, infrastructure and people). The specific site has been chosen for its mineral resources thus making an alternative site selection null and void.

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

An EMPr must comply with section 24N of the Act and include—

A. DETAILS OF—

- (i) the EAP who prepared the EMPr; and
- (ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae;

Name of Practitioner	Qualifications	Contact details
Ms. Percy Schaole Pr. Sci. Nat. EAPASA (2019/959)	Master’s Degree in Environmental Science Master’s Degree in Environmental Management (refer to Appendix 1)	Tel No.: (018) 011 1925 Fax No.: (053) 963 2009 e-mail address: percy@milnex-sa.co.za
Lizanne Esterhuizen	Honours Degree in Environmental Science (refer to Appendix 1)	Tel No.: (018) 011 1925 Fax No.: (053) 963 2009 e-mail address: lizanne@milnex-sa.co.za

It is hereby confirmed that the requirements for the provision of the details and expertise of the EAP are contained in Part A, section 1(a) as required. The Curriculum Vitae for the responsible EAP is contained in **Appendix 1 and 2**.

B. DESCRIPTION OF THE ASPECTS OF THE ACTIVITY

(a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;)

It is hereby confirmed that the requirements to describe the aspects of the activity that are required by the EMP is already included in Part A, section 1(h).

C. COMPOSITE MAP

(a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that [any areas that] should be avoided, including buffers;)

Refer to Locality Map, attached as in **Appendix 4**.

D. A DESCRIPTION OF THE IMPACT MANAGEMENT [OBJECTIVES] OUTCOMES, INCLUDING MANAGEMENT STATEMENTS, IDENTIFYING THE IMPACTS AND RISKS THAT NEED TO BE AVOIDED, MANAGED AND MITIGATED AS IDENTIFIED THROUGH THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS FOR ALL PHASES OF THE DEVELOPMENT INCLUDING—

- i) **Determination of closure objectives.** (ensure that the closure objectives are informed by the type of environment described in 2.4 herein)

Closure objectives for the alluvial diamond mine will aim to ensure that the residual post-closure impacts be minimized and be acceptable to relevant parties. To achieve these closure objectives, the following will be implemented:

- All prospecting related infrastructure, foundations and concrete areas will be decommissioned, removed from the site and appropriately disposed of. Reclaimable structures such as metal, electrical installations or equipment will be sold for re-use or as scrap.
- All disturbed areas within the site not already vegetated will be re-vegetated with appropriate indigenous, ecologically adapted species appropriate to the area and the final land use as soon as possible after operation ceases. Progress of vegetation growth/establishment, stability and drainage/erosion will be monitored and, in the event of adverse trends being identified, corrective measures will be implemented.
- Vegetation monitoring will consider, inter alia, the establishment of perennial ground cover and infestation by alien invasive plant species. The encroachment of indigenous vegetation into the area will be used as an indication of a stable, self-sustaining vegetation cover with little risk of retrogressing to a situation where are and water pollution may occur.
- Final landforms must be resilient to perturbation and also be self-sustaining to obviate/limit further/ongoing interventions and maintenance by **Okapi Diamonds (Pty) Ltd**. The remaining impacts be of an acceptable nature with minimal deterioration over time.
- The final outcome of the mine site rehabilitation would be productive systems, where required sustaining either cattle or wildlife.
- Environmental and human quality of life, including health and safety requirements in general, would not be compromised; and
- Closure is achieved in an efficient and cost-effective manner as possible and with minimum socioeconomic changes.

E. A DESCRIPTION AND IDENTIFICATION OF IMPACT MANAGEMENT OUTCOMES REQUIRED FOR THE ASPECTS CONTEMPLATED IN PARAGRAPH (D);]

The above goal is underpinned by more specific objectives listed below.

1. Upfront planning/development

To provide overall guidance and direction to closure planning and/or the implementation of progressive closure measures over the remaining over the prospecting life.

2. Physical stability

To ensure that surface infrastructure and prospecting residue and/or disturbances that are present at processing plant decommissioning will be removed and/or stabilised in a manner that these will not compromise post-closure land use and be sustainable long-term landforms.

- Closure, removal and disposal of all surface infrastructure that has no beneficial post-closure use.
- Shaping and vegetating the remaining earth embankments, trenches, etc. to stabilise slopes and integrate with surrounding topography.

3. Environmental quality

To ensure that local environmental quality is not adversely affected by possible physical effects arising from prospecting operations and the prospecting site after closure. This will be achieved by:

- Avoiding and/or limiting the following during prospecting operations which could result in adverse effects that could not be readily addressed and/or mitigated at mine closure.
 - Dust fall-out areas surrounding the prospecting site.
 - Wash-off and/or mobilisation of chemically contaminated soils and sediments from the prospecting site that could have long term adverse effects on local aquatic health and/or other water uses.
 - Possible shallow groundwater contamination adversely affecting the quality of the local water resource and its beneficial use.
- Limiting the potential for dust generation on the rehabilitated prospecting site that could cause nuisance and/or health effects to surrounding landowners;
- Limiting the possible adverse water quality and quantity effects arising from the rehabilitated prospecting site to ensure that long term beneficial use of local resources is not compromised;
- Conducting soil clean-up/remediation to ensure that the planned land use could be implemented and maintained;

4. Health and safety

To limit the possible health and safety treats due to terrain hazards to humans and animals utilizing the rehabilitated prospecting site after closure by:

- Demonstrating through upfront soil testing that any resultant inorganic and organic pollution present on the site is acceptable;
- Removal of potential contaminants such as hydrocarbons and chemicals off site;
- Shaping of embankments and trenches to safe slopes and reintegrating of these into surrounding topography.
- Ensuring that the environmental quality as reflected above is achieved.

5. Land capability / land use

To ensure that the required land capability to achieve and support the planned land use can be achieved over the prospecting site by:

- Clean-up and reclamation of contaminated soil areas in order not to compromise the above land use planning earmarked for implementation;
- To ensure that the overall rehabilitated prospecting site is free draining
- Transferring prospecting related surface infrastructure to third parties for beneficial use after closure.

6. Aesthetic quality

To ensure that the rehabilitated prospecting site will display, at a minimum, an acceptable aesthetic appearance that would not compromise the planned land use by leaving behind:

- A prospecting area that is properly cleared-up with no fugitive/scattered waste piles

- Rehabilitated prospecting area that is free draining and disturbed areas that are suitably vegetated.
- Rehabilitated prospecting residues that are suitably landscaped, blending with the surrounding environment as far as possible.
- Shaped and rehabilitated terrace and hard stand areas, roughly emulating the local natural surface topography.

7. Landscape viability

To create a landscape that is self-sustaining and over time will evolve/converge to the desired ecosystem structure, function and composition by:

- Conducting surface profiling, with associated material movement optimisation, to obtain a landscape resembling the natural landscapes to support the succession trajectory towards a climax ecological system.
- Establishing woody patches and create “rough and loose” areas for pioneer specie establishment around the respective patches.
- Establishing pioneer species as follows:
 - Collected and prepared seeds for broad casting;
 - Seedlings grown on on-site nursery;
 - Cuttings collected from surrounding veld areas;
- Conducting rehabilitation monitoring and corrective action as required.

8. Biodiversity

To encourage, where appropriate, the re-establishment of native vegetation on the rehabilitated mine site such the terrestrial biodiversity is largely re-instated over time, by:

- Stabilising disturbed areas to prevent erosion in the short- to medium term until a suitable vegetation cover has established; and
- Establishing viable self-sustaining vegetation communities of local fauna, as far as possible.

F. A DESCRIPTION OF PROPOSED IMPACT MANAGEMENT ACTIONS, IDENTIFYING THE MANNER IN WHICH THE IMPACT MANAGEMENT [OBJECTIVES AND] OUTCOMES CONTEMPLATED IN PARAGRAPH (D) [AND (E)] WILL BE ACHIEVED, AND MUST, WHERE APPLICABLE, INCLUDE ACTIONS TO

—

Provide a rehabilitation plan that describes and shows the scale and aerial extent of the main mining activities, including the anticipated mining area at the time of closure.

The Rehabilitation & Closure Plan is attached as **Appendix 8**.

Calculate and state the quantum of the financial provision required to manage and rehabilitate the environment in accordance with the applicable guideline.

CALCULATION OF THE QUANTUM							
Applicant: Okapi Diamonds (Pty) Ltd Evaluators: Milnex CC Environmental Consultants			Ref No.: NC30/5/1/2/2/10171MR Date: 17-04-2020				
No.	Description	Unit	A	B	C	D	E=A*B*C*D
			Quantity	Master Rate	Multiplication factor	Weighting factor 1	Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	0	14,05	1	1	0
2 (A)	Demolition of steel buildings and structures	m2	214,5	195,76	1	1	41990,52
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	288,49	1	1	0
3	Rehabilitation of access roads	m2	7100,9	35,03	1	1	248744,527
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	340,01	1	1	0
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0	185,46	1	1	0
5	Demolition of housing and/or administration facilities	m2	0	391,53	1	1	0
6	Opencast rehabilitation including final voids and ramps	ha	3,36	205242,16	0,04	1	27584,5463
7	Sealing of shafts adits and inclines	m3	0	105,09	1	1	0
8 (A)	Rehabilitation of overburden and spoils	ha	0,346	136828,1	1	1	47342,5226
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0,2	170416,93	1	1	34083,386
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0	494971,55	1	1	0
9	Rehabilitation of subsided areas	ha	0	114572,93	1	1	0
10	General surface rehabilitation	ha	0	108390,94	1	1	0
11	River diversions	ha	0	108390,94	1	1	0
12	Fencing	m	436,4	123,64	1	1	53956,496
13	Water management	ha	0,1	41213,28	1	1	4121,328
14	2 to 3 years of maintenance and aftercare	ha	0	14424,65	1	1	0
15 (A)	Specialist study	Sum	0			1	0
15 (B)	Specialist study	Sum				1	0
						Sub Total 1	457823,3259
1	Preliminary and General		54938,79911		weighting factor 2 1		54938,79911
2	Contingencies			45782,33259			45782,33259
						Subtotal 2	558544,46
						VAT (15%)	83781,67
						Grand Total	642326

a. **Confirm that the financial provision will be provided as determined.**

Financial Guarantee

The financial guarantee for the rehabilitation for land disturbed **Okapi Diamonds (Pty) Ltd** will be submitted

Rehabilitation Fund

Okapi Diamonds (Pty) Ltd will also make provision for rehabilitation during closure by establishing a rehabilitation trust.

IMPACTS TO BE MITIGATED IN THEIR RESPECTIVE PHASES

Measures to rehabilitate the environment affected by the undertaking of any listed activity

ACTIVITIES	PHASE	SIZE AND SCALE of disturbance	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
<p>(E.g. For prospecting - drill site, site camp, ablation facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc</p> <p>E.g. For mining,- excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablation, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)</p>	<p>(of operation in which activity will take place.</p> <p>State; Planning and design, Pre-Construction, Construction, Operational, Rehabilitation, Closure, Post closure).</p>	<p>(volumes, tonnages and hectares or m²)</p>	<p>(describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)</p>	<p>(A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)</p>	<p>Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required.</p> <p>With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regard to Rehabilitation, therefore state either:-.</p> <p>Upon cessation of the individual activity</p> <p>Or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.</p>
<p>Clearance of vegetation</p>	<p>Pitting and trenching phase-(construction and operation phase)</p>	<p>2180.2646 Ha Total hectares to be disturbed. Concurrent backfilling will take place as far as</p>	<p>If the development is approved, contractors must ensure that no mammalian species are disturbed, trapped, hunted or killed. If the development is approved, every effort should be made to confine the footprint to the blocks allocated for the</p>	<p>Compliance with Duty of Care as detailed within NEMA</p>	<p>Duration of operations on the mining activities.</p>

		<p>possible in order to rehabilitate.</p>	<p>development and have the least possible edge effects on the surrounding area. The EMPr also provides numerous mitigation measures – refer to section (f) of the EMPr.</p> <p>The potential impacts associated with damage to and loss of farmland should be effectively mitigated. The aspects that should be covered include:</p> <ol style="list-style-type: none"> 1. The site should be fenced off prior to commencement of construction activities; 2. The footprint associated with the construction related activities (access roads, construction platforms, workshop etc.) should be confined to the fenced off area and minimised where possible; 3. An Environmental Control Officer (ECO) should be appointed to monitor the establishment phase of the construction phase; 4. All areas disturbed by construction related activities, such as access roads on the site, construction platforms, workshop area etc., should be rehabilitated at the end of the construction phase; 		
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| | | | <ol style="list-style-type: none"> 5. The implementation of a rehabilitation programme should be included in the terms of reference for the contractor/s appointed. Specifications for the rehabilitation are provided throughout the EMPr – section (f) of the EMPr. 6. The implementation of the Rehabilitation Programme should be monitored by the ECO. 7. Any activities that take place within 32 meters of a wetland or watercourse or the 1:100 year flood lines will require authorisation in terms of the relevant regulations of NEMA, however as far as possible infrastructure should be placed outside of wetlands and / or buffer lines. 8. No stockpiling should take place within a watercourse or the 32m buffer. 9. All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds 10. Erosion and sedimentation into channels must be minimised through the effective stabilisation (gabions and Reno | | |
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| | | | <p>mattresses) and the re-vegetation of any disturbed stream banks;</p> <p>11. Ensure that erosion management and sediment controls are strictly implemented from the beginning of site clearing activities, particularly as the soils in the study area are prone to erosion;</p> <p>12. All areas should be re-sloped and top-soiled where necessary and reseeded with indigenous grasses to stabilise the loose material;</p> <p>13. Edge effects such as erosion must be strictly monitored and managed;</p> <p>14. Sensitivity maps have been developed for the study area, indicating the drainage lines and riparian systems, and their relevant buffer zones. It is recommended that this sensitivity map be considered during all phases of the development and with special mentioning of the planning of infrastructure, in order to aid in the conservation of and minimise impact on the riparian and aquatic habitat and resources within the study area;</p> | | |
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| | | | <p>15.Rehabilitation must ensure that the wetland structure and function are reinstated in such a way as to ensure the ongoing functionality of the larger wetland systems at pre-mining levels.</p> <p>16.Any areas where bank failure is observed, due to the prospecting or mining impacts, should be immediately repaired;</p> <p>17.As far as possible the existing road network should be utilised, minimising the need to develop new access routes resulting in an increased impact on the local environment. Should temporary roads or access routes be necessary and unavoidable, proper planning must take place and the site sensitivity plan must be taken into consideration. If additional roads are required, then wherever feasible such roads should be constructed a distance from the more sensitive riparian areas and not directly adjacent thereto. If crossings are required they should cross the systems at right angles, as far as possible to minimise impacts in the receiving environment;</p> | | |
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| | | | <p>18.The duration of impacts on the riverine and drainage line systems should be minimised as far as possible by ensuring that the duration of time in which flow alteration and sedimentation will take place is minimised;</p> <p>19.Stabilisation of banks by employing one of the individual techniques below or a combination thereof, is essential, given the inherent susceptibility of the soils to erosion. Such measures include:</p> <p>20.Re-sloping of banks to a maximum of a 1:3 slope;</p> <p>21.Revegetation of re-profiled slopes;</p> <p>22.Temporary stabilisation of slopes using geotextiles; and</p> <p>23.Installation of gabions and reno-mattresses.</p> <p>24.To prevent the further erosion of soils, management measures may include berms, soil traps, hessian curtains and storm water diversion away from areas particularly susceptible to erosion;</p> <p>25.Install erosion berms during construction to prevent gully formation:</p> | | |
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| | | | <p>26. Berms every 50m should be installed where any disturbed soils have a slope of less than 2%,</p> <p>27. Berms every 25m where the track slopes between 2% and 10%,</p> <p>28. Berms every 20m where the track slopes between 10% and 15% and</p> <p>29. Berms every 10m where the track slope is greater than 15%;</p> <p>30. Sheet runoff from access roads should be slowed down by the strategic placement of berms and sandbags;</p> <p>31. All soils compacted as a result of construction activities falling outside of project areas should be ripped and profiled. Special attention should be paid to alien and invasive control within these areas. Alien and invasive vegetation control should take place throughout all construction and rehabilitation phases to prevent loss of floral habitat;</p> <p>32. As far as possible, all rehabilitation activities should occur in the low flow season, during the drier winter months.</p> <p>33. Trenches and deep excavations should not be</p> | | |
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left open for extended periods of time as fauna may fall in and become trapped in them. Trenches which are exposed should contain soil ramps allowing fauna to escape the trench.

Specialist (Mpho Ramalivhana)
mitigation measures:

- Supervision by an ecologist to ensure success of the rescue operation
- Place drilling holes away from any red listed and/or protected plant species
- Use already available farm roads to avoid trampling red listed plant species
- Due to the sensitivity of the areas it is advised that areas designated for vegetation clearing should be identified and visibly marked off and also approved as part of final drilling map
- Vegetation clearing areas should be kept to a minimum and restricted to the proposed drilling sites.
- Exposed areas should be rehabilitated with indigenous plants to the project area as

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| | | | <p>soon as construction is finished.</p> <ul style="list-style-type: none"> • Do not disturb nests, breeding sites or young ones. Do not attempt to kill or capture snakes unless directly threatening the safety of employees. • Dogs or other pets are not allowed to the worksite as they are threats to the natural wild animal • A low speed limit should be enforced on site to reduce wild animal-vehicle collisions • No animals should be intentionally killed or destroyed and poaching and hunting should not be permitted on the site. • Severe contractual fines must be imposed and immediate dismissal on any contract employee who is found attempting to snare or otherwise harms remaining faunal species. • Hunting weapons are prohibited on site. • Contract employees must be educated about the value of wild animals and the | | |
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			<p>importance of their conservation.</p> <ul style="list-style-type: none"> • The ECO must conduct regular site inspections of removing any snares or traps that have been erected. • Employees and contractors should be made aware of the presence of, and rules regarding, flora and fauna through suitable induction training and on-site signage. • Ensure that the colours used to paint the buildings including the roof are blending to the environment 		
Construction of roads	Pitting and trenching phase- (construction and operation phase)	+ - 500m	<p>34.Planning of access routes to the site for construction/mining purposes shall be done in conjunction with the Contractor and the Landowner. All agreements reached should be documented and no verbal agreements should be made. The Contractor shall clearly mark all access roads. Roads not to be used shall be marked with a "NO ENTRY for Mining vehicles" sign.</p> <p>35.Construction routes and required access roads must be clearly defined.</p>	Compliance with Duty of Care as detailed within NEMA	Duration of operations on the prospecting activities.

			<p>36. Damping down of the un-surfaced roads must be implemented to reduce dust and nuisance.</p> <p>37. Soils compacted by construction/Mining activities shall be deep ripped to loosen compacted layers and re-graded to even running levels.</p> <p>38. The contractor must ensure that damage caused by related traffic to the gravel access road is repaired continuously. The costs associated with the repair must be borne by the contractor;</p> <p>39. Dust suppression measures must be implemented for heavy vehicles such as wetting of gravel roads on a regular basis and ensuring that vehicles used to transport the gravel are fitted with tarpaulins or covers;</p> <p>40. All vehicles must be road-worthy and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits.</p>		
Mining of Diamonds (Alluvial) and Diamonds (General) – Soils and geology	Pitting and trenching phase- (construction	2180.2646 Ha Total hectares to be disturbed.	41. The Contractor should, prior to the commencement of earthworks determine the average depth of topsoil (If	Compliance with Duty of Care as detailed within NEMA	Duration of operations on the mine

	and operation phase)	Concurrent backfilling will take place as far as possible in order to rehabilitate.	<p>topsoil exists), and agree on this with the ECO. The full depth of topsoil should be stripped from areas affected by construction and related activities prior to the commencement of major earthworks. This should include the building footprints, working areas and storage areas. Topsoil must be reused where possible to rehabilitate disturbed areas.</p> <p>42. Care must be taken not to mix topsoil and subsoil during stripping.</p> <p>43. The topsoil must be conserved on site in and around the pit/trench area.</p> <p>44. Subsoil and overburden in the Mining area should be stockpiled separately to be returned for backfilling in the correct soil horizon order.</p> <p>45. If stockpiles are exposed to windy conditions or heavy rain, they should be covered either by vegetation or geofabric, depending on the duration of the project. Stockpiles may further be protected by the construction of berms, trenches or low brick walls around their bases.</p> <p>46. Stockpiles should be kept clear of weeds and alien</p>		
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			<p>vegetation growth by regular weeding.</p> <p>47. Where contamination of soil is expected, analysis must be done prior to disposal of soil to determine the appropriate disposal route. Proof from an approved waste disposal site where contaminated soils are dumped if and when a spillage/leakage occurs should be attained and given to the project manager.</p> <p>48. The impact on the geology will be permanent. There is no mitigation measure.</p>		
<p>Mining Diamonds (Alluvial) and Diamonds (General) – excavations</p>	<p>Pitting and trenching phase- (construction and operation phase)</p>	<p>2180.2646 Ha Total hectares to be disturbed. Concurrent backfilling will take place as far as possible in order to rehabilitate.</p>	<ol style="list-style-type: none"> 1. The Mining activities must aim to adhere to the relevant noise regulations and limit noise to within standard working hours in order to reduce disturbance of dwellings in close proximity to the development. 2. Mine, pans, workshops and other noisy fixed facilities should be located well away from noise sensitive areas. Once the proposed final layouts are made available by the Contractor(s), the sites must be evaluated in detail and specific measures designed in to the system. 3. Truck traffic should be routed away from noise 	<p>Compliance with Duty of Care as detailed within NEMA</p>	<p>Duration of operations on the Mining area</p>

			<p>sensitive areas, where possible.</p> <ol style="list-style-type: none"> 4. Noise levels must be kept within acceptable limits. 5. Noisy operations should be combined so that they occur where possible at the same time. 6. Mine workers to wear necessary ear protection gear. 7. Noisy activities to take place during allocated hours. 8. Noise from labourers must be controlled. 9. Noise suppression measures must be applied to all equipment. Equipment must be kept in good working order and where appropriate fitted with silencers which are kept in good working order. Should the vehicles or equipment not be in good working order, the Contractor may be instructed to remove the offending vehicle or machinery from the site. 10. The Contractor must take measures to discourage labourers from loitering in the area and causing noise disturbance. Where possible labour shall be transported to and from the site by the Contractor or his Sub- 		
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			<p>Contractors by the Contractors own transport.</p> <p>11.Implementation of enclosure and cladding of processing plants.</p> <p>12.Applying regular and thorough maintenance schedules to equipment and processes. An increase in noise emission levels very often is a sign of the imminent mechanical failure of a machine.</p>		
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IMPACT MANAGEMENT OUTCOMES

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

ACTIVITY (whether listed or not listed).	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE In which impact is anticipated	MITIGATION TYPE	STANDARD TO BE ACHIEVED
(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.).	(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc....etc...)		(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure)	(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g. <ul style="list-style-type: none"> • Modify through alternative method. • Control through noise control 	(Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.

				<ul style="list-style-type: none"> • Control through management and monitoring • Remedy through rehabilitation.. 	
Clearance of vegetation	Loss or fragmentation of habitats	Fauna & flora	Pitting and trenching phase- (construction and operation phase)	<p>Existing vegetation</p> <ol style="list-style-type: none"> 1. Vegetation removal must be limited to the Mining area. 2. Vegetation to be removed as it becomes necessary rather than removal of all vegetation throughout the site in one step. 3. No vegetation to be used for firewood. 4. Exotic and invasive plant species should not be allowed to establish, if the development is approved. <p>Rehabilitation</p> <ol style="list-style-type: none"> 5. All damaged areas shall be rehabilitated upon completion of the contract. 6. Re-vegetation of the disturbed site is aimed at approximating as near as possible the natural vegetative conditions prevailing prior to construction. 7. All natural areas impacted during construction/Mining must be rehabilitated with locally indigenous grasses typical of the representative botanical unit. 8. Rehabilitation must take place in a phased approach as soon as possible. 9. Rehabilitation process must make use of species indigenous 	Minimisation of impacts to acceptable limits

				<p>to the area. Seeds from surrounding seed banks can be used for re-seeding.</p> <p>10.Rehabilitation must be executed in such a manner that surface run-off will not cause erosion of disturbed areas.</p> <p>11.Planting of indigenous tree species in areas not to be cultivated or built on must be encouraged.</p> <p>Demarcation of Mining area</p> <p>12.All plants not interfering with Mining operations shall be left undisturbed clearly marked and indicated on the site plan.</p> <p>13.The Mining area must be well demarcated and no construction/Mining activities must be allowed outside of this demarcated footprint.</p> <p>14.Vegetation removal must be phased in order to reduce impact of construction/Mining.</p> <p>15.Site office and laydown areas must be clearly demarcated and no encroachment must occur beyond demarcated areas.</p> <p>16.Strict and regular auditing of the Mining process to ensure containment of the Mining and laydown areas.</p> <p>17.Soils must be kept free of petrochemical solutions that may be kept on site during construction/Mining. Spillage</p>	
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				<p>can result in a loss of soil functionality thus limiting the re-establishment of flora.</p> <p>Utilisation of resources</p> <p>18. Gathering of firewood, fruit, muti plants, or any other natural material onsite or in areas adjacent to the site is prohibited unless with prior approval of the ECO.</p> <p>Exotic vegetation</p> <p>19. Alien vegetation on the site will need to be controlled.</p> <p>20. The Contractor should be responsible for implementing a programme of weed control (particularly in areas where soil has been disturbed); and grassing of any remaining stockpiles to prevent weed invasion.</p> <p>21. The spread of exotic species occurring throughout the site should be controlled.</p> <p>Herbicides</p> <p>22. Herbicide use shall only be allowed according to contract specifications. The application shall be according to set specifications and under supervision of a qualified technician. The possibility of leaching into the surrounding environment shall be properly</p>	
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				<p>investigated and only environmentally friendly herbicides shall be used.</p> <p>23. The use of pesticides and herbicides on the site must be discouraged as these impact on important pollinator species of indigenous vegetation.</p> <p>Fauna</p> <p>24. Rehabilitation to be undertaken as soon as possible after the Mining activities have been completed.</p> <p>25. No trapping or snaring to fauna on the construction/Mining site should be allowed.</p> <p>26. No faunal species must be disturbed, trapped, hunted or killed by maintenance staff during any routine maintenance at the development.</p>	
Mining Diamonds (Alluvial) and Diamonds (General) – excavations	Loss of topsoil	Soil	Pitting and trenching phase- (construction and operation phase)	<p>1. The Contractor should, prior to the commencement of earthworks determine the average depth of topsoil, and agree on this with the ECO. The full depth of topsoil should be stripped from areas affected by construction and related activities prior to the commencement of major earthworks. This should include the building footprints, working areas and storage areas. Topsoil must be reused where possible to rehabilitate disturbed areas.</p>	Minimisation of impacts to acceptable limits

				<ol style="list-style-type: none"> 2. Care must be taken not to mix topsoil and subsoil during stripping. 3. The topsoil must be conserved on site in and around the pit/trench area. 4. Subsoil and overburden in the Mining area should be stockpiled separately to be returned for backfilling in the correct soil horizon order. 5. If stockpiles are exposed to windy conditions or heavy rain, they should be covered either by vegetation or geofabric, depending on the duration of the project. Stockpiles may further be protected by the construction of berms or low brick walls around their bases. 6. Stockpiles should be kept clear of weeds and alien vegetation growth by regular weeding. 7. Where contamination of soil is expected, analysis must be done prior to disposal of soil to determine the appropriate disposal route. Proof from an approved waste disposal site where contaminated soils are dumped if and when a spillage/leakage occurs should be attained and given to the project manager. <p>Establish an effective record keeping system for each area where soil is</p>	
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				<p>disturbed for Mining purposes. These records should be included in environmental performance reports, and should include all the records below.</p> <ul style="list-style-type: none"> • Record the GPS coordinates of each area. • Record the date of topsoil stripping. • Record the GPS coordinates of where the topsoil is stockpiled. • Record the date of cessation Mining activities at the particular site. • Photograph the area on cessation of Mining activities. • Record date and depth of re-spreading of topsoil. • Photograph the area on completion of rehabilitation and on an annual basis thereafter to show vegetation establishment and evaluate progress of restoration over time. 	
	Erosion	Soil Air Water	Pitting and trenching phase- (construction and operation phase)	<ol style="list-style-type: none"> 1. An effective system of run-off control should be implemented, where it is required, that collects and safely disseminates run-off water from all hardened surfaces and prevents potential down slope erosion. 2. Periodical site inspection should be included in environmental performance reporting that inspects the effectiveness of the 	Minimisation of impacts to acceptable limits

				<p>run-off control system and specifically records the occurrence of any erosion on site or downstream.</p> <ol style="list-style-type: none"> 3. Wind screening and stormwater control should be undertaken to prevent soil loss from the site. 4. The use of silt fences and sand bags must be implemented in areas that are susceptible to erosion. 5. Other erosion control measures that can be implemented are as follows: <ul style="list-style-type: none"> ○ Brush packing with cleared vegetation ○ Mulch or chip packing ○ Planting of vegetation ○ Hydroseeding/hand sowing 6. Sensitive areas need to be identified prior to construction/Mining so that the necessary precautions can be implemented. 7. All erosion control mechanisms need to be regularly maintained. 8. Seeding of topsoil and subsoil stockpiles to prevent wind and water erosion of soil surfaces. 9. Retention of vegetation where possible to avoid soil erosion. 10. Vegetation clearance should be phased to ensure that the minimum area of soil is exposed to potential erosion at any one time. 	
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				<p>11.Re-vegetation of disturbed surfaces should occur immediately after construction/Mining activities are completed. This should be done through seeding with indigenous grasses.</p> <p>12.No impediment to the natural water flow other than approved erosion control works is permitted.</p> <p>13.To prevent stormwater damage, the increase in stormwater run-off resulting from construction/Mining activities must be estimated and the drainage system assessed accordingly.</p> <p>14. Stockpiles not used in three (3) months after stripping must be seeded or backfilled to prevent dust and erosion.</p>	
	Air Pollution	Air	Pitting and trenching phase-(construction and operation phase)	<p>Dust control</p> <ol style="list-style-type: none"> 1. Wheel washing and damping down of un-surfaced and un-vegetated areas. 2. Retention of vegetation where possible will reduce dust travel. 3. Clearing activities must only be done during agreed working times and permitting weather conditions to avoid drifting of sand and dust into neighbouring areas. 4. Damping down of all exposed soil surfaces with a water 	Minimisation of impacts to acceptable limits

				<p>bowser or sprinklers when necessary to reduce dust.</p> <ol style="list-style-type: none"> 5. The Contractor shall be responsible for dust control on site to ensure no nuisance is caused to the neighbouring communities. 6. A speed limit of 30km/h must not be exceeded on site. 7. Any complaints or claims emanating from the lack of dust control shall be attended to immediately by the Contractor. 8. Any dirt roads that are utilised by the workers must be regularly maintained to ensure that dust levels are controlled. <p>Odour control</p> <ol style="list-style-type: none"> 9. Regular servicing of vehicles in order to limit gaseous emissions. 10. Regular servicing of onsite toilets to avoid potential odours. <p>Rehabilitation</p> <ol style="list-style-type: none"> 11. The Contractor should commence rehabilitation of exposed soil surfaces as soon as practical after completion of earthworks. <p>Fire prevention</p> <ol style="list-style-type: none"> 12. No open fires shall be allowed on site under any circumstance. All cooking shall be done in demarcated areas that are safe 	
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				<p>and cannot cause runaway fires.</p> <p>13. The Contractor shall have operational fire-fighting equipment available on site at all times. The level of firefighting equipment must be assessed and evaluated through a typical risk assessment process.</p>	
	Noise		Pitting and trenching phase- (construction and operation phase)	<ol style="list-style-type: none"> 1. The Mining activities must aim to adhere to the relevant noise regulations and limit noise to within standard working hours in order to reduce disturbance of dwellings in close proximity to the development. 2. Mine, crushers, workshops and other noisy fixed facilities should be located well away from noise sensitive areas. Once the proposed final layouts are made available by the Contractor(s), the sites must be evaluated in detail and specific measures designed in to the system. 3. Truck traffic should be routed away from noise sensitive areas, where possible. 4. Noise levels must be kept within acceptable limits. 5. Noisy operations should be combined so that they occur where possible at the same time. 6. Mine workers to wear necessary ear protection gear. 	Minimisation of impacts to acceptable limits

				<ol style="list-style-type: none"> 7. Noisy activities to take place during allocated hours. 8. Noise from labourers must be controlled. 9. Noise suppression measures must be applied to all equipment. Equipment must be kept in good working order and where appropriate fitted with silencers which are kept in good working order. Should the vehicles or equipment not be in good working order, the Contractor may be instructed to remove the offending vehicle or machinery from the site. 10. The Contractor must take measures to discourage labourers from loitering in the area and causing noise disturbance. Where possible labour shall be transported to and from the site by the Contractor or his Sub-Contractors by the Contractors own transport. 11. Implementation of enclosure and cladding of processing plants. 12. Applying regular and thorough maintenance schedules to equipment and processes. An increase in noise emission levels very often is a sign of the imminent mechanical failure of a machine. 	
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	Impact on potential cultural and heritage artefacts	Heritage	Pitting and trenching phase- (construction and operation phase)	<ol style="list-style-type: none"> 1. Any finds must be reported to the nearest National Monuments office to comply with the National Heritage Resources Act (Act No 25 of 1999) and to DEA. 2. Local museums as well as the South African Heritage Resource Agency (SAHRA) should be informed if any artefacts are uncovered in the affected area. 3. The Contractor must ensure that his workforce is aware of the necessity of reporting any possible historical or archaeological finds to the ECO so that appropriate action can be taken. 4. Any discovered artefacts shall not be removed under any circumstances. Any destruction of a site can only be allowed once a permit is obtained and the site has been mapped and noted. Permits shall be obtained from the SAHRA should the proposed site affect any world heritage sites or if any heritage sites are to be destroyed or altered. <p><u>Management and Mitigation Measures according to the Phase 1 HIA conducted by J.A. van Schalkwyk</u></p>	Minimisation of impacts to acceptable limits
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				<ol style="list-style-type: none">1. A person or entity, e.g. the Environmental Control Officer, must be tasked to take responsibility for the heritage sites and must be held accountable for any damage.2. Known sites must be located and isolated, e.g. by fencing them off. All construction workers must be informed that these are no-go areas, unless accompanied by the individual or persons representing the Environmental Control Officer as identified above.3. In areas where the vegetation is threatening the heritage sites, e.g. growing trees pushing walls over, it should be removed, but only after permission for the methods proposed has been granted by SAHRA. A heritage official should be part of the team executing these measures.4. Known sites should be clearly marked in order that they can be avoided during construction activities.5. The contractors and workers should be notified that archaeological sites might be exposed during the construction activities.	
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				<p>6. Should any heritage artefacts be exposed during excavation, work on the area where the artefacts were discovered, shall cease immediately and the Environmental Control Officer shall be notified as soon as possible;</p> <p>7. All discoveries shall be reported immediately to a heritage practitioner so that an investigation and evaluation of the finds can be made. Acting upon advice from these specialists, the Environmental Control Officer will advise the necessary actions to be taken;</p> <p>8. Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site; and</p> <p>9. Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or palaeontological artefacts, as set out in the National Heritage Resources Act (Act No. 25 of 1999), Section 51. (1).</p> <p>10. Specialist findings mitigation measures</p> <ul style="list-style-type: none"> • Chance finds: Stone Age material 	
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				<p>(5) No further action required: This is applicable only where sites or features have been rated to be of such low significance that it does not warrant further documentation, as it is viewed to be fully documented after inclusion in this report.</p> <ul style="list-style-type: none"> • Site 7.3.1: Historic house <ol style="list-style-type: none"> (1) Avoidance/Preserve: This is viewed to be the primary form of mitigation and applies where any type of development occurs within a formally protected or significant or sensitive heritage context and is likely to have a high negative impact; or, alternatively; (2) Archaeological investigation: This is appropriate where development occurs in a context of heritage significance and where the impact is such that it can be mitigated. Mitigation is to excavate the site by archaeological techniques, document the site (map and photograph) and analyse the recovered material to acceptable standards. <p>11. <u>Conditions for inclusion in the environmental authorisation according to the Phase 1 HIA specialist:</u></p>	
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				<ul style="list-style-type: none"> • If the identified structure is to be demolished, it must be fully documented – mapped, photographed and described – beforehand. • The Palaeontological Sensitivity Map (SAHRIS) indicate that the study area has moderate sensitivity of fossil remains to be found and therefore a desktop palaeontological study of the site is required. • Should archaeological sites or graves be exposed in other areas during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made 	
Waste management		Pollution	Pitting and trenching phase- (construction and operation phase)	<p>Litter management</p> <ol style="list-style-type: none"> 1. Refuse bins must be placed at strategic positions to ensure that litter does not accumulate within the construction site. 2. The Contractor shall supply waste collection bins where such is not available and all solid waste collected shall be disposed of at registered/licensed landfill. 3. Good housekeeping practices should be implemented to regularly maintain the litter and 	Minimisation of impacts to acceptable limits

				<p>rubble situation on the construction site.</p> <ol style="list-style-type: none"> 4. If possible and feasible, all waste generated on site must be separated into glass, plastic, paper, metal and wood and recycled. An independent contractor can be appointed to conduct this recycling. 5. Littering by the employees of the Contractor shall not be allowed under any circumstances. The ECO shall monitor the neatness of the work sites as well as the Contractor campsite. 6. Skip waste containers should be maintained on site. These should be kept covered and arrangements made for them to be collected regularly. 7. All waste must be removed from the site and transported to a landfill site promptly to ensure that it does not attract vermin or produce odours. 8. Where a registered waste site is not available close to the construction site, the Contractor shall provide a method statement with regard to waste management. 9. A certificate of disposal shall be obtained by the Contractor and kept on file, if relevant. 10. Under no circumstances may solid waste be burnt on site. 	
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				<p>11.All waste must be removed promptly to ensure that it does not attract vermin or produce odours.</p> <p>Hazardous waste</p> <p>12.All waste hazardous materials must be carefully stored as advised by the ECO, and then disposed of offsite at a licensed landfill site, where practical. Incineration may be used where relevant.</p> <p>13.Contaminants to be stored safely to avoid spillage.</p> <p>14.Machinery must be properly maintained to keep oil leaks in check.</p> <p>15.All necessary precaution measures shall be taken to prevent soil or surface water pollution from hazardous materials used during construction and any spills shall immediately be cleaned up and all affected areas rehabilitated.</p> <p>Sanitation</p> <p>16.The Contractor shall install mobile chemical toilets on the site.</p> <p>17.Staff shall be sensitised to the fact that they should use these facilities at all times. No indiscriminate sanitary</p>	
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				<p>activities on site shall be allowed.</p> <p>18. Toilets shall be serviced regularly and the ECO shall inspect toilets regularly.</p> <p>19. Toilets should be no closer than 50m or above the 1:100 year flood line from any natural or manmade water bodies or drainage lines or alternatively located in a place approved of by the Engineer.</p> <p>20. Under no circumstances may open areas, neighbours fences or the surrounding bush be used as a toilet facility.</p> <p>21. The construction of “Long Drop” toilets is forbidden, but rather toilets connected to the sewage treatment plant.</p> <p>22. Potable water must be provided for all construction staff.</p> <p>Remedial actions</p> <p>23. Depending on the nature and extent of the spill, contaminated soil must be either excavated or treated on-site.</p> <p>24. Excavation of contaminated soil must involve careful removal of soil using appropriate tools/machinery to storage containers until treated or disposed of at a licensed hazardous landfill site.</p> <p>25. The ECO must determine the precise method of treatment for</p>	
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				<p>polluted soil. This could involve the application of soil absorbent materials as well as oil-digestive powders to the contaminated soil.</p> <p>26.If a spill occurs on an impermeable surface such as cement or concrete, the surface spill must be contained using oil absorbent material.</p> <p>27.If necessary, oil absorbent sheets or pads must be attached to leaky machinery or infrastructure.</p> <p>28.Materials used for the remediation of petrochemical spills must be used according to product specifications and guidance for use.</p> <p>29.Contaminated remediation materials must be carefully removed from the area of the spill so as to prevent further release of petrochemicals to the environment, and stored in adequate containers until appropriate disposal.</p>	
Water Use and Quality	Water pollution	Water	Pitting and trenching phase-(construction and operation phase)	<p>Water Use</p> <ol style="list-style-type: none"> 1. Develop a sustainable water supply management plan to minimise the impact to natural systems by managing water use, avoiding depletion of aquifers and minimising impacts to water users. 2. Water must be reused, recycled or treated where possible. 	

				<p>Water Quality</p> <ol style="list-style-type: none"> 3. The quality and quantity of effluent streams discharged to the environment including stormwater should be managed and treated to meet applicable effluent discharge guidelines. 4. Discharge to surface water should not result in contaminant concentrations in excess of local ambient water quality criteria outside a scientifically established mixing zone. 5. Efficient oil and grease traps or sumps should be installed and maintained at refueling facilities, workshops, fuel storage depots, and containment areas and spill kits should be available with emergency response plans. <p>Stormwater</p> <ol style="list-style-type: none"> 6. The site must be managed in order to prevent pollution of drains, downstream watercourses or groundwater, due to suspended solids and silt or chemical pollutants. 7. Silt fences should be used to prevent any soil entering the stormwater drains. 8. Temporary cut off drains and berms may be required to 	
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				<p>capture stormwater and promote infiltration.</p> <p>9. Promote a water saving mind set with construction/Mining workers in order to Contractor ensure less water wastage.</p> <p>10. Hazardous substances must be stored at least 40m from any water bodies on site to avoid pollution.</p> <p>11. The installation of the stormwater system must take place as soon as possible to attenuate stormwater from the construction phase as well as the operation phase.</p> <p>12. Earth, stone and rubble is to be properly disposed of, or utilized on site so as not to obstruct natural water path ways over the site. i.e. these materials must not be placed in stormwater channels, drainage lines or rivers.</p> <p>13. There should be a periodic checking of the site's drainage system to ensure that the water flow is unobstructed.</p> <p>14. If a batching plant is necessary, run-off should be managed effectively to avoid contamination of other areas of the site. Untreated runoff from the batch plant must not be allowed to get into the storm water system or nearby</p>	
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				<p>streams, rivers or erosion channels or dongas.</p> <p>The cut-off trenches and silt fences will be installed where necessary as to control runoff storm water by attenuating it and control the movement of sediment on the premises.</p> <p>These structures will be monitored on a regular basis. It is suggested that it be monitored on a weekly basis during the rainy season, and after possible rain events during the dry season.</p> <p>If these practices is found to be insufficient for the control of storm water and sedimentation, other alternatives should immediately be investigated and implemented.</p> <p>Groundwater resource protection</p> <p>15.Process solution storage ponds and other impoundments designed to hold non fresh water or non-treated process effluents should be lined and be equipped with sufficient wells to enable monitoring of water levels and quality.</p> <p>It is recommended that the following actions be implemented in order to mitigate groundwater contamination:</p>	
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				<ul style="list-style-type: none"> • Prevent dirty water runoff from leaving the general mining area; • Minimise dirty footprints; • Compact the base of dirty areas, like the workshops and oil and diesel storage areas to minimise infiltration of poor-quality water to the underlying aquifers; • A credible company should remove used oil from the workshops; • Enough supply of absorbent fibre should be kept at the site to contain accidental spills; • Contain dirty water in return water dams or pollution control facilities; • Ensure adequate maintenance of waste dam to avoid overflow; • Rehabilitation must include covering with a topsoil layer as well as vegetation thereof; • Proper storm water management should be implemented. Berms should also be constructed to ensure separation of clean water and dirty water areas; • The monitoring results must be interpreted annually, and network audited annually as well to ensure compliance with regulations; • A detailed mine closure plan should be prepared during the operational phase, including a risk assessment, water resource impact prediction etc. as stipulated in the 	
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				<p>DWS Best Practice Guidelines. The implementation of the mine closure plan, and the application for the closure certificate can be conducted during the decommissioned phase.</p> <p>Sanitation</p> <p>16. Adequate sanitary facilities and ablutions must be provided for construction workers (1 toilet per every 15 workers).</p> <p>17. The facilities must be regularly serviced to reduce the risk of surface or groundwater pollution.</p> <p>Concrete mixing</p> <p>18. Concrete contaminated water must not enter soil or any natural drainage system as this disturbs the natural acidity of the soil and affects plant growth.</p> <p>Public areas</p> <p>19. Food preparation areas should be provided with adequate washing facilities and food refuse should be stored in sealed refuse bins which should be removed from site on a regular basis.</p> <p>20. The Contractor should take steps to ensure that littering by construction/Mining workers</p>	
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				<p>does not occur and persons should be employed on site to collect litter from the site and immediate surroundings, including litter accumulating at fence lines.</p> <p>21. No washing or servicing of vehicles on site.</p>	
Water Use and Quality	Changes to the hydrological regime of the stream		Pitting and trenching phase- (construction and operation phase)	<p>Proposed mitigation</p> <ul style="list-style-type: none"> • Any activities that take place within 32 meters of a wetland or watercourse or the 1:100 year flood lines will require authorisation in terms of the relevant regulations of NEMA, however as far as possible infrastructure should be placed outside of wetlands and / or buffer lines. • No stockpiling should take place within a watercourse or the 32m buffer. • All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds • Erosion and sedimentation into channels must be minimised through the effective stabilisation (gabions and Reno mattresses) and the re-vegetation of any disturbed stream banks; • Ensure that erosion management and sediment controls are strictly implemented from the beginning of site clearing activities, particularly 	

				<p>as the soils in the study area are prone to erosion;</p> <ul style="list-style-type: none"> • All areas should be re-sloped and top-soiled where necessary and reseeded with indigenous grasses to stabilise the loose material; • Edge effects such as erosion must be strictly monitored and managed; • Sensitivity maps have been developed for the study area, indicating the drainage lines and riparian systems, and their relevant buffer zones. It is recommended that this sensitivity map be considered during all phases of the development and with special mentioning of the planning of infrastructure, in order to aid in the conservation of and minimise impact on the riparian and aquatic habitat and resources within the study area; • Rehabilitation must ensure that the wetland structure and function are reinstated in such a way as to ensure the ongoing functionality of the larger wetland systems at pre-mining levels. • Any areas where bank failure is observed, due to the prospecting or mining impacts, should be immediately repaired; • As far as possible the existing road network should be utilised, minimising the need to develop 	
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				<p>new access routes resulting in an increased impact on the local environment. Should temporary roads or access routes be necessary and unavoidable, proper planning must take place and the site sensitivity plan must be taken into consideration. If additional roads are required, then wherever feasible such roads should be constructed a distance from the more sensitive riparian areas and not directly adjacent thereto. If crossings are required they should cross the systems at right angles, as far as possible to minimise impacts in the receiving environment;</p> <ul style="list-style-type: none"> • The duration of impacts on the riverine and drainage line systems should be minimised as far as possible by ensuring that the duration of time in which flow alteration and sedimentation will take place is minimised; • Stabilisation of banks by employing one of the individual techniques below or a combination thereof, is essential, given the inherent susceptibility of the soils to erosion. Such measures include: <ul style="list-style-type: none"> ○ Re-sloping of banks to a maximum of a 1:3 slope; ○ Revegetation of re-profiled slopes; ○ Temporary stabilisation of slopes using geotextiles; and 	
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				<ul style="list-style-type: none"> ○ Installation of gabions and reno-mattresses. ○ To prevent the further erosion of soils, management measures may include berms, soil traps, hessian curtains and storm water diversion away from areas particularly susceptible to erosion; ● Install erosion berms during construction to prevent gully formation: <ul style="list-style-type: none"> ○ Berms every 50m should be installed where any disturbed soils have a slope of less than 2%, ○ Berms every 25m where the track slopes between 2% and 10%, ○ Berms every 20m where the track slopes between 10% and 15% and ○ Berms every 10m where the track slope is greater than 15%; ● Sheet runoff from access roads should be slowed down by the strategic placement of berms and sandbags; ● All soils compacted as a result of construction activities falling outside of project areas should be ripped and profiled. Special attention should be paid to alien and invasive control within these areas. Alien and invasive vegetation control should take place throughout all construction and 	
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				<p>rehabilitation phases to prevent loss of floral habitat;</p> <ul style="list-style-type: none"> • As far as possible, all rehabilitation activities should occur in the low flow season, during the drier winter months. • Trenches and deep excavations should not be left open for extended periods of time as fauna may fall in and become trapped in them. Trenches which are exposed should contain soil ramps allowing fauna to escape the trench. 	
	Impact of changes to water quality		Pitting and trenching phase- (construction and operation phase)	<p>Proposed mitigation</p> <ul style="list-style-type: none"> • All vehicles must be regularly inspected for leaks. Re-fuelling must take place on a sealed surface area to prevent entry of hydrocarbons into topsoil; • All spills, should they occur, should be immediately cleaned up and treated accordingly. • Chemicals used for prospecting, vehicle maintenance and construction must be stored safely on site but outside the 32m buffer and surrounded by bunds. Chemical storage containers must be regularly inspected so that any leaks are detected early. • Littering and contamination of water sources during prospecting must be prevented by effective site management. 	

				<ul style="list-style-type: none"> • Emergency plans must be in place in case of spillages especially in the watercourse. • No stockpiling should take place within a watercourse. • All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds. • Stockpiles must be located away from river channels. • Erosion and sedimentation into channels must be minimised through the effective stabilisation (gabions and Reno mattresses) and the re-vegetation of any disturbed riverbanks. • The construction camp and necessary ablution facilities meant for construction workers must be beyond the 32m buffer described previously. 	
	Loss of riparian vegetation, aquatic habitat and stream continuity (migration corridors)		Pitting and trenching phase- (construction and operation phase)	<p>Proposed mitigation</p> <ul style="list-style-type: none"> • As far as possible, all rehabilitation activities should occur in the low flow season, during the drier winter months. • Trenches and deep excavations should not be left open for extended periods of time as fauna may fall in and become trapped in them. Trenches which are exposed should contain soil ramps allowing fauna to escape the trench. 	

				<ul style="list-style-type: none"> • The duration of impacts on the riverine and drainage line systems should be minimised as far as possible by ensuring that the duration of time in which flow alteration and sedimentation will take place is minimised; • Rehabilitation must ensure that riparian structure and function are reinstated in such a way as to ensure the ongoing functionality of the larger riparian systems at pre-mining levels. • Stabilisation of banks by employing one of the individual techniques below or a combination thereof, is essential, given the inherent susceptibility of the soils to erosion. Such measures include: <ul style="list-style-type: none"> ○ Re-sloping of banks to a maximum of a 1:3 slope; ○ Revegetation of re-profiled slopes; ○ Temporary stabilisation of slopes using geotextiles; and ○ Installation of gabions and reno-mattresses. ○ To prevent the further erosion of soils, management measures may include berms, soil traps, hessian curtains and storm water diversion away from areas particularly susceptible to erosion; • Install erosion berms during construction to prevent gully formation: 	
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				<ul style="list-style-type: none"> ○ Berms every 50m should be installed where any disturbed soils have a slope of less than 2%, ○ Berms every 25m where the track slopes between 2% and 10%, ○ Berms every 20m where the track slopes between 10% and 15% and ○ Berms every 10m where the track slope is greater than 15%; 	
	Spread of alien invasive species		Pitting and trenching phase- (construction and operation phase)	<p>Proposed mitigation</p> <ul style="list-style-type: none"> ● Proliferation of alien and invasive species is expected within any disturbed areas particularly as there are some alien and invasive species within the study area at present. These species should be eradicated and controlled to prevent further spread beyond the study area; ● It is suggested that an alien plant removal program be initialised within the study area in order to help reinstate more natural hydrological and ecological functions to within the project site; ● Alien plant seed dispersal within the top layers of the soil within footprint areas, that will have an impact on future rehabilitation, has to be controlled; ● Care should be taken with the choice of herbicide to ensure that no additional impact and loss of 	

				<p>indigenous plant species occurs due to the herbicide used;</p> <ul style="list-style-type: none"> • Footprint areas should be kept as small as possible when removing alien plant species; • No vehicles should be allowed to drive through designated sensitive drainage lines and riparian areas during the eradication of alien and weed species. • All alien vegetation in the riparian zone should be removed upon completion of prospecting activities and reseeded with indigenous grasses as specified by a suitably qualified specialist (ecologist); 	
Specialist (Mpho Ramalivhana) mitigation measures: Vegetation Clearing for the prospecting purpose	Destruction of protected plant species		(construction and operation phase)	<ul style="list-style-type: none"> • Supervision by an ecologist to ensure success of the rescue operation • Place drilling holes away from any red listed and/or protected plant species • Use already available farm roads to avoid trampling red listed plant species 	
	Removal of the natural vegetation		(construction and operation phase)	<ul style="list-style-type: none"> • Due to the sensitivity of the areas it is advised that areas designated for vegetation clearing should be identified and visibly marked off and also approved as part of final drilling map 	

				<ul style="list-style-type: none"> • Vegetation clearing areas should be kept to a minimum and restricted to the proposed drilling sites. • Exposed areas should be rehabilitated with indigenous plants to the project area as soon as construction is finished. 	
	Disturbance to animals on site		(construction and operation phase)	<ul style="list-style-type: none"> • Do not disturb nests, breeding sites or young ones. Do not attempt to kill or capture snakes unless directly threatening the safety of employees. • Dogs or other pets are not allowed to the worksite as they are threats to the natural wild animal • A low speed limit should be enforced on site to reduce wild animal-vehicle collisions • No animals should be intentionally killed or destroyed and poaching and hunting should not be permitted on the site. • Severe contractual fines must be imposed and immediate dismissal on any contract employee who is found attempting to snare or otherwise harms remaining faunal species. • Hunting weapons are prohibited on site. 	

				<ul style="list-style-type: none"> • Contract employees must be educated about the value of wild animals and the importance of their conservation. • The ECO must conduct regular site inspections of removing any snares or traps that have been erected. • Employees and contractors should be made aware of the presence of, and rules regarding, flora and fauna through suitable induction training and on-site signage. • Ensure that the colours used to paint the buildings including the roof are blending to the environment 	
	Increased soil erosion, increase in silt loads and sedimentation		(construction and operation phase)	<ul style="list-style-type: none"> • Following prospecting, rehabilitation of disturbed areas is required • Avoid areas with sensitive soils, steep slopes during rain or windy season. • Ensure that roads are not paved but well maintained (as gravel) to reduce the speed of water by promoting infiltration. 	
	Establishment and spread of declared weeds		(construction and operation phase)	<ul style="list-style-type: none"> • The best mitigation measure for alien and invasive species is the early detection and eradication of these species which will be ensured 	

				<p>with the use of a monitoring programme.</p> <ul style="list-style-type: none"> • An alien invasive management programme should be developed and implemented in order to control alien invasive species 	
<p>Specialist (Mpho Ramalivhana) mitigation measures:</p> <p>Waste generation</p>	<p>Pollution due to oil and fuel spills, erosion, and ablution facilities.</p>		<p>(construction and operation phase)</p>	<ul style="list-style-type: none"> • Proper ablution facilities on site must be provided. • Constant rehabilitation of erosion problems. • Proper storage facilities of construction materials. • Waste management is very important. Proper storage and removal strategy must be in place. • Proper Standard Operating Procedures in place regulating refuelling and other potential polluting activities. • Must have rehabilitation strategy as part of EMP such as a clean-up plan/strategy if spills occur and proper facilities (ablution) to ensure no sewerage spills into drainage lines and streams. 	
<p>Specialist (Mpho Ramalivhana) mitigation measures:</p> <p>Wetland destruction</p>	<p>Prospecting on wetlands/along wetlands</p>		<p>(construction and operation phase)</p>	<ul style="list-style-type: none"> • Prospecting across wetlands/rivers should not take place. • Ensure that prospecting activities are carefully monitored to limit unnecessary impacts to wetlands/riparian areas 	

				<p>(particularly in-stream habitat) and should be approved by WUL.</p> <ul style="list-style-type: none"> • Do not lower the original stream bed / profile of the wetland/river as this may result in scouring in an upstream direction and further alteration of bed conditions. • Ensure that coarse immovable material including boulders and other rock in river channels is not removed to ensure continued stability and functioning of the river systems. River sediments should not be permanently removed from the system in any case. 	
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IMPACT MANAGEMENT ACTIONS

(A description of impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs (c) and (d) will be achieved).

ACTIVITY Whether listed or not listed.	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices,	(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination,	(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc)	Describe the time period when the measures in the environmental management programme	(A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will

<p>ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.).</p>	<p>groundwater contamination, air pollution etc....etc...)</p>	<p>E.g.</p> <ul style="list-style-type: none"> • Modify through alternative method. • Control through noise control • Control through management and monitoring <p>Remedy through rehabilitation..</p>	<p>must be implemented</p> <p>Measures must be implemented when required.</p> <p>With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regard to Rehabilitation, therefore state either:-..</p> <p>Upon cessation of the individual activity or.</p> <p>Upon the cessation of mining, bulk sampling or alluvial diamond Mining as the case may be.</p>	<p>comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)</p>
<p>Clearance of vegetation</p>	<p>Loss or fragmentation of habitats</p>	<p>Existing vegetation</p> <ol style="list-style-type: none"> 1. Vegetation removal must be limited to the Mining site. 2. Vegetation to be removed as it becomes necessary rather than removal of all vegetation throughout the site in one step. 3. No vegetation to be used for firewood. 4. Exotic and invasive plant species should not be allowed to establish, if the development is approved. 	<p>Duration of operation</p>	<p>The implementation of the recommended mitigation measures will result in the minimisation of impacts to acceptable standards, thereby ensuring compliance with NEMA and Duty of Care as prescribed by NEMA.</p>

		<p>Rehabilitation</p> <ol style="list-style-type: none"> 5. All damaged areas shall be rehabilitated upon completion of the contract. 6. Re-vegetation of the disturbed site is aimed at approximating as near as possible the natural vegetative conditions prevailing prior to construction. 7. All natural areas impacted during construction/Mining must be rehabilitated with locally indigenous grasses typical of the representative botanical unit. 8. Rehabilitation must take place in a phased approach as soon as possible. 9. Rehabilitation process must make use of species indigenous to the area. Seeds from surrounding seed banks can be used for re-seeding. 10. Rehabilitation must be executed in such a manner that surface run-off will not cause erosion of disturbed areas. 11. Planting of indigenous tree species in areas not to be cultivated or built on must be encouraged. <p>Demarcation of Mining area</p> <ol style="list-style-type: none"> 12. All plants not interfering with Mining operations shall be left undisturbed clearly marked and indicated on the site plan. 13. The Mining area must be well demarcated and no construction 		
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		<p>activities must be allowed outside of this demarcated footprint.</p> <p>14. Vegetation removal must be phased in order to reduce impact of construction/Mining.</p> <p>15. Site office and laydown areas must be clearly demarcated and no encroachment must occur beyond demarcated areas.</p> <p>16. Strict and regular auditing of the Mining process to ensure containment of the Mining and laydown areas.</p> <p>17. Soils must be kept free of petrochemical solutions that may be kept on site during construction/Mining. Spillage can result in a loss of soil functionality thus limiting the re-establishment of flora.</p> <p>Utilisation of resources</p> <p>18. Gathering of firewood, fruit, muti plants, or any other natural material onsite or in areas adjacent to the site is prohibited unless with prior approval of the ECO.</p> <p>Exotic vegetation</p> <p>19. Alien vegetation on the site will need to be controlled.</p> <p>20. The Contractor should be responsible for implementing a programme of weed control (particularly in areas where soil has been disturbed); and grassing of any remaining stockpiles to prevent weed invasion.</p>		
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		<p>21.The spread of exotic species occurring throughout the site should be controlled.</p> <p>Herbicides</p> <p>22.Herbicide use shall only be allowed according to contract specifications. The application shall be according to set specifications and under supervision of a qualified technician. The possibility of leaching into the surrounding environment shall be properly investigated and only environmentally friendly herbicides shall be used.</p> <p>23.The use of pesticides and herbicides on the site must be discouraged as these impact on important pollinator species of indigenous vegetation.</p> <p>Fauna</p> <p>24.Rehabilitation to be undertaken as soon as possible after Mining has been completed.</p> <p>25.No trapping or snaring to fauna on the construction/Mining site should be allowed.</p> <p>26.No faunal species must be disturbed, trapped, hunted or killed by maintenance staff during any routine maintenance at the development.</p>		
<p>Mining of Diamonds (Alluvial) and Diamonds (General) – excavations</p>	<p>Loss of topsoil</p>	<p>1. The Contractor should, prior to the commencement of earthworks determine the average depth of topsoil, and agree on this with the ECO. The full depth of topsoil should be stripped from areas affected by</p>	<p>Duration of operation</p>	<p>The implementation of the recommended mitigation measures will result in the minimisation of impacts to acceptable standards,</p>

		<p>construction/Mining and related activities prior to the commencement of major earthworks. This should include the building footprints, working areas and storage areas. Topsoil must be reused where possible to rehabilitate disturbed areas.</p> <ol style="list-style-type: none"> 2. Care must be taken not to mix topsoil and subsoil during stripping. 3. The topsoil must be conserved on site in and around the pit/trench area. 4. Subsoil and overburden in the Mining area should be stockpiled separately to be returned for backfilling in the correct soil horizon order. 5. If stockpiles are exposed to windy conditions or heavy rain, they should be covered either by vegetation or geofabric, depending on the duration of the project. Stockpiles may further be protected by the construction of berms or low brick walls around their bases. 6. Stockpiles should be kept clear of weeds and alien vegetation growth by regular weeding. 7. Where contamination of soil is expected, analysis must be done prior to disposal of soil to determine the appropriate disposal route. Proof from an approved waste disposal site where contaminated soils are dumped if and when a spillage/leakage occurs should be attained and given to the project manager. 		<p>thereby ensuring compliance with NEMA and Duty of Care as prescribed by NEMA.</p>
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		<p>Establish an effective record keeping system for each area where soil is disturbed for Mining purposes. These records should be included in environmental performance reports, and should include all the records below.</p> <ul style="list-style-type: none"> • Record the GPS coordinates of each area. • Record the date of topsoil stripping. • Record the GPS coordinates of where the topsoil is stockpiled. • Record the date of cessation Mining activities at the particular site. • Photograph the area on cessation of Mining activities. • Record date and depth of re-spreading of topsoil. • Photograph the area on completion of rehabilitation and on an annual basis thereafter to show vegetation establishment and evaluate progress of restoration over time. 		
	Erosion	<ol style="list-style-type: none"> 1. An effective system of run-off control should be implemented, where it is required, that collects and safely disseminates run-off water from all hardened surfaces and prevents potential down slope erosion. 2. Periodical site inspection should be included in environmental performance reporting that inspects the effectiveness of the run-off control system and specifically records the occurrence of any erosion on site or downstream. 	Duration of operation	The implementation of the recommended mitigation measures will result in the minimisation of impacts to acceptable standards, thereby ensuring compliance with NEMA and Duty of Care as prescribed by NEMA.

		<ol style="list-style-type: none"> 3. Wind screening and stormwater control should be undertaken to prevent soil loss from the site. 4. The use of silt fences and sand bags must be implemented in areas that are susceptible to erosion. 5. Other erosion control measures that can be implemented are as follows: <ul style="list-style-type: none"> o Brush packing with cleared vegetation o Mulch or chip packing o Planting of vegetation o Hydroseeding/hand sowing 6. Sensitive areas need to be identified prior to construction/Mining so that the necessary precautions can be implemented. 7. All erosion control mechanisms need to be regularly maintained. 8. Seeding of topsoil and subsoil stockpiles to prevent wind and water erosion of soil surfaces. 9. Retention of vegetation where possible to avoid soil erosion. 10. Vegetation clearance should be phased to ensure that the minimum area of soil is exposed to potential erosion at any one time. 11. Re-vegetation of disturbed surfaces should occur immediately after construction/Mining activities are completed. This should be done through seeding with indigenous grasses. 12. No impediment to the natural water flow other than approved erosion control works is permitted. 		
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		<p>13.To prevent stormwater damage, the increase in stormwater run-off resulting from construction/Mining activities must be estimated and the drainage system assessed accordingly. A drainage plan must be submitted to the Engineer for approval and must include the location and design criteria of any temporary stream crossings.</p> <p>14. Stockpiles not used in three (3) months after stripping must be seeded/backfilled to prevent dust and erosion.</p>		
	Air Pollution	<p>Dust control</p> <p>14. Wheel washing and damping down of un-surfaced and un-vegetated areas.</p> <p>15. Retention of vegetation where possible will reduce dust travel.</p> <p>16. Clearing activities must only be done during agreed working times and permitting weather conditions to avoid drifting of sand and dust into neighbouring areas.</p> <p>17. Damping down of all exposed soil surfaces with a water bowser or sprinklers when necessary to reduce dust.</p> <p>18. The Contractor shall be responsible for dust control on site to ensure no nuisance is caused to the neighbouring communities.</p> <p>19. A speed limit of 30km/h must not be exceeded on site.</p> <p>20. Any complaints or claims emanating from the lack of dust control shall be attended to immediately by the Contractor.</p>	Duration of operation	The implementation of the recommended mitigation measures will result in the minimisation of impacts to acceptable standards, thereby ensuring compliance with NEMA and Duty of Care as prescribed by NEMA.

		<p>21. Any dirt roads that are utilised by the workers must be regularly maintained to ensure that dust levels are controlled.</p> <p>Odour control</p> <p>22. Regular servicing of vehicles in order to limit gaseous emissions.</p> <p>23. Regular servicing of onsite toilets to avoid potential odours.</p> <p>Rehabilitation</p> <p>24. The Contractor should commence rehabilitation of exposed soil surfaces as soon as practical after completion of earthworks.</p> <p>Fire prevention</p> <p>25. No open fires shall be allowed on site under any circumstance. All cooking shall be done in demarcated areas that are safe and cannot cause runaway fires.</p> <p>26. The Contractor shall have operational fire-fighting equipment available on site at all times. The level of firefighting equipment must be assessed and evaluated through a typical risk assessment process.</p>		
	Noise	<p>1. The Mining activities must aim to adhere to the relevant noise regulations and limit noise to within standard working hours in order to reduce disturbance of dwellings in close proximity to the development.</p> <p>2. Pans, power plants, crushers, workshops and other noisy fixed</p>	Duration of operation	The implementation of the recommended mitigation measures will result in the minimisation of impacts to acceptable standards, thereby ensuring compliance with NEMA

		<p>facilities should be located well away from noise sensitive areas. Once the proposed final layouts are made available by the Contractor(s), the sites must be evaluated in detail and specific measures designed in to the system.</p> <ol style="list-style-type: none"> 3. Truck traffic should be routed away from noise sensitive areas, where possible. 4. Noise levels must be kept within acceptable limits. 5. Noisy operations should be combined so that they occur where possible at the same time. 6. Mine workers to wear necessary ear protection gear. 7. Noisy activities to take place during allocated hours. 8. Noise from labourers must be controlled. 9. Noise suppression measures must be applied to all equipment. Equipment must be kept in good working order and where appropriate fitted with silencers which are kept in good working order. Should the vehicles or equipment not be in good working order, the Contractor may be instructed to remove the offending vehicle or machinery from the site. 10. The Contractor must take measures to discourage labourers from loitering in the area and causing noise disturbance. Where possible labour shall be transported to and from the site by the Contractor or his Sub- 		<p>and Duty of Care as prescribed by NEMA.</p>
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		<p>Contractors by the Contractors own transport.</p> <p>11. Implementation of enclosure and cladding of processing plants.</p> <p>12. Applying regular and thorough maintenance schedules to equipment and processes. An increase in noise emission levels very often is a sign of the imminent mechanical failure of a machine.</p>		
	<p>Impact on potential cultural and heritage artefacts</p>	<ol style="list-style-type: none"> 1. Any finds must be reported to the nearest National Monuments office to comply with the National Heritage Resources Act (Act No 25 of 1999) and to DEA. 2. Local museums as well as the South African Heritage Resource Agency (SAHRA) should be informed if any artefacts are uncovered in the affected area. 3. The Contractor must ensure that his workforce is aware of the necessity of reporting any possible historical or archaeological finds to the ECO so that appropriate action can be taken. 4. Any discovered artefacts shall not be removed under any circumstances. Any destruction of a site can only be allowed once a permit is obtained and the site has been mapped and noted. Permits shall be obtained from the SAHRA should the proposed site affect any world heritage sites or if any heritage sites are to be destroyed or altered. 	<p>Duration of operation</p>	<p>The implementation of the recommended mitigation measures will result in the minimisation of impacts to acceptable standards, thereby ensuring compliance with NEMA and Duty of Care as prescribed by NEMA.</p>

		<p><u>Management and Mitigation Measures according to the Phase 1 HIA conducted by J.A. van Schalkwyk</u></p> <p>12. A person or entity, e.g. the Environmental Control Officer, must be tasked to take responsibility for the heritage sites and must be held accountable for any damage.</p> <p>13. Known sites must be located and isolated, e.g. by fencing them off. All construction workers must be informed that these are no-go areas, unless accompanied by the individual or persons representing the Environmental Control Officer as identified above.</p> <p>14. In areas where the vegetation is threatening the heritage sites, e.g. growing trees pushing walls over, it should be removed, but only after permission for the methods proposed has been granted by SAHRA. A heritage official should be part of the team executing these measures.</p> <p>15. Known sites should be clearly marked in order that they can be avoided during construction activities.</p> <p>16. The contractors and workers should be notified that archaeological sites might be exposed during the construction activities.</p> <p>17. Should any heritage artefacts be exposed during excavation, work on the</p>		
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		<p>area where the artefacts were discovered, shall cease immediately and the Environmental Control Officer shall be notified as soon as possible;</p> <p>18. All discoveries shall be reported immediately to a heritage practitioner so that an investigation and evaluation of the finds can be made. Acting upon advice from these specialists, the Environmental Control Officer will advise the necessary actions to be taken;</p> <p>19. Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site; and</p> <p>20. Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or palaeontological artefacts, as set out in the National Heritage Resources Act (Act No. 25 of 1999), Section 51. (1).</p> <p>21. Specialist findings mitigation measures</p> <ul style="list-style-type: none"> • Chance finds: Stone Age material (5) No further action required: This is applicable only where sites or features have been rated to be of such low significance that it does not warrant further documentation, as it is viewed to be fully documented after inclusion in this report. • Site 7.3.1: Historic house 		
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		<p>(1) Avoidance/Preserve: This is viewed to be the primary form of mitigation and applies where any type of development occurs within a formally protected or significant or sensitive heritage context and is likely to have a high negative impact; or, alternatively;</p> <p>(2) Archaeological investigation: This is appropriate where development occurs in a context of heritage significance and where the impact is such that it can be mitigated. Mitigation is to excavate the site by archaeological techniques, document the site (map and photograph) and analyse the recovered material to acceptable standards.</p> <p>22. <u>Conditions for inclusion in the environmental authorisation according to the Phase 1 HIA specialist:</u></p> <ul style="list-style-type: none"> • If the identified structure is to be demolished, it must be fully documented – mapped, photographed and described – beforehand. • The Palaeontological Sensitivity Map (SAHRIS) indicate that the study area has moderate sensitivity of fossil remains to be found and therefore a desktop palaeontological study of the site is required. • Should archaeological sites or graves be exposed in other areas during construction work, it must immediately be 		
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		reported to a heritage practitioner so that an investigation and evaluation of the finds can be made		
Waste Management		<p>Litter management</p> <ol style="list-style-type: none"> 1. Refuse bins must be placed at strategic positions to ensure that litter does not accumulate within the construction/Mining site. 2. The Contractor shall supply waste collection bins where such is not available and all solid waste collected shall be disposed of at registered/licensed landfill. 3. Good housekeeping practices should be implemented to regularly maintain the litter and rubble situation on the construction/Mining site. 4. If possible and feasible, all waste generated on site must be separated into glass, plastic, paper, metal and wood and recycled. An independent contractor can be appointed to conduct this recycling. 5. Littering by the employees of the Contractor shall not be allowed under any circumstances. The ECO shall monitor the neatness of the work sites as well as the Contractor campsite. 6. Skip waste containers should be maintained on site. These should be kept covered and arrangements made for them to be collected regularly. 7. All waste must be removed from the site and transported to a landfill site promptly to ensure that it does not attract vermin or produce odours. 	Duration of operation	The implementation of the recommended mitigation measures will result in the minimisation of impacts to acceptable standards, thereby ensuring compliance with NEMA and Duty of Care as prescribed by NEMA.

		<p>8. Where a registered waste site is not available close to the construction/Mining site, the Contractor shall provide a method statement with regard to waste management.</p> <p>9. A certificate of disposal shall be obtained by the Contractor and kept on file, if relevant.</p> <p>10. Under no circumstances may solid waste be burnt on site.</p> <p>11. All waste must be removed promptly to ensure that it does not attract vermin or produce odours.</p> <p>Hazardous waste</p> <p>12. All waste hazardous materials must be carefully stored as advised by the ECO, and then disposed of offsite at a licensed landfill site, where practical. Incineration may be used where relevant.</p> <p>13. Contaminants to be stored safely to avoid spillage.</p> <p>14. Machinery must be properly maintained to keep oil leaks in check.</p> <p>15. All necessary precaution measures shall be taken to prevent soil or surface water pollution from hazardous materials used during construction/Mining and any spills shall immediately be cleaned up and all affected areas rehabilitated.</p> <p>Sanitation</p> <p>16. The Contractor shall install mobile chemical toilets on the site.</p>		
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		<p>17. Staff shall be sensitised to the fact that they should use these facilities at all times. No indiscriminate sanitary activities on site shall be allowed.</p> <p>18. Toilets shall be serviced regularly and the ECO shall inspect toilets regularly.</p> <p>19. Toilets should be no closer than 50m or above the 1:100 year flood line from any natural or manmade water bodies or drainage lines or alternatively located in a place approved of by the Engineer.</p> <p>20. Under no circumstances may open areas, neighbours fences or the surrounding bush be used as a toilet facility.</p> <p>21. The construction of “Long Drop” toilets is forbidden, but rather toilets connected to the sewage treatment plant.</p> <p>22. Potable water must be provided for all construction staff.</p> <p>Remedial actions</p> <p>23. Depending on the nature and extent of the spill, contaminated soil must be either excavated or treated on-site.</p> <p>24. Excavation of contaminated soil must involve careful removal of soil using appropriate tools/machinery to storage containers until treated or disposed of at a licensed hazardous landfill site.</p> <p>25. The ECO must determine the precise method of treatment for polluted soil. This could involve the application of soil absorbent materials as well as oil-</p>		
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		<p>digestive powders to the contaminated soil.</p> <p>26.If a spill occurs on an impermeable surface such as cement or concrete, the surface spill must be contained using oil absorbent material.</p> <p>27.If necessary, oil absorbent sheets or pads must be attached to leaky machinery or infrastructure.</p> <p>28.Materials used for the remediation of petrochemical spills must be used according to product specifications and guidance for use.</p> <p>29.Contaminated remediation materials must be carefully removed from the area of the spill so as to prevent further release of petrochemicals to the environment, and stored in adequate containers until appropriate disposal.</p>		
Water Use and Quality	Water pollution	<p>Water Use</p> <p>1. Develop a sustainable water supply management plan to minimise the impact to natural systems by managing water use, avoiding depletion of aquifers and minimising impacts to water users.</p> <p>2) Water must be reused, recycled or treated where possible.</p> <p>Water Quality</p> <p>3) The quality and quantity of effluent streams discharged to the environment including stormwater should be managed and treated to meet applicable effluent discharge guidelines.</p> <p>4) Discharge to surface water should not result in contaminant concentrations in excess of local ambient water quality</p>		

		<p>criteria outside a scientifically established mixing zone.</p> <p>5) Efficient oil and grease traps or sumps should be installed and maintained at refueling facilities, workshops, fuel storage depots, and containment areas and spill kits should be available with emergency response plans.</p> <p>Stormwater</p> <p>6) The site must be managed in order to prevent pollution of drains, downstream watercourses or groundwater, due to suspended solids and silt or chemical pollutants.</p> <p>7) Silt fences should be used to prevent any soil entering the stormwater drains.</p> <p>8) Temporary cut off drains and berms may be required to capture stormwater and promote infiltration.</p> <p>9) Promote a water saving mind set with construction/Mining workers in order to Contractor ensure less water wastage.</p> <p>10) New stormwater construction must be developed strictly according to specifications from engineers in order to ensure efficiency.</p> <p>11) Hazardous substances must be stored at least 20m from any water bodies on site to avoid pollution.</p> <p>12) The installation of the stormwater system must take place as soon as possible to attenuate stormwater from the construction phase as well as the operation phase.</p> <p>13) Earth, stone and rubble is to be properly disposed of, or utilized on site so as not to</p>		
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		<p>obstruct natural water path ways over the site. i.e. these materials must not be placed in stormwater channels, drainage lines or rivers.</p> <p>14) There should be a periodic checking of the site’s drainage system to ensure that the water flow is unobstructed.</p> <p>15) If a batching plant is necessary, run-off should be managed effectively to avoid contamination of other areas of the site. Untreated runoff from the batch plant must not be allowed to get into the storm water system or nearby streams, rivers or erosion channels or dongas.</p> <p>Groundwater resource protection</p> <p>16) Process solution storage ponds and other impoundments designed to hold non fresh water or un-treated process effluents should be lined and be equipped with sufficient wells to enable monitoring of water levels and quality.</p> <p>It is recommended that the following actions be implemented in order to mitigate groundwater contamination:</p> <ul style="list-style-type: none"> • Prevent dirty water runoff from leaving the general mining area; • Minimise dirty footprints; • Compact the base of dirty areas, like the workshops and oil and diesel storage areas to minimise infiltration of poor-quality water to the underlying aquifers; • A credible company should remove used oil from the workshops; • Enough supply of absorbent fibre should be kept at the site to contain accidental spills; 		
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		<ul style="list-style-type: none"> • Contain dirty water in return water dams or pollution control facilities; • Ensure adequate maintenance of waste dam to avoid overflow; • Rehabilitation must include covering with a topsoil layer as well as vegetation thereof; • Proper storm water management should be implemented. Berms should also be constructed to ensure separation of clean water and dirty water areas; • The monitoring results must be interpreted annually, and network audited annually as well to ensure compliance with regulations; • A detailed mine closure plan should be prepared during the operational phase, including a risk assessment, water resource impact prediction etc. as stipulated in the <p>DWS Best Practice Guidelines. The implementation of the mine closure plan, and the application for the closure certificate can be conducted during the decommissioned phase.</p> <p>Sanitation</p> <p>17) Adequate sanitary facilities and ablutions must be provided for construction workers (1 toilet per every 15 workers).</p> <p>18) The facilities must be regularly serviced to reduce the risk of surface or groundwater pollution.</p> <p>Concrete mixing</p> <p>19) Concrete contaminated water must not enter soil or any natural drainage system as this disturbs the natural acidity of the soil and affects plant growth.</p>		
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		<p>Public areas</p> <p>20) Food preparation areas should be provided with adequate washing facilities and food refuse should be stored in sealed refuse bins which should be removed from site on a regular basis.</p> <p>21) The Contractor should take steps to ensure that littering by construction workers does not occur and persons should be employed on site to collect litter from the site and immediate surroundings, including litter accumulating at fence lines.</p> <p>22) No washing or servicing of vehicles on site.</p>		
Water Use and Quality	Changes to the hydrological regime of the stream	<p>Proposed mitigation</p> <ul style="list-style-type: none"> • Any activities that take place within 32 meters of a wetland or watercourse or the 1:100 year flood lines will require authorisation in terms of the relevant regulations of NEMA, however as far as possible infrastructure should be placed outside of wetlands and / or buffer lines. • No stockpiling should take place within a watercourse or the 32m buffer. • All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds • Erosion and sedimentation into channels must be minimised through the effective stabilisation (gabions and Reno mattresses) and the re-vegetation of any disturbed stream banks; • Ensure that erosion management and sediment controls are strictly 		

		<p>implemented from the beginning of site clearing activities, particularly as the soils in the study area are prone to erosion;</p> <ul style="list-style-type: none"> • All areas should be re-sloped and top-soiled where necessary and reseeded with indigenous grasses to stabilise the loose material; • Edge effects such as erosion must be strictly monitored and managed; • Sensitivity maps have been developed for the study area, indicating the drainage lines and riparian systems, and their relevant buffer zones. It is recommended that this sensitivity map be considered during all phases of the development and with special mentioning of the planning of infrastructure, in order to aid in the conservation of and minimise impact on the riparian and aquatic habitat and resources within the study area; • Rehabilitation must ensure that the wetland structure and function are reinstated in such a way as to ensure the ongoing functionality of the larger wetland systems at pre-mining levels. • Any areas where bank failure is observed, due to the prospecting or mining impacts, should be immediately repaired; • As far as possible the existing road network should be utilised, minimising the need to develop new access routes resulting in an increased impact on the local environment. Should temporary roads or access routes be necessary and 		
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		<p>unavoidable, proper planning must take place and the site sensitivity plan must be taken into consideration. If additional roads are required, then wherever feasible such roads should be constructed a distance from the more sensitive riparian areas and not directly adjacent thereto. If crossings are required they should cross the systems at right angles, as far as possible to minimise impacts in the receiving environment;</p> <ul style="list-style-type: none"> • The duration of impacts on the riverine and drainage line systems should be minimised as far as possible by ensuring that the duration of time in which flow alteration and sedimentation will take place is minimised; • Stabilisation of banks by employing one of the individual techniques below or a combination thereof, is essential, given the inherent susceptibility of the soils to erosion. Such measures include: <ul style="list-style-type: none"> ○ Re-sloping of banks to a maximum of a 1:3 slope; ○ Revegetation of re-profiled slopes; ○ Temporary stabilisation of slopes using geotextiles; and ○ Installation of gabions and reno-mattresses. ○ To prevent the further erosion of soils, management measures may include berms, soil traps, hessian curtains and storm water diversion away from areas particularly susceptible to erosion; 		
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		<ul style="list-style-type: none"> • Install erosion berms during construction to prevent gully formation: <ul style="list-style-type: none"> ○ Berms every 50m should be installed where any disturbed soils have a slope of less than 2%, ○ Berms every 25m where the track slopes between 2% and 10%, ○ Berms every 20m where the track slopes between 10% and 15% and ○ Berms every 10m where the track slope is greater than 15%; • Sheet runoff from access roads should be slowed down by the strategic placement of berms and sandbags; • All soils compacted as a result of construction activities falling outside of project areas should be ripped and profiled. Special attention should be paid to alien and invasive control within these areas. Alien and invasive vegetation control should take place throughout all construction and rehabilitation phases to prevent loss of floral habitat; • As far as possible, all rehabilitation activities should occur in the low flow season, during the drier winter months. • Trenches and deep excavations should not be left open for extended periods of time as fauna may fall in and become trapped in them. Trenches which are exposed should contain soil ramps allowing fauna to escape the trench. 		
	Impact of changes to water quality	<p>Proposed mitigation</p> <ul style="list-style-type: none"> • All vehicles must be regularly inspected for leaks. Re-fuelling must take place on a sealed surface area to 		

		<p>prevent entry of hydrocarbons into topsoil;</p> <ul style="list-style-type: none"> • All spills, should they occur, should be immediately cleaned up and treated accordingly. • Chemicals used for prospecting, vehicle maintenance and construction must be stored safely on site but outside the 32m buffer and surrounded by bunds. Chemical storage containers must be regularly inspected so that any leaks are detected early. • Littering and contamination of water sources during prospecting must be prevented by effective site management. • Emergency plans must be in place in case of spillages especially in the watercourse. • No stockpiling should take place within a watercourse. • All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds. • Stockpiles must be located away from river channels. • Erosion and sedimentation into channels must be minimised through the effective stabilisation (gabions and Reno mattresses) and the re-vegetation of any disturbed riverbanks. • The construction camp and necessary ablution facilities meant for 		
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	<p>Loss of riparian vegetation, aquatic habitat and stream continuity (migration corridors)</p>	<p>construction workers must be beyond the 32m buffer described previously.</p> <p>Proposed mitigation</p> <ul style="list-style-type: none"> • As far as possible, all rehabilitation activities should occur in the low flow season, during the drier winter months. • Trenches and deep excavations should not be left open for extended periods of time as fauna may fall in and become trapped in them. Trenches which are exposed should contain soil ramps allowing fauna to escape the trench. • The duration of impacts on the riverine and drainage line systems should be minimised as far as possible by ensuring that the duration of time in which flow alteration and sedimentation will take place is minimised; • Rehabilitation must ensure that riparian structure and function are reinstated in such a way as to ensure the ongoing functionality of the larger riparian systems at pre-mining levels. • Stabilisation of banks by employing one of the individual techniques below or a combination thereof, is essential, given the inherent susceptibility of the soils to erosion. Such measures include: <ul style="list-style-type: none"> ○ Re-sloping of banks to a maximum of a 1:3 slope; ○ Revegetation of re-profiled slopes; ○ Temporary stabilisation of slopes using geotextiles; and ○ Installation of gabions and reno-mattresses. 		
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		<ul style="list-style-type: none"> ○ To prevent the further erosion of soils, management measures may include berms, soil traps, hessian curtains and storm water diversion away from areas particularly susceptible to erosion; ● Install erosion berms during construction to prevent gully formation: <ul style="list-style-type: none"> ○ Berms every 50m should be installed where any disturbed soils have a slope of less than 2%, ○ Berms every 25m where the track slopes between 2% and 10%, ○ Berms every 20m where the track slopes between 10% and 15% and ○ Berms every 10m where the track slope is greater than 15%; 		
	<p>Spread of alien invasive species</p>	<p>Proposed mitigation</p> <ul style="list-style-type: none"> ● Proliferation of alien and invasive species is expected within any disturbed areas particularly as there are some alien and invasive species within the study area at present. These species should be eradicated and controlled to prevent further spread beyond the study area; ● It is suggested that an alien plant removal program be initialised within the study area in order to help reinstate more natural hydrological and ecological functions to within the project site; ● Alien plant seed dispersal within the top layers of the soil within footprint areas, that will have an impact on future rehabilitation, has to be controlled; ● Care should be taken with the choice of herbicide to ensure that no additional 		

		<p>impact and loss of indigenous plant species occurs due to the herbicide used;</p> <ul style="list-style-type: none"> • Footprint areas should be kept as small as possible when removing alien plant species; • No vehicles should be allowed to drive through designated sensitive drainage lines and riparian areas during the eradication of alien and weed species. • All alien vegetation in the riparian zone should be removed upon completion of prospecting activities and reseeded with indigenous grasses as specified by a suitably qualified specialist (ecologist); 		
<p>Specialist (Mpho Ramalivhana) mitigation measures:</p> <p>Vegetation Clearing for the prospecting purpose</p>	<p>Destruction of protected plant species</p>	<p>(construction and operation phase)</p>	<ul style="list-style-type: none"> • Supervision by an ecologist to ensure success of the rescue operation • Place drilling holes away from any red listed and/or protected plant species • Use already available farm roads to avoid trampling red listed plant species 	
	<p>Removal of the natural vegetation</p>	<p>(construction and operation phase)</p>	<ul style="list-style-type: none"> • Due to the sensitivity of the areas it is advised that areas designated for vegetation clearing should be identified and visibly marked off and also approved as part of final drilling map • Vegetation clearing areas should be kept to a minimum and restricted to the proposed drilling sites. • Exposed areas should be rehabilitated with indigenous plants to the project area as soon as construction is finished. 	
	<p>Disturbance to animals on site</p>	<p>(construction and operation phase)</p>	<ul style="list-style-type: none"> • Do not disturb nests, breeding sites or young ones. Do not attempt to kill or 	

			<p>capture snakes unless directly threatening the safety of employees.</p> <ul style="list-style-type: none"> • Dogs or other pets are not allowed to the worksite as they are threats to the natural wild animal • A low speed limit should be enforced on site to reduce wild animal-vehicle collisions • No animals should be intentionally killed or destroyed and poaching and hunting should not be permitted on the site. • Severe contractual fines must be imposed and immediate dismissal on any contract employee who is found attempting to snare or otherwise harms remaining faunal species. • Hunting weapons are prohibited on site. • Contract employees must be educated about the value of wild animals and the importance of their conservation. • The ECO must conduct regular site inspections of removing any snares or traps that have been erected. • Employees and contractors should be made aware of the presence of, and rules regarding, flora and fauna through suitable induction training and on-site signage. • Ensure that the colours used to paint the buildings including the roof are blending to the environment 	
	Increased soil erosion,	(construction and operation phase)	<ul style="list-style-type: none"> • Following prospecting, rehabilitation of disturbed areas is required 	

	increase in silt loads and sedimentation		<ul style="list-style-type: none"> • Avoid areas with sensitive soils, steep slopes during rain or windy season. • Ensure that roads are not paved but well maintained (as gravel) to reduce the speed of water by promoting infiltration. 	
	Establishment and spread of declared weeds	(construction and operation phase)	<ul style="list-style-type: none"> • The best mitigation measure for alien and invasive species is the early detection and eradication of these species which will be ensured with the use of a monitoring programme. • An alien invasive management programme should be developed and implemented in order to control alien invasive species 	
Specialist (Mpho Ramalivhana) mitigation measures: Waste generation	Pollution due to oil and fuel spills, erosion, and ablution facilities.	(construction and operation phase)	<ul style="list-style-type: none"> • Proper ablution facilities on site must be provided. • Constant rehabilitation of erosion problems. • Proper storage facilities of construction materials. • Waste management is very important. Proper storage and removal strategy must be in place. • Proper Standard Operating Procedures in place regulating refuelling and other potential polluting activities. • Must have rehabilitation strategy as part of EMP such as a clean-up plan/strategy if spills occur and proper facilities (ablution) to ensure no sewerage spills into drainage lines and streams. 	

<p>Specialist (Mpho Ramalivhana) mitigation measures:</p> <p>Wetland destruction</p>	<p>Prospecting on wetlands/along wetlands</p>	<p>(construction and operation phase)</p>	<ul style="list-style-type: none"> • Prospecting across wetlands/rivers should not take place. • Ensure that prospecting activities are carefully monitored to limit unnecessary impacts to wetlands/riparian areas (particularly in-stream habitat) and should be approved by WUL. • Do not lower the original stream bed / profile of the wetland/river as this may result in scouring in an upstream direction and further alteration of bed conditions. • Ensure that coarse immovable material including boulders and other rock in river channels is not removed to ensure continued stability and functioning of the river systems. River sediments should not be permanently removed from the system in any case. 	
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Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including

G. MONITORING OF IMPACT MANAGEMENT ACTIONS

H. MONITORING AND REPORTING FREQUENCY

I. RESPONSIBLE PERSONS

J. TIME PERIOD FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Clearance of vegetation	Loss or fragmentation of habitats	<ul style="list-style-type: none"> • Conduct regular internal audits • Conduct regular external audits 	<ul style="list-style-type: none"> • Environmental Manager • Suitable qualified environmental auditor 	Monitoring should be undertaken for duration of operations. Internal audits should be undertaken at least every 6 months. External audits should be undertaken by a suitably qualified auditor on an annual basis. Reports should be made available to the competent authority if required.
Mining of Diamonds (Alluvial) and Diamonds (General) – excavations	Loss of topsoil Erosion Air Pollution Noise	<ul style="list-style-type: none"> • Conduct regular internal audits • Conduct regular external audits 	<ul style="list-style-type: none"> • Environmental Manager • Suitable qualified environmental auditor 	Monitoring should be undertaken for duration of operations. Internal audits should be undertaken at

	Impact on potential cultural and heritage artefacts			least every 6 months. External audits should be undertaken by a suitably qualified auditor on an annual basis. Reports should be made available to the competent authority if required.
Waste management	Pollution	<ul style="list-style-type: none"> • Conduct regular internal audits • Conduct regular external audits 	<ul style="list-style-type: none"> • Environmental Manager • Suitable qualified environmental auditor 	Monitoring should be undertaken for duration of operations. Internal audits should be undertaken at least every 6 months. External audits should be undertaken by a suitably qualified auditor on an annual basis. Reports should be made available to the competent authority if required.
Water Use and Quality	Water pollution	<ul style="list-style-type: none"> • Conduct regular internal audits • Conduct regular external audits 	<ul style="list-style-type: none"> • Environmental Manager • Suitable qualified environmental auditor 	Monitoring should be undertaken for duration of operations. Internal audits should be undertaken at least every 6 months. External audits should be undertaken by a suitably qualified auditor on an annual basis. Reports should be made available to the competent authority if required.

K. A PROGRAM FOR REPORTING ON COMPLIANCE, TAKING INTO ACCOUNT THE REQUIREMENTS AS BY THE REGULATIONS;

External audits should be undertaken by a suitably qualified auditor on an annual basis. Reports should be made available to the Competent Authority if required.

L. AN ENVIRONMENTAL AWARENESS PLAN DESCRIBING THE MANNER IN WHICH—

- (i) Manner in which the applicant intends to inform his or her employees of any environmental risk which may result from their work.**

Okapi Diamonds (Pty) Ltd will implement an Environmental Awareness Plan which will include various mechanisms for informing employees of environmental risks resulting from their work, including:

- Induction training for full –time staff and contractors;
- In-house training sessions to be held with relevant employees;
- On the job training regarding environmental issues
- Training and skills development

The above measures will be implemented through an Environmental Communication Strategy to be implemented.

See the attached **appendix 7** for the Awareness plan

- (ii) Manner in which risks will be dealt with in order to avoid pollution or the degradation of the environment.**

Okapi Diamonds (Pty) Ltd will implement an incident reporting and reporting procedure in order to identify risks timeously and implement actions to avoid or minimise environmental impacts.

M. SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY (Among others, Confirm that the financial provision will be reviewed annually).

No specific information requirements have been detailed by the Competent Authority.

*******END OF THE REPORT*******