



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

SCOPING REPORT

FOR LISTED ACTIVITIES ASSOCIATED WITH MINING RIGHT AND/OR BULK SAMPLING ACTIVITIES INCLUDING TRENCHING IN CASES OF ALLUVIAL DIAMOND PROSPECTING.

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

NAME OF APPLICANT: WILLEM JOHANNES ANDRIES BERGH
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FILE REFERENCE NUMBER SAMRAD: (NC) 30/5/1/3/2/10876 MP

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.

OBJECTIVE OF THE SCOPING PROCESS

1. The objective of the scoping process is to, through a consultative process—
 - (a) identify the relevant policies and legislation relevant to the activity;
 - (b) motivate 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 and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process;
 - (d) identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment;
 - (e) identify the key issues to be addressed in the assessment phase;
 - (f) agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site; and
 - (g) identify suitable measures to avoid, manage, or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored.
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SCOPING REPORT

Contact Person and correspondence address

a) Details of:

i) The EAP who prepared the report:

Name of the Practitioner: Roelien Oosthuizen

Tel No.: 084 208 9088

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e-mail address: roosthuizen950@gmail.com

Physical Address: Farm Oberon, Kimberley, 8301

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ii) Appointed by:

Berné Bergh

Contact Person: Berné Bergh

Mobile: 076 902 5960

Email: stephanie@oryxplant.com

iii) Expertise of the EAP

(1) The qualifications of the EAP

Masters in Environmental Management (UFS)

B-Comm in Human and Industrial- Psychology (NWU)

(With evidence attached as **Appendix 1**)

(2) Summary of the EAP's past experience

Relevant past experiences in carrying out the Environmental Impact Assessment Procedures include Environmental Impact Assessments, Environmental Management Plans/Programmes/ Reports, Performance assessments, Rehabilitation progress assessments, Environmental Liability assessments, Environmental compliance monitoring, Scoping Reports, etc.

See attached CV.

(Attach the EAP's curriculum vitae as **Appendix 2**)

b) Description of the property

Farm Name:	<p>THE REMAINING EXTENT OF ERF 28; A PORTION OF ERF 30; ERF 1565; A PORTION OF A GRAVEL ROAD NAMED 'SAAMLOOP STREET'; AND A PORTION OF AN UNNAMED GRAVEL ROAD</p> <p>Extent: 4.9979 Ha District: Barkly West Province: Northern Cape</p>
Application area (Ha)	4.9979ha (Four comma nine nines seven nine hectares.)
Magisterial district:	Barkly West
Distance and direction from nearest town	<p>25km on the R31 towards Postmasburg. North West of Barkly-West District Barkly-Wes, Northern Cape, South Africa.</p>
21 digit Surveyor General Code for each farm portion	<p>C00700030000002800000 C00700030000003000000 C00700030000156500000</p> <p>A PORTION OF A GRAVEL ROAD NAMED 'SAAMLOOP STREET'; AND A PORTION OF AN UNNAMED GRAVEL ROAD</p>

c) **Locality map**
(show nearest town, scale not smaller than 1:250000)

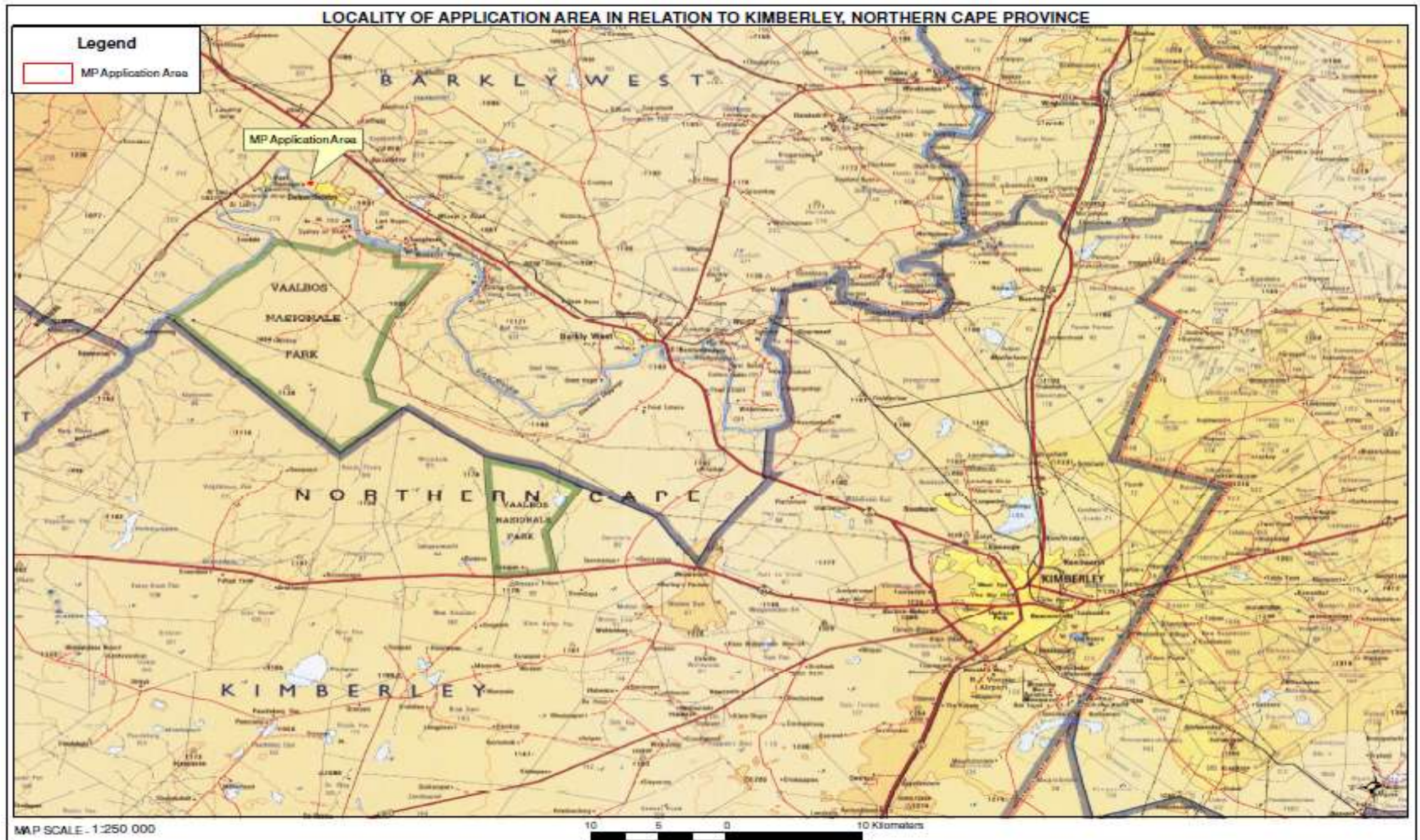


Figure 1. Locality Map

d) Description of the scope of the proposed overall activity

i) Listed and specified activities

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

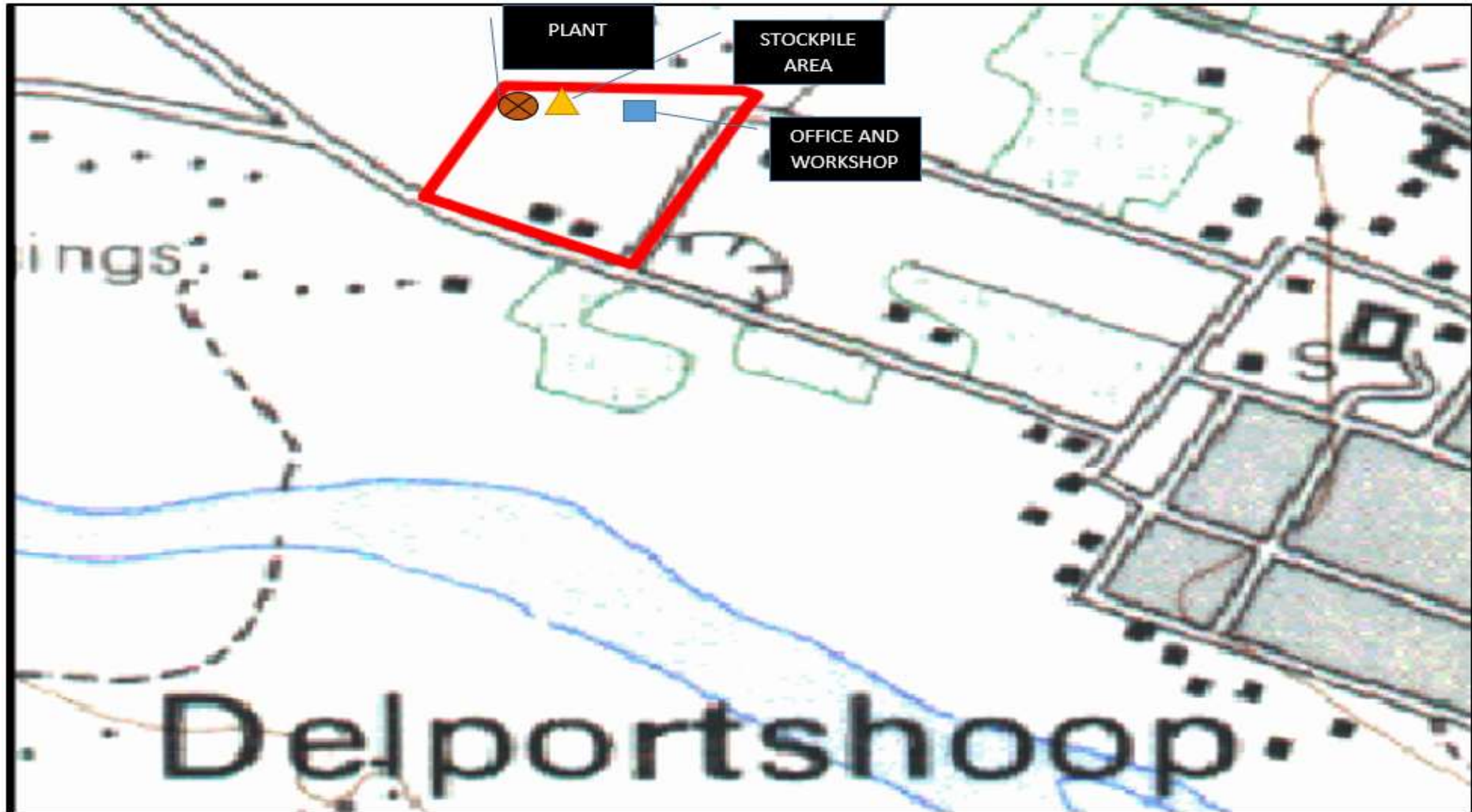


Figure 2. A plan indicating the overall location and extent of listed activities and main infrastructure on the mining site

Table 1: Listed and specified activities

NAME OF ACTIVITY (E.g. for prospecting – drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route, etc. ... etc. ... etc. E.g. for mining – excavations, blasing, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc. ... etc. ... etc.)	Aerial extent of the Activity Ha or m²	LISTED ACTIVITY (Mark with an X where applicable or affected).	APPLICABLE LISTING NOTICE (GNR 544, GNR 545 or GNR 546)	WASTE MANAGEMENT AUTHORISATION (Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)
Activity 21 of NEMA Listing Notice 1 Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, 202 (Act No. 28 of 2002), including - (a) associated infrastructure, structures and earthworks directly related to the extraction of a mineral resource; (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 smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in listing notice 2 applies.	4.9979ha	X	GNR 983	
Activity 24(ii) of NEMA Listing Notice 1 The development of haul roads 15m wide with no reserve	±5 000m ² on the Area.	X	GNR983	
Activity 56(ii) of NEMA Listing Notice 1 The continuous lengthening (and rehabilitation) of haul roads 15m wide with no reserve	±5 000m ² on the Area.	X	GNR983	

<p>Activity 27 of NEMA Listing Notice 1 The clearance of an area of 1 hectare or more, but less than 20 ha of indigenous vegetation.</p>	<p>A total of 4.9807 hectares will be physically disturbed were the alluvial diamond material will be removed and washed.</p>	<p>X</p>	<p>GNR984</p>	
<p>Activity 15 of Category A under the National Environmental Management: Waste Act 59 of 2008 The disposal of inert waste of 10 000 tons, excluding the disposal of such waste for the purposes of levelling and building which has been authorised by other legislation.</p> <p>The continuous establishment and reclamation of temporary stockpiles resulting from activities which require a mining permit.</p>	<p>10 000m²</p>		<p>GNR 633</p>	<p>X</p>
<p>Activity 12(g) i & ii The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p>i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has</p>	<p>4.9979ha</p>	<p>X</p>	<p>GNR 985</p>	

<p>ii. been identified as critically endangered in the National Spacial Biodiversity Assessment 2004; Within critically biodiversity areas identified in bioregional plans;</p>				
<p>OTHER ACTIVITIES (Associated infrastructure not considered to be listed activities)</p> <p>Temporary Workshop Facilities</p> <p>Concrete Bund walls and diesel Depots</p> <p>Ablution Facilities</p> <p>Topsoil Stockpiles</p> <p>Overburden Stockpiles</p>	<p>±300m²</p> <p>±250m²</p> <p>±25m²</p> <p>±2 000m²</p> <p>±2 000m²</p>		<p>NOT LISTED</p>	

ii) Description of the activities to be undertaken

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

Mining Method

The applicant will make use of an open cast mining method for alluvial diamonds. The mining method being employed is an open cast mining process with oversize material from the gravel scalping and the tailings from the plant, being used as backfill material prior to final rehabilitation. Gravels are excavated, loaded and transported to the nearby treatment facility using articulated dump trucks. Gravels are then loaded onto a vibrating grizzly and the +32 mm oversize material is discarded back into the open pit (about 55% reduction). The remaining -32 mm fraction is loaded into 1 X 16 sixteen-foot rotary pan, each with a treatment capacity of 40 tph. Tracer tests are done regularly to ensure that the pan is operating at the correct density. Concentrate is tapped continuously from the pan every three hours into three ton holding bins and transported with enclosed trucks to a final recovery unit which is, designed to use the X-ray diamond recovery method or any other facility which is chosen by André Bergh.

The operational phase of the mining operation will include the mining of alluvial diamonds by means of open cast mining with machinery.

Topsoil will be removed from the first area, where after it will be stored separately on the high ground side of the proposed mining area. Stored topsoil will be kept separate from overburden and will not be used for the building or maintenance of access roads. Stored topsoil will be adequately protected from being eroded or blown away.

Exposed diamondiferous gravel will then be removed by means of a back actor and loaded onto a tipper truck, which will transport it to the central mineral processing plant. At the plant the diamondiferous gravel will be sorted by means of a grizzly screen grid and all material larger than 100 mm will be separated from the rest. This material will be used in the backfilling stage.

Screened material smaller than 100 mm will be transported to a stockpiling area via a front-end loader. From here it will be transported to a conveyor belt, which will feed it onto a wet rotary screen and then directly onto a 1 X 16 feet washing pan.

The following procedure will be followed in terms of backfilling and rehabilitation:

- The coarse gravel sifted at the grizzly screen, tailing from the pan and fine concentrate will be transported back to and dumped into open area.
- During this process of backfilling, variation in the dumping sequence of different sized materials will be followed to ensure better compaction and stability of the reclaimed gravel. This will ensure that the voids surrounding the coarse gravel will be filled up with finer sediments. Compaction will be achieved through the movement of heavy vehicles over the area during the backfilling stage.
- The mining sequence will be followed until the last area is reached. Topsoil stored at the beginning of the mining operation will now be utilized for the final rehabilitation of the last area on the mining area.

e) Policy and Legislative Context

Table 2: 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 POLICY AND LEGISLATIVE CONTEXT (E.g In terms of the National Water Act:-Water Use License has/has not been applied for).</p>
<p>Conservation of Agricultural Resources Act (Act 43 of 1983) and Regulations (CARA)</p>	<ul style="list-style-type: none"> - Section 5: Implementation of control measures for alien and invasive plant species; - Section 6: Control measures. - Regulation GN R1048, published on 25 May 1984, in terms of CARA 	<ul style="list-style-type: none"> - Control measures are to be implemented upon the approval of the EMPR.
<p>Constitution of South Africa (Act 108 of 1996)</p>	<ul style="list-style-type: none"> - Section 24: Environmental right - Section 25: Rights in Property - Section 27: Water and sanitation right 	<ul style="list-style-type: none"> - To be implemented upon the approval of the EMPR.
<p>Environment Conservation Act (Act 73 of 1989) and Regulations (ECA)</p>	<ul style="list-style-type: none"> - Sections 21, 22, 25, 26 and 28: EIA Regulations, including listed activities that still relate to the existing section of ECA. - Section 28A: Exemptions. 	<ul style="list-style-type: none"> - To be implemented upon the approval of the EMPR.
<p>Fencing Act (Act 31 of 1963)</p>	<ul style="list-style-type: none"> - Section 17: States that any person erecting a boundary fence may clean any bush along the line of the fence up to 1.5m on each side thereof and remove any tree standing in the immediate line of the fence. However, this provision must be read in conjunction with the environmental legal provisions relevant to protection of flora. 	<ul style="list-style-type: none"> - Control measures are to be implemented upon the approval of the EMPR.
<p>Hazardous Substances Act (Act 15 of 1973) and Regulations read together with NEMA and NEMWA</p>	<ul style="list-style-type: none"> - Definition, classification, use, operation, modification, disposal or dumping of hazardous substances. 	<ul style="list-style-type: none"> - Noted and Considered measures are to be implemented upon the approval of the EMPR.

Intergovernmental Relations Act (Act 13 of 2005)	<ul style="list-style-type: none"> - This Act establishes a framework for the National, Provincial and Local Governments to promote and facilitate intergovernmental relations. 	
Mine, Health and Safety Act (Act 29 of 1996) and Regulations	<ul style="list-style-type: none"> - Entire Act. 	<ul style="list-style-type: none"> - Control measures are to be implemented upon the approval of the EMPR.
Mineral and Petroleum Resources Development Act (Act 28 of 2002) and Regulations as amended	<ul style="list-style-type: none"> - Entire Act. - Regulations GN R527 	<ul style="list-style-type: none"> - A Mining Permit has been applied for ((NC) 30/5/1/3/2/10876 MP). - Rights and obligations to be adhered to.
National Environmental Management Act (Act 107 of 1998) and Regulations as amended	<ul style="list-style-type: none"> - Section 2: Strategic environmental management principles, goals and objectives. - Section 24: Foundation for Environmental Management frameworks. - Section 24N: - Section 24O: - Section 28: The developer has a general duty to care for the environment and to institute such measures to demonstrate such care. - Regulations GN R547, more specifically Chapters 5 and 7, where applicable (the remainder was repealed) published on 18 June 2010 in terms of NEMA (Environmental Management Framework Regulations) - Regulations GN R982 to R985, published on 4 December 2014 in terms of NEMA (Listed Activities) - Regulations GN R993, published on 8 December 2014 in terms of NEMA (Appeal) - Regulations GN R994, published on 8 December 2014 in terms of NEMA (exemption) 	<ul style="list-style-type: none"> - Control measures are to be implemented upon the approval of the EMPR.

	<ul style="list-style-type: none"> - Regulations GN R205, published on 12 March 2015 in terms of NEMA (National appeal Amendment Regulations) - Regulations GN R1147, published on 20 November 2015 in terms of NEMA (Financial Provision) 	
National Environmental Management: Air Quality Act (Act 39 of 2004)	<ul style="list-style-type: none"> - Section 32: Control of dust - Section 34: Control of noise - Section 35: Control of offensive odours - Regulation GN R551, published on 12 June 2015 (amended Categories 1 to 5 of GN 983) in terms of NEM:AQA (Atmospheric emission which have a significant detrimental effect on the environment) - Regulation GN R283, published on 2 April 2015 in terms of NEM:AQA (National Atmospheric Emissions Reporting Regulations) (Group C-Mines) 	<ul style="list-style-type: none"> - Control measures are to be implemented upon the approval of the EMPR. - This is also legislated by Mine Health and Safety from DMR and is to be adhered to.
National Environmental Management: Biodiversity Act (Act 10 of 2004)	<ul style="list-style-type: none"> - Section 52 of The National Environmental Management Act: Biodiversity Act (NEMBA) (Act 10 of 2004) states that the MEC/Minister is to list ecosystems that are threatened and in need of protection. - Section 53 states that the Minister may identify any process or activity in such a listed ecosystem as a threatening process. - A list of threatened and protected species has been published in terms of Section 56(1) GG 29657 GNR 151 and GNR 152, Threatened or Protected Species Regulations. <p>Commencement of Threatened or Protected Species Regulations 2007 : 1 June 2007 GNR 150/GG 29657/23-02-2007</p>	<ul style="list-style-type: none"> - A permit application regarding protected plant species needs to be lodged with DENC if any protected species is encountered.

	<p>Publication of lists of critically endangered, vulnerable and protected species GNR 151/GG 29657/23-02-2007 *</p> <p>Threatened or Protected Species Regulations GNR 152/GG 296547/23-02-2007 *</p> <ul style="list-style-type: none"> - Sections 65 – 69: These sections deal with restricted activities involving alien species; restricted activities involving certain alien species totally prohibited; and duty of care relating to alien species. - Sections 71 and 73: These sections deal with restricted activities involving listed invasive species and duty of care relating to listed invasive species. - Regulation GN R151, published on 23 February 2007 (List fo Critically Endangered, Vulnerable and Protected Species, 2007) in terms of NEM: BA - Regulation GN R152, published on 23 February 2007 (TOPS) in terms of NEM:BA - Regulations GN R507 to 509 of 2013 and GN 599 of 2014 in terms of NEM:BA (Alien Species) 	
<p>The National Environmental Management Act: Protected Areas Act (NEMPAA) (Act 57 of 2003) provides for the protection of ecologically viable areas that are representative of South Africa’s natural biodiversity and its landscapes and seascapes.</p>	<ul style="list-style-type: none"> - Chapter 2 lists all protected areas. 	<p>If any protected vegetation is identified the necessary permit application will be done.</p>
<p>National Environmental Management: Waste Management Act (Act 59 of 2008)</p>	<ul style="list-style-type: none"> - Chapter 4: Waste management activities 	<ul style="list-style-type: none"> - To be implemented upon the approval of the EMPR.

	<ul style="list-style-type: none"> - Regulations GN R634 published on 23 August 2013 in terms of NEM:WA (Waste Classification and Management Regulations) - Regulations GN R921 published on 29 November 2013 in terms of NEM:WA (Categories A to C – Listed activities) - National Norms and Standards for the Remediation of contaminated Land and Soil Quality published on 2 May 2014 in terms of NEM:WA (Contaminated land regulations) - Regulations GN R634 published on 23 August 2013 in terms of NEM: WA (Waste Classification and Management Regulations) - Regulations GN R632 published on 24 July 2015 in terms of NEM: WA (Planning and Management of Mineral Residue Deposits and Mineral Residue Stockpiles) - Regulations GN R633 published on 24 July 2015 in terms of NEM: WA (Amendments to the waste management activities list published under GN921) 	
<p>National Forest Act (Act 84 of 1998) and Regulations</p>	<ul style="list-style-type: none"> - Section 15: No person may cut, disturb, damage, destroy or remove any protected tree; or collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a licence granted by the Minister. 	<ul style="list-style-type: none"> - A permit application regarding protected tree species need to be lodged with DAFF if necessary.
<p>National Heritage Resources Act (Act 25 of 1999) and Regulations</p>	<ul style="list-style-type: none"> - Section 34: No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority. - Section 35: No person may, without a permit issued by the responsible heritage resources 	<ul style="list-style-type: none"> - Control measures are to be implemented upon the approval of the EMPR.

	<p>authority destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or paleontological site.</p> <ul style="list-style-type: none"> - Section 36: No person may, without a permit issued by SAHRA or a provincial heritage resources authority destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a forma cemetery administered by a local authority. - Section 38: This section provides for HIA which are not already covered under the ECA. Where they are covered under the ECA the provincial heritage resources authorities must be notified of a proposed project and must be consulted during HIA process. - Regulation GN R548 published on 2 June 2000 in terms of NHRA 	
<p>National Water Act (Act 36 of 1998) and regulations as amended, <i>inter alia</i> Government Notice No. 704 of 1999</p>	<ul style="list-style-type: none"> - Section 4: Use of water and licensing. - Section 19: Prevention and remedying the effects of pollution. - Section 20: Control of emergency incidents. - Section 21: Water uses In terms of Section 21 a licence is required for: <ul style="list-style-type: none"> (a) taking water from a water resource; (b) storing water; (c) impeding or diverting the flow of water in a watercourse; (f) Waste discharge related water use; (g) disposing of waste in a manner which may detrimentally impact on a water resource; 	<ul style="list-style-type: none"> - A water use application is in the process of preparation and will be lodged with Department of Water and Sanitation (DWS). - Control measures are to be implemented upon the approval of the EMPR.

	<ul style="list-style-type: none"> (i) altering the bed, banks, course or characteristics of a watercourse; (j) removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and; - Regulation GN R704, published on 4 June 1999 in terms of the National Water Act (Use of water for mining and related activities) - Regulation GN R1352, published on 12 November 1999 in terms of the National Water Act (Water use to be registered) - Regulation GN R139, published on 24 February 2012 in terms of the National Water Act (Safety of Dams) - Regulation GN R398, published on 26 March 2004 in terms of the National Water Act (Section 21 (j)) - Regulation GN R399, published on 26 March 2004 in terms of the National Water Act (Section 21 (a) and (b)) - Regulation GN R1198, published on 18 December 2009 in terms of the National Water Act (Section 21 (c) and (i) – rehabilitation of wetlands) - Regulations GN R1199, published on 18 December 2009 in terms of the National Water Act (Section 21 (c) and (i)) - Regulations GN R665, published on 6 September 2013 in terms of the National Water Act (Amended GN 398 and 399 – Section 21 (e), (f), (h), (g), (j)) 	
<p>Nature Conservation Ordinance (Ord 19 of 1974)</p>	<ul style="list-style-type: none"> - Chapters 2, 3, 4 and 6: Nature reserves, miscellaneous conservation measures, protection of wild animals other than fish, protection of Flora. 	<ul style="list-style-type: none"> - Control measures are to be implemented upon the approval of the EMPR.

Northern Cape Nature Conservation Act (Act 9 of 2009)	<ul style="list-style-type: none"> - Addresses protected species in the Northern Cape and the permit application process related thereto. 	<ul style="list-style-type: none"> - A permit application regarding provincially protected plant species as well as for large-scale harvesting of indigenous flora need to be lodged with DENC if necessary. - Control measures are to be implemented upon the approval of the EMPR.
Occupational Health and Safety Act (Act 85 of 1993) and Regulations	<ul style="list-style-type: none"> - Section 8: General duties of employers to their employees. - Section 9: General duties of employers and self-employed persons to persons other than their employees. 	<ul style="list-style-type: none"> - Control measures are to be implemented upon the approval of the EMPR.
Road Traffic Act (Act 93 of 1997) and Regulations	<ul style="list-style-type: none"> - Entire Act. 	<ul style="list-style-type: none"> - Control measures are to be implemented upon the approval of the EMPR.
Water Services Amendment Act (Act 30 of 2007)	<ul style="list-style-type: none"> - It serves to provide the right to basic water and sanitation to the citizens of South Africa (giving effect to section 27 of the Constitution). 	<ul style="list-style-type: none"> - Control measures are to be implemented upon the approval of the EMPR.
National Land Transport Act, (Act 5 of 1998)		<ul style="list-style-type: none"> - To take note.
Northern Cape Planning and Development Act (Act 7 of 1998)	<ul style="list-style-type: none"> - To control planning and development 	<ul style="list-style-type: none"> - To be implemented upon the approval of the EMPR.
Spatial Planning and Land Use Management (Act 16 of 2013 (SPLUMA) and regulations	<ul style="list-style-type: none"> - To provide a framework for spatial planning and land use management in the Republic; - To specify the relationship between the spatial planning and the land use management, amongst others - Regulations GN R239 published on 23 March 2015 in terms of SPLUMA 	<ul style="list-style-type: none"> - To be implemented upon the approval of the EMPR.
Subdivision of Agricultural Land Act, 70 of 1970 and regulations	<ul style="list-style-type: none"> - Regulations GN R373 published on 9 March 1979 in terms of Subdivision of Agricultural Land 	<ul style="list-style-type: none"> - To take note.

Basic Conditions of Employment Act (Act 3 of 1997)) as amended	- To regulate employment aspects	- To be implemented upon the approval of the EMPR
Community Development (Act 3 of 1966)	- To promote community development	- To be implemented upon the approval of the EMPR
Development Facilitation (Act 67 of 1995) and regulations	- To provide for planning and development	- To take note.
Development Facilitation (GN24, PG329, 24/07/1998)	- Regulations re Northern Cape LDO's	- To take note.
Development Facilitation (GNR1, GG20775, 07/01/2000)	- Regulations re application rules S26, S46, S59	- To take note.
Development Facilitation (GN732, GG14765, 30/04/2004)	- Determines amount, see S7(b)(ii)	- To take note.
Land Survey Act (Act 8 of 1997)) and regulations, more specifically GN R1130	- To control land surveying, beacons etc. and the like; - Agriculture, land survey S10	- To take note.
National Veld and Forest Fire Act (Act 101 of 1998)) and regulations, more specifically GN R1775	- To regulate law on veld and forest fires - (Draft regulations s21)	- To be implemented upon approval of the EMPR
Municipal Ordinance, 20/1974	- To control pollution, sewers etc.	- To be implemented upon approval of the EMPR
Municipal Ordinance, PN955, 29/08/1975	- Nature conservation Regulations	- To be implemented upon approval of the EMPR
Cape Land Use Planning Ordinance, 15/85	- To control land use planning	- To take note.
Cape Land Use Planning Ordinance, PN1050, 05/12/1988	- Land use planning Regulations	- To take note.

f) Need and desirability of the proposed activities.

(Motivate the need and desirability of the proposed development including the need and desirability of the activity in the context of the preferred location).

Taking into consideration all the information captured in this report, the most appropriate procedure for planning and developing the proposed mining operation will involve the following:

The WJA Bergh Project is in line with the 'Beneficiation Strategy for the Minerals Industry of South Africa' (DMR, 2011) in terms of aiming to beneficiate diamonds for sale/export. The benefits of this will fall directly to the Northern Cape Province and, specifically, the Frances Baard District.

In addition, the South African National Development Plan aims to eliminate poverty and reduce inequality by 2030. South Africa can realise these goals by drawing on the energies of its people, growing an inclusive economy, building capabilities, enhancing the capacity of the state, and promoting leadership and partnerships throughout society. The André Bergh Project will contribute to achieving this plan in terms of direct and indirect employment of people from the local and district municipalities as well as investment in the region and on a national scale.

Need

Analysis of the Diamond Industry – ALROSA (website)

The Information on the analysis of the diamond industry was obtained from the ALROSA website which is one of the biggest diamond producers in the world.

The world diamond market is represented by diamond mining and trade in rough diamonds. The bulk of the world diamond mining is concentrated in nine countries, with their share in the global production in physical terms as high as 99%.

The world's largest producers of natural diamonds are Russia, the Democratic Republic of Congo (DRC) and Botswana, all together accounting over 60% of the global diamond production.

Top Countries in the Global Diamond Production 2016: 134.1 mln. Carats

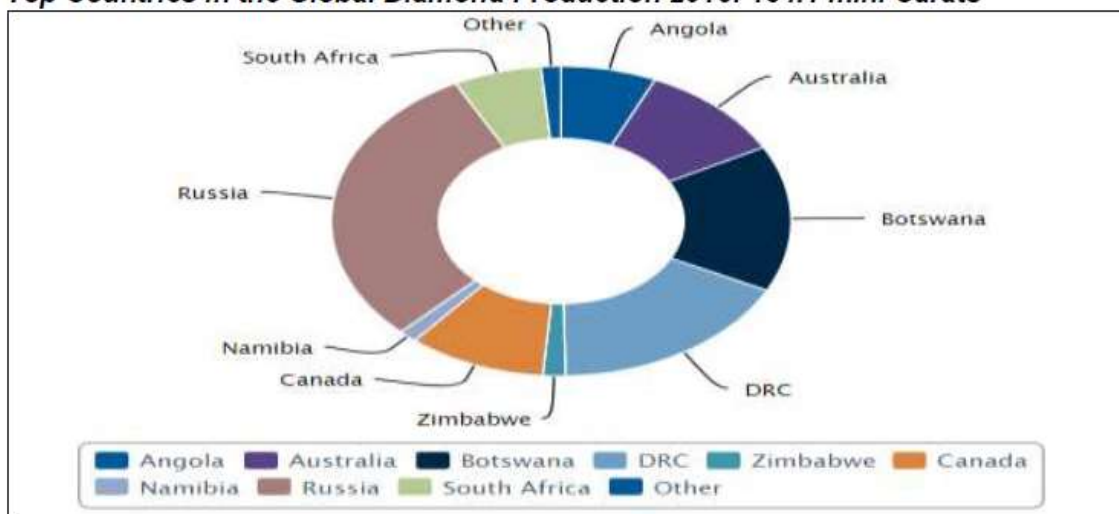


Figure 3. Kimberley Process companies' data Global Diamond Production 2011-16 (thousands carats)

World diamond production based on the costs of produced rough diamonds are dominated by Russia, Botswana and Canada with a combined production of more than 60% of the total worldwide production.

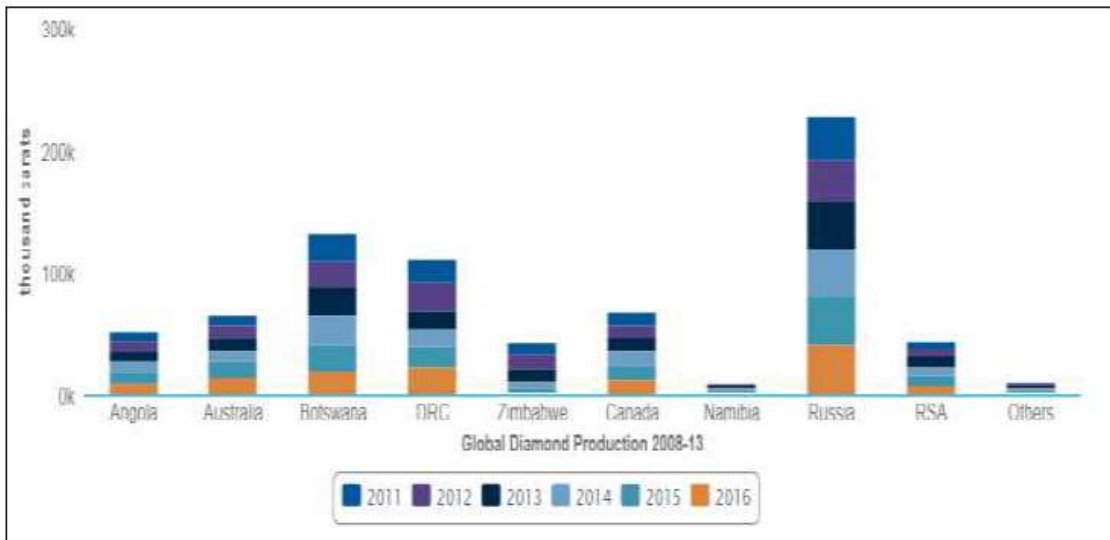


Figure 4. Global Diamond Production 2011-16 (thousands carats) Kimberley Process companies' data.

Russia ranks first in the world's diamond production. ALROSA Group accounts for 93% of the total diamond production in the Russian Federation in physical terms, and it is the leader of the global diamond mining industry. Major mining companies are engaged in mining in the main diamond-producing countries, the exception being Zimbabwe and the DRC, where diamond deposits are developed by small companies and prospectors. The graph below represents the geography of the companies' activities including exploration.

Diamond Production by Leading Companies, 2016(* - including Ekati; Companies' data)

The world's diamond mining is concentrated in the major primary deposits accounting for about 60% of the global diamond production. The remaining production is concentrated in placer deposits, the principal of them located in the DRC (Mbiji-Mayii) and Zimbabwe (Marange).

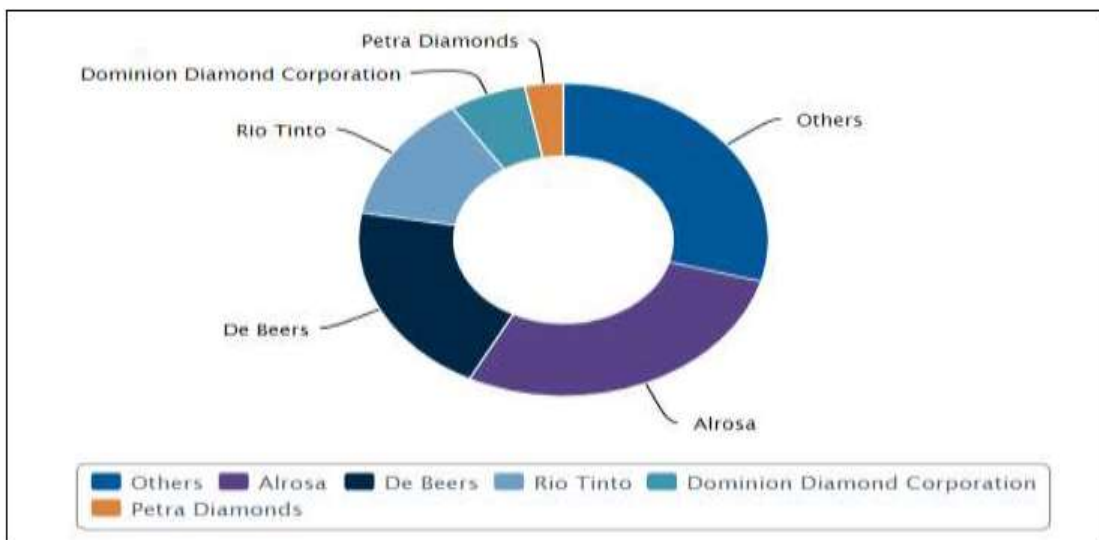


Figure 5. Diamond Production by Leading Companies, 2016(* - including Ekati; Companies' data)

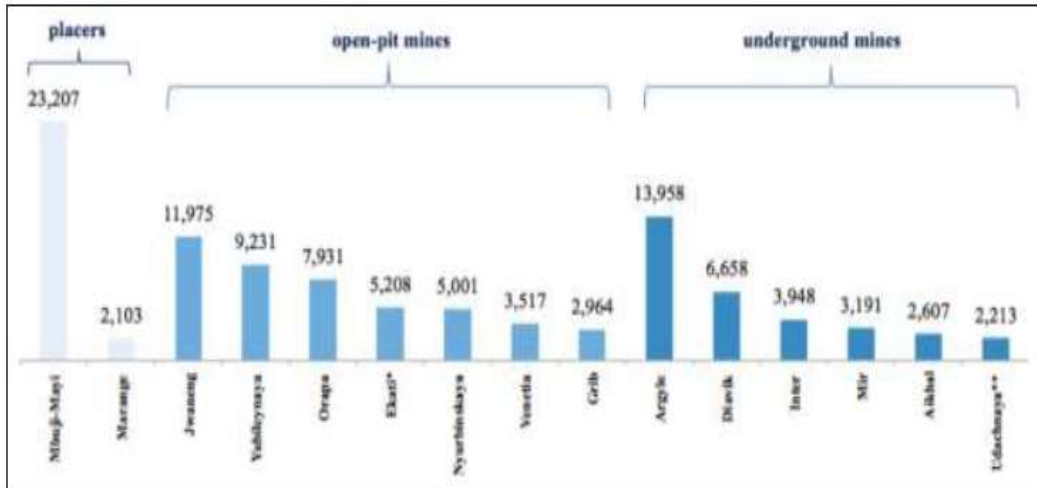


Figure 6. Production Output of the World's Major Diamond Deposits, 2016 (thousand carats) Kimberley Process and companies' data; * - Ekati includes open-pit and underground mining; ** - output, including further development of the open-pit.

By their attributes diamonds from deposits fall into two categories: gem quality and industrial grade diamonds. The former is used in diamond jewellery production, while the latter is used for industrial purposes (manufacture of drills, saws, and abrasive powders). Gem quality rough diamonds are sorted by size, colour, quality and shape, and then are sold to buyers in conformity with the sales policy adopted in a rough diamond production company. Depending on the quality of the mined rough diamonds, the current state of the market, the adopted marketing policy, companies use different approaches to diamond sales: sights, tenders, auctions, spot transactions and long-term contracts.

The world's largest trading centers, which concentrate the bulk of trade in natural rough diamonds, are India, Belgium, the UAE, the USA, Hong Kong and Israel. Being sold from mines, natural rough diamonds arrive at cutting and polishing plants to become polished diamonds that will be used in jewellery making.

(The information above was sourced from the ALROSA website. ALROSA is a world leader in the world diamond mining industry, a Russian partially state-owned diamond mining company)

The Diamond Pipeline

The Diamond Pipeline can be defined as the route the diamond takes from mine to end consumer. The diamond pipeline, typically, comprises.



Figure 7. The Diamond Pipeline

Exploration/Prospecting; involves geologists finding diamond deposits in different areas. Prospecting is vital to the future survival of any diamond business as there is a predicted supply-demand gap.

Mining and Recovery; once diamonds have been discovered and surveys shown that it is financially viable to mine them; they are now recovered from the ground. The manner in which they are mined and recovered depends on their source, thus, where they are found.

Sorting and valuing; process of sorting and valuing of diamonds, categorizing them according to size, quality, model and colour.

Cutting and polishing; refers to manufacturing of diamonds; the process of turning rough diamonds into polished.

Polished Market; this is referred to as the ‘diamond exchange bourse’, a place where diamonds are traded. These are located in some of the world’s major diamond manufacturing centres, e.g. Belgium.

Retailing; polished diamonds find their way to Jewellers and Consumers through Wholesalers and Retailers.

International Diamond Market Trends

Although global financial stability has proven quite volatile over the past 4-5 years, the diamond industry appears to have stabilised somewhat, with moderate increases in diamond prices forecast for the immediate future.



Figure 8. Inventory movements support diamond prices(USDM, Mct)

BMO Capital Markets (Sterck, 2011) estimated at the time that Chinese demand for polished diamonds accounted for 5% or USD1 billion of the market in 2010. While this represents a relatively small proportion of the market currently, growth is extremely strong.

De Beers reported that Chinese demand for polished diamonds grew at 25% in 2010, significantly ahead of GDP growth of 13%. Looking ahead, momentum into 2011 suggests that growth of 15% may be possible. From 2012 onwards, growth in household disposable income is forecast to average 11% to 12% per annum. This translates into minimum growth in diamond demand of 13% per annum.

From 2012 onwards diamond demand is likely to grow in line with economic growth at around 10% per annum. Combining steady demand growth from the established diamond consuming nations and strong growth in demand from emerging consumer's results in a forecast of polished diamond demand almost doubling by 2020, resulting in a total market value of over USD30 billion in nominal terms.

Desirability

No	Description	Yes/No
1	Does the proposed land use / development fit the surrounding area?	Yes
2	Does the proposed land use / development conform to the relevant structure plans, SDF and planning visions for the area?	Yes
3	Will the benefits of the proposed land use / development outweigh the negative impacts of it?	Yes
4	Will the proposed land use / development impact on the sense of place?	Yes
5	Will the proposed land use / development set a precedent?	No
6	Will any person's rights be affected by the proposed land use / development?	Yes
7	Will the proposed land use / development compromise the "urban edge"?	No

Benefits

No	Description	Yes/No
1	Will the land use / development have any benefits for society in general?	Yes
2	Will the land use / development have any benefits for the local communities where it will be located?	Yes

g) Period for which the environmental authorisation is required

5 years dependant on the granting of the Mining Permit for 2 years which can be renewed for a further three years one year at a time.

h) Description of the process followed to reach the proposed preferred site

NB!! – This section is not about the impact assessment itself; It is about the determination of the specific site layout having taken into consideration (1) the comparison of the originally proposed site plan, the comparison of that plan with the plan of environmental features and current land uses, the issues raised by interested and affected parties, and the consideration of alternatives to the initially proposed site layout as a result.

The location of the mine is determined by the geological location of the mineral resources.

i) Details of all alternatives considered

With reference to the site plan provided as Appendix 4 and the location of the individual activities on site, provide details of the alternatives considered with respect to:

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

(a) The registered description of the land to which the mining right application relates:

Properties: Remaining Extent of Erf 28; A Portion of Erf 30; Erf 1565, A Portion of a Gravel Road 'Saamloop Street' and a Portion of an unnamed Gravel Road

District: Barkly West

Province: Northern Cape

Extent: 4.9979 ha

Alternatives considered: -

No planned alternative to proposed mining is envisaged. Should mining not proceed the current land use will continue. Proposed site layout and opencast mining with concurrent rehabilitation where possible will minimise footprint and impact. Any alternative methodology may have greater impact. Alternatives may be looked at in more detail within the EIA EMP Report.

The only other alternative would be not to continue with the operation.

(b) The type of activity to be undertaken:

The planned mining technique is that of a typical South African opencast alluvial diamond operation. The planned mining method is Opencast mining process with oversize material from the gravel scalping and the tailings from the plant, being used as backfill material prior to final rehabilitation. Gravels are excavated, loaded and transported to the nearby treatment facility using articulated dump trucks.

Alternatives considered: -

The mining area are within the target area known to carry diamonds and therefore no alternative to the application area can be considered. The only alternative land use on the area that will be selected for the processing plant is grazing; however, the applicant's main economic activity is mining and for this reason does not favour any other alternative land use.

(c) The design or layout of the activity:

The site infrastructure will need to be strategically placed by incorporating mining project demands and environmental sensitivities identified during the Environmental Impact Assessment process. Thus, the site layout will primarily be based on proximity

to the nearby access roads, proximity to the areas earmarked for mining as well as limited additional impact on the environmental (nonperennial drainage lines and wind direction), heritage resources and discussions with the relevant Interested and affected parties and Departments.

The following infrastructure will be established and will be associated with the prospecting operation:

- Processing Plant: 1 X 16 feet
- Ablution Facilities: In terms of sewage the decision was made to use chemical toilets which can be serviced regularly by the service provider.
- Clean & Dirty water system: Berms
It is anticipated that the operation will establish stormwater control berms and trenches to separate clean and dirty water on the mining site.
- Fuel Storage facility (Concrete Bund walls and Diesel tanks):
It is anticipated that the operation will utilize 1 or 2 x 23 000 litre diesel tanks depending on the need. This tank must be placed in bund walls, with a capacity of 1.5 times the volume of the diesel tank. A concrete floor must be established where the re-fuelling will take place.
- Mining Area: Area applied for is an open cast mining process with oversize material from the gravel scalping and the tailings from the plant, being used as backfill material prior to final rehabilitation.
- Processing plant: At the plant the diamondiferous gravel will be sorted by means of a grizzly screen grid and all material larger than 100 mm will be separated from the rest. This material will be used in the backfilling stage.
- Roads (both access and haulage road on the mine site):
Although it is recommended that the operation utilize existing roads as far as possible, it is anticipated that the mining operation will create an additional 1.5 km of roads, with a width of 8 meters where no reserve exists and where the reserve exists 15 meters. The current access roads is deemed adequate for a service road into the mining site.
- Salvage yard (Storage and laydown area).
- Product Stockpile area.
- Waste disposal site
The operation will establish a dedicated, fenced waste disposal site with a concrete floor and bund wall. The following types of waste will be disposed of in this area:
 - Small amounts of low-level hazardous waste in suitable receptacles;
 - Domestic waste;
 - Industrial waste.
- Temporary Workshop Facilities and Wash Bay.

- Water distribution Pipeline.
- Water tank: It is anticipated that the operation will establish 1 x 10 000 litre water tanks with purifiers for potable water.

Alternatives considered: -

Alternatives for fuel storage include surface storage, underground storage and the storage of fuel in mobile tanks with a metal bund wall. Underground storage has an adverse negative pollution potential because it is not easy to monitor leakages. Remediation measures are also not as effective as compared to surface storage tanks. Mobile tanks are viable option for infield screening activities, but the best viable long terms option is the instalment of fuel tanks within a concrete bund wall. The final location of the fuel storage tanks will be determined based on proximity to mining operations.

In terms of water use alternatives; the operation is located next to the Vaal River which is a perennial river as the best water source for the operation. Plastic pipelines are considered to be the best long-term option for transferring water, due to their temporary nature which causes minimum environmental disturbances.

A diamond rotary plant will be established which uses a 1 X 16 feet rotary pan. Water use for a 16 feet rotary pan is in the order of 10 000 litres per hour. The operation will only work in daytime hours which will constitute about 8 hours per day which will bring water consumption to 80 000 litres per day and 400 000 litres per week 1 600 000 litres per month per pan. A 16 feet pan can on capacity work about 65 tons per hour which constitutes about 117m³ per hour.

Therefore, a pipeline route will be designed based on the principle of minimum impacts to the environment.

The locality of the mine residue dam will be selected based on the following considerations, this dam will be very small due to the limited material being processed and the water needed:

- The locality is already disturbed or mined out.
- It is within reach of (1 000m) of the treatment plant.
- It is situated near the access road to the mining activities.
- No underlying ore bodies or geological discontinuities.
- No geomorphological impacts.
- No structures, dwellings or other points of risk on down-stream side.
- Convenient material nearby for construction of dam.
- Top soil from the treatment process will be available for final rehabilitation.

A standard slimes dam design will be established in order to maximise the capacity of the slimes dam and to minimise the risks in terms of general safety and the DWS regulation.

In terms of power generation, the options available was for Generators or ESKOM power. All of the electricity needs for the operations will be generated by a diesel

generator and there would therefore be no additional pressure on the Eskom Electricity Grid.

In terms of sewage the decision was made to use chemical toilets which can be serviced regularly by the service provider.

(d) The technology to be used in the activity:

- Technique

The operational phase of the mining operation will include the mining of alluvial diamonds by means of open cast mining with machinery.

Topsoil will be removed from the first excavation, where after it will be stored separately on the high ground of the proposed mining area. Stored topsoil will be kept separate from overburden and will not be used for the building or maintenance of access roads. Stored topsoil will be adequately protected from being eroded or blown away.

Exposed diamondiferous gravel of Excavation 1 will then be removed by means of a back actor and loaded onto a tipper truck, which will transport it to the central mineral processing plant. At the plant the diamondiferous gravel will be sorted by means of a grizzly screen grid and all material larger than 100 mm will be separated from the rest. This material will be used in the backfilling stage.

- Technology

The mining method being employed is an Open cast mining process with oversize material from the gravel scalping and the tailings from the plant, being used as backfill material prior to final rehabilitation. Gravels are excavated, loaded, and transported to the nearby treatment facility using articulated dump trucks. Gravels are then loaded onto a vibrating grizzly and the +32 mm oversize material is discarded back into the open pit (about 55% reduction). The remaining -32 mm fraction is loaded into a 1 X 16-foot rotary pan, each with a treatment capacity of 40 tph. Tracer tests are done regularly to ensure that the pan is operating at the correct density. Concentrate is tapped continuously from the pan every three hours into three ton holding bins and transported with enclosed trucks to a final recovery unit which is designed to use the X-ray diamond recovery method or any other facility which is chosen by WJA Bergh.

Alternatives considered: -

The planned mining activities include mining with an excavator up to bedrock. The operation is also associated with processing techniques that make use of modern technologies. These are the most economic viable method currently being used by the diamond fraternity. There is no other feasible, alternative mining method for the mining of alluvial diamonds.

(e) The operational aspects of the activity:

The gravels will be loaded with an excavator on to dump trucks for conveyance to the Processing Plant. At the Processing Plant the run of mine gravels will be fed onto

a grizzly for screening out oversize material. The material will be processed through a screening section for delivery to a recovery plant. Concentrate from the recovery plant will be processed through an X-Ray/Sortex plant to extract the diamonds. An area will be used for all processing and dumping operations outside the 1:100-year flood line.

Mining activities will primarily make use of existing roads created by previous mining activities, but there is a possibility for additional roads that could be created.

Alternatives considered: -

The conventional opencast load-haul-mining method has been proven to be the most economic viable method currently being used by the diamond fraternity. There is no other feasible, alternative mining method for the mining and extraction of possible general and alluvial diamonds.

(f) The option of not implementing the activity:

Potential land use includes grazing and mining. The majority of the area is classified to have potential for grazing land. Therefore, mining activities are believed to be the most economically beneficial option for the area to establish any potential for mineral resources.

Socio-Economy

The operation will make provision for 11 - 15 job opportunities. This will be lost if the mining project does not proceed. Substantial tax benefits to the State and Local Government will also be lost.

Biodiversity

There are some parts of the application area that is covered by vegetation, a specialist biodiversity study will be done on the area to establish if any of the flora or fauna is protected.



Figure 9. View of application area in Delportshoop

Heritage and Cultural Resources

No information is available on any heritage features on the area of application and the necessary specialist studies will be done to be included into the EIA/EMP documents.

Should any other heritage features and/or objects be located or observed, a heritage specialist will be contacted immediately. Observed or located heritage features and/or objects may not be disturbed or removed in any way until such time that a heritage specialist has been able to make an assessment as to the significance of the site (or material) in question. If the mining operation is approved, the heritage resources if any other had been encountered will be protected through the demarcation of no-go zones and fencing off.

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.

Consultation Letters with comments forms and a copy of the Scoping Report was send to all owners of the erwen in Delportshoop on 21 July 2021. All Government Departments identified were also notified by registered letters and a copy of the Scoping Report send on 21 July 2021.

A notice was also placed in the DFA during July 2021 to invite any other interested parties to come forward and to register.

Notices were put up at the erwen fences and at the general dealer in Delportshoop.

iii) Summary of issues raised by I&APs

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

Table 3: Summary of issues raised by I & AP's

Interested and Affected Parties		Date Comments Received	Issues Raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated
List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted					
AFFECTED PARTIES					
Landowner/s	X				
Mr. H.C. Bergh	X				
Ms. M.A. Daniels					
Mr. J.J. Nel					
Ms. S. Bergh					
Lawful occupier/s of the land					
Landowners or lawful occupiers on adjacent properties	X				
Municipal Councillor	X				
Municipality	X				
Dikgatlong Local Municipality Private Bag X5 Barkly West 8375	X				
Frances Baard District Municipality Private Bag X6088 Kimberley	X				

8300					
Organs of State (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA					
ESKOM SOC Limited NC Land Development Operating Unit P O Box 606 Kimberley 8300	X				
Eskom Environmental Division PO Box 356 Bloemfontein 9300	X				
SANRAL P O Box 415 Pretoria 0001	X				
Transnet PO Box 72501 Parkview 2122	X				
Communities					
No Communities					
Dept. Land Affairs					
Department of Rural Development and Land Reform PO Box 5026 Kimberley 8300	X				

Department of Land Affairs and Rural Development Private Bag X 5018 Kimberley 8300					
Department of Agriculture & Land Reform, Rural Development Private Bag X5018 Kimberley 8300					
Traditional Leaders					
No Traditional Leaders					
Dept. Environmental Affairs					
Department of Environment & Nature Conservation Private Bag X6102 Kimberley 8300	X				
Other Competent Authorities affected					
Department of Water and Sanitation NC Private Bag X6101 Kimberley 8300	X				
SAHRA P.O. Box 4637 Cape Town 8000	X				

Dept. of Agriculture, Land Reform & Rural Development Private Bag X5108 Kimberley 8300	X				
National Dept. of Public Works Private Bag X5002 Kimberley 8300	X				
Northern Cape Department of Roads and Public Works Head of Department PO Box 3132 Squarehill Park Kimberley 8300	X				
Department of Agriculture, Forestry and Fisheries P O Box 2782 Upington 8800					
OTHER AFFECTED PARTIES					
None					
INTERESTED PARTIES					

iv) The Environmental attributes associated with the sites

(1) Baseline Environment

(a) Type of Environment affected by the proposed activity

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

1.1 Geology

Alluvial gravels, normally containing diamonds, occurs sporadically along the Vaal and Riet river. The *Mastodon* remains found in the older gravels, indicates that these gravels are 4 million years old and thus forms part of the Late Pliocene to Middle Pleistocene. The alluvial gravels developed on different heights and distances from the current riverbed. The largest concentration of gravels is found down stream of Windsorton on the right shore of the Vaal River.

Older gravels

The oldest gravels found on Nooitgedacht 66; south west, north west and north east of Barkly West; south of the Vaal river on the northern part of Pniel 281; south west and south east of Riverton; on Holsdam 229; Harrisdale 226, near Warrenton and in the northern parts of Beth-el-Pella 623. Around Barkly West these gravels are found at a depth of 25 m and south of Barkly West on Pniel 281 to a depth of 33 m. On Nooitgedacht 66 the alluvial gravels are found between 45 m and 76 m above the current riverbed. Rounded to half rounded cobblestone and pebble stoned size clasts are found in a matrix of loose, silty sands, compacted calcretes or calcified sand.

A poorly sorted, basal layer gravel occurs underneath the older gravels and reaches a thickness of 4,4 m in the Barkly West region. The basal layer consisting of diabase and dolerite pebble stones and roll blocks, weathered Ventersdorp lavas and tillite material consisting of quartzite, chert, agate, and banded ironstone.

Due to colluvial processes a graded layer of reworked gravels were deposited on top of the basal layer. These graded layers are known as "rooi"-, "aartapel"- and "rooikoppie" gravels. These gravels only consist out of weathering resistant rocks such as quartzite, agate, chert, jasper, chalsedone, petrified wood and banded ironstones since the softer more weatherable rollstones are weathered away. These colluvial gravel deposits contain less lava roll stones and contain more diamonds than the basal layer gravels.

Younger gravels

The younger gravels were formed in the Middle Pleistocene. The younger gravels are not as well sorted or rounded as the older gravels and contain roll stones with a diameter of 0,3 m. The roll stones mostly consists out of lavas from the Ventersdorp Supergroup. These younger gravels also contain less quartz-, quartzite-, jasper-, chert-, and agate roll stones than the older graded layer gravels.

These gravels can be divided into three sequential units. The basal unit consist out of a cobblestone gravel which consist of massive bottom load deposits. The middle unit consists out of uncemented rough sand and pebbles whereas the top unit consists of rough to cobbelstone gravels. The gravels are cemented by hardpan calcrete in certain areas. These units can be observed from Windsorton to Delportshoop along the Vaal river.

Youngest Gravels

The youngest gravels are found on terraces 6 to 17 m above the current riverbed. Outcrops of these gravels can be found in Douglas, Schmidtsdrift, Gong-Gong and Delportshoop. These gravels are covered by red sand and mostly consists of roll stones with diameters of 1 m and larger. The matrix of these gravels is mostly sand, silt and clay.

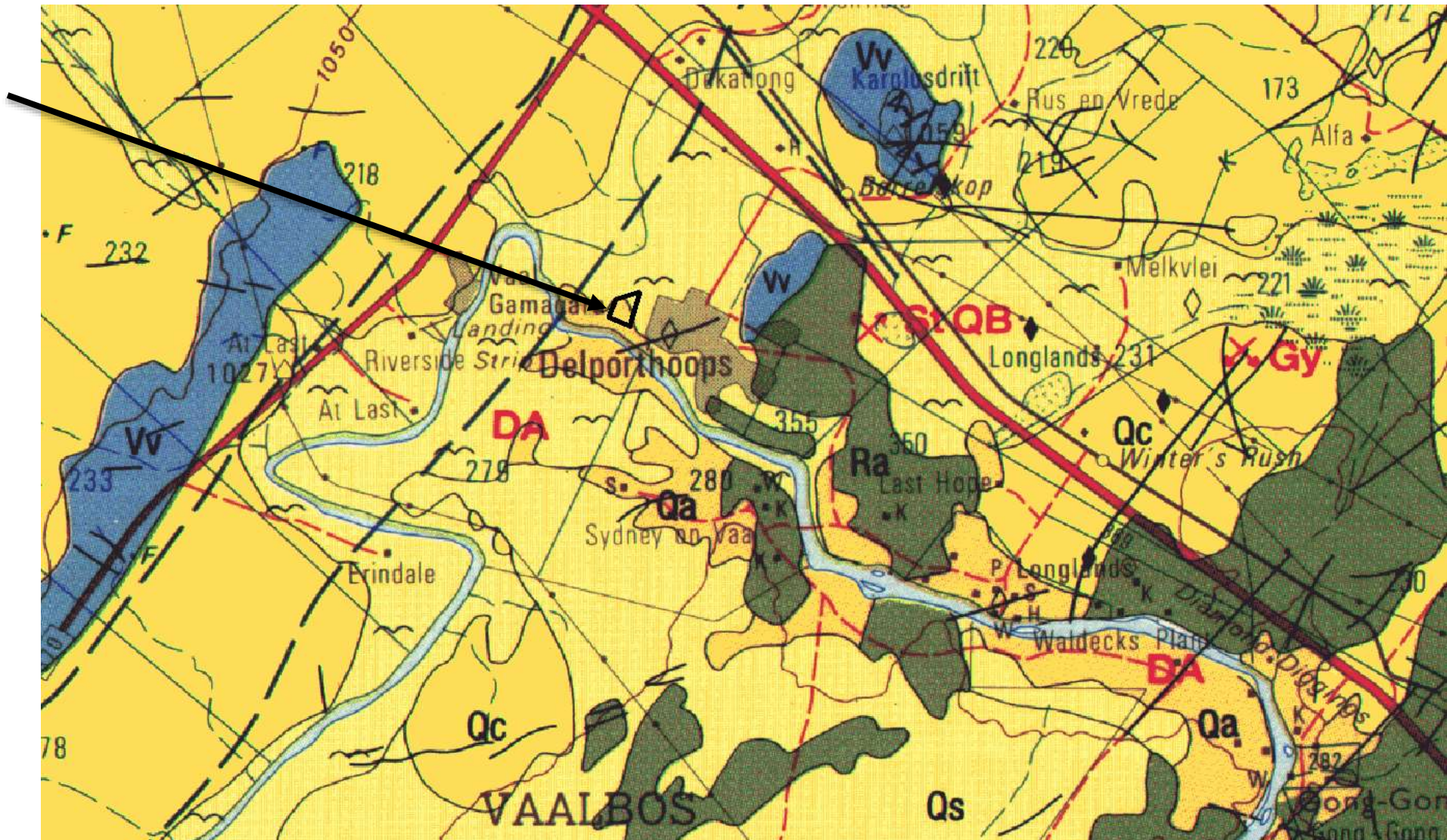


Figure 10. A Geological Map of the application area (Scale 1: 250000). Qa - Alluvial diamondiferous gravels, Qc – Calcrete, ~ - Alluvium and scree, Qs – Red and grey aeolian dune sand, Ra - Andesite, Vv – Siltstone, shale, quartzite, gritstone and conglomerate.

1.2 Climate

The mine site is located in Delpoortshoop which is located near the towns Barkly West and Postmasburg. The climatic conditions discussed below is a combination of information obtained for Delpoortshoop and Barkly West.

<https://en.climate-data.org/>
<https://www.worldweatheronline.com/>

Temperatures

The warmest months in Delpoortshoop is from October to March with the highest temperatures measured for December and January (32°C). The lowest maximum temperatures measured varies between 22 °C to 18 °C for the months May to August. The average maximum and minimum temperatures measured for each month can be seen in the figure below.

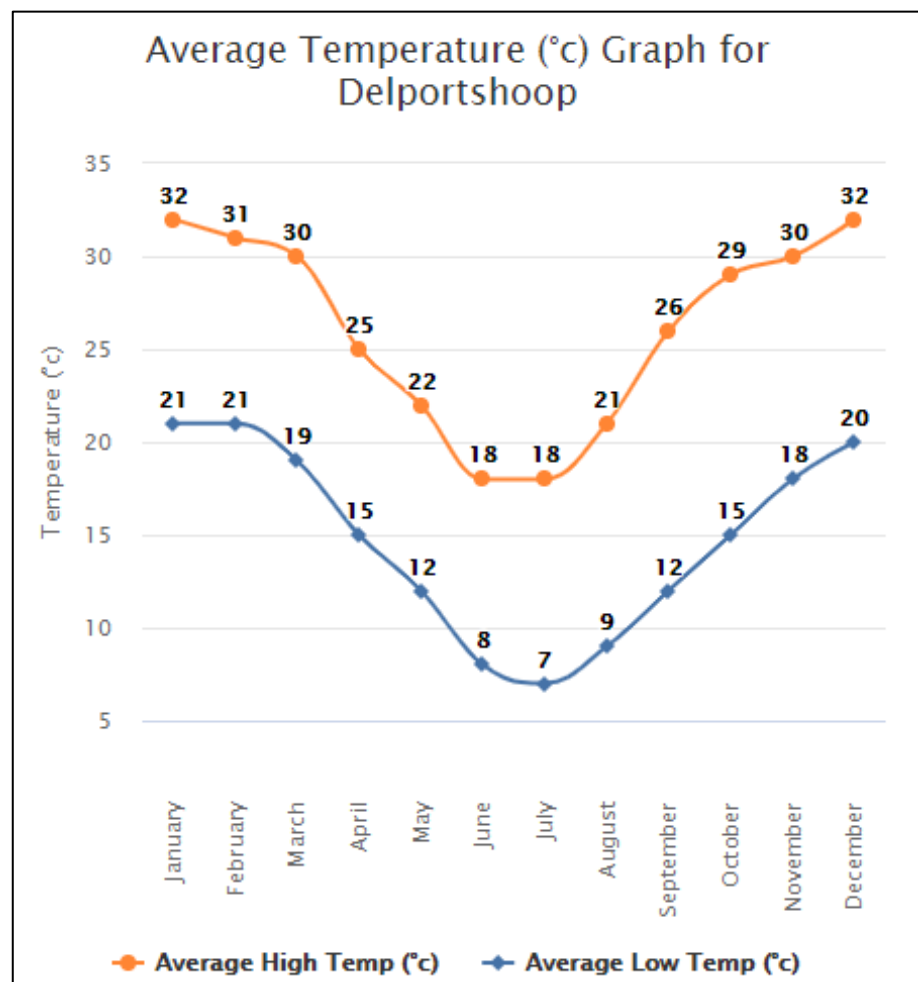


Figure 11. Average temperatures measured for Delpoortshoop.

The average temperatures measured for Barkly West for each month can be seen in the table below. The table also contains information regarding the average rainfall measured for each month in Barkly West.

Table 4: Temperatures and rainfall statistics for Barkly West

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature (°C)	26.6	24.1	22.3	17.8	14	10.3	10.3	12.8	16.8	20.5	22.7	24.4
Min. Temperature (°C)	17.7	16.7	14.8	9.9	5.6	1.7	1.2	3.2	7.1	11.5	14.1	16.3
Max. Temperature (°C)	33.6	31.6	29.9	25.8	22.4	18.9	19.5	22.4	26.5	29.5	31.3	32.5
Avg. Temperature (°F)	78.1	75.4	72.1	64.0	57.2	50.5	50.5	55.0	62.2	68.9	72.9	75.9
Min. Temperature (°F)	63.9	62.1	58.6	49.8	42.1	35.1	34.2	37.8	44.8	52.7	57.4	61.3
Max. Temperature (°F)	92.5	88.9	85.8	78.4	72.3	66.0	67.1	72.3	79.7	85.1	88.3	90.5
Precipitation / Rainfall (mm)	66	79	62	46	16	11	8	6	10	26	43	54

Rainfall

The average rainfall measured for Delportshoop can be seen in the figure below whereas the average rainfall measured for Barkly West can be seen in the table above.

The highest amount of rain was measured for the months February and December. Summer and autumn rainfall is thus common in the area and winters are known to be very dry (Mucina and Rutherford). The area however does not receive a lot of rain since the average rainfall measured for a month never exceeds 10 mm.

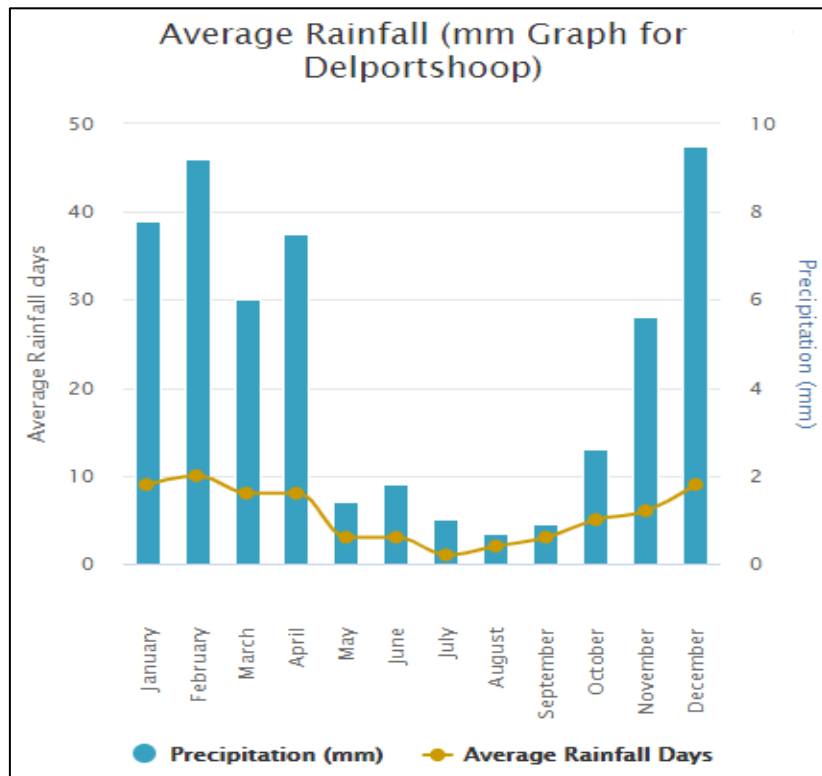


Figure 12. Average rainfall in Delportshoop per month.

Evaporation

Evaporation far exceeds rainfall at the site. Although no records are available from the nearest station.

Wind

The average wind speeds measured varies between 10 to 20 kmph with maximum wind speeds measured for the months October (34 kmph) to January (30 kmph).

Incidents of Extreme Weather Conditions

- **Hail**

Hail is sometimes associated with thunderstorms and mainly occurs in early to late summer (November to February). It occurs on average three times a year and although these storms may sometimes be severe and cause much damage, they usually impact on a relatively small area.

- **Frost**

The period during which frost can be expected lasts for about 120 days (May to August).

- **Droughts**

Droughts are common and may vary from mild to severe. During these periods dust storms sometimes occur, depending mainly on denudation of the surface.

- **Wind**

High winds are unusual but when they do occur can uproot trees and take off roads.

1.3 **Topography**

The general topography is considered to largely consist of a uniform plain which has a gradual slope toward the Vaal River, i.e from north to south, but which may increase significantly in the slope gradient in the portion adjacent to the river.

1.4 **Soils**

Soil Types

The most significant geology in the area is the Dwyka diamictites and Ecca Shales of the Karoo Supergroup with shale and dolomite of the Schmidtsdrif Subgroup also being present. Limestone outcrops also occur sporadically. The area is thus associated with shallow (< 0.3 m), well drained, stony soils with large angular rocks on the soil surface giving rise to a soil-rock complex. The Mispah soil form is common in the area. (Mucina and Rutherford, 2006).

1.5 **Pre-mining Land Capability**

As a result of a combination of the climate non-rich soils; the topography of the area; and the distance to the nearest surface water, the land lends itself to an activity such as livestock farming.

1.6 **Land Use**

Land Use Prior to Mining

Prior to the first mining activities conducted on the Erwen the area was utilised mainly for livestock farming and housing.

Historical Agricultural Activities

No record of historical agricultural activities in the study area exists.

Evidence of Abuse

There are signs of old alluvial mining on the application area and adjacent to the application area.

Existing Structures

A farmstead with out-buildings are the only existing structures on the mining permit area.

1.7 **Natural Fauna**

The site is in Delpportshoop and it was noticeable that almost no tracks and signs of mammals were present on the site. Burrows were also conspicuously absent, also likely as a result of the rocky, gravel substrate. The modification of the study area due to mining has most likely altered the habitat to such a degree that it is not suitable for most mammals occurring in this area. Furthermore, as has been previously discussed many areas does not contain any established vegetation and where vegetation has managed to re-establish this is very sparse. Consequently, the resources available to mammals is also very low and not able to sustain a viable mammal population.

The most significant impact on mammals anticipated on the site itself is primarily concerned with the loss and fragmentation of available habitat. Transformation of the natural vegetation on the site will result in a decrease in the population size as available habitat decreases. However, as discussed, the available habitat is already transformed and mammal population would be much diminished from the natural condition. It will be possible to significantly mitigate this by amongst others to limit mining to set areas and not mine several areas at the same time, limit the extent

of each such mining area and comprehensive and successful rehabilitation of mined areas.

It is also considered likely that several mammal species were overlooked during the survey but owing to the transformed condition of the site due to previous mining it is considered unlikely that any rare or endangered species would occur on the site.

Mining operations itself may also affect the mammal population and care should therefore be taken to ensure none of the faunal species on site is harmed. The hunting, capturing or harming in any way of mammals on the site should not be allowed. Voids and excavations may also act as pitfall traps to fauna and these should continuously be monitored and any trapped fauna removed and released in adjacent natural areas.

The impact that the proposed mining operation will have on the fauna is expected to be low as the Screening Report conducted indicates a low risk sensitivity for the Animal Species Combined Sensitivity Theme. An Ecologist will however conduct an ecological study to ensure that no threatened or endangered species do occur on the proposed site.

1.8 Natural Vegetation

The study area falls within the Savannah Biome. The Savannah Biome is the largest biome in Southern Africa, occupying 46% of its area, and over one-third the area of South Africa. It is well developed over the low veldt and Kalahari region of South Africa and is also the dominant vegetation in Botswana, Namibia and Zimbabwe.

It is characterised by a grassy ground layer and a distinct upper layer of woody plants. Where this upper layer is relatively low, this vegetation type is often referred to as Shrub veldt. Dense areas are often referred to as Woodland, and the intermediate stages are known as Bush veldt. A major factor that determines the distribution of this biome is low rainfall which prevents the upper layer from dominating. The grass layer prospers where the growing season is hot and moist. Most of the savannah vegetation types are suitable for grazing.

Schmidtsdrif Thornveld

Mostly a closed shrubby thornveld dominated by *Acacia mellifera* and *A. tortilis*. Apart from grasses, bulbous and annual herbaceous plant species are also prominent. The vegetation is sometimes very disturbed due to overgrazing by goats and other browsers.

As stated previously the dominant geology for the vegetation group is the Dwyka diamictites and Ecca Shales of the Karoo Supergroup and shales and dolomites from the Schmidtsdrif subgroup. The Mispah soil form is the most dominant soil form and is found along with a soil-rock complex.

Vegetation that can be found in the vegetation type includes small trees like *Acacia mellifera subsp. Detinens* (d), *A. tortilis subsp. Heteracantha* (d), *Ficus cordata*, *Ziziphus mucronata*. Tall shrubs like the *Tarchonanthus camphoratus* (d) and *Grewia flava* and low shrubs like *Aptosimum albomarginatum* (d), *Barleria rigida* (d), *Monechma incanum* (d), *Pentzia incana* (d), *Hermannia affinis*, *H. comosa*, *Ptycholobium biflorum*, *Zygophyllum pubescens*. can also be found in the Schmidtsdrif Thornveld. The Semiparasitic Shrubs *Thesium lineatum*. Is also common in the area along with Graminoids which includes *Aristida meridionalis* (d), *Enneapogon desvauxii*. Lastly Herbs found in the vegetation type includes *Lepidium bonariense* (d), *Amaranthus praetermissus*, *Heliotropium ciliatum*, *Indigastrum parviflorum*, *Ostreospermum muricatum*, *Seddera capenss*, *Stachys hyssopoides*. (Mucina & Rutherford, 2006).

The Screening Report compiled for the Environmental Authorization indicates a low risk sensitivity for the Plant Species Combined Sensitivity. An Ecologist will however conduct an ecological study to ensure that no threatened or engangered species do occur on the proposed site as part of the EIA EMP process.



Figure 13. Plant Species Combined Sensitivity.

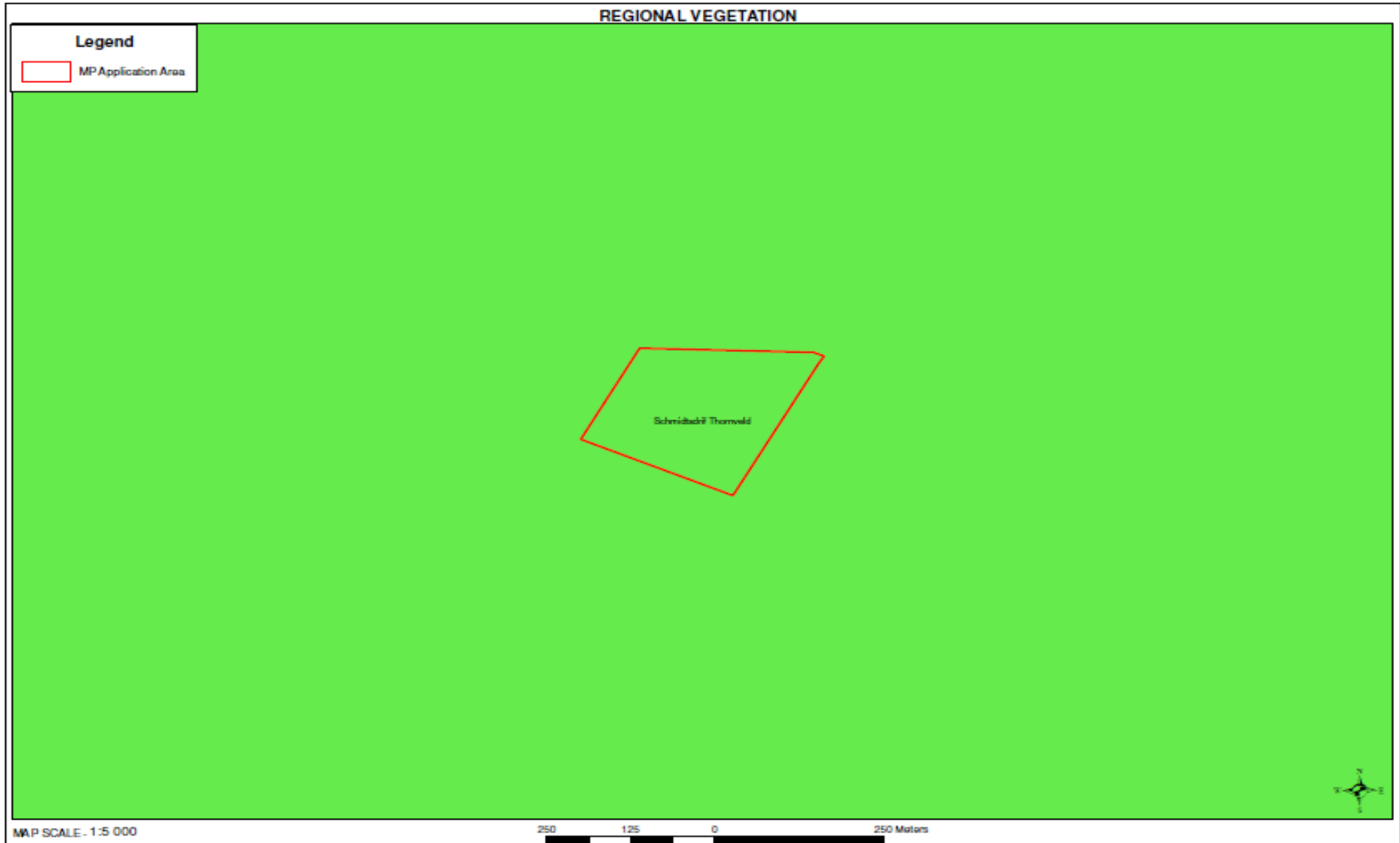


Figure 14. vegetation map of prosed mining site.

1.9 Surface Water

The nearest surface water body to the proposed project is the Vaal River. The Vaal River is found south of the site however, the river does not border the proposed site. The mine operation however will make use of the Vaal river as a source of water for the operation.

Non-perennial drainage lines can also be found north of the project.

The Screening Report done for the proposed mining site indicates a low risk sensitivity for the Aquatic Biodiversity Combined Sensitivity and thus it is expected that the proposed operation will have a very little impact on the surface water in the area.



Figure 15. Aquatic Biodiversity Combined Sensitivity.

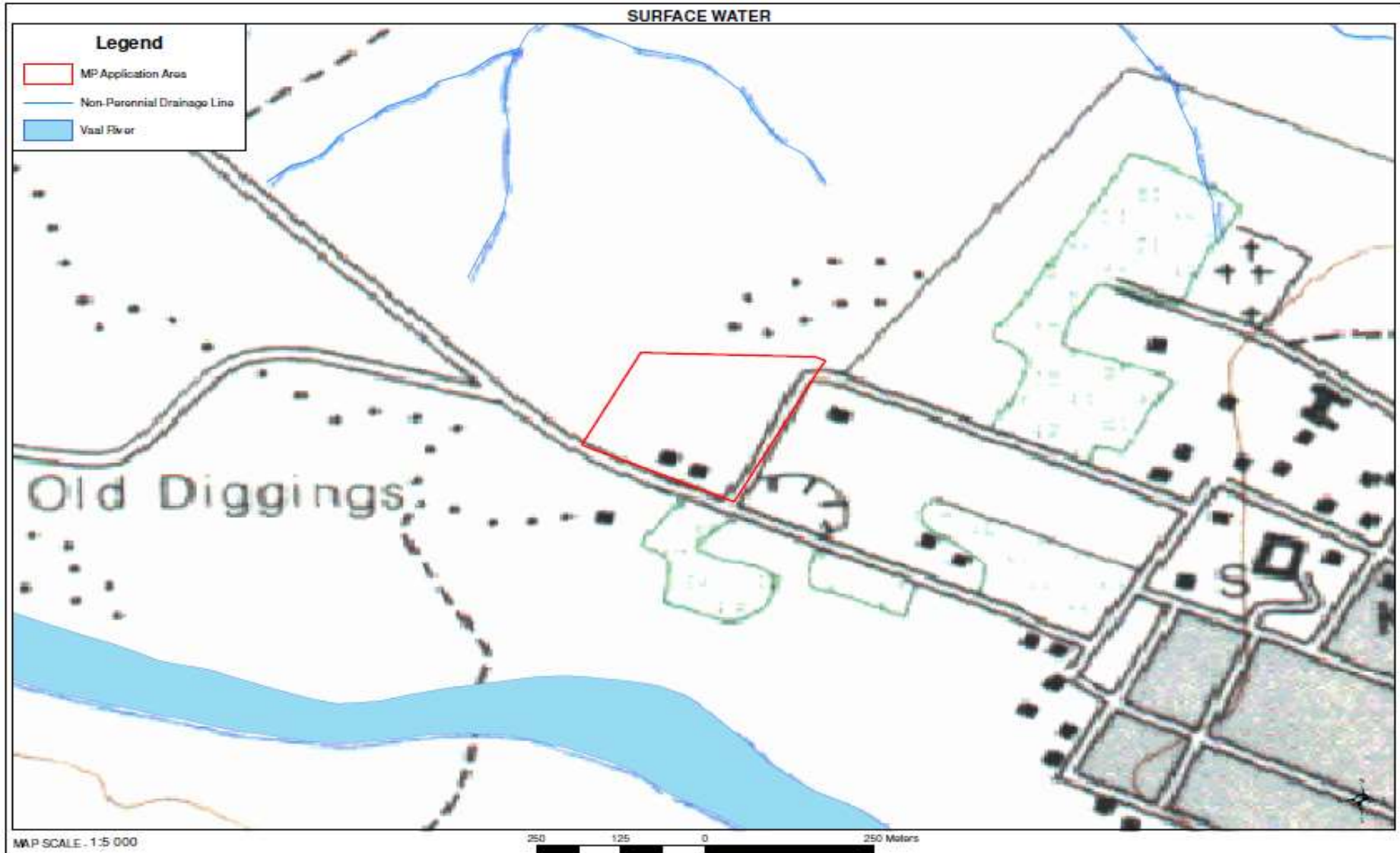


Figure 16. Surface water features in the mining application area

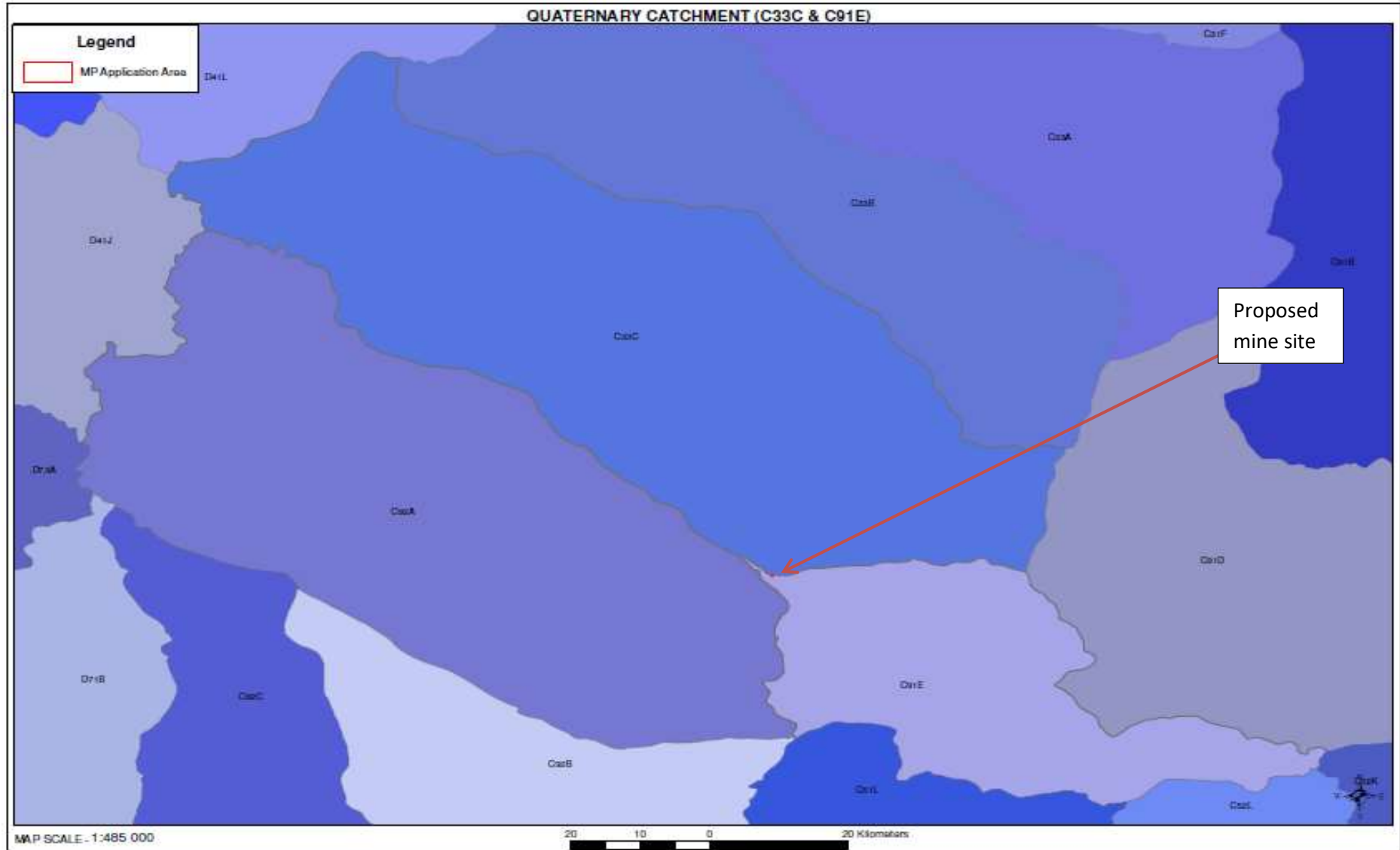


Figure 17. Quaternary Catchment Map

1.10 Ground Water

Catchment and Process Water Demands

The site is located on the borders of the Quaternary catchments C33C and C91E. This catchment is listed under Zone A of the Groundwater Taking Zones in the Revision of General Authorisations (GA) in Terms of Section 39 of the National Water Act, 1998 (DWAf 2004 & 2012). For Zone A, no water may be taken under GA except as set out under Schedule 11 (DWS, 2016).

Operation Demand

As stated previously, the operation will make use of 80 000 litres of water per day which will be sourced from the Vaal river.

Ground Water Quality

Ground water quality if present should be relatively good.

1.11 Cultural and Heritage Resources

The Screening Report done for the properties for the Environmental Authorization indicated that all three of the properties has a high sensitivity regarding the Paleontological Combined Sensitivity theme but a low sensitivity for the Archaeological and Cultural Heritage Combined Sensitivity. Therefore a Paleontological as well as Heritage and Cultural study will be conducted by an specialist.

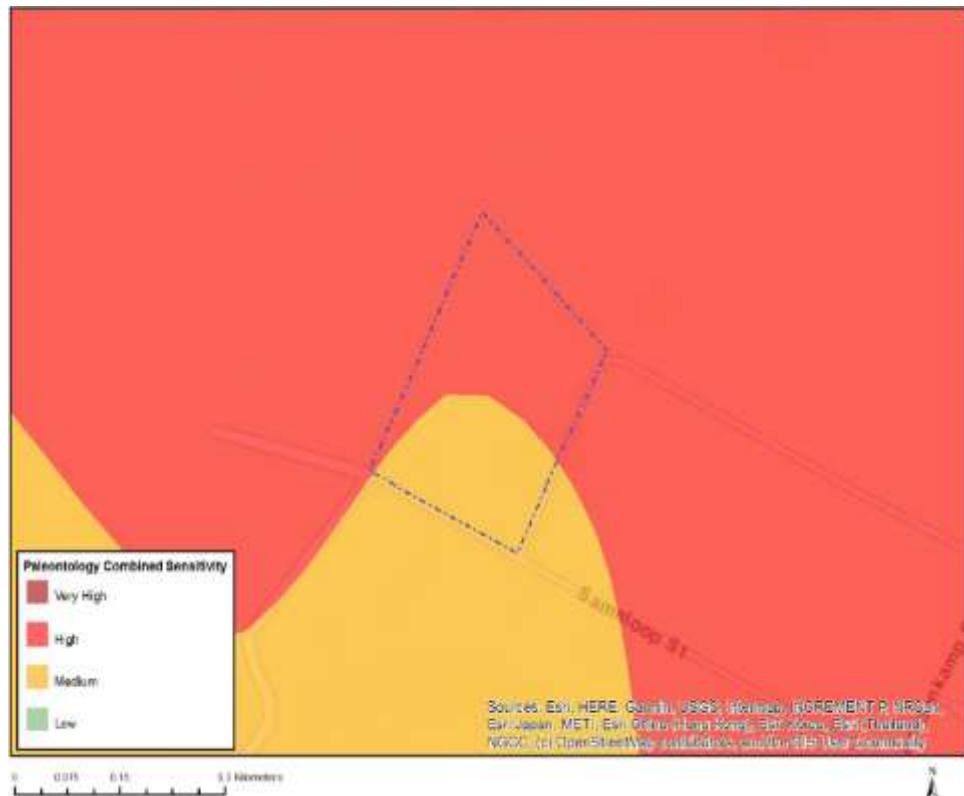


Figure 18. Paleontology Combined Sensitivity for all three of the proposed sites.



Figure 19. Archeological and Cultural Heritage Combined Sensitivity for the proposed site.

1.12 Air Quality

With reference to the listed activities and associated minimum emission standards identified in terms of section 21 of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004).

NOTICE OF INTENTION TO AMEND THE LIST OF ACTIVITIES WHICH RESULT IN ATMOSPHERIC EMISSIONS WHICH HAVE OR MAY HAVE A SIGNIFICANT DETRIMENTAL EFFECT ON THE ENVIRONMENT, INCLUDING HEALTH, SOCIAL CONDITIONS, ECONOMIC CONDITIONS, ECOLOGICAL CONDITIONS OR CULTURAL HERITAGE, no scheduled process relates to any proposed mining activity.

Existing Sources

The current source of air pollution in the area stems from numerous gravel roads and from vehicles travelling on the gravel roads of the area. No other significant sources of air- or dust pollution currently exist in the study area. Negligible amounts of exhaust fumes are emitted by the mining machinery and vehicles used on the farm. A small amount of dust pollution is furthermore caused by the trucks transporting products to the markets.

New Source

The source of air pollution on the properties will be nuisance dust generated by the excavations made as well as the movement of trucks

and vehicles on the mining roads. Gas emissions from machinery will be within legal limits.

Areas of Impact

As the prevailing wind direction for the area is north to north-west for the months January to September and changing from north to sometimes westerly winds during October to December, there is negligible a potential for fall-out dust to impact on the surrounding farm properties and communities, which can be described as the nearest potential area of impact. The dust management programme recommended should include daily dosing of access roads and stockpile areas.

1.13 Noise

Some sources of noise are evident in the study area. The application area are situated in Delpportshoop. The access to the mine will be from the two gravel roads also included in the application.

1.14 Visual Aspects

The mining area is reached via a gravel streets within Delpportshoop. The application area is within Delpportshoop and within the residential area. The mine is not located on any tourist route and will not be visible to the average tourist.

1.15 Socio-Economic Structure of the Region

All information in this section is taken out of the DIKGATLONG MUNICIPALITY: INTEGRATED DEVELOPMENT PLAN – 2018 – 2019.

Demographic Profile of Municipality

POPULATION AND POPULATION GROWTH

According to Statistics South Africa census 2011, Dikgatlong Local Municipality has seen an increase in total population of 46 841 to 48473 with a total 3.5 increase in population over the last five years. The annual growth is 0.7% and if this trend continues the population will increase to 50 907 by 2023. The population is divided into various racial groups: the majority being Black African (58.47%), followed by Coloured (28.48%), other (8.88%) while Whites (3.62%) and Indians or Asian (0.28%) being the least represented.

Table 5: Population Growth from 2011 to 2016.

2011	2016	Change	Increase/Change per Annum	2023 Exponential Growth Population Projection
46841	48473	1633 (3,5%)	0,70	50 899

Dikgatlong Local Municipality saw an 18% growth in households between 2011 and 2016 and a decline in household size from 3.9 to 3.3.

GENDER AND AGE GROUPS

The Dikgatlong LM is seeing a slight aging in its population, with a 5,4% decline in the age category of between '15 and 34', while the '0-14' age category saw a slight decline and the '35-64' age category increased by 8,9% between 2011 and 2016. Similar to the other local municipalities, the 'older than 64' category saw a large increase of 54,1% (see Table 6 below).

Table 6: Change in age groups of population according to gender.

Age	0-14		15-34		35-64		Older than 64		Total	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Dikgatlong 2011	7484	7341	8103	8136	6466	6849	1009	1452	23062	23778
Dikgatlong 2016	7571	7197	7975	7435	7304	7198	1443	2350	24293	24180
Change in numbers	88	-144	-129	-702	838	349	434	898	1231	402
% Change between 2011 and 2016	1,2	-2,0	-1,6	-8,6	13,0	5,1	43,0	61,8	+5,3%	+1,7%

An interesting trend however is the decline in the female population aged between '15-34' by 8,6% (702 individuals).

EDUCATION

Dikgatlong Local Municipality had a large number of people with some secondary school followed by those with some primary levels from 2011. Currently 10% of the Dikgatlong LM population that is older than 20 years in 2016 have 'no schooling', a steep decline of 37% in actual numbers from

18% in 2011. Only 23% of the 2016 population that is older than 20 years of age have Gr.12, up from 20% in 2011, these low levels of education place certain limitations on employment creation (See Tables 7 and 8 below).

Table 7: Population older than 20 without schooling. [Source: StatsSA]

	2011		2016		% Change 2011 to 2016
	Pop. 20+ with no Schooling	% Pop. 20+ with no Schooling	Pop. 20+ with no Schooling	% Pop. 20+ with no Schooling	
Sol Plaatjies	10758	7%	7412	5%	-31%
Dikgatlong	4864	18%	3079	10%	-37%
Magareng	2371	17%	1834	13%	-23%
Phokwane	6418	18%	4976	14%	-22%
Frances Baard	24411	10%	17301	7%	-29%
Northern Cape	76861	11%	58818	8%	-23%

Table 8: Population older than 20 with grade 12. [Source: StatsSA]

	2011		2016		% Change 2011 to 2016
	Pop. 20+ with Gr.12	% Pop. 20+ with Gr.12	Pop. 20+ with Gr.12	% Pop. 20+ with Gr.12	
Sol Plaatjies	44506	29%	53303	33%	+20%
Dikgatlong	5567	20%	6628	23%	+19%
Magareng	3419	24%	4055	28%	+19%
Phokwane	7963	22%	8741	24%	+10%
Frances Baard	61456	26%	72728	30%	+18%
Northern Cape	154008	22%	200860	27%	+30%

Tertiary education is decidedly low in Dikgatlong LM, with only 1,1% of the population older than 34 having some type of tertiary education, a 1,81% increase from 2011 (see Table 9 below).

Table 9; Populatuion older than 34 with Tertiary Education, 2011-2016

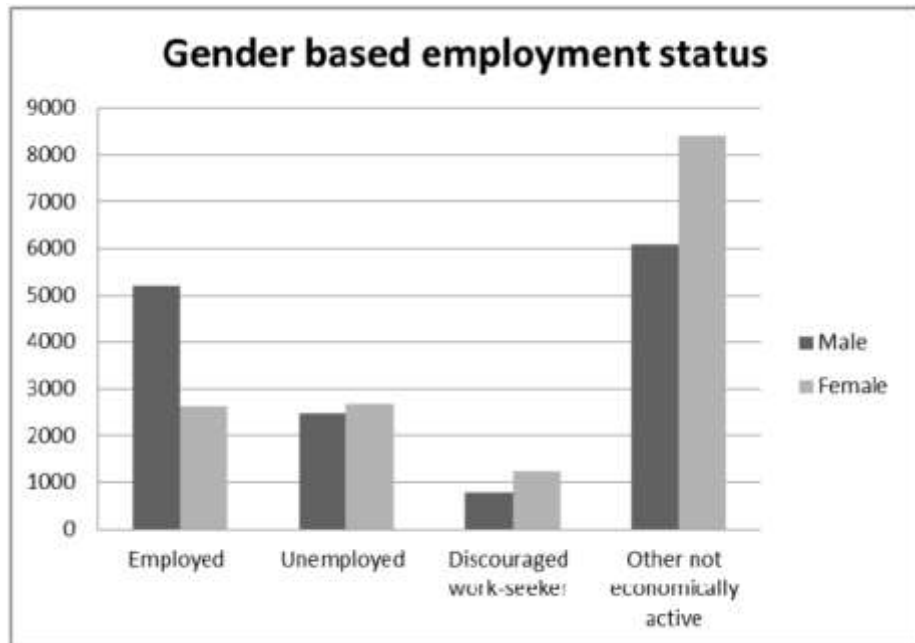
	2011		2016		% Change 2011 to 2016
	Pop. older than 34 with Higher Education	% of pop. older than 34	Pop. older than 34 with Higher Education	% of pop. older than 34	
Sol Plaatjies	1053	1,2%	1494	1,5	+0,13%
Dikgatlong	107	0,7%	208	1,1	+1,81%
Magareng	84	1,0%	149	1,6	+2,12%
Phokwane	189	0,9%	394	1,7	+1,10%
Frances Baard	1307	0,3%	1736	1,1	+0,10%

UNEMPLOYMENT

The number of those who are not economically active is very high, which means a large portion of the population is highly dependent on social grants or on those that work. The number of employed people has increased from 5924 people (2001) to 7841 (2011). Thus the unemployment rate has decreased from 45.3% (2001) to 39.7% (2011).

The Stats SA 2011 indicates that more men are employed than their female counterparts.

Furthermore women are the most discouraged work seekers. Additionally, the economical not active female population is also higher than their male counterparts.



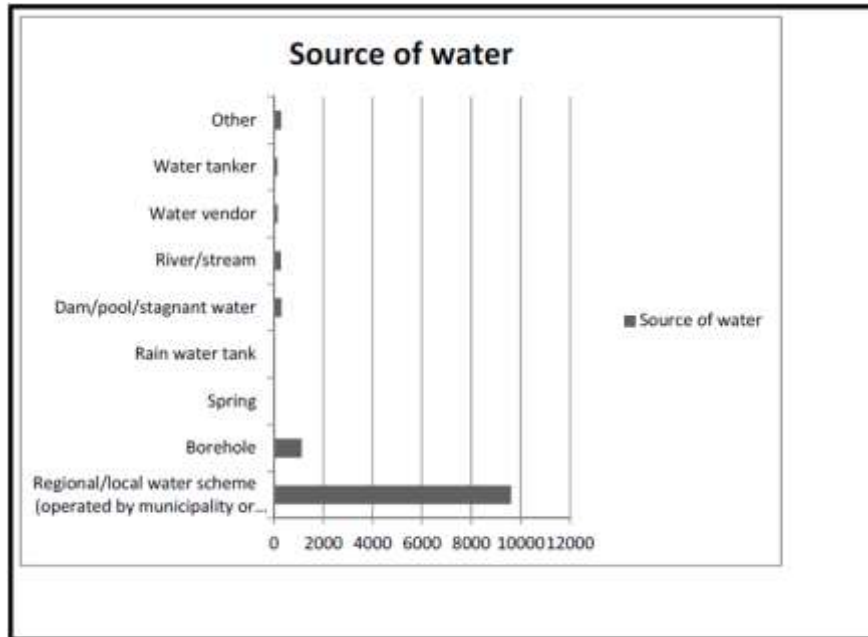
Graph 1: Employment status based on gender.

HOUSEHOLDS AND HOUSEHOLD SERVICES

There has not been a significant change in the dwellings indicators of Dikgatlong Local Municipality. Those living in formal structure constitute 78.5% compared to the 73.2% of 2001. Those living in informal settlements constitute 11.5% of the total households. Currently those living in informal settlements have access to the following basic services; communal stand pipes, electricity and limited refuse removal.

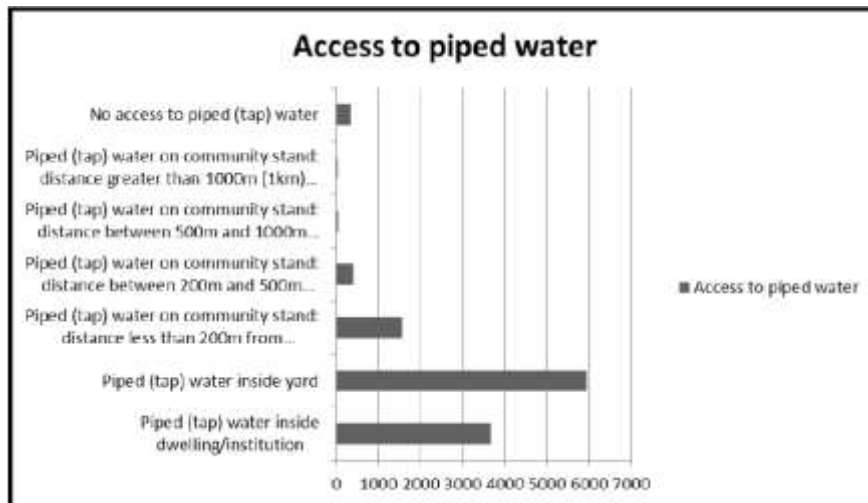
Water

Access to clean water and proper sanitation are key environmental elements that affect health outcomes of households. From the graph below it is evident that a large number of households receive water from a regional/local water scheme. However there are still those households who drink water from the river/stream, dam/pool/stagnant water and those that could not be ascertained as to where they get their water from. Drinking water that has not been purified can make the households vulnerable to a number of communicable diseases such as diarrhoea. The municipality is the water service authority for ward 6, 7 and portion of ward 5. The rest of the municipal area is supplied with water by Sedibeng Water.



Graph 2: Water Sources

The majority of household (5935) have access to piped water inside their yard, followed by those who have access to piped water inside their dwelling (3670). The concern is for those households that must travel more than 1km (more than 20 minutes) to access a community piped water stand (0.24%), as it technical indicates that such a service is not accessible. The concern is also for those who have no access to tap water (2.77%), as they might be drinking water that is un-purified and not good for health purposes.

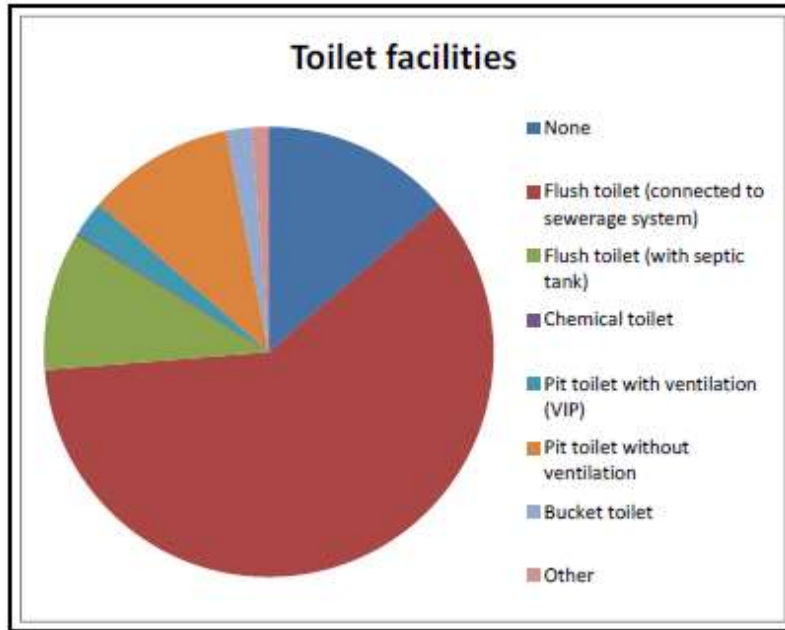


Graph 3: Access to piped water.

Sanitation

The Millennium Development Goal states the need for “sustainable access to safe drinking water and basic sanitation”. 13.72% of households in the Dikgatlong LM do not have access to basic sanitation, while 1.84% still uses the bucket toilet. The 13.72% of none access, is higher than the

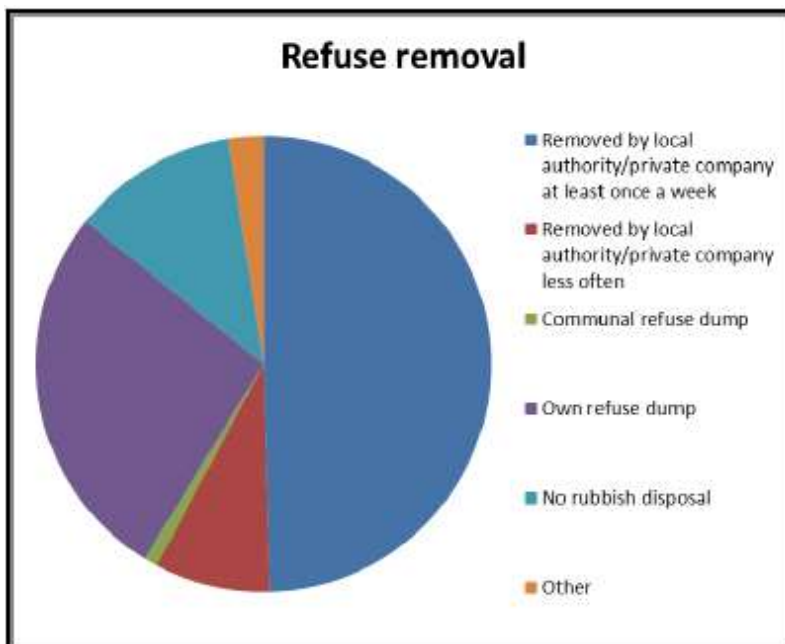
Provincial one which is 8.04% of households with no access to basic sanitation.



Graph 4: Toilet facilities.

Waste management

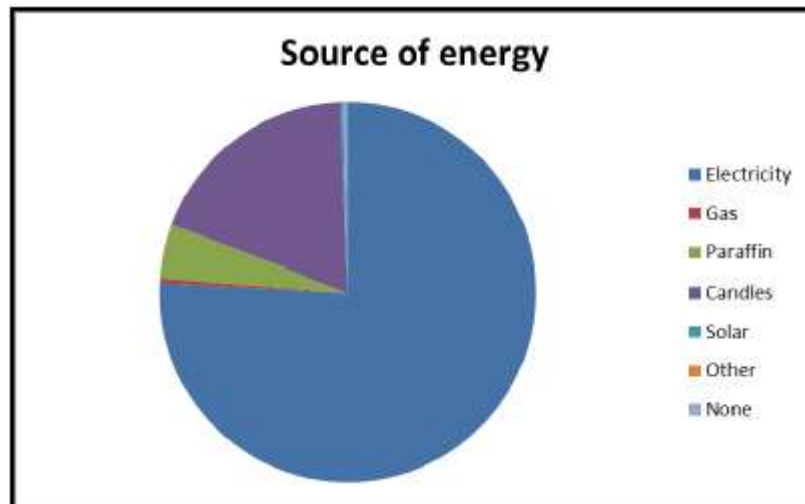
Proper waste management is important for sustainable development because if waste is not disposed of properly it can cause environmental and health problems. 49.57% of households have their refuse removed by a local authority at least once a week, while 27% have their own refuse dump and 11.78% have no rubbish disposal. It is a great concern for those who have no rubbish disposal because they can dispose their refuse in a manner that is not in line with sustainable development principles.



Graph 5: Refuse removal.

Electricity and energy

There has been an improvement on the energy use across the whole country. The majority of household (75.86%) use electricity as the source of energy for lighting, this was previously 68.5% (in 2001). The number of households that use candles has also decreased from 32% to 18.66% as well as those that use gas and paraffin. However there seems to be no visible efforts of using solar energy, to decrease the dependency of electricity.



Graph 6: Source of energy for households.

1.17 Sensitive Landscapes

“Sensitive Environments” that have statutory protection are the following:-

1. Limited development areas (Section 23 of the Environmental Conservation Act, 1989 (Act 73 of 1989).
2. Protected natural environments and national heritage sites.
3. National, provincial, municipal and private nature reserves.
4. Conservation areas and sites of conservation significance.
5. National monuments and gardens of remembrance.
6. Archaeological and palaeontological sites.
7. Graves and burial sites.
8. Lake areas, offshore islands and the admiralty reserve.
9. Estuaries, lagoons, wetlands and lakes.

10. Streams and river channels and their banks.
11. Dunes and beaches.
12. Caves and sites of geological significance.
13. Battle and burial sites.
14. Habitat and/or breeding sites of Red Data Book species.
15. Areas or sites of outstanding natural beauty.
16. Areas or sites of special scientific interest.
17. Areas or sites of special social, cultural or historical interest.
18. Declared national heritage sites.
19. Mountain catchment areas.
20. Areas with eco-tourism potential.

(b) Description of the Current Land Uses

Please see Baseline Description above.

(c) Description of Specific Environmental Features and Infrastructure on the Site

Please see Baseline Description above.

(d) Environmental and Current Land Use Map
(Show all environmental, and current land use features)

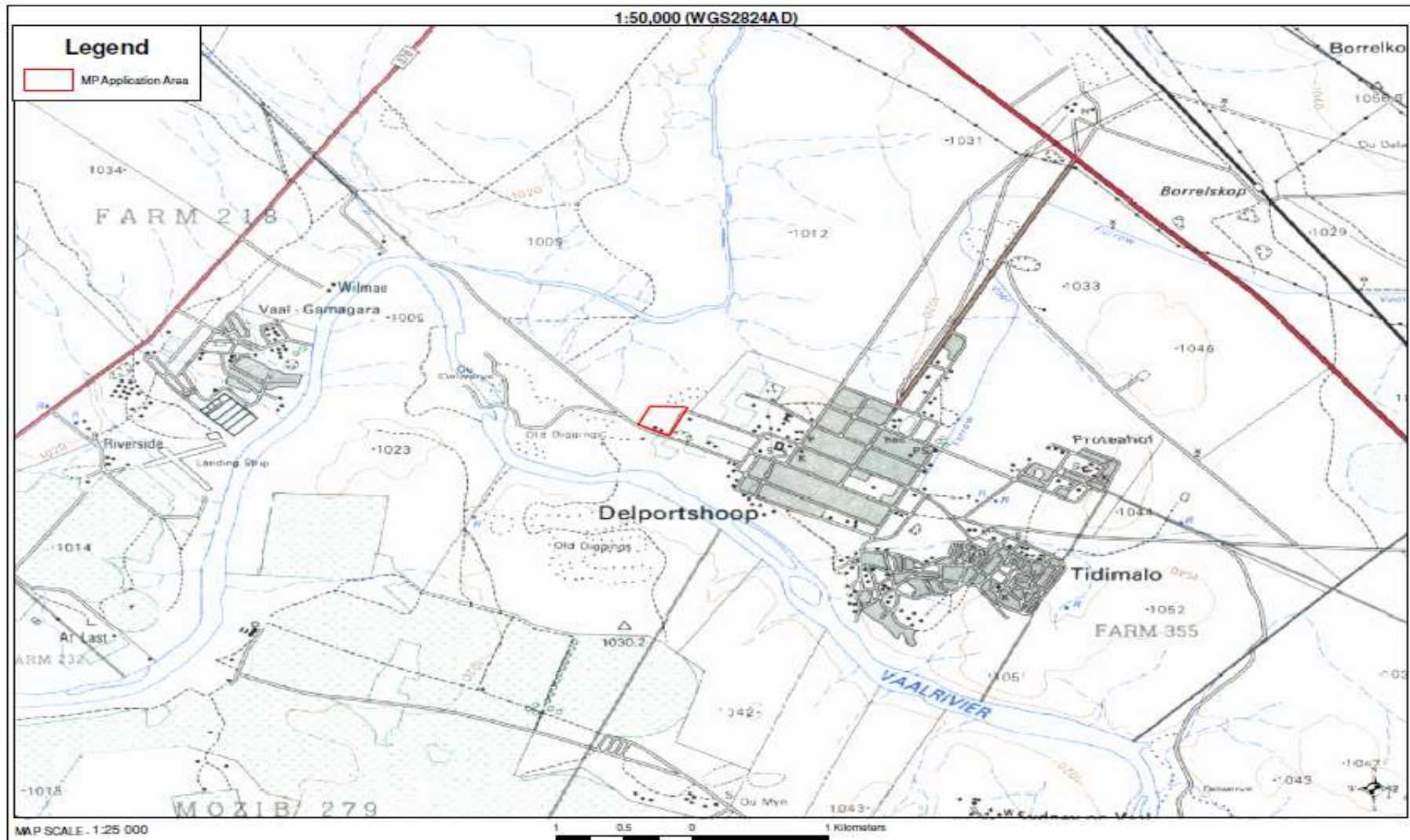


Figure 20. Show all environmental, and current land use features

v) Impacts identified

(Provide a list of the potential impacts identified of the activities described in the initial site layout that will be undertaken, as informed by both the typical known impacts of such activities, and as informed by the consultations with affected parties together with the significance, probability and duration of the impacts

Table 10: Impacts Identified

Environmental Factor	Nature of Impact	Significance	Probability	Duration	Consequence
Geology and mineral resource	Sterilisation of mineral resources.	Very low	Highly unlikely	Decommissioning	Insignificant
Topography	Changes to surface topography due to construction of evaporation ponds, topsoil removal, placement of infrastructure.	Low to medium	Certain	Long Term Life of operation	Moderate
Soils	Soil erosion by water and wind on disturbed and exposed soils; potential for dust production and soil microbial degradation; potential contamination of soils due to spillages.	Low to medium	Possible	Long Term Life of operation	Minimal
Land Capability	Loss of land capability through topsoil removal, disturbances and loss of soil fertility.	Very low	Possible	Short term	Minimal
Land use	Loss of land use due to poor placement of surface infrastructure and ineffective rehabilitation.	Very low	Possible	Short term	Minimal
Ground water	Pollution of underground water sources.	Low	Possible	Long Term Residual	Minimal
Surface water	Deterioration in water quality through spillages.	Low	Possible	Long Term Residual	Critical
Indigenous flora	The clearance of vegetation; potential loss of floral species with conservation value; potential loss of ecosystem function.	Low to medium	Certain	Long Term Life of operation	Major
Alien invasive plants	Proliferation of alien invasive plant species.	Low to medium	Certain	Long Term Residual	High
Fauna	Displacement of faunal species.	Low	Possible	Long Term Life of operation	Minimal
Habitat	The loss, damage and fragmentation of floral and faunal habitats; potential loss of ecosystem function.	Low to medium	Certain	Long Term Residual	Critical
Air quality	Sources of atmospheric emission associated with the mining operation are likely to include fugitive dust from gravel roads, wind erosion of stockpiles and vehicle entrainment of road dust.	Minimal	Certain	Life of operation Decommissioning	Minimal
Noise and vibration	Increase in continuous noise levels; the disruption of current ambient noise levels; and the disruption of sensitive receptors by means of increased noise and vibration.	Low to medium	Certain	Life of operation Decommissioning	Minimal

Visual impacts	Visual impacts of the mine infrastructure, Mine residue Deposit; visibility of dust.	Low to medium	Certain	Life of operation Decommissioning	Minimal
Traffic	Potential negative impacts on traffic safety and deterioration of the existing road networks.	Low	Possible	Life of operation Decommissioning	Minimal
Heritage resources	The deterioration of sites of cultural and heritage importance.	Medium	Certain	Residual	Major
Socio-economic	<u>Negative:</u> Loss of agricultural potential; influx of workers to the area increases health risks and loitering (resulting in lack of security and safety); negative impact of employment loss during mine closure.	Low and low to medium	Certain	Short-term and closure	High and major
	<u>Positive:</u> Upliftment of previously disadvantaged communities.	Medium		Life of operation Decommissioning to residual	Medium
Interested and affected parties	Loss of trust and a good standing relationship between the IAPs and the mining company.	Low to medium	Possible	Life of operation Decommissioning to residual	High

vi) **Methodology used in determining the significance of environmental impacts**

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

Methodology used in determining and ranking the nature, severity, consequences, extent, duration and probability of potential environmental impacts and risks

The limits were defined in relation to the Mining Characteristics. Those for probability, significance and duration are subjective, based on rule of thumb and experience. The significance of the impacts is defined as follows:

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

Nature of impact

This is an appraisal of the type of effect the activity would have on the affected environmental component. Its description should include what is being affected, and how.

Extent

The physical and spatial size of the impact. This is classified as follows:

- Local
The impacted area extends only as far as the activity, e.g. a footprint.
- Site
The impact could affect the whole, or a measurable portion of the property.
- Regional
The impact could affect the area including the neighbouring farms, transport routes and the adjoining towns.

Duration

The lifetime of the impact which is measured in the context of the lifetime of the proposed phase (i.e. construction or operation).

- Short term
The impact will either disappear with mitigation or will be mitigated through natural process in a short time period.
- Medium term
The impact will last up to the end of the mining period, where after it will be entirely negated.
- Long term (Residual)
The impact will continue or last for the entire operational life of the mine, but will be mitigated by direct human action or by natural processes thereafter.
- Permanent.

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

Intensity

This describes how destructive, or benign, the impact is. Does it destroy the impacted environment, alter its functioning, or slightly alter it? These are rated as:

- Low
This alters the affected environment in such a way that the natural processes or functions are not affected.
- Medium
The affected environment is altered, but function and process continue, albeit in a modified way.
- High
Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.

This will be a relative evaluation within the context of all the activities and the other impacts within the framework of the project.

Probability

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

- Improbable
The possibility of the impact occurring is very low, due either to the circumstances, design or experience.
- Probable
There is a possibility that the impact will occur to the extent that provisions must be made therefore.
- Highly probable
It is most likely that the impacts will occur at some or other stage of the development.
- Definite
The impact will take place regardless of any preventative plans, and mitigation measures or contingency plans will have to be implemented to contain the impact.

Determination of 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 classes are rated as follows:

- No significance
The impact is not likely to be substantial and does not require any mitigatory action.
- Low

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

- Medium

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

- High

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

vii) The positive and negative impacts that the proposed activity (in terms of the initial site layout) and alternatives will have on the environment and the community that may be affected.

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

During construction and operation of the mine, there is a possibility of sterilisation of the mineral reserves and resources due to improper placement of infrastructure. The infrastructure and slimes dam will alter the topography by adding features to the landscape. Topsoil removal and alluvial mining will unearth the natural topography. The construction of infrastructure and various facilities in the mining area can also result in loss of soil due to erosion. Vegetation where present will be stripped in preparation for placement of infrastructure and loading, and therefore the areas will be bare and susceptible to erosion. The topsoil that is stripped and piled on surrounding areas can be eroded by wind and rain. The soil will be carried away during runoff. Declared areas will be rehabilitated, but full restoration of soil might only occur over a number of years, subsequent to the re-establishment of vegetation. Furthermore, improper stockpiling and soil compaction can result in soil sterilisation. Leaching can also occur, resulting in the loss of nutrients.

During the construction and operation of the mine, there is a possibility that equipment might leak oil, thus causing surface spillages. The hydrocarbon soil contamination will render the soil unusable unless they are decontaminated. The storage of fuels on site might have an impact on soil if the tanks that are available on site are not properly monitored and maintained to avoid leakages. Then there is the potential that contaminated soil can be carried through runoff to contaminate water resources and soil stockpiled for rehabilitation. Soil pollution is therefore possible, but through mitigation it can be minimised.

The loss of land capability and land use can occur in two ways. Firstly, through topsoil removal, disturbances and loss of soil fertility; and secondly through the improper placement of infrastructure. The site has a land capability for limited grazing, but grazing activities can still be performed in areas not earmarked for mining, and with proper rehabilitation the land capabilities and land use potential can be restored.

If oil and fuel spillages occur, then it will seep into the underlying aquifers and contaminate ground water. Improper handling of hazardous material will cause contamination of nearby surface water resources during runoff episodes. Lack of storm control structures will lead to erosion of stockpiles during heavy rains and runoff will carry suspended solids into the downstream environment. This might cause high silt load and affect stream flow.

Construction and mining activities on site will reduce the natural habitat for ecological systems to continue their operation. It is not expected that the areas of high ecological function will rehabilitate following disturbance events. Vehicle traffic generates lots of dust which can reduce the growth success and seed dispersal of many small plant species. It is expected that protected species if present will be destroyed during the mining operation, the necessary permits will be obtained after the specialist studies have been completed to confirm the presence of any protected species.

While general clearing of the area and mining activities destroy natural vegetation, invasive plants can increase due to their opportunistic nature in disturbed areas. If invasive plants establish in disturbed areas, it may cause an impact beyond the boundaries of the mining site. These alien invasive species are thus a threat to surrounding natural vegetation and can result in the decrease of biodiversity and ecological value of the area. Therefore, if alien invasive species are not controlled and managed, their propagation into new areas could have a high impact on the surrounding natural vegetation in the long term. With proper mitigation, the impacts can be substantially reduced.

The transformation of natural habitats to mining and associated infrastructure will result in the loss of habitat of affected individual species, and ecological processes. In turn this will result in the displacement of faunal species dependent upon such habitat. Increased noise and vibration due to mining activities will disturb and possibly displace birds and other wildlife. Fast moving vehicles take a heavy toll in the form of road kills of small mammals, birds, reptiles, amphibians and a large number of invertebrates. The construction of the mine and associated infrastructure will result in the loss of connectivity and fragmentation of natural habitat. Fragmentation of habitat will lead to the loss of migration corridors, in turn resulting in degeneration of the affected population's genetic make-up. This results in a subsequent loss of genetic variability between meta-populations occurring within the site. Pockets of fragmental natural habitats hinder the growth and development of populations.

During the mining operation the abovementioned activities have potential for dust generation. It is anticipated that the extent of dust emissions would vary substantially from day to day depending on the level of activity and the specific operations. The mine will add a certain amount of noise to the existing noise in the area. However, levels of noise generated by mining activities are low.

The impact of site generated trips on the traffic of the existing roads is experienced to be low. Nevertheless, if road safety is not administered it can have a high impact on the safety of fellow road users.

The mining operation, especially during construction, will create a number of new employment opportunities. The magnitude of this impact will depend on the number of people that will be employed and the number of contractors sourced. An influx of people into the area will possibly impact on safety and security of local residents. During the decommissioning and at closure of the mine, staff will most likely be retrenched. This can potentially flood the job market, resulting in people being unable to find new employment for a long period of time. It is normally more difficult for people with highly specialised skills to find employment immediately. Those with fewer skills have more flexibility in the job market.

Economic slump of the local towns after mine closure is an associated potential impact,

although small due to the small scale of the operation. Income streams from wage bills as well as goods and services contracts (at all geographical levels) will come to an end, reducing the monetary income of individuals and mine-related businesses. People who have derived income directly or indirectly from the project may be inclined to leave the region in search of employment or business opportunities. This could result in further decline of the economy of the region as well as the abandonment of infrastructure. The loss of the mine workforce income will also impact upon non-mine related industries within the local and regional areas, particularly the rental property market and retail and service industries who would have received income during the life of mine from the salaried workforce.

It is likely, however that there will be residual positive economic impacts that are not fully reversed with the closure of the mine, and that the economy will not decline to its original level prior to the development of this project. This is because the mine will generate substantial income for the regional and local economy, both directly and indirectly, during its life.

It is difficult to predict the actual impact of the mine closure in advance, but it is acceptable to assume that the mine closure will have a negative impact on the local and regional economy with a high probability of occurrence, a Low severity and a Low significance.

Positive impacts include employment and training opportunities for people in the local community and local contractors; social upliftment and community development programmes; economic benefits.

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

(With regard to the issues and concerns raised by affected parties provide a list of the issues raised and an assessment/ discussion of the 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).

Geology and Mineral Resource

Level of risk: Very low

Mitigation measures

- Ensure that optimal use is made of the available mineral resource through proper planning.
- The alluvial deposit should be delineated first and all infrastructure positions should be selected with the main aim of avoiding sterilization of future resources.
- No random dumping of materials prior to approval by mine manager.

Topography

Level of risk: Low

Mitigation measures

- Mine all alluvial diamond gravels and rehabilitate material back up to natural ground level.
- Do controlled dumping.
- Employ effective rehabilitation strategies to restore surface topography of the area and plant site.

- Stabilise the excavations and mine residue deposits.
- All temporary infrastructures will be demolished during closure.

Soil Erosion

Level of risk: Very low

Mitigation measures

- All attempts must be made to avoid exposure of dispersive soils.
- Re-establishment of plant cover on disturbed areas must take place as soon as possible, once activities in the area have ceased.
- Ground exposure should be minimised in terms of the surface area and duration, wherever possible.
- The mining operation must co-ordinate different activities in order to optimise the utilisation of the alluvial mining operations and thereby prevent repeated and unnecessary dumping.
- Construction that requires the clearing of large areas of vegetation should ideally occur during the dry season only.
- Construction during the rainy season (November to March) should be closely monitored and controlled.
- The run-off from the exposed ground should be controlled with the careful placement of flow retarding carriers.
- The soil that is excavated during construction should be stock-piled in layers and protected by berms to prevent erosion.
- All stockpiles should be kept as small as possible, with gentle slopes (18 degrees) in order to avoid excessive erosional induced losses.
- Excavated and stockpiled soil material are to be stored and bermed on the higher laying areas of the footprint areas and not in any storm water run-off channels or other areas where it is likely to cause erosion, or where water would naturally accumulate.
- Stockpiles susceptible to wind erosion are to be covered during windy periods.
- Audits must be carried out at regular intervals to identify areas where erosion is occurring.
- Appropriate remedial action, including the rehabilitation of eroded areas, must occur.
- Dust suppression must take place, without compromising the water balance of the area.
- Linear infrastructure such as roads and pipelines will be inspected at least monthly to check that the associated water management infrastructure is effective in controlling erosion.

Soil Pollution

Level of risk: Very low

Mitigation measures

- Refuelling must take place in well demarcated areas and over suitable drip trays to prevent soil pollution.

- Spill kits to clean up accidental spills from earthmoving machinery must be well-marked and available on site.
- Workers must undergo induction to ensure that they are prepared to rapid clean-up procedures.
- All facilities where dangerous materials are stored must be contained in a bund wall.
- Vehicles and machinery should be regularly serviced and maintained.

Land Capability and Land Use

Level of risk: Very low

Mitigation measures

- Ensure that optimal use is made of the available land through consultation with land owner proper planning of mining activities.
- Surface agreement to be signed with land owners.
- Employ effective rehabilitation strategies to restore land capability and land use potential of the farm.
- All activities to be restricted within the demarcated areas.

Ground Water

Level of risk: Very low

Mitigation measures

- Refuelling must take place in well demarcated areas and over suitable drip trays to prevent soil pollution.
- Spill kits to clean up accidental spills from earthmoving machinery must be well-marked and available on site.
- Workers must undergo induction to ensure that they are prepared for rapid clean-up procedures.
- All facilities where dangerous materials are stored must be contained in a bund wall.
- Vehicles and machinery should be regularly serviced and maintained.

Surface Water

Level of risk: Very low

Mitigation measures

- Sufficient care must be taken when handling hazardous materials to prevent pollution.
- Under no circumstances any ablutions occur outside of the provided facilities.
- If servicing and washing of vehicles occur on site, there must be specific areas constructed for these activities, which must have concrete foundations, bunding as well as oil trips to contain any spillages.
- A walled concrete platform, dedicated store with adequate flooring or bermed area and ventilation must be used to accommodate chemicals such as fuels, oils, paints, herbicide and insecticides.
- Oil residue shall be treated with oil absorbent and this material removed to approved waste site.

- Spill kits must be easily accessible and workers must undergo induction regarding the use thereof.
- Store all litter carefully to prevent it from washing away or blown into any of the water courses near the study area.
- Provide bins for staff at appropriate locations, particularly where food is consumed.
- The mining site should be cleaned daily and litter removed.
- Conduct ongoing staff awareness programmes in order to reinforce the need to avoid littering, which contributed to surface water pollution.

Indigenous Flora

Level of risk: Low to medium

Mitigation measures:

- Minimise the footprint of transformation.
- Encourage the growth of natural plant species.
- Ensure measures for the adherence to the speed limit.
- Footprint areas of the mining activities must be scanned for Red Listed and protected plant species prior to mining.
- It is recommended that these plants are identified and marked prior to mining.
- These plants should, where possible, be incorporated into the design layout and left in situ.
- However, if threatened by destruction when mining, these plants should be removed (with the relevant permits from DAFF and DENC) and relocated if possible.
- A management plan should be implemented to ensure proper establishment of ex situ individuals and should include a monitoring programme for at least two years after re-establishment in order to ensure successful translocation.
- All those working on site must be educated about the conservation importance of the fauna and flora occurring on site.

Alien Invasive Plants

Level of risk: Very low

Mitigation measures

- Minimise the footprint of transformation.
- Encourage proper rehabilitation of mined areas.
- Encourage the growth of natural plant species.
- Mechanical methods (hand-pulling) of control to be implemented extensively.
- Annual follow-up operations to be implemented.

Fauna

Level of risk: Very low

Mitigation measures

- Careful consideration is required when planning the placement for stockpiling topsoil and the creation of access routes in order to avoid the destruction of habitats and minimise the overall mining footprint.

- The appointment of a full-time ECO must render guidance to the staff and contractors with respect to suitable areas for all related disturbance.
- All those working on site must be educated about the conservation importance of the fauna and flora occurring on site.
- The ECO must ensure that all contractors and workers undergo Environmental Induction prior to commencing with work on site.
- The Environmental Induction should occur in the appropriate languages for the workers who may require translation.
- Reptiles and amphibians that are exposed during the clearing operations should be captured for later release or translocation by a qualified expert.
- Employ measures that ensure adherence to the speed limit.

Habitat

Level of risk: Low

Mitigation measures

- Mining activities must be planned, where possible in order to encourage faunal dispersal and should minimise dissection or fragmentation of any important faunal habitat type.
- The extent of the mining area should be demarcated on site layout plans (preferably on disturbed areas or those identified with low conservation importance). No construction personnel or vehicles may leave the demarcated area except those authorised to do so.

Air Quality

Level of risk: Very low

Mitigation measures

- Vegetation must be removed when soil stripping is required only. These areas should be limited to include those areas required for mining only, hereby reducing the surface area exposed to wind erosion. Adequate demarcation of these areas should be undertaken.
- Control options pertaining to topsoil removal, loading and dumping are generally limited to wet suppression.
- Where it is logistically possible, control methods for gravel roads should be utilised to reduce the re-suspension of particulates. Feasible methods include wet suppression, avoidance of unnecessary traffic, speed control and avoidance of track-on of material onto paved and treated roads.
- The length of time where alluvial diamond mining areas are exposed should be restricted. Mining should not be delayed after vegetation has been cleared and topsoil removed where possible.
- Dust suppression methods should, where logistically possible, must be implemented at all areas that may/are exposed for long periods of time.
- For all mining activities management should undertake to implement health measures in terms of personal dust exposure, for all its employees.

Noise and Vibration

Level of risk: Very low

Mitigation measures

- Restrict mining activities to daytime unless agreements obtained to do 24hr operations.
- Systematic maintenance of all forms of equipment, training of personnel to adhere to operational procedures that reduce the occurrence and magnitude of individual noisy event.
- Where possible material stockpiles should be placed so as to protect the boundaries from noise to individual operations.
- Standardised noise measurements should be carried out on individual equipment at the delivery to site to construct a reference data-base and regular checks carried out to ensure that equipment is not deteriorating and to detect increases which could lead to increase in the noise impact over time and increased complaints.
- Environmental noise monitoring should be carried out regularly to detect deviations from predicted noise levels and enable corrective measures to be taken where warranted.

Visual Impacts

Level of risk: Very low

Mitigation Measures:

- Infrastructure should be placed to optimise the natural screening capacity of the vegetation.
- Where practical, protect existing vegetation clumps in order to facilitate screening during the mining operation.
- Remove rubble and other building rubbish off site as soon as possible or place it in a container in order to keep the mining site free from additional sightly elements.
- Locate the stockpiles outside of the visual field of sensitive visual receptors.
- Dust suppression procedures should be implemented especially on windy days.
- Rehabilitation should aim to establish a diverse and self-sustaining surface cover that is visually and ecologically representative of naturally occurring vegetation species.
- Implement a management plan for the post-mining site in order to control the invasion of alien vegetation and to manage erosion, until the site is fully rehabilitated.

Traffic and Road Safety

Level of risk: Very low

Mitigation measures

- Implement measures that ensure the adherence to traffic rules.

Heritage Resources

Level of risk: Medium

Mitigation measures

- The heritage and cultural resources if any are encountered (e.g. graveyards, ruins, historic structures, etc.) must be protected and preserved by the delineation of a no-go zone.
- Intact bedrock strata should be avoided during mining of terrace gravels where possible.
- Stone tools should be avoided where possible and fresh exposures should be recorded before destruction. All stone tool artefacts should be recorded, mapped and collected before destruction.
- Should development necessitate impact on any building structures, the developer should apply for a SAHRA Site destruction permit prior to commencement of construction.

Socio-economic

Level of risk: Low

Mitigation measures

- The mine must ensure that false expectations are not created regarding job creation.
- Jobs must be allocated as advertised and in so far as is possible to local inhabitants.
- Contractors and employees should not be permitted to wander outside the mining area.
- Uncontrolled settlement of contractors and workers outside of the site will be prevented.
- The expectations of what benefits can accrue to the community must be managed from the initiation of the project.

Interested and Affected Parties

Level of risk: Very low

Mitigation measures

- Maintain active communication with IAPs.
- Ensure transparent communication with IAPs at all times.
- IAPs must be kept up to date on any changes in the mining operation.
- A complaints management system should be maintained by the mine to ensure that all issues raised by community members are followed up and addressed appropriately.

ix) **The outcome of the site selection Matrix. Final Site Layout Plan**
(Provide a final site layout plan as informed by the process of consultation with interested and affected parties)

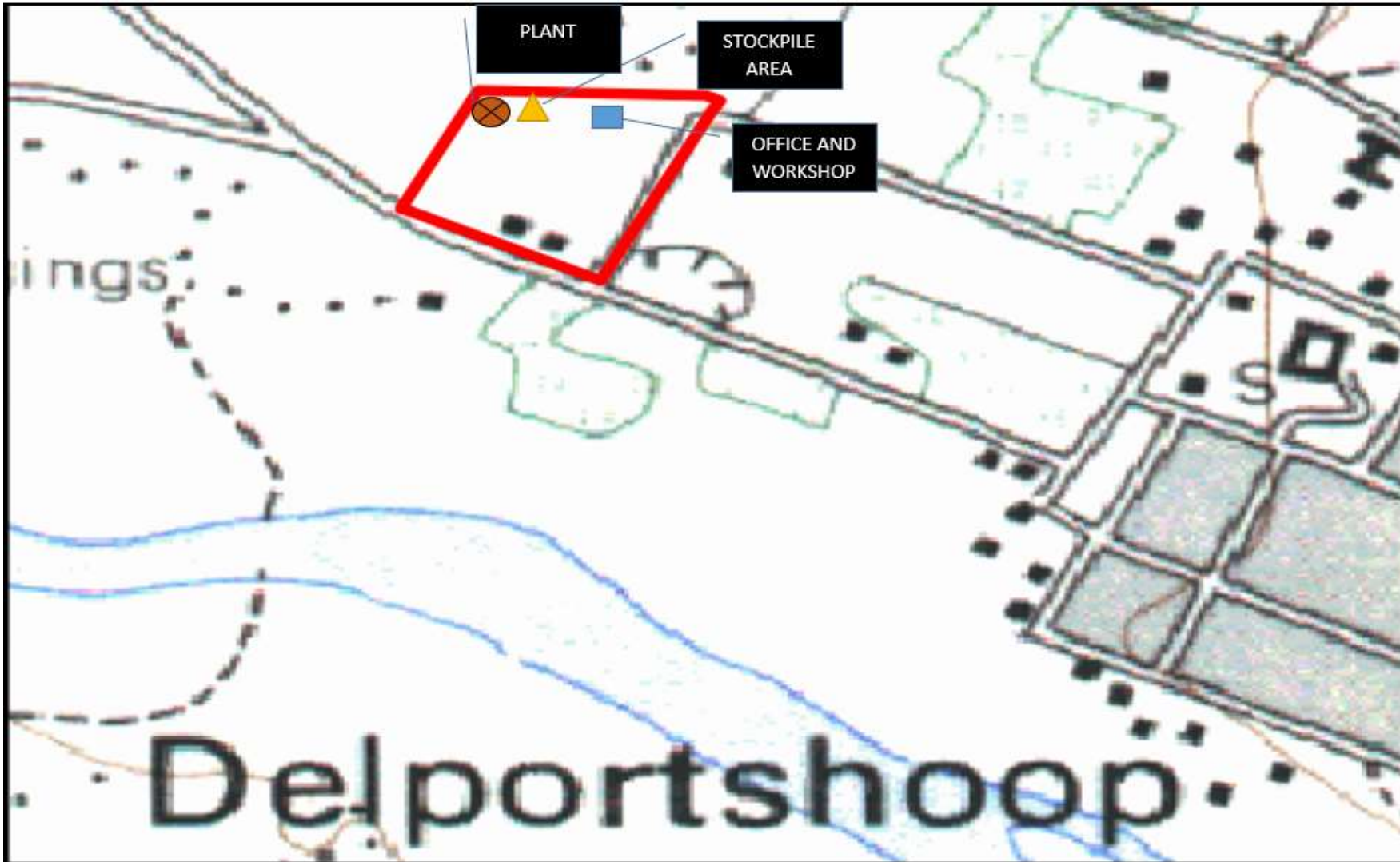


Figure 21. Final site layout plan (not to scale)

x) Motivation where no alternative sites were considered

No alternative location for the proposed mining operation was considered, as the alluvial diamond resources has been deposited in this area. There is therefore no other alternative with regard to the overall operation footprint.

xi) Statement motivating the preferred site

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

Not applicable. There is no alternative development location for the site as this is the area with the mineable resource.

i) Plan of study for the Environmental Impact Assessment process**i) Description of alternatives to be considered including the option of not going ahead with the activity.***Land use development alternatives:*

The site layout may vary, depending on the operational requirements. However, the final design and layout of the infrastructure have been planned and decided upon by the developer on the grounds of reserves, and placement of infrastructure based on hauling distance, environmental features such as wind direction, heritage findings, protected species, and stormwater management on the mine.

Consequence if not Proceeding with the Operation:

The following positive impacts will be lost if the proposed mining project is not developed:

- TAX and VAT obligations to SARS as well as Royalties;
- CAPEX spent locally and regionally;
- Employment opportunities;
- Payroll income;
- Operating expenditure and maintenance (OPEX);
- Revenue.

Mining activities are believed to be the most economically beneficial option for the area.

If the operation does not continue it would hold back any potential employment for the region and the families who are likely to benefit from the positive employment opportunities. Simultaneously, it may have a stagnant effect on the economy of South Africa and the diamond industry as a whole. Substantial tax benefits to the State and Local Government will also be inhibited.

Mining forms an integrated part of the social and economic growth of South Africa.

(ii) Description of the aspects to be assessed as part of the environmental impact assessment process

(The EAP must undertake to assess the aspects affected by each individual mining activity whether listed or not, including activities such as blasting, Loading, hauling and transport, and mining activities such as excavations, stockpiles, discard dumps or dams, water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)

1. The clearing of vegetation for:
 - Access roads and haul roads
 - Surface infrastructure
 - Product Stockpile area
 - Waste disposal site (domestic and industrial waste)
2. The stripping and stockpiling of topsoil.
3. Load and Haul Operation for the mining of alluvial gravels.
4. Altering the characteristics of surface water features (possible drainage channel).
5. The development of temporary stockpiles:
 - Topsoil storage area;
 - Mine Residue Stockpile for slime.
6. The rehabilitation of footprint areas where the open casts have been opened.
7. The construction of Processing plant.
8. Loading, hauling and transporting of ROM, product and material
9. Water holding facilities, pipeline and stormwater control:
 - Clean & Dirty water system: Stormwater dam / Water storage facility;
 - Water distribution Pipeline;
 - Water tank.
10. Fuel storage and refuelling bays;
 - Fuel Storage facility (Diesel tanks);
 - Concrete bund walls and diesel depots.
11. Supporting infrastructure:
 - Temporary Offices;
 - Office Parking Bay;
 - Temporary Workshop and Wash Bay;
 - Salvage yard (Storage and laydown area);
 - Ablution facilities/ Sewage facilities;
 - Generators;
 - Pipelines transporting water.

(i) Description of aspects to be assessed by specialists

The application area is near the Vaal River. The necessary studies (Ecological studies (that will include soil, fauna, flora) and heritage and palaeontological studies) will be done.

(ii) Proposed method of assessing the environmental aspects including the proposed method of assessing alternatives

The receiving environment will be determined using a combination of on-site observations, spatial information, project description, site layout and previous studies currently available to the EAP. Based on the EAPs knowledge and experience, the receiving environment will include geological features, topography, land use, archaeological and historical sites, surface water, groundwater, terrestrial ecology, air quality, noise, etc.

The identification of potential impacts of the mining activity will be based on the legal requirements; the nature of the proposed activity; the nature of the receiving environment; and issues raised during the public participation process. Considering the factors listed above and based on the EAPs knowledge and experience, environmental impacts that could potentially result from the mining activities include impacts on air quality, noise, fauna, flora, ground water, terrestrial ecology, heritage resources, socio-economy, aquatic environments, visuals, storm water and erosion.

The consideration of alternatives is a critical component of the EIA process, where an appropriate range of alternatives require consideration whilst achieving the desired objective of the proposed project. In order to ensure that the proposed project enables sustainable mining, a number of feasible options will be explored. The various alternatives in terms of land use, project infrastructure, mining method and proceeding without the mining operation will be assessed in terms of logistical practicality, environmental acceptability and economic feasibility. Alternatives for the locality of the mining operation will however not form part of this consideration, as the location of the mining site is determined by the geological location of the mineral resource.

(iii) The proposed method of assessing duration significance:

The lifetime of the impact will be measured in the context of the lifetime of the proposed phase or activity.

Weight	Duration of Impact	Explanation of Duration
1	Very Short	Less than 1 year
2	Short	1 to 5 years
3	Medium	6 to 15 years
4	Long term (Life of project)	16 to 50 years
5	Very Long term	Longer than 50 years
6	Permanent	Permanent

- Short term
The impact will either disappear with mitigation or will be mitigated through natural process in a short time period.

- Medium term
The impact will last up to the end of the mining period, where after it will be entirely negated.
- Long term
The impact will continue or last for the entire operational life of the mine, but will be mitigated by direct human action or by natural processes thereafter.
- Permanent
The only class of impact, which will be non-transitory. Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient.

(iv) The stages at which the competent authority will be consulted:

Consultation with the Competent Authority will take place throughout the application process, however more specifically; consultation will take place before submission of the Scoping Report and again before submission of the EIA/EMPR Report.

(v) Particulars of the public participation process with regard to the Impact Assessment process that will be conducted:

1. Steps to be taken to notify Interested and Affected parties:

(These steps must include the steps that will be taken to ensure consultation with the affected parties identified in (h)(ii) herein.)

The consultation process as described by NEMA for Environmental Authorisation was followed and is still in process. The following steps were already taken:

- Notification letters were sent to all interested and/or affected parties on the 21st of July 2021. Attached to each of these letters a draft Scoping Report for comments.
- A newspaper advert was placed in the DFA local newspaper during July 2021.
- Several Notices were placed at the entrance to the site and along the fence as well as at the local shop in Delportshoop.

Proof of notification and consultation is attached as Appendix 3. The consultation process is still in process.

2. Details of the engagement process to be followed:

The following procedures will be followed:

- Public meetings will be held with registered IAPs at suitable venues and on appropriate dates, depending on the feedback received during the consultation process and if required.
- An IAP register will be compiled and regular and ongoing follow-up sessions will be held with the IAPs to monitor those issues raised during the IAP process and that are deemed to be affected by the mining operation.

- Scoping, EMP and EMPR will be made available in the public library.
- Records will be kept of the complaints and the mitigation measures implemented.

3. Description of the information to be provided to Interested and Affected Parties

The following information will be provided to IAPs:

- The site plan;
- List of activities to be authorised;
- Scale and extent of activities to be authorised;
- Typical impacts of activities to be authorised;
- The duration of the activity.

The following information will be requested from the IAPs:

- To provide information on how they consider that the proposed activities will impact on them or their socio-economic conditions;
- To provide written responses stating their suggestions to mitigate the anticipated impacts of each activity;
- To provide information on current land uses and their location within the area under consideration;
- To provide information on the location of environmental features on site to make proposals as to how and to what standard the impacts on site can be remedied. They will be requested to make written proposals;
- To mitigate the potential impacts on their socio-economic conditions to make proposals as to how the potential impacts on their infrastructure can be managed, avoided or remedied).

(vi) Description of the tasks that will be undertaken during the environmental impact assessment process:

Determining environmental attributes

The receiving environment will be determined using a combination of on-site observations, spatial information, project description, site layout and previous studies currently available to the EAP. Based on the EAPs knowledge and experience, the receiving environment will include geological features, topography, land use, archaeological and historical sites, surface water, groundwater, terrestrial ecology, air quality, noise, etc.

Identification of impacts and risks

The identification of potential impacts of the mining activity will be based on the legal requirements; the nature of the proposed activity; the nature of the receiving environment; and issues raised during the public participation process.

Considering the factors listed above and based on the EAPs knowledge and experience, environmental impacts that could potentially result from the mining activities include impacts on air quality, noise, fauna, flora, ground water, surface water, terrestrial ecology, heritage resources, socio-economy, aquatic environments, visuals, stormwater and erosion.

Consideration of alternatives

The consideration of alternatives is a critical component of the EIA process, where an appropriate range of alternatives require consideration whilst achieving the desired objective of the mining project. In order to ensure that the proposed project enables sustainable mining, a number of feasible options will be explored. The various alternatives in terms of land use, project infrastructure, mining method and proceeding without the mining operation will be assessed in terms of logistical practicality, environmental acceptability and economic feasibility.

Alternatives for the locality of the mining operation will however not form part of this consideration, as the location of the mining site is determined by the geological location of the mineral resource.

Process to assess and rank impacts

Before any assessment can be made the following evaluation, criteria need to be described.

Table 11: Explanation of PROBABILITY of impact occurrence

Weight	Probability of Impact Occurrence	Explanation of Probability
1	Very Low	<20% sure of particular fact or likelihood of impact occurring
2	Low	20 – 39% sure of particular fact or likelihood of impact occurring
3	Moderate	40 – 59% sure of particular fact or likelihood of impact occurring
4	High	60 – 79% sure of particular fact or likelihood of impact occurring
5	Very High	80 – 99% sure of particular fact or likelihood of impact occurring
6	Definite	100% sure of particular fact or likelihood of impact occurring

Table 12: Explanation of EXTEND of impact

Weight	Extent of Impact	Explanation of Extent
1	Site Specific	Direct and Indirect impacts limited to site of impact only
2	Surrounding Area	Direct and Indirect impacts affecting environmental elements within 2 km of site
3	Local Municipality	Direct and Indirect impacts affecting environmental elements within the Delportshoop area
4	Regional/District	Direct and Indirect impacts affecting environmental elements within District (Dikatleng / Barkly West District)
5	Provincial	Direct and Indirect impacts affecting environmental elements in the Northern Cape Province

Table 13: Explanation of DURATION of impact

Weight	Duration of Impact	Explanation of Duration
1	Very Short	Less than 1 year
2	Short	1 to 5 years

3	Medium	6 to 15 years
4	Long term (Life of project)	16 to 50 years
5	Very Long term	Longer than 50 years
6	Permanent	Permanent

Table 14: Explanation of SEVERITY of the impacts

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

Methodology used in determining and ranking the nature, severity, consequences, extent, duration and probability of potential environmental impacts and risks

The criteria used to assess the significance of the impacts are shown in the table below. The limits were defined in relation to mining characteristics. Those for probability, intensity/severity and significance are subjective, based on rule-of-thumb and experience. Natural and existing mitigation measures were considered. These natural mitigation measures were defined as natural conditions, conditions inherent in the project design and existing management

measures, which alleviate impacts. The significance of the impacts was calculated by using the following formula:

$$(\text{Severity} + \text{Extent} + \text{Duration}) \times \text{Probability weighting}$$

For the impact assessment, the different project activities and associated infrastructure were identified and considered in order to identify and analyse the various possible impacts.

Table 15:

SIGNIFICANCE				
Colour Code	Significance rating	Rating	Negative Impact	Positive Impact
	Very low	3 -16	Acceptable/Not serious	Marginally Positive
	Low	17 - 22	Acceptable/Not serious	Marginally Positive
	Medium-Low	23 -33	Acceptable/Not desirable	Moderately Positive
	Medium	34 - 48	Generally undesirable	Beneficial
	Medium-High	49 - 56	Generally unacceptable	Important
	High	57 - 70	Not Acceptable	Important
	Very High	90 - 102	Totally unacceptable	Critically Important

Significance of impacts is defined as follows:

Very Low - Impact would be negligible. Almost no mitigation and/or remedial activity would be needed, and any minor steps which might be needed would be easy, cheap and simple.

Low - Impact would have little real effect. Mitigation and/or remedial activity would be either easily achieved or little would be required or both.

Medium Low- Impact would be real but not substantial within the bounds of those which could occur. Mitigation and/or remedial activity would be both feasible and fairly easily possible.

Medium - Impact would be real but not substantial within the bounds of those which could occur. Mitigation and/or remedial activity would be feasible and possible.

Medium High- Impact would be real but could be substantial within the bounds of those which could occur. Mitigation and/or remedial activity would be both feasible and possible but may be difficult and or costly.

High - Impacts of substantial order. Mitigation and/or remedial activity would be feasible but difficult, expensive, time consuming or some combination of these.

Very High - Of the highest order possible within the bounds of impacts which could occur. There would be no possible mitigation and/or remedial activity to offset the impact at the spatial or time scale for which was predicted.

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

ACTIVITY Whether listed or not listed (e.g. excavations, blasting, stockpiles, discard dumps or dams, loading, hauling and transport, water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc...)	POTENTIAL IMPACT (e.g. dust, noise, drainage, surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc...)	MITIGATION TYPE modify, remedy, control or stop (e.g. noise control measures, stormwater control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc...) (e.g. modify through alternative method. Control through management and monitoring through rehabilitation.)	POTENTIAL FOR RESIDUAL RISK
Ablution facilities Chemical toilets	<ul style="list-style-type: none"> • Soil contamination • Groundwater contamination • Odours 	<ul style="list-style-type: none"> • Maintenance of chemical toilets on regular basis. • Removal of containers upon closure. 	Very low
Clean & Dirty water system	<ul style="list-style-type: none"> • Surface disturbance • Groundwater contamination • Soil contamination • Surface water contamination 	<ul style="list-style-type: none"> • Maintenance of berms and trenches. • Oil traps used in relevant areas. • Drip trays used. • Immediately clean hydrocarbon spill. 	Low/Medium
Diesel tanks	<ul style="list-style-type: none"> • Groundwater contamination • Removal and disturbance of vegetation cover and natural habitat of fauna • Soil contamination • Surface disturbance 	<ul style="list-style-type: none"> • Maintenance of diesel tanks and bund walls. • Oil traps. • Groundwater quality monitoring. • Drip tray at re-fuelling point. • Immediately clean hydrocarbon spill. 	Medium
Opencast Alluvial Diamond mining	<ul style="list-style-type: none"> • Dust • Possible Groundwater contamination • Noise 	<ul style="list-style-type: none"> • Access control • Dust control and monitoring • Groundwater quality monitoring • Noise control and monitoring • Continuous rehabilitation 	Medium

	<ul style="list-style-type: none"> • Removal and disturbance of vegetation cover and natural habitat of fauna • Soil contamination • Surface disturbance • Surface water contamination 	<ul style="list-style-type: none"> • Stormwater run-off control • Immediately clean hydrocarbon spill • Drip trays • Erosion control 	
Generators	<ul style="list-style-type: none"> • Groundwater contamination • Noise • Removal and disturbance of vegetation cover and natural habitat of fauna • Soil contamination • Surface disturbance 	<ul style="list-style-type: none"> • Access control • Maintenance of generator and bund walls • Noise control and monitoring • Oil traps • Groundwater quality monitoring • Immediately clean hydrocarbon spill 	Medium
Office – Prefabricated office blocks on concrete	<ul style="list-style-type: none"> • Removal and disturbance of vegetation cover and natural habitat of fauna • Soil contamination • Surface disturbance 	<ul style="list-style-type: none"> • Immediately clean hydrocarbon spill • Rip disturbed areas to allow re-growth of vegetation cover 	Very low
Parking bay	<ul style="list-style-type: none"> • Dust • Groundwater contamination • Noise • Removal and disturbance of vegetation cover and natural habitat of fauna • Surface disturbance 	<ul style="list-style-type: none"> • Dust control and monitoring • Noise control and monitoring • Drip trays • Stormwater run-off control. • Immediately clean hydrocarbon spills • Rip disturbed areas to allow re-growth of vegetation cover 	Low
Processing plant	<ul style="list-style-type: none"> • Dust • Noise • Groundwater contamination • Removal and disturbance of vegetation cover and natural habitat of fauna 	<ul style="list-style-type: none"> • Access control • Maintenance of processing plant • Dust control and monitoring • Groundwater quality and level monitoring • Noise control and monitoring • Drip trays 	Medium

	<ul style="list-style-type: none"> • Soil contamination • Surface disturbance 	<ul style="list-style-type: none"> • Stormwater run-off control. • Immediately clean hydrocarbon spills • Rip disturbed areas to allow re-growth of vegetation cover 	
Water distribution Pipeline	<ul style="list-style-type: none"> • Surface disturbance • Possible Groundwater contamination • Soil contamination • Surface water contamination 	<ul style="list-style-type: none"> • Maintenance of pipes. 	Low
Roads	<ul style="list-style-type: none"> • Dust • Possible Groundwater contamination • Noise • Removal and disturbance of vegetation cover and natural habitat of fauna • Surface disturbance 	<ul style="list-style-type: none"> • Maintenance of roads • Dust control and monitoring • Noise control and monitoring • Speed limits • Stormwater run-off control. • Erosion control • Immediately clean hydrocarbon spills • Rip disturbed areas to allow re-growth of vegetation cover 	Low
Salvage yard	<ul style="list-style-type: none"> • Possible Groundwater contamination • Removal and disturbance of vegetation cover and natural habitat of fauna • Soil contamination • Surface disturbance • Surface water contamination 	<ul style="list-style-type: none"> • Access control • Maintenance of fence. • Stormwater run-off control • Immediately clean hydrocarbon spill 	Low
Stockpile area	<ul style="list-style-type: none"> • Dust • Possible Groundwater contamination • Noise 	<ul style="list-style-type: none"> • Dust control and monitoring • Noise control and monitoring • Drip trays • Stormwater run-off control. • Immediately clean hydrocarbon spills 	Low

	<ul style="list-style-type: none"> Removal and disturbance of vegetation cover and natural habitat of fauna Surface disturbance 	<ul style="list-style-type: none"> Rip disturbed areas to allow re-growth of vegetation cover 	
Topsoil storage area	<ul style="list-style-type: none"> Dust Removal and disturbance of vegetation cover and natural habitat of fauna Soil disturbance Surface disturbance 	<ul style="list-style-type: none"> Dust control and monitoring Stormwater run-off control. Continuous rehabilitation Rip disturbed areas to allow re-growth of vegetation cover Backfilling of topsoil during rehabilitation 	Low
Waste disposal site	<ul style="list-style-type: none"> Groundwater contamination Surface water contamination 	<ul style="list-style-type: none"> Storage of waste within receptacles Storage of hazardous waste on concrete floor with bund wall Removal of waste on regular intervals. 	Low
Mine Residue Deposit – Slimes	<ul style="list-style-type: none"> Dust Possible Groundwater contamination Noise Removal and disturbance of vegetation cover and natural habitat of fauna Surface disturbance 	<ul style="list-style-type: none"> Dust control and monitoring Groundwater quality monitoring Noise control and monitoring Stormwater run-off control. Rip disturbed areas to allow re-growth of vegetation cover 	Low
Wash bay	<ul style="list-style-type: none"> Possible Groundwater contamination Removal and disturbance of vegetation cover and natural habitat of fauna Soil contamination 	<ul style="list-style-type: none"> Groundwater quality and level monitoring Concrete floor with oil/water separator Stormwater run-off control Immediately clean hydrocarbon spills 	Low
Water tank: It is anticipated that the operation will establish 1 x 10 000 litre water tanks with purifiers for potable water.	<ul style="list-style-type: none"> Vaal river water and usage Surface disturbance 	<ul style="list-style-type: none"> Monitor water quality and quantity Maintenance of tanks (check for leaks). 	Low

l) Other Information required by the competent Authority**i) Compliance with the provisions of sections 24(4)(a) and (b) read with section 24 (3) (a) and (7) of the National Environmental Management Act (Act 107 of 1998). The EIA report must include the:-****1. Impact on the socio-economic conditions of any directly affected person**

(Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any directly affected person including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim, attach the investigation report as **Appendix 2.19.1** and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6.and 2.12.herein).

The socio-economic conditions of the local community could be affected in two ways:

- Negative impacts to the welfare of the residents and workers through general nuisance, dust generation, damages to properties and any associated potential safety risks.
- Positive impacts through job creation and local business opportunities.
- The consultation with interested and affected parties is on-going and any issues, concerns or comments will be considered and included in the EIA report and control measures will be presented in the EMP report.

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

(Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) with the exception of the national estate contemplated in section 3(2)(j)(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).

A Heritage study will be done to determine if any such sites and/or objects are located on the site itself.

Should any heritage features and/or objects be located or observed, a heritage specialist will be contacted immediately. Observed or located heritage features and/or objects may not be disturbed or removed in any way until such time that a heritage specialist has been able to make an assessment as to the significance of the site (or material) in question. This is true for graves and cemeteries as well.

u) 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**).

As mentioned before, the specific occurrence of diamonds in the area dictates the selection of the specific mining site and there are no alternatives in terms of project location.

The mining operation will provide ±11 - 15 jobs and will also add to the increased economic activity and the area surrounding the farm.

Negative impacts on the area are expected to be temporary and can be mitigated to a large extent if the recommendations of the EMPR area adhered to e.g. rehabilitation.

v) UNDERTAKING REGARDING CORRECTNESS OF INFORMATION

I, **RH Oosthuizen**, ID number **7004180037082**, herewith undertake that the information provided in the foregoing report is correct, and that the comments and inputs from stakeholders and Interested and Affected parties has been correctly recorded in the report.



Signature of the EAP

DATE: 21 July 2021

w) UNDERTAKING REGARDING LEVEL OF AGREEMENT

I, **RH Oosthuizen**, ID number **7004180037082**, herewith undertake that the information provided in the foregoing report is correct, and that the level of agreement with interested and Affected Parties and stakeholders has been correctly recorded and reported herein.



Signature of the EAP

DATE: 21 July 2021

-END-

Appendix 1

DIE UNIVERSITEIT
VAN DIE ORANJE-
VRYSTAAT



THE UNIVERSITY
OF THE ORANGE
FREE STATE

HIERMEE WORD VERKLAAR DAT DIE GRAAD THIS IS TO CERTIFY THAT THE DEGREE

Magister in Omgewingsbestuur
Master in Environmental Management

TOEGEKEN IS AAN
HAS BEEN CONFERRED UPON

ROELINA HENRIËTTE OOSTHUIZEN

NADAT AAN DIE STATUTE EN REGULASIES VAN DIE UNIVERSITEIT VOLDOEN IS, AS BEWYS DAARVAN PLAAS ONS ONS ONDERSKEIE HANDTEKENINGE EN DIE SEËL VAN DIE UNIVERSITEIT HIERONDER. IN ACCORDANCE WITH THE STATUTES AND REGULATIONS OF THE UNIVERSITY, AS WITNESS OUR RESPECTIVE SIGNATURES AND THE SEAL OF THE UNIVERSITY BELOW.



.....
VISEKANSELIER/VICE-CHANCELLOR

.....
DEKAAN/DEAN

.....
REGISTRATEUR/REGISTRAR

BLOEMFONTEIN
2000-09-16

APPENDIX 2

CURRICULUM VITAE

Roelina Henriette Oosthuizen

Cell: 084 208 9088

E-Mail: roosthuizen950@gmail.com

1. PERSONAL INFORMATION

Name: Roelina Henriette Oosthuizen

Surname: Oosthuizen (Maiden: Alberts)

Identity number: 7004180037082

Date of birth: 18 April 1970

Gender: Female

Marital status: Married (26 years) with 3 children

Driving license: Yes, Code EB

Languages: Fluent in Afrikaans and English

Nationality: South African

Criminal offences: None

Health: Excellent, fit

2. SYNOPSIS OF PROFESSIONAL CAREER

Roelina Henriette Oosthuizen has 22 years of experience in the environmental management field. She started her career in the area of Environmental Management and Environmental Impact Assessment (EIA) evaluation in 1997 at the Department of Minerals and Energy. After moving to industry in 2005, Roelien became involved in the practical aspects of environmental management. A major project during her early years outside of government was that of the EIA for a Game Reserve and Lodge development near Barkly-Wes, she did this project together with a consultancy firm from Kimberley AWS water solutions (Mr. Adriaan du Toit). In 2007 the Company she worked for was bought by a Canadian Group of Companies and she became more involved in practical aspects of the operations and worked closely with operations personnel in dealing with ongoing management of environmental impacts at the Mine (e.g. monitoring, auditing, operating procedures). She was also centrally involved in liaison with the authorities and with stakeholders in neighbouring areas.

During her time at the Canadian Group of Companies, Roelien was the environmental manager overseeing operations in the Barkly-West, Prieska and Douglas areas. She was responsible for preparing the environmental compliance documents for each operation which included Performance Assessments (Audit reports) and Financial Quantum submissions as well as new applications for Prospecting Rights and Mining Rights with the relevant Scoping, EIA / EMP documents. Her activities included liaison with stakeholders and also with the relevant Departments. During this time, Roelien became increasingly involved in environmental policy and strategy work, as well as the environmental aspects of corporate governance.

She has assisted a range of clients with Environmental Due Diligence audits and compliance audits. Roelien has also undertaken numerous environmental audits, particularly compliance and due diligence audits for clients in the mining industry. Thus, she is familiar with best practice standards in environmental auditing.

Roelien have also represented the South African Diamond Producers Organisation (SADPO) on the Environmental Policy Committee (EPC) at the Chamber of Mines between 2005 and 2011.

In a nutshell, Roelien has wide ranging experience and is thus well-positioned to assist clients in any matter related to sustainability and environmental management. This is achieved through her own skills base and on drawing on specialists.

3. QUALIFICATIONS

MEM (Master in Environmental Management) University of the Orange Free State (2000)
B – Comm NWU (1991)

4. TRAINING COURSES

Roelien have attended various mining and environmental conferences and seminars to stay abreast with the latest changes in legislation, legal compliance and policy positions in the sector.

October 1997	Mineral Laws Administration & Environmental Management (University of Pretoria)
July 2002	Project Management for Environmental Systems (University of the Orange Free State)
August 2004	Environmental and Sustainability in Mining Minerals and Energy Education and Training Institute (MEETI)
September 2005	Converting Old Order Rights to New Order Rights in Mining International Quality & Productivity Centre Johannesburg)
November 2006	Mine waste disposal and Achievement of Mine Closure
February 2007	Introduction to ArcGis 1
April 2010	Mining Law Update Conference (IIR BV South Africa)
November 2010	Social Labour Plans for Mining Workshop (Melrose Training)
August 2011	Mineral Resources Compliance and Reporting (ITC)
May 2012	Enviro Mining Conference 2012 (Sustainability and Rehabilitation) (Spectacular Training Conferences)
August 2012	Mineral Resources Compliance and Reporting 4th Annual (ITC)
March 2013	1st EnviroMining-Ensuring Environmental Compliance and reporting
March 2014	4th Annual EnviroMining Conference
March 2015	5th Annual EnviroMining Conference
February 2018	Seminar by the Department of Environmental Affairs on knowledge sharing workshops on the Screening Tool
August 2020	SAHRA Workshop for EAP's and Heritage Practitioners
October 2020	IAIAsa Symposium

5. PROFESSIONAL REGISTRATION

Registered Environmental Assessment Practitioner at EAPASA : Number 2019/1467
Registered as a professional at IAIA (International Association for Impact Assessment South Africa). IAIA is a voluntary organisation and is not a statutory body regulating the profession. Its members are however expected to abide by the organisations code of ethics.

6. PROFESSIONAL EXPERIENCE

Projects are listed below by area of expertise.

Environmental Management Systems (EMS) and Environmental Auditing

Development of EMS and Compilation of INCIDENT REPORT AND INVESTIGATION FORMS for the EMS of the Canadian group of Companies on various sites.

Undertaking of a range of due diligence and performance audits for operations, including those listed below:

Performance Assessment reports for a mining company with various infrastructure and mining operations near Barkly-West and Windsorton.

Performance Assessment reports for a mining company near Douglas.

Preparation of an environmental auditing checklist / protocol for a Community project with restitution ground in assisting the community to determine environmental legal compliance at their operations.

Environmental audit as part of a closure with Dr. Betsie Milne another specialist. This Annual Rehabilitation Plan has been developed to match the various requirements set out in the National Environmental Management Act (No 107 of 1998) (NEMA) Regulations pertaining to the financial provision for prospecting, exploration, mining or production operations (as amended in 2015). This project had the objective of ensuring that this company are accounting for environmental liabilities and risks adequately. The plan distinguishes between (a) those environmental rehabilitation liabilities pertaining to drilling, for which the Company was legally responsible and (b) those environmental rehabilitation liabilities pertaining to historic mining activities, for which the Company is not legally responsible, but consider performing as part of their best practice environmental principals. Three costing scenarios were explored in order to evaluate the most feasible rehabilitation plan, i.e. (1) Total cost (worst-case scenario) including risks, (2) legally required cost and (3) features currently available that do not involve any risks.

Sustainability projects: policies, guidelines, strategies and performance reporting

Involved in the compilation of 43-101 technical documents for listed companies which included information on sustainability and performance in rehabilitation and sustainable mining.

Alien species eradication project guideline and strategy near Barkly-Wes in terms of Regulations that have been promulgated in terms of the Conservation of Agricultural Resources Act, No. 43 of 1983 further make it unlawful to allow various species of weeds and invader plants to grow. The target species was Wild tobacco (declared weed), Pink Tamarisk (declared weed) and Mexican poppy, it also involved the community for job creation and training (2008).

Investigations for a Company near Prieska on Development of a biodiversity offsets policy for the applications for forestry tree licences for protected tree species.

Strategic Environmental Studies and Environmental Impact Assessment (EIA)

Undertaking of a Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2006 for a Private Individual which involved the proposed extension of a roof over an existing deck with two wood pillars by means of the excavating of 0.5m X 0.5m X 1m X 2 (½m²) OF SOIL WITHIN 100M OF THE HIGH WATER MARK OF THE SEA. A Positive Record of Decision (ROD) Granted (2010).

Undertaking of an ENVIRONMENTAL IMPACT ASSESSMENT & ENVIRONMENTAL MANAGEMENT PROGRAMME SUBMITTED FOR AN APPLICATION FOR A MINING RIGHT IN TERMS OF SECTION 39 & OF REGULATION 50 & 51 OF THE MPRDA, 2002 (ACT NO. 28 OF 2002) near Boshof for a kimberlite Diamond Mining Company (2015)

Undertaking of a strategic environmental review and amendment for a Chinese group of Companies near Postmasburg. The study provided baseline environmental information and a high-level review of the potential impacts of various components of the development (2014 – 2016). Roelien worked as a member (EAP) of a large team consisting of a project Coordinator, attorneys, water specialists, other specialist and an engineer.

Environmental Impact Assessments for various developments including the proposed mining project for the former retrenchees of De Beers in Kimberley. This project involved coordination of the process, liaison with the authorities and compilation as well as appointment of specialist with contributions of specialist reports to compile the EIA EMP report (2017). Roelien worked as a member (EAP) of a team consisting of De Beers (attorneys and environmentalists), the retrenchees, the appointed contractor, EKAPA, and specialist appointed for the studies.

Environmental Impact Assessments for a Salt operation near Upington. This project involved coordination of the process, liaison with the authorities and compilation as well as appointment of specialists with contributions of specialist reports to compile the EIA EMP report (2019). Roelien also worked as part of a team with the Company and another consultant that started with the Water Use Licence application. The public participation was done to include the water use activities.

Environmental Impact Assessment for a change in scope of a prospecting right application consisting of the sole and exclusive right to prospect for iron, silver, zinc,

copper and sulphur ore. This project involved coordination of the process, liaison with the authorities and compilation as well as appointment of specialists with contributions of specialist reports to compile the EIA EMP report (2019). Roelien also worked as a member (EAP) of a team consisting of the directors of the company and specialists appointed for the studies

7. CAREER PATH

01 April 1997 to 28 February 2005

DEPT OF MINERALS & ENERGY

Senior Environmentalist - Assistant Director Environment

MAIN JOB FUNCTIONS

- Collect analyse and interpret information regarding the measurement of impacts of mining operations on the environment, the rehabilitation of land surfaces.
- The prevention, control and combating of pollution.
- Co-ordinate and prioritise the rehabilitation of derelict and ownerless mines.
- Co-ordinate, investigate, audit and resolve environmental problems in conjunction with the Department of Water Affairs and Forestry, Department of Agriculture and the provincial Department of Tourism, Environment and Conservation.
- Address complaints and inquiries received from the public and mining industry.
- Consult with relevant authorities and interested and affected people regarding the approval of Environmental Management Programmes.
- Ensuring that rehabilitation standards are applied.
- Ensuring that the requirements stated in Environmental Management Programme Reports are adhered to.
- Conduct inspections and recommendations on mines that apply for closure.
- Evaluate mining licences and prospecting applications and recommend site-specific conditions according to legislative requirements.
- Constant liaison with the public, the mining industry and other government authorities on environmental matters, legislation and agreements.
- Influence new development processes through participation in the EMPR and EIA processes and give guidance through education and awareness programmes.
- Calculate and verify financial provision for outstanding rehabilitation.

01 March 2005 – 30 September 2012

Appointed as professional Mineral Law Administration and Environmental Manager for HC van Wyk Diamonds which was bought over in 2007 by a **Canadian group of Companies**.

MAIN JOB FUNCTIONS

Conducting of Environmental Impact Assessments (EIAs), including the implementation of public participation programmes, for a variety of projects.
Undertaking of environmental reviews, audits and management plans:
Formulation of an environmental policy and guidelines for the Group.
Participation in the development of the budget for environmental expenditure.
Co-ordination of technical studies (e.g. monitoring of groundwater quality).
Environmental compliance measurement and reporting with respect to environmental permit conditions (e.g. Forestry Licences and water sampling for Water Use Licences).
Development of environmental guidelines for contractors on sites.
Liaison with regulatory authorities on compliance with environmental legislation.
Documentation of environmental incidents.
Environmental awareness and training.
Development of a public participation strategy.
Formulation of a complaint's procedure.

01 October 2012 to Present

Appointed as professional Mineral Law Administration and Environmental Manager for **Mentor Trade and Investments Pty Ltd**

MAIN JOB FUNCTIONS

Conducting of Environmental Impact Assessments (EIAs), including the implementation of public participation programmes, for a variety of projects.
Undertaking of environmental reviews, audits and management plans.
Formulation of an environmental policy and guidelines for the Mine.
Co-ordination of technical studies (e.g. monitoring of groundwater quality) as well as updating of the Mine's IWWMP.
Environmental compliance measurement and reporting with respect to environmental permit conditions (e.g. as water sampling and effluent).
Development of environmental guidelines for contractors.
Liaison with regulatory authorities on compliance with environmental legislation.
Documentation of environmental incidents.
Environmental awareness and training.
Development of a public participation strategy.
Formulation of a complaint's procedure.

01 October 2012 to Present part time

Appointed as EAP on some projects for **Wadala Mining and Consulting Pty Ltd**

*Conducting of Environmental Impact Assessments (EIAs), including the implementation of public participation programmes, for a variety of projects.
Undertaking of environmental reviews, audits and management plans.
Liaison with regulatory authorities on compliance with environmental legislation.
Environmental awareness and training.*