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 MINING

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: **Renaissance Resources (Pty) Ltd**
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FILE REFERENCE NUMBER SAMRAD: **(NC) 30/5/1/3/2/10199 MR**

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 a permit are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulation and will lead to the Environmental Authorisation being refused.

It is therefore 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

The objective of the scoping report 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.

PART A

SCOPE OF ASSESSMENT AND ENVIRONMENTAL IMPACT ASSESSMENT REPORT

2) Contact Person and Correspondence Address

a) Details of:-

i) Details of the EAP who prepared the report:

Name of the Practitioner:	**ROELIEN OOSTHUIZEN**
Tel No.:	**084 208 9088**
Fax No.:	**086 510 7120**
E-mail address:	roosthuizen950@gmail.com
Physical Address:	**Farm Oberon; Kimberley; 8301**
Postal Address:	**P.O. Box 110823, Hadisonpark; 8306**

ii) Appointed by:

Renaissance Resources (Pty) Ltd

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**
(In carrying out the Environmental Impact Assessment Procedure)

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. (with evidence attached as **Appendix 2**)

b) Description of the property

Farm Name:	PORTION 2 (AT LAST) OF THE FARM NO. 232, Barkly-Wes IN EXTENT: 2 723.7718 HA PORTION 2, 3, 4, 5 AND 6 OF THE FARM DE BAD 155, Kimberley IN EXTENT: 3 497.4237 HA TOTAL EXTENT: 6 221.1955 HA
Application area (Ha)	6221.1955 ha (Six thousand two hundred and twenty one comma one nine five five hectares.)
Magisterial district:	Barkly-Wes and Kimberley
Distance and direction from nearest town	The At Last area is situated ± 14km west from the town Delportshoop, ± 30 km north from Barkly West and ± 62.3 km north west from Kimberley The De Bad area is situated ± 17.5 km south of the town Schmidtsdrift, ± 36.72 km north east from Douglas and ± 68.69 km west from Kimberley as the major town.
21 digit Surveyor General Code for each farm portion	Ptn 2 / At Last 232 - C00700000000023200002 Ptn 2 / De Bad 155 - C03700000000015500002 Ptn 3 / De Bad 155 - C03700000000015500003 Ptn 4 / De Bad 155 - C03700000000015500004 Ptn 5 / De Bad 155 - C03700000000015500005 Ptn 6 / De Bad 155 - C03700000000015500006
Locality map	Attach a locality map at a **scale not smaller than 1:250000 and attach as Appendix 2**
Description of the overall activity. **(Indicate Prospecting Right, mining Permit, Mining right, Bulk Sampling, Production Right, Exploration Right, Reconnaissance permit, Technical co-operation permit, Additional listed activity)**	Renaissance Resources is in the process of applying for a **Mining Right** for the mining of diamonds. They therefore seek to apply for an additional Environmental Authorisation for this area which will include the listed activities for a mining operation. Renaissance Resources is the holder of a Prospecting Rights on the same properties.

c) Locality map

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

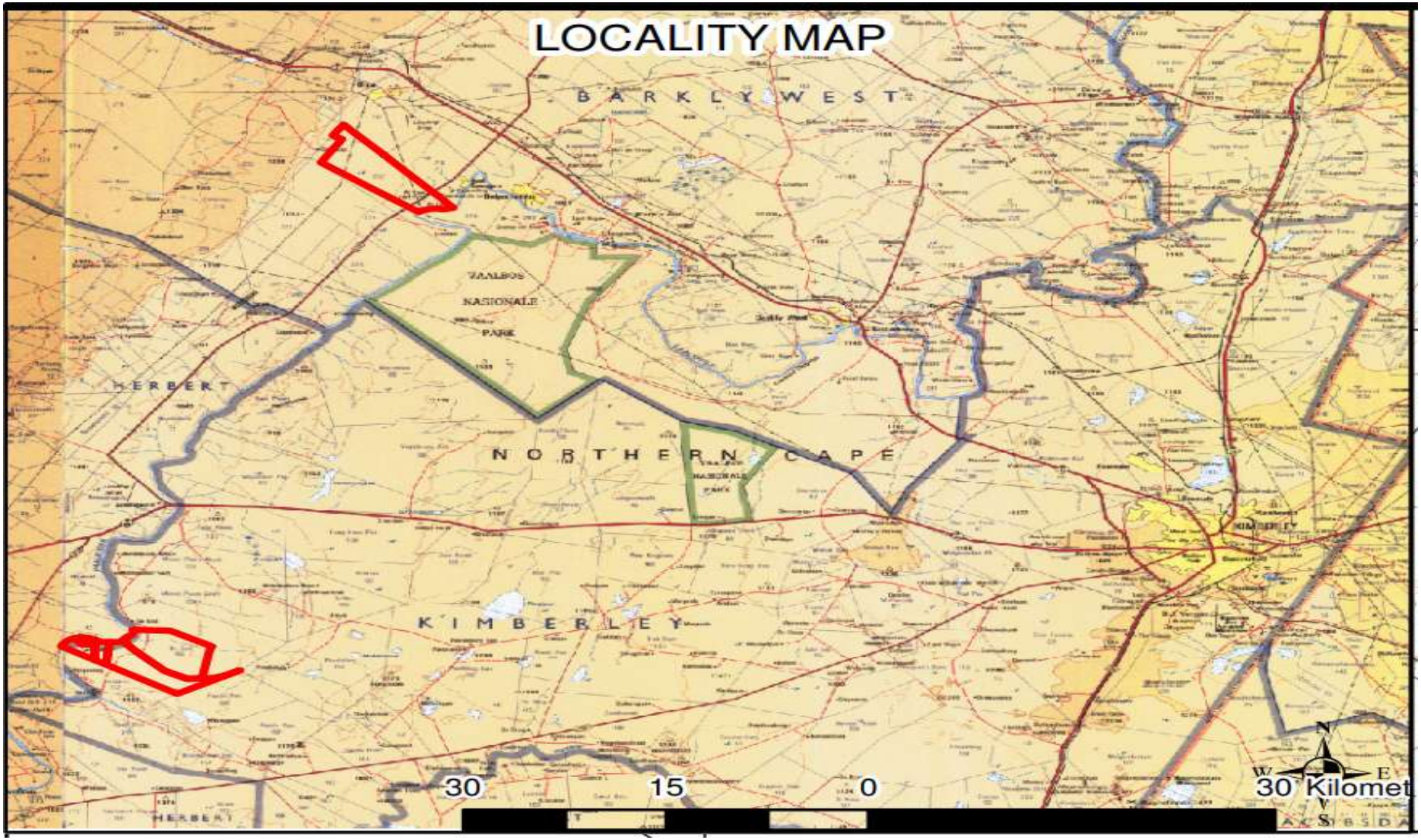


Figure 1. 1:250 000 topocadastral map KIMBERLEY 2824 indicating the application areas in red.

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 that 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)

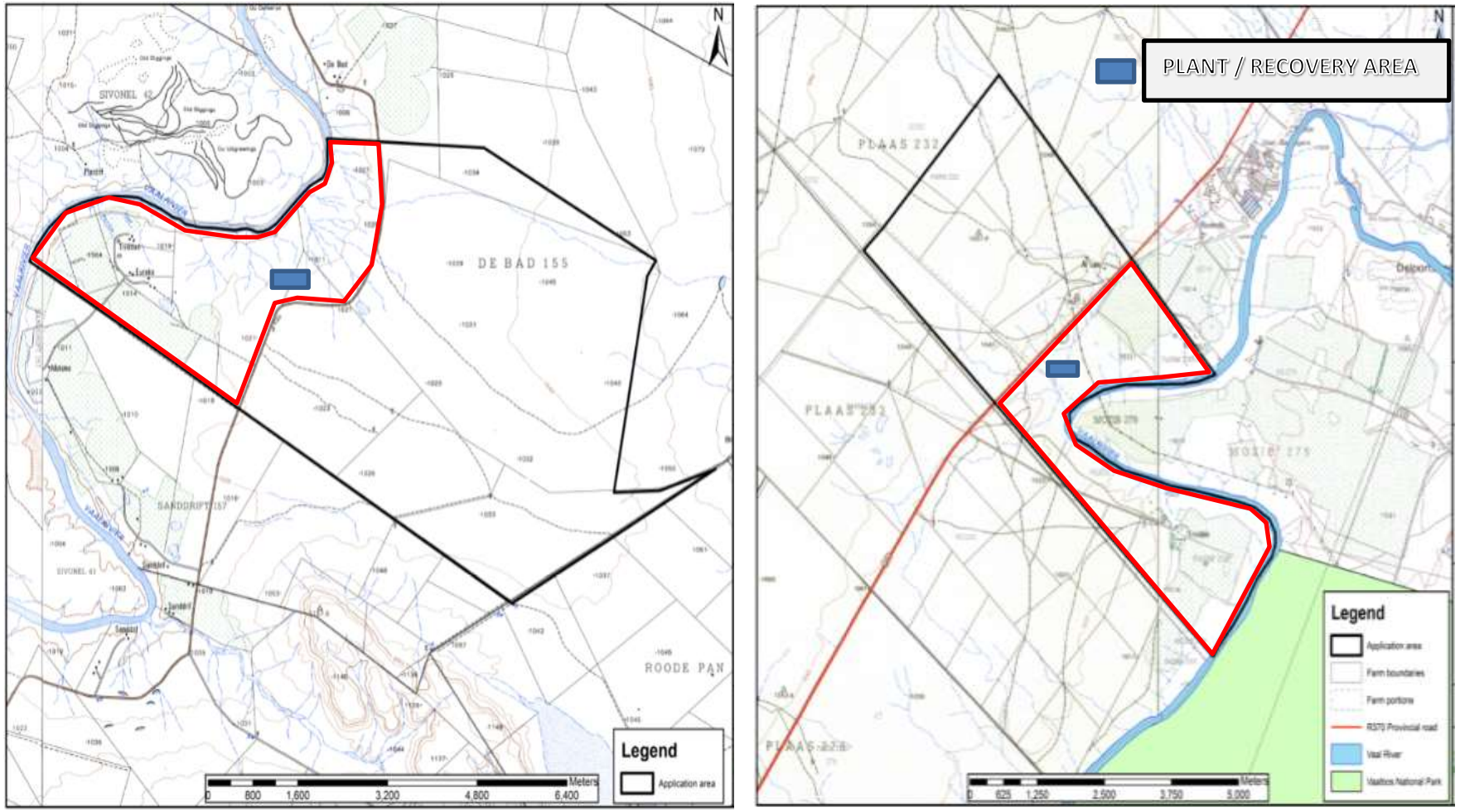


Figure 2. Location, and area (hectares) of all the aforesaid main and listed activities, and infrastructure to be placed in site. The red line indicates the areas that is the main target areas.

Table 1. Listed and Specified Activities

Name of activity (e.g. Excavations, blasting, stockpiles, discard dumps or dams, loading, hauling and transport, water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.)	Aerial extent of the activity (Ha or m²)	Listed Activity (mark with an X where applicable or affected)	Applicable Listing Notice (GNR544, GNR545 or GNR546 / Not listed GNR983, GNR984, GNR985/ Not listed)
Activity 9: "The development of infrastructure exceeding 1000 metres in length for the bulk transportation of water or storm water- (vii) with an internal diameter of 0.36 metres or more; or (viii) with a peak throughput of 120 litres per second or more;	Water distribution Pipelines	X	NEMA: LN1 (GNR327)
Activity 12: "The development of— The development of- (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— (a) within a watercourse; (b) in front of a development setback; or **(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse"** Regulation GN R704, published on 4 June 1999 in terms of the National Water Act (Use of water for mining and related activities)	Clean and dirty water system It is anticipated that the operation will establish storm water control berms and trenches to separate clean and dirty water on the mining site.	X	NEMA: LN1 (GNR327)
Activity 13: The development of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50 000 cubic meters or more, unless such storage falls within the ambit of activity 16 in Listing Notice 2 of 2014	Possible storage dam and tanks	X	NEMA: LN1 (GNR327)
Activity 19: The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, **excavation, removal or moving** of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;	Possible excavation within the 1:100-year flood line if approval is received from DWA	X	NEMA: LN1 (GNR327)

Activity 24: The development of a road- (ii) a road with a reserve wider than 13,5 meters or where no reserve exists where the road is wider than 8 metres.	Access and haul roads 10 000m²	X	NEMA: LN1 (GNR327)
Activity 17: Any activity including the operation of that activity which requires a **mining right** as contemplated in section 22 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including – (a) associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource; or (b) the primary processing of a mineral resource including winning, extraction, classifying, crushing, screening or washing; But excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in Listing notice 2 applies. The Renaissance operation directly relates to mining of a mineral resource (diamonds) and requires a mining right.	6 221.1955 ha	X	NEMA: LN2 (GNR325)
Activity 14: The development and related operation of facilities or infrastructure for the storage and handling of dangerous goods (fuel), where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic meters.	2 X 23 000l diesel tanks = 46 000l with capacity for storing of old oils and new oils to be calculated	X	NEMA: LN1 (GNR327)
Activity 15: The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for- (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	±250 ha	X	NEMA: LN2 (GNR325)
Activity 12(g): 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.	At Last falls into Critical Biodiversity Area 1 and 2 as well as Ecological Support Areas and Freshwater Ecosystem priority area quinary catchments	X	NEMA: LN3 (GNR 324)

i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; ii. Within critical biodiversity areas identified in bioregional plans;	A small part of De Bad falls into Critical Biodiversity Area 2 and Ecological Support Areas.		
Activity 11: The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require **a mining right**, exploration right or production right in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)	0.3ha 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. The continuous establishment and reclamation of temporary stockpiles resulting from activities which require a mining right.		NEMWA: Category B (GNR 633)
Office complexes Temporary workshop facilities Storage facilities Concrete bund walls and diesel depots Ablution facilities Topsoil stockpiles Overburden stockpiles Water tanks	± 200 m2 ± 300 m2 ± 2 000 m2 ± 250 m2 ± 30 m2 ± 500 m2 5 000 m2 3m x 3m = 9m² each		Not Listed
Waste disposal site (domestic and industrial waste): It is anticipated that 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.	15m x 30m = 450m²		Not Listed

ii) Description of the activities to be undertaken

(Describe methodology or technology to be employed, including the type of commodity to be mined and for a linear activity, a description of the route of the activity)

Basic overview of the mining method

The following is a description of a typical South African alluvial diamond mining operation, which is also being utilized by Renaissance Resources (Pty) Ltd at the At Last and De Bad operations. The mining method being employed is a strip 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 onto a vibrating grizzley or scalping screen and the +32 mm oversize material is discarded back into the open pit (about 55% reduction). The screen will be moved adjacent to each pit. Once the pit is complete it will be moved to the next pit.

The remaining –32 mm fraction is , loaded and transported to the nearby treatment facility using articulated dump trucks.
Where pans are used the screened material is loaded into a series of 4 sixteen foot rotary pans, each typically with a treatment capacity of 80 tph. Tracer tests are done regularly to ensure that the pans are operating at the correct density. Concentrate is tapped continuously from each of the pans every three hours into three ton holding bins and transported with enclosed trucks to a final recovery unit or any other facility which is chosen by Renaissance Resources (Pty) Ltd.

Topsoil will be removed from the first block, 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 Block 1 will then be removed by means of an excavator and loaded onto a tipper truck or front end loader, which will transport it to the nearby first stage mineral processing plant at the edge of excavation due for backfilling. At this plant the diamondiferous gravel will be sorted by means of a grizzly screen grid or scalping screen 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 at the treatment plant, via front-end loader or tipper. From here it will be transported to a conveyor belt, which will feed it onto a Findlay type screen or if wet, then to scrubber or wet rotary screen and then directly onto 2 X 16 feet washing pans per site.

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

- The coarse gravel sifted at the grizzly screen, tailing from the pans and fine concentrate will be transported back to and dumped into open Block 1. 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 block is reached. Topsoil stored at the beginning of the mining operation will now be utilized for the final rehabilitation of the last block on the land portion.

Workshop equipment and tools to be used consist of secured container stores containing grease pumps, rigger chains, hydraulic jacks, air compressors, electric testers, welders, grinders, socket sets, gas sets, magnetic drills, hydraulic test instruments, tools, spanners and tool boxes Approximately 18 000 litres of process water will be required by the proposed mining operation per hour per pan however modern technology in de-sanding may reduce water consumption in some areas. The use of closed circuit water recovery systems on the pans can result in further savings of more than 50% on water requirement.

Process water is sourced from the Vaal River for the At Last and De Bad operations. Other sources of water include pumping water from mining excavations or the tailings or slimes disposal facilities and recyling ponds. The production rate of the proposed operation will be approximately 80 tph per pan.

Waste Management

Proper sanitation facilities will be provided for employees. No person will pollute the workings with faeces or urine, misuse the facilities provided or inappropriately foul the surrounding environment with faeces or urine. Acceptable hygienic and aesthetic practices will be adhered to. Non-biodegradable refuse such as glass bottles, plastic bags, etc. will be sorted and stored in separate lockable containers at a central point. It will be disposed of at a recognised disposal facility twice a month. Biodegradable refuse will either be handled as indicated, or be buried in a pit excavated for that purpose and covered with layers of soil when almost full. A final 0,5m thick layer of topsoil will be incorporated where practicable. Provision will be made for the future subsidence of the covering. Refuse will not be dumped in the vicinity of the mining area. Waste material with regard to vehicle repairs will be kept in 200 litres steel containers in the maintenance/farmstead area. This material will be disposed of at a recognised disposal facility once a month.

Access Roads

The At Last property is accessed via the R370 tar road and a gravel road, as well as tracks on the property. While the De Bad property is accessed via a Secondary gravel road that turns off from the N8 national tar road the Activities associated with the Mine that is expected to make use of these roads include:-

- The transportation of mining personnel to and from the site;
- Delivery of supplies and materials;

- The transportation of the product for the market.

These transport operations will make use of passenger vehicles, light delivery vehicles and very limited heavy vehicles.

Haul Roads

There will be one Haul road to the plant area and one haul road to the mining site. No other haul roads will be constructed. Main haul roads will have a minimum width of 15m. No roads will be wider than 15m. Existing roads will be used as far as practically possible.

e) Policy and Legislative Context

Table 2. Applicable legislation and guidelines used to compile the report

Applicable Legislation and Guidelines used to compile the report (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process.)	Reference where applied	HOW DOES THIS DEVELOPMENT COMPLY 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).
Conservation of Agricultural Resources Act (Act 43 of 1983) and Regulations (CARA)	- 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	- Control measures are to be implemented upon the approval of the EMPR.
Constitution of South Africa (Act 108 of 1996)	- Section 24: Environmental right - Section 25: Rights in Property - Section 27: Water and sanitation right	- To be implemented upon the approval of the EMPR.
Environment Conservation Act (Act 73 of 1989) and Regulations (ECA)	- Sections 21, 22, 25, 26 and 28: EIA Regulations, including listed activities that still relate to the existing section of ECA. - Section 28A: Exemptions.	- To be implemented upon the approval of the EMPR.
Fencing Act (Act 31 of 1963)	- 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.	- Control measures are to be implemented upon the approval of the EMPR.
Hazardous Substances Act (Act 15 of 1973) and Regulations read together with NEMA and NEMWA	- Definition, classification, use, operation, modification, disposal or dumping of hazardous substances.	- Noted and Considered measures are to be implemented upon the approval of the EMPR.

Intergovernmental Relations Act (Act 13 of 2005)	- 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	- Entire Act.	- 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	- Entire Act. - Regulations GN R527	- A Mining Right has been applied for (NC) 30/5/1/2/2/10199MR. - Rights and obligations to be adhered to.
National Environmental Management Act (Act 107 of 1998) and Regulations as amended	- 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) - Regulations GN R205, published on 12 March 2015 in terms of NEMA (National appeal Amendment Regulations)	- Control measures are to be implemented upon the approval of the EMPR.

	- Regulations GN R1147, published on 20 November 2015 in terms of NEMA (Financial Provision)	
National Environmental Management: Air Quality Act (Act 39 of 2004)	- 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)	- 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)	- 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. Commencement of Threatened or Protected Species Regulations 2007 : 1 June 2007 GNR 150/GG 29657/23-02-2007 Publication of lists of critically endangered, vulnerable and protected species GNR 151/GG 29657/23-02-2007 *	- A permit application regarding protected plant species need to be lodged with DENC if any protected species is encountered. Control measures are to be implemented upon the approval of the EMPR.

	Threatened or Protected Species Regulations GNR 152/GG 296547/23-02-2007 * - 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)	
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.	- Chapter 2 lists all protected areas.	Applicable. The mining operation does fall within protected areas which is known. At Last falls into Critical Biodiversity Area 1 and 2 as well as Ecological Support Areas and Freshwater Ecosystem priority area quinary catchments in terms of the screening report. A small part of De Bad falls into Critical Biodiversity Area 2 and Ecological Support Areas in terms of the screening report.
National Environmental Management: Waste Management Act (Act 59 of 2008)	- Chapter 4: Waste management activities	- To be implemented upon the approval of the EMPR.

	- 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)	
National Forest Act (Act 84 of 1998) and Regulations	- 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.	- A permit application regarding protected tree species need to be lodged with DAFF if necessary. - Control measures are to be implemented upon the approval of the EMPR.
National Heritage Resources Act (Act 25 of 1999) and Regulations	- 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 authority destroy, damage, excavate, alter, deface or	- Control measures are to be implemented upon the approval of the EMPR. Fossil finds procedure are attached to the PIA.

	otherwise disturb any archaeological or paleontological site. - 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	
National Water Act (Act 36 of 1998) and regulations as amended, *inter alia* Government Notice No. 704 of 1999	- 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: (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; (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	- A water use application (WULA) must be submitted and will be submitted to run concurrently with the Mining Right application. - Control measures are to be implemented upon the approval of the EMPR.

	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))	
Nature Conservation Ordinance (Ord 19 of 1974)	- Chapters 2, 3, 4 and 6: Nature reserves, miscellaneous conservation measures, protection of wild animals other than fish, protection of Flora.	- Control measures are to be implemented upon the approval of the EMPR.
Occupational Health and Safety Act (Act 85 of 1993) and Regulations	- 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.	- Control measures are to be implemented upon the approval of the EMPR.

Road Traffic Act (Act 93 of 1997) and Regulations	- Entire Act.	- Control measures are to be implemented upon the approval of the EMPR.
Water Services Amendment Act (Act 30 of 2007)	- 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).	- Control measures are to be implemented upon the approval of the EMPR.
National Land Transport Act, (Act 5 of 1998)		- To take note.
Spatial Planning and Land Use Management (Act 16 of 2013 (SPLUMA) and regulations	- 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	- To be implemented upon the approval of the EMPR.
Subdivision of Agricultural Land Act, 70 of 1970 and regulations	- Regulations GN R373 published on 9 March 1979 in terms of Subdivision of Agricultural Land	- 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 (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

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)

The Renaissance Resources 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 Dikgatlong and Sol Plaatje Districts.

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 Renaissance 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.

Renaissance was granted a prospecting right by the DMR to prospect for alluvial diamonds on Portion of Portion 2 of the Farm 232 (At Last 232), and Portions 2,3,4,5 and 6 of the Farm De Bad 155 in the Districts of Barkly West and Kimberley. The At Last area is situated ± 14km west from the town Delportshoop, ± 30 km north from Barkly West and ± 62.3 km north west from Kimberley. The De Bad alluvial diamond project is located on the eastern bank of the Vaal River, 45km downstream of the At Last project and about 30km north-east of Douglas in the Northern Cape Region.

In order to advance the project and to prove the presence of a minable resource of diamonds Renaissance undertook a in depth investigation mainly obtained through in-depth discussions with previous small-scale diggers and farmers and from consulting geologists who did work on the projects on the farms and a reserve was proven.

Diamond mining, will contribute to South Africa's status in world diamond production and Renaissance's vision is to be an active participant in the industry. Importantly it is a product that is exported and earns foreign exchange.

Should this proven reserve be mined, it would provide a significant contribution to the local community and the economy of the country.

Need

Analysis of the Diamond Industry – ALROSA(website)

The Information on the analysis of the diamond industry was obtained from the ALROSA website who 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

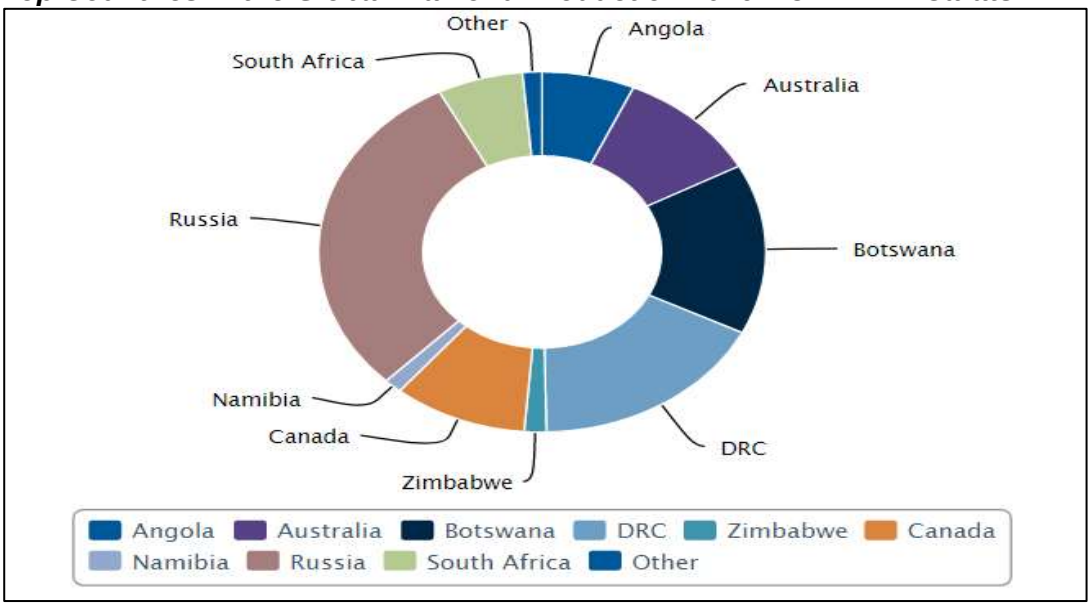


Figure 3. Kimberley Process companies' data Global Diamond Production 2011-16 (thousands of carats)

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

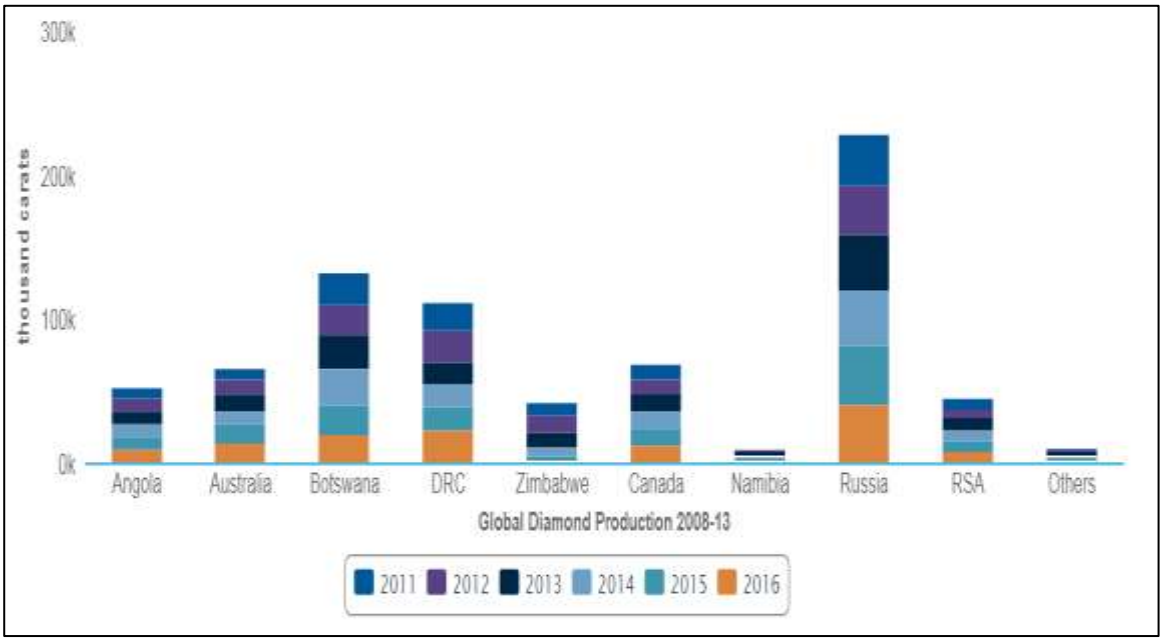


Figure 4. Global Diamond Production 2011-16 (thousands of carats) Kimberley Process companies' data

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).

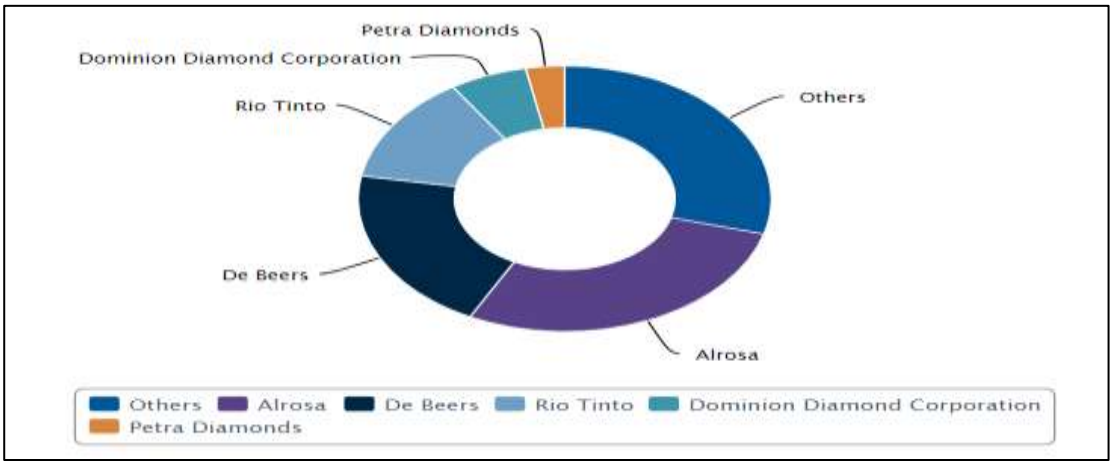


Figure 5. Diamond Production by Leading Companies, 2016(***** - including Ekati; Companies' data)

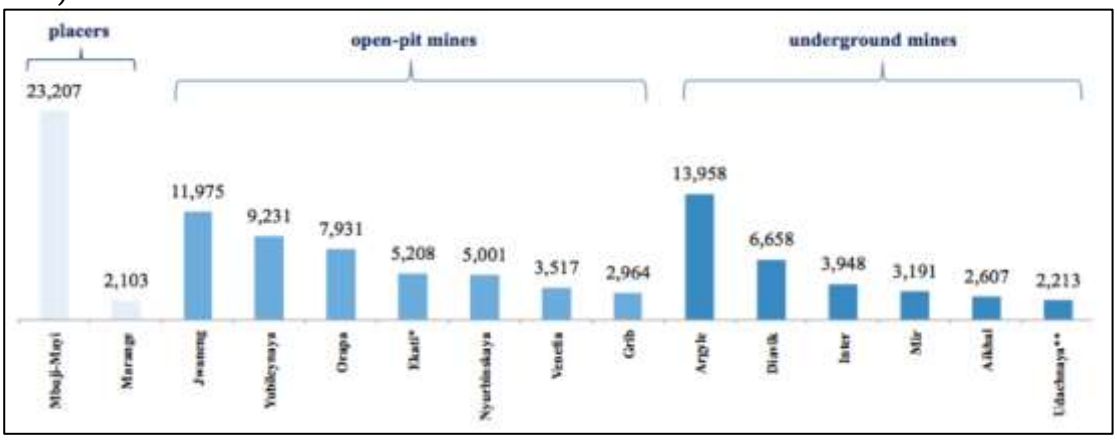


Figure 6. Production Output of the World's Major Diamond Deposits, 2016 (thousand carats) Kimberley Process and companies' data; ***** - Ekati includes open-pit and underground mining; ****** - output, including further development of the open-pit.

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 centres, 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.

g) Period for which the environmental authorisation is required

The period applied for, being 10 years, based on the production of between 704 000 tons in year 1 ramped up in year 2 to an envisaged 1 408 000 tons per annum.

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 resource. Alluvial diamonds were mined in the At Last Ox-bow and adjacent properties, in particular by operators such as Sonop Mining (Chris Potgieter), Gemrock and medium to small scale miners. Other nearby mining operations along the Vaal River are located at the well-known Caerwinning mine, Sydney on Vaal (opposite At Last, operated by Sonop mining), Erindale, Winters Rush, Longlands, Waldecks Plant and Gong Gong.

An estimated total of 17 500 carats were historically being mined within the At Last Ox-bow by previous operators.

Cooke (2006) reported that 919.8ct were recovered on At Last at an average diamond grade of 1.39 cpht from the treatment of 6 617 tonnes during the period 1994 to 1997.

During August - December 2009, Renaissance excavated a bulk sample on At Last, totalling 11 300 ton yielding 184.62cts. The diamonds were sold at all-time low prices as achieved during the global financial crises for between US$220/ct – US$406/ct, averaging US$290/ct (instead of normal estimated prices of US$420/ct).

Alluvial diamonds were mined in the De Bad Ox-bow and adjacent properties, in particular by operators such as Sonop Mining (Chris Potgieter), Gemrock and small scale miners. Other nearby mining operations along the Vaal River are located at the well-known Schmidtsdrift mine 10km upstream of De Bad.

An estimated total of 6 950 carats were historically mined within the De Bad Ox-bow by previous operators. Unverified historic reports stated that during this period a total of 258.17 carats was sold for a total value of R1,587,010. The diamonds sold were of high quality – averaging a selling price of R6 000 (approximately US$ 900/ct). Taking into account the style of the mineralisation and insufficient exploration data available at De Bad, a conservative value of US$850/ct is estimated for the resource.

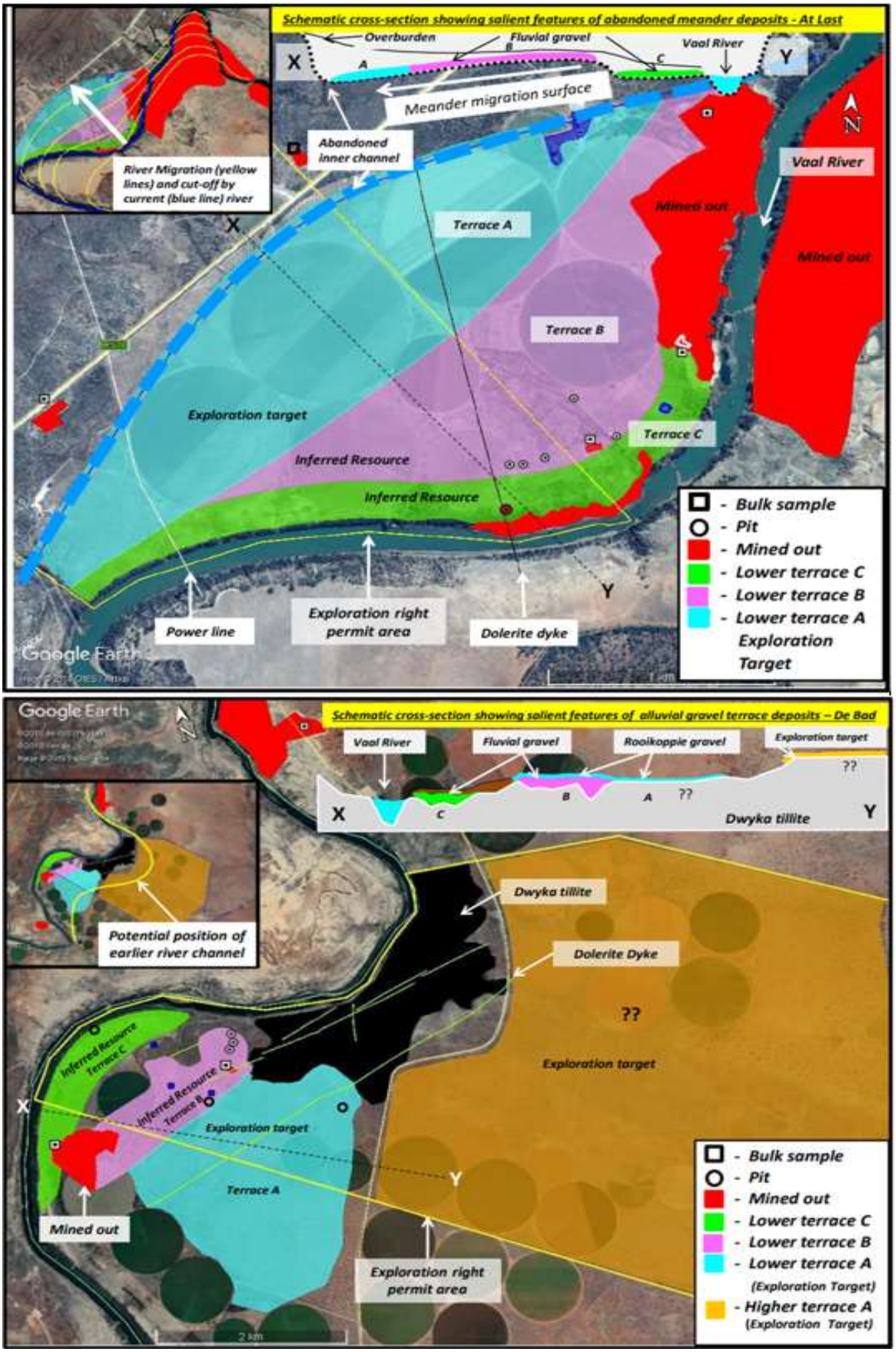


Figure 8. Property maps showing extrapolation of the inferred resources beyond nominal sample spacing.

i) Details of the development footprint alternatives considered

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

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

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

Property: Portion of Portion 2 of the Farm 232 (At Last 232), and Portions 2,3,4,5 and 6 of the Farm De Bad 155.
District: Barkly West and Kimberley
Province: Northern Cape
Extent: 6 221.1955 ha
(2 723.7718 ha (At Last) + (3 497.4237 ha (De Bad)

The property on which the Mining right was applied for is determined by the geological location of the mineral resource. Therefore, there are no alternatives for the location of the activity, except for not proceeding with the operation. This will however cause the underutilisation of a national economic resource.

The area is accessible via tar and gravel roads from different directions.

Infrastructure in the Dikgatlong and Sol Plaatje area is well developed with good road and rail networks, electricity grid and water. Experienced labour is available in the area as is an extensive network of secondary industries geared towards small and large-scale diamond mining. Water for Processing Plant will be a crucial element that needs to be secured towards the successful operating of the project. A water application will be submitted to the Department of Water and Sanitation which may include a Section 21 (a), (b), (g), (i) and (c) application.

Alternatives considered:-

As the area covered under the Mining Right had been selected based on the assumption of alluvial gravels and indication of the presence of alluvial gravels, it will not be viable to consider an alternative site for the mine. Alternatives for land are thus not available, as the mining right application can not be considered over another area.

Therefore there are no alternatives to the area.

(a) The type of activity to be undertaken:

The planned mining technique is that of a opencast alluvial diamond mining operation 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. **No irrigation pivots will be disturbed or mined without prior agreement from the farm owner.**

Alternatives considered:-

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

(b) 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 (non-perrennial drainage lines, pivots the river and wind direction), heritage resources and discussions with the relevant interested and affected parties.

The following infrastructure will be established and will be associated with the mining operation outside the 1:100 year floodline zone with permission of the relevant competent authority and the surface owners:

- Processing Plant : 2 X 16 feet pans with conveyers and recovery per property.
- 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 mine site.
- Fuel Storage facility (Concrete Bund walls and Diesel tanks):
  It is anticipated that the operation will utilize 2 x 23 000 litre diesel tanks. These tanks must be placed in bund walls, with a capacity of 1.5 times the volume of the diesel tanks. A concrete floor must be established where the re-fuelling will take place.
- Mining Area: Opencast mining to mine for alluvial diamonds.
- 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 2 - 4 km of roads, with a width of 15 meters.
- 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 a viable option for infield screening activities, but the best viable long term option is the instalment of fuel tanks within a concrete bund wall.

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

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

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.

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

- Technique
  The area will be excavated (opencast method) with an excavator up to bedrock, stockpiled next to an open area and loaded onto the trucks by a frond end loader. The trucks will transport the gravel via a newly constructed road, which will be constructed to the required safety standard. No provincial roads will be used.
  At the processing plant the run of mine will be fed onto a grizzly for the screening out oversize material. The gravel will be processed through a screening section for

delivery to a recovery plant and associated equipment. In terms of the processing it should take place outside the 1:100 year floodline and a processing area will be negotiated with the Department. This area will be used for all processing and stockpiling operations with an agreement entered into with the relevant Department).

- Technology

At the processing plant the run of mine will be fed onto a grizzly for the screening out oversize material. The gravel will be processed through a screening section for delivery to a recovery plant and associated equipment. In terms of the processing it should take place outside the 1:100 year floodline and a processing area will be negotiated with the Department. This area will be used for all processing and stockpiling operations with an agreement entered into with the relevant Department).

Alternatives considered:-

The planned mining activities include (opencast method) 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 and extraction of alluvial diamonds.

(d) 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. A area will be used for all processing and dumping operations outside the 1:100 year floodline. The expected lifespan of the mine is 10 years.

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 alluvial diamonds.

(e) The option of not implementing the activity:

Potential land use includes grazing (game farming), agricultural (pivots) and mining. The majority of the area is classified to have potential for grazing land and agricultural use for crop yield. Therefore, mining activities are believed to be one of the economically beneficial options for the areas.

Socio-Economy

The operation will make provision for ±46 job opportunities. This will be lost if the project does not proceed. Substantial tax benefits to the State and Local Government will also be lost.

Heritage and Cultural Resources

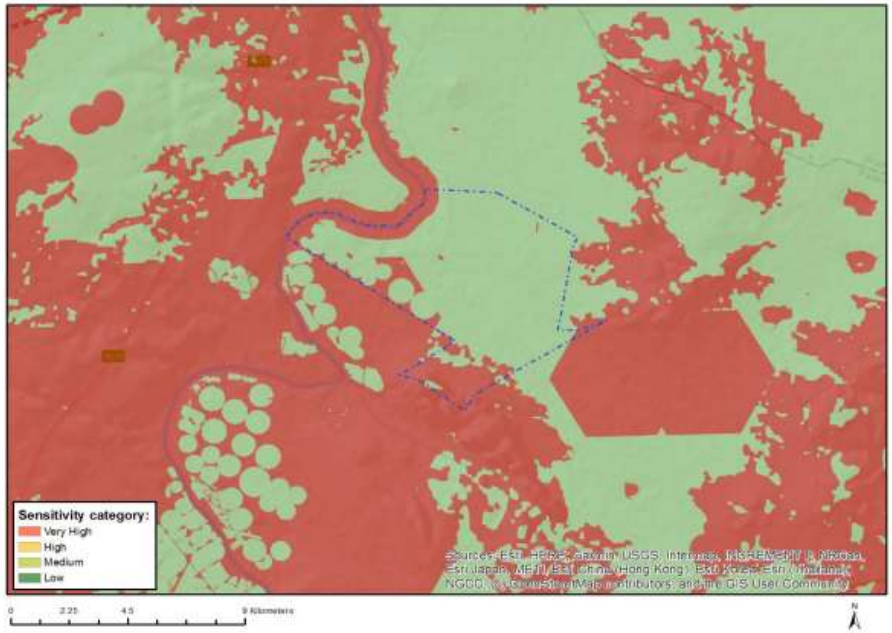
No information is available on any heritage features on the area of application and the necessary specialist studies will be done to be included into the EIA/EMP documents. The screening report done for the mining right application indicated a low sensitivity for Heritage but a high sensitivity for both areas in terms of Palaeontology.

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.

Biodiversity

In terms of the screening tool that had been done for the mining right application the application area falls into Critical Biodiversity Area 1 and 2 as well as ecological support areas and Freshwater ecosystem priority area quinary catchments. The necessary specialist studies will be done to confirm this.

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY

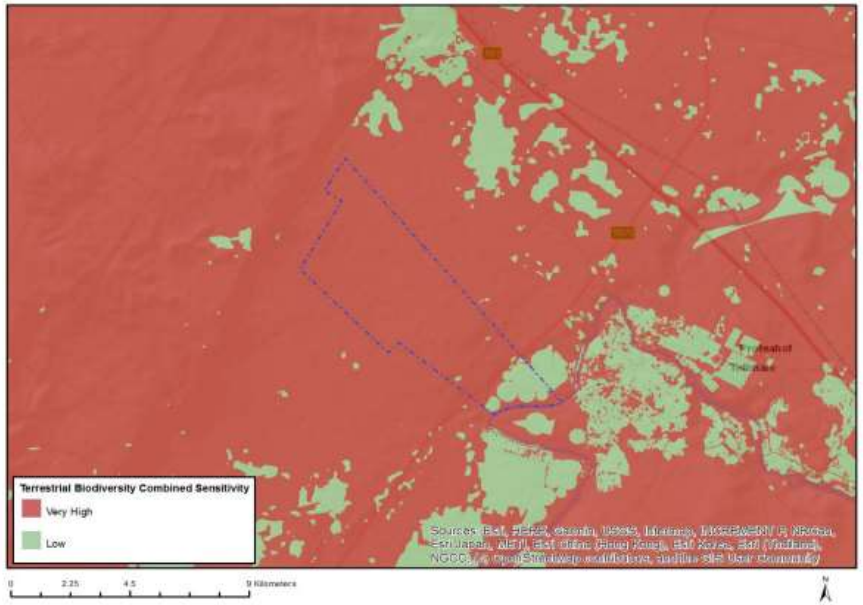


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Very High	Critical Biodiversity Area 2
Very High	Ecological Support Area

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Very High	Critical Biodiversity Area 1
Very High	Critical Biodiversity Area 2
Very High	Ecological Support Area
Very High	Freshwater ecosystem priority area quinary catchments

Figure 9. Final site layout plan in terms of the screening tool for Terrestrial Biodiversity

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.

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 24 January 2022. Attached to each of these letters was a Draft Scoping report, containing information relating to the proposed project for comments.
- A newspaper advert will be placed in the DFA local newspaper on 28 January 2022.
- Notices were placed at the entrances to the farms and along the fence line and in the library in Barkly-West.

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

Summary of issues raised by I&APs

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

Table 3. Consultation with I&Aps

PLEASE SEE ATTACHED AS APPENDIX 3

iv) The Environmental attributes associated with the development footprint alternatives (The environmental attributed described must include socio-economic, social, heritage, cultural, geographical, physical and biological aspects)

(1) Baseline Environment

(a) Type of environment affected by the proposed activity
(its current geographical, physical, biological, socio-economic, and cultural character)

(1) GEOLOGY:

All information is taken out of the Independent Statement of diamond resources and exploration targets done in January 2019 by Mr. Stephen H. le Roux on At Last, De Bad and Lanyon Vale projects.

Geological Setting

Alluvial geology of the Kimberley area1:
The erosion of diamondiferous kimberlites liberates diamonds onto the land surface, for redistribution by streams and rivers. The processes that lead to the deposition and concentration of diamonds in river sediments are obviously of direct importance in the formation of economic alluvial diamond deposits.

The South African alluvial deposits are distributed in a southwest-trending belt that stretches from the Limpopo River to the Namaqualand coast. The major deposits are concentrated along the Vaal and Orange River valleys and some tributaries of the Vaal River. The deposits invariably consist of gravel resting on Precambrian bedrock.

This bedrock contains trap sites for diamonds in the form of scour channels, potholes, gulleys and plunge pools, and in all cases, its competence and irregularity are sufficient to trap coarse debris that, in turn, act to entrain diamonds. The bedrock comprises a wide variety of rock types, including granite, gneiss, lava, dolomite, tillite, shale and quartzite, and cross-cutting dykes perpendicular to the fluvial channels and paleochannels are important in the development of trap sites.

The diamonds were originally derived from kimberlites on the Kalahari Craton, mostly within South Africa and transported by rivers to their placer sites. Many of these placers were subsequently reworked during the Cenozoic and redeposited as younger placers in downstream locations as depicted in the schematic illustration below (figure 10).

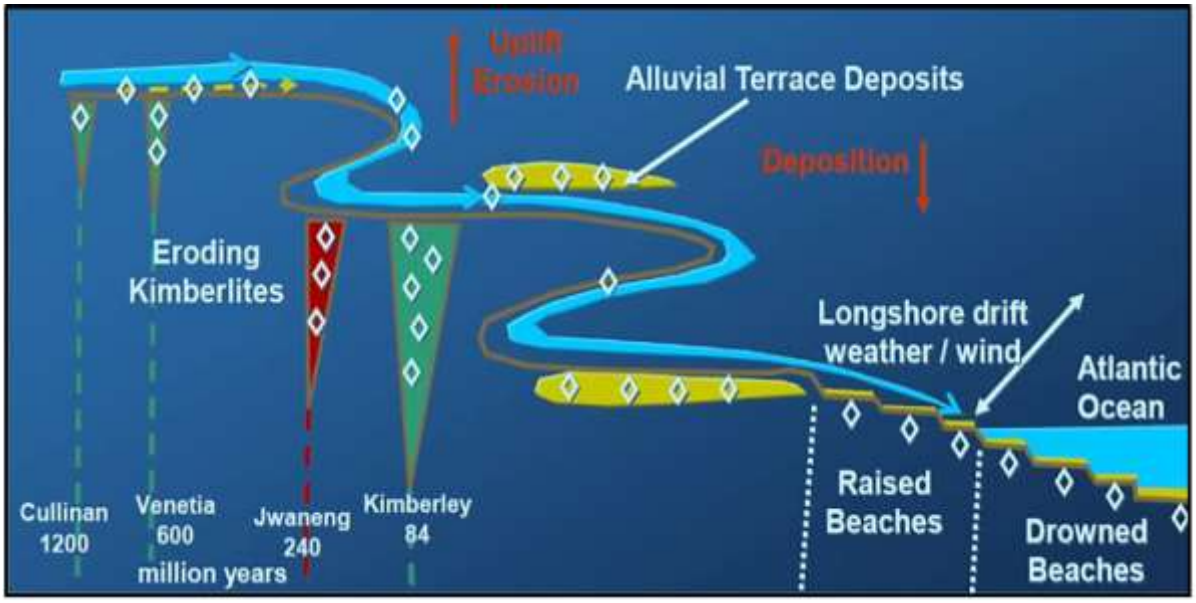


Figure 10. Origin of Alluvial Diamond Deposits.

The age of the alluvial placers ranges from Late Cretaceous to Quaternary with depositional peaks coinciding with fluvial phases during the Late Cretaceous, Miocene and Plio-Pleistocene. These ages post-date the emplacement of all the diamondiferous kimberlites on the Kalahari Craton from which the diamonds were derived.

Deposits of Miocene, Pliocene and Pleistocene age occur along the Vaal River valley between Christiana and Douglas and along the Orange River valley between Hopetown and Prieska. These deposits are located at elevations between present river level and 120m above present river levels. The diamonds were probably transported from kimberlites located near Kroonstad, Welkom, Theunissen, Boshof, Koffiefontein, and in northern Lesotho via former drainage courses of the Vals, Vet, Riet and Orange Rivers and a so-called Kimberley River that tapped the Boshof kimberlites prior to being captured by the Modder River during the Pliocene.

Studies of the Lower Vaal, Harts and Middle Orange River (MOR) alluvial deposits show that there are five broad phases of prominent alluvial deposit development in these areas reflected by several deposit types.

Cretaceous aged Nooitgedacht-Droogeveldt Terraces are considered to be the oldest alluvial deposits and they occur between 80 - 120 meters above the modem Vaal River S-W of Barkly West. These deposits probably conform in age to the initial period of late-Cretaceous uplift which triggered a period of accelerated river incision and simultaneous erosion and lowering of the land surfaces, accompanied by the supply of detritus, including diamonds.

Miocene-age Holpan and Klipdam Channel deposits occur at approximately 60 meters above the Vaal River. Younger terraces include the Pliocene-age Proksch Koppie and Wedburg Terraces, which occur at 30 - 45 and 20 - 30 meters respectively.

Pliocene - Holocene deposits or the youngest terraces, which include the current Vaal River channel, occur between 0 - 20 meters and are collectively referred to as the Rietputs and Riverton Terraces.

Younger deposits, through a process of progressive weathering, deflation and winnowing of the above deposits, 'secondary' deposits known as Rooikoppies developed over large areas of the landscape. Typically, these deposits are found to be broadly associated with older terraces and buried channels, these readily accessible deflation deposits were extensively mined by the old timers and Diggers. In many cases the presence of Rooikoppie deposits was useful in respect of highlighting the presence of older buried deposits.

Hundreds of thousands of carats and numerous large stones have been produced from these terraces at various projects with grades varying between 0.1 and 2.0 cpht.

Geology of the Lower Vaal and Middle Orange River Deposits

Prior to the Karoo period, the (pre-Karoo) Vaal River cut a network of channels closely approximating the present floodplain. These channels were then utilized by the subsequent glaciers and were finally filled with Dwyka tillites and shales (at ±250 million years). The post-Karoo Vaal River, subsequently, incised into these formations and deposited gravels and large quantities of fine sediments.

The geological settings of the diamondiferous gravel deposits vary from thick remnant palaeo-river terraces and channels of late Cretaceous age through to young surface deflation or Rooikoppie deposits of 0.5 – 1.0 meters thick.

Through geological time, erosion and deflation of the very extensive primary gravel deposits lead to the formation of extensive lag deposits or Rooikoppie which in places were particularly rich. These deposits are generally associated with underlying primary gravels but mass weathering, material creep and movement of the heavier lag deposits down slopes has resulted in deposits which may be far more extensive than the underlying primary deposits.

Rooikoppie gravels have been extensively dug by the old-time diggers in the past, using unsophisticated mining and diamond recovery techniques. Highly fractured Ventersdorp lavas or Dwyka tillites underlie the Rooikoppie gravels. Iron has stained the entire assemblage, giving it a reddish colour and hence the
name Rooikoppie.

Magmatic intrusions are in the form of Karoo-aged dolerite sills and dykes and Cretaceous-aged kimberlites.

In the Lower Vaal and MOR area dry periods lead to the precipitation of an extensive hard calcrete horizon which effectively defines the "interface"

between the surface Rooikoppies and lower primary gravel deposits in many areas.

The calcrete prevented old time diggers from mining below the Rooikoppies and consequently large areas of primary gravel are being mined in areas such as the MOR by drilling, blasting and stripping the hard 1 to 2 meter calcrete layer and mining and processing the underlying preserved primary alluvial gravels.

Property Geology – At Last

The At Last alluvial gravel deposit can be describe as a cut-off meander or paleo channels which formed as part of continuous channel migration during the deposition and reworking of the younger Rietputs C and B gravels, within a relatively wide, alluvium-filled flood plain causing continuous erosion and recycling of alluvium, located between 1 – 10m above the river.

The bedrock in the area consists of +2,700-million-year-old Ventersdorp lavas overlain by younger Dwyka tillites and sedimentary rocks comprising of a sequence of siltstone, shale quartzite, dolomite and limestone. A thin surface layer of calcrete covers a large part of the project area.

Alluvial diamondiferous gravel varying from 1 – 3m thick are found underneath a thick layer of soil, sand and calcrete almost across the entire stretch of the farm.

Locally, bedrock features including large boulders (glacial erratics) protruding from and released by the Dwyka diamictites of the floor rocks, and fractures and potholes found on Ventersdorp bedrock played an important role in diamond concentration of the alluvial deposits.

Well-developed splays (e.g. Windsorton and Waldecks Plant on the Vaal River), dolerite dykes, faults and contrasting rock competencies also lead to grade enhancement in younger deposits. Locally plunge and scour pools lead to a high concentration of diamonds.

A dolerite dyke was found on At Last, cutting through the river in the south and running in a northwesterly direction. As in the case of the Saxendrift dolerite dyke, grades are expected to be high on either side of the dyke.

The model presented for the At Last alluvial deposit is based on field observations regarding these deposits, information gained from trial mining and bulk sampling exercises on the property and the basic concepts of fluvial dynamics and Ox-bow formation. This model is meant as a first working model to direct further exploration and facilitate the understanding of exploration areas and should be updated/adapted as more information is gained.

The At Last alluvial gravel deposit can be describe as a cut-off meander or paleo-channels which formed as part of continuous channel migration during the deposition and reworking of the younger Rietputs C and B

gravels, within a relatively wide, alluvium-filled flood plain causing continuous erosion and recycling of alluvium, located between 1 – 10m above the river. No Rooikoppie gravels are present on the property.

Rietputs C gravels are usually found in or near the present river channel and were mined extensively on the farm and adjacent property - all within the At Last Ox-bow. The greatest recorded height of these younger gravels above the present stream is about 23 metres (at Gong-Gong) and the greatest depth below the river bed drops as low as 18 meters (also at Gong-Gong) a depth that is due to the filling of potholes in the bed rock (Photo 3).

Progressive channel migration and incision over a few million years during the Pleistocene period produced a downward spiralling and widening meander system that left the preserved alluvial gravel as elevated islands encircled by shallow dipping meander migration surfaces (MMS) and abandoned channels on the outside, normally filled with fluvial sand. Meander maturation occurs when the current river cut severely into the preserved inner gravel to form the current Vaal River as found at At Last.

The younger clast-supported, cobble/boulder Rietputs C gravels on At Last are overlain by calcretized sands (1 – 3m thick) of the Riverton Formation which are, in turn, succeeded by 1m of red Hutton sands, clayey silt and sand.

Overburden thickness varies between 10 – 18m across the At Last ox-bow with gravel thicknesses varying between 2 – 4m thick and gravels are lying directly on shale or tillite as encountered by historic trial mining and bulk sampling exercises. Potholes (most favourable trap site) are normally filled with wellrounded pebbles/cobbles of andesite and finer gravel of resistant material.

Studies in the surrounding area showed that Ilmenites (96%) are by far the most abundant kimberlitic indicator minerals followed by garnets (4%).

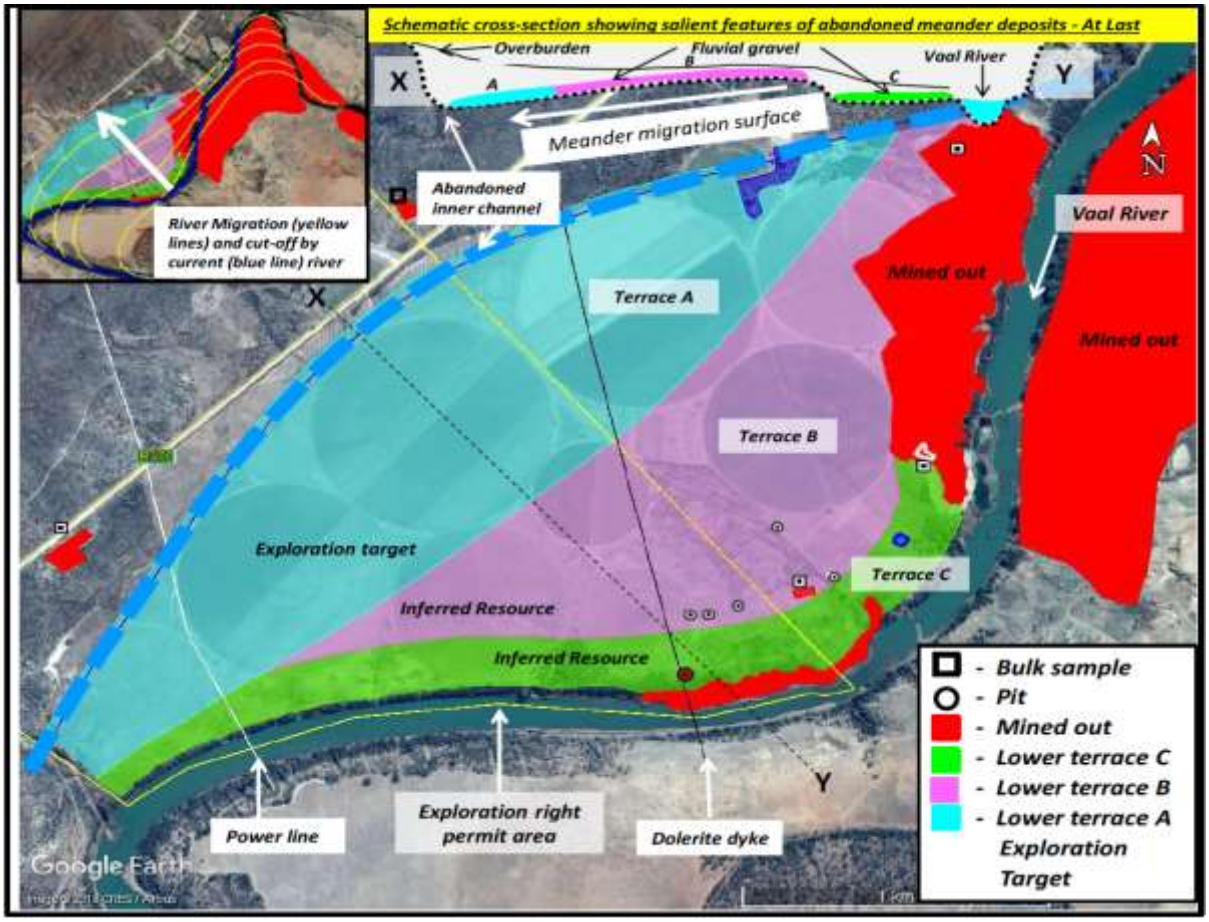


Figure 11. Satellite image showing the position of Alluvial Diamond Deposits and Inferred Resources on At Last.

Property Geology and Geological Model – De Bad

On De Bad, diamondiferous gravels are found within the:

- Rietputs C, B and A terraces,
- Rooikoppie Gravels

The **Rietputs C** fluvial alluvial gravels are found adjacent to the present-day Vaal River (1 – 5m above the river) which has a total length of 3,5km within the De Bad Ox-bow. The extent of the gravels along the river within the De Bad exploration right is 1.9km. The gravels are generally found in the deeper sections of the channel and may be locally very rich.

Areas of enrichment are usually associated with alluvial traps such as bedrock irregularities, rock bars, plunge pools and the presence of large boulders. This gravel has a bimodal nature to it and consists of angular to well-rounded cobbles and boulders of lava together with rounded to well-rounded pebbles and cobbles of quartzite, agate and chert.

Many years ago, adjacent to the river a pit was made in the Rietputs C gravels, where a few cobbles and boulders can still be found, whilst a small portion of the same gravels were mined by Sonop mining on the adjacent property. A bulk sample was also excavated during the same period on the lower terrace.

The **Rietputs B** fluvial alluvial gravels are found some 800m away from the river, located on elevated terraces, 16 – 18m above the present river. The clast supported, pebble-cobble gravels are 1 – 2 m thick and slightly to massively calcretised, showing weak imbrication. The gravels are overlain by a thin layer of Rooikoppie gravel with an average thickness of 0.5m. The 'rolling' bedrock consists of soft Dwyka tillite. Thicker gravel deposits are found in the deeper, low lying areas on the bedrock.

The **Rooikoppie Gravels** occur as a thin layer covering the Rietputs B fluvial alluvial gravels and extend further away from the terrace to the southeast, up to a height of roughly 21m above the present-day Vaal River. Rooikoppie gravels consist of sub-rounded to well-rounded of the most durable lithologies, such as quartz, quartzite, agate, jasper, chalcedony, fossilized wood and minor BIF. In places Red Hutton sands and soils covers the Rooikoppie gravels.

Rietputs A fluvial alluvial gravels may be present to the southeast of Terrace B up to a height of 21 m above the present river. Well-rounded cobbles mixed with Rooikoppie gravel were found in a small excavation on the northeastern corner of Terrace A. This area requires further investigation.

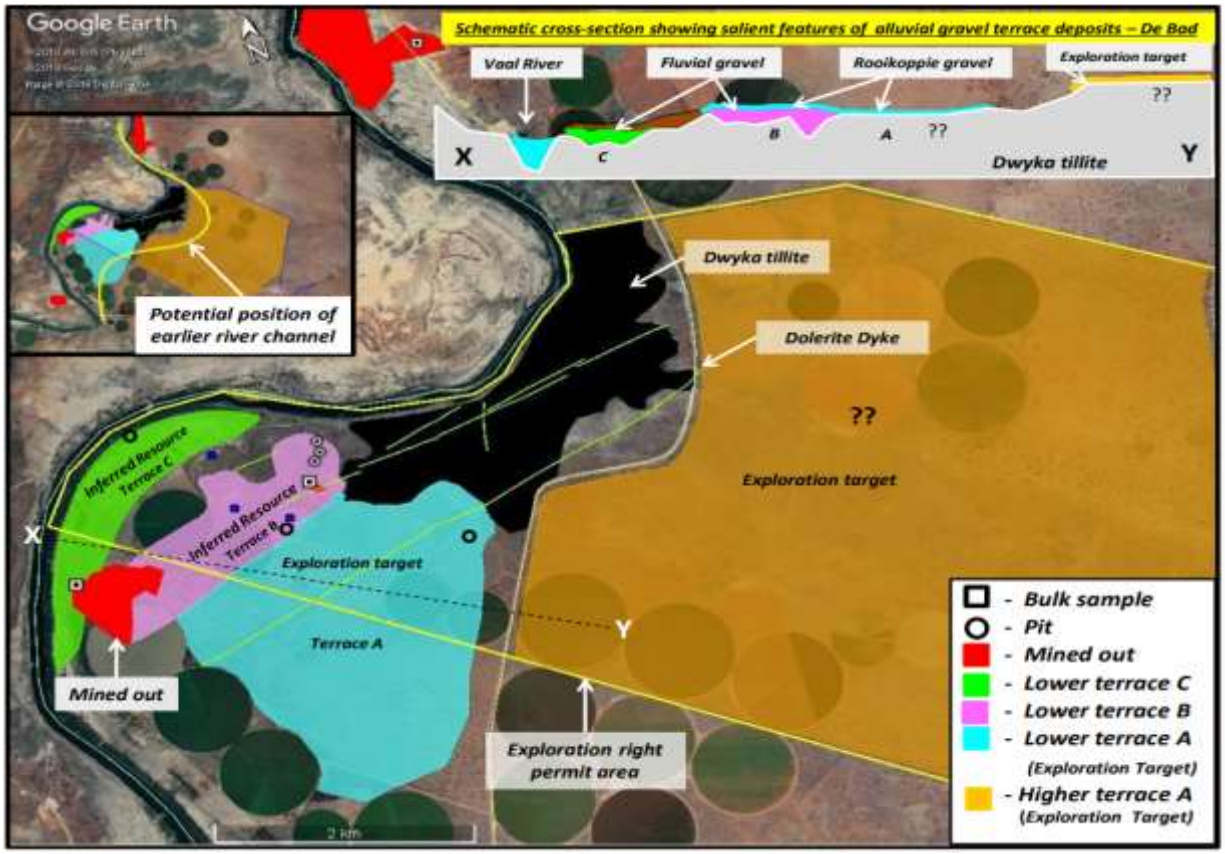


Figure 12. Satellite image showing the position of Alluvial Diamond Deposits and Inferred Resources on De Bad.

4.6 Mineral Resource Map

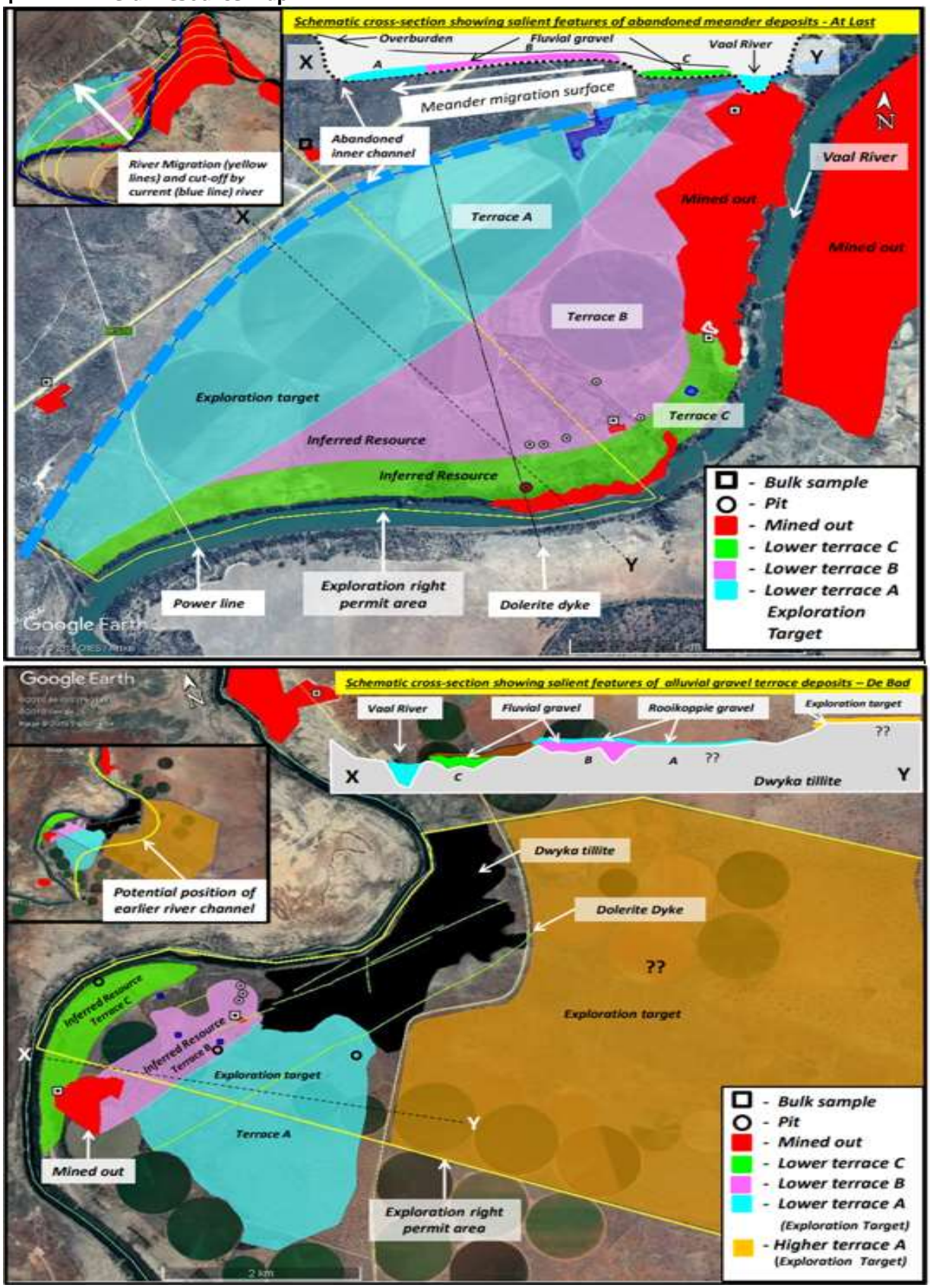


Figure 13. Property maps showing extrapolation of the inferred resources beyond nominal sample spacing.

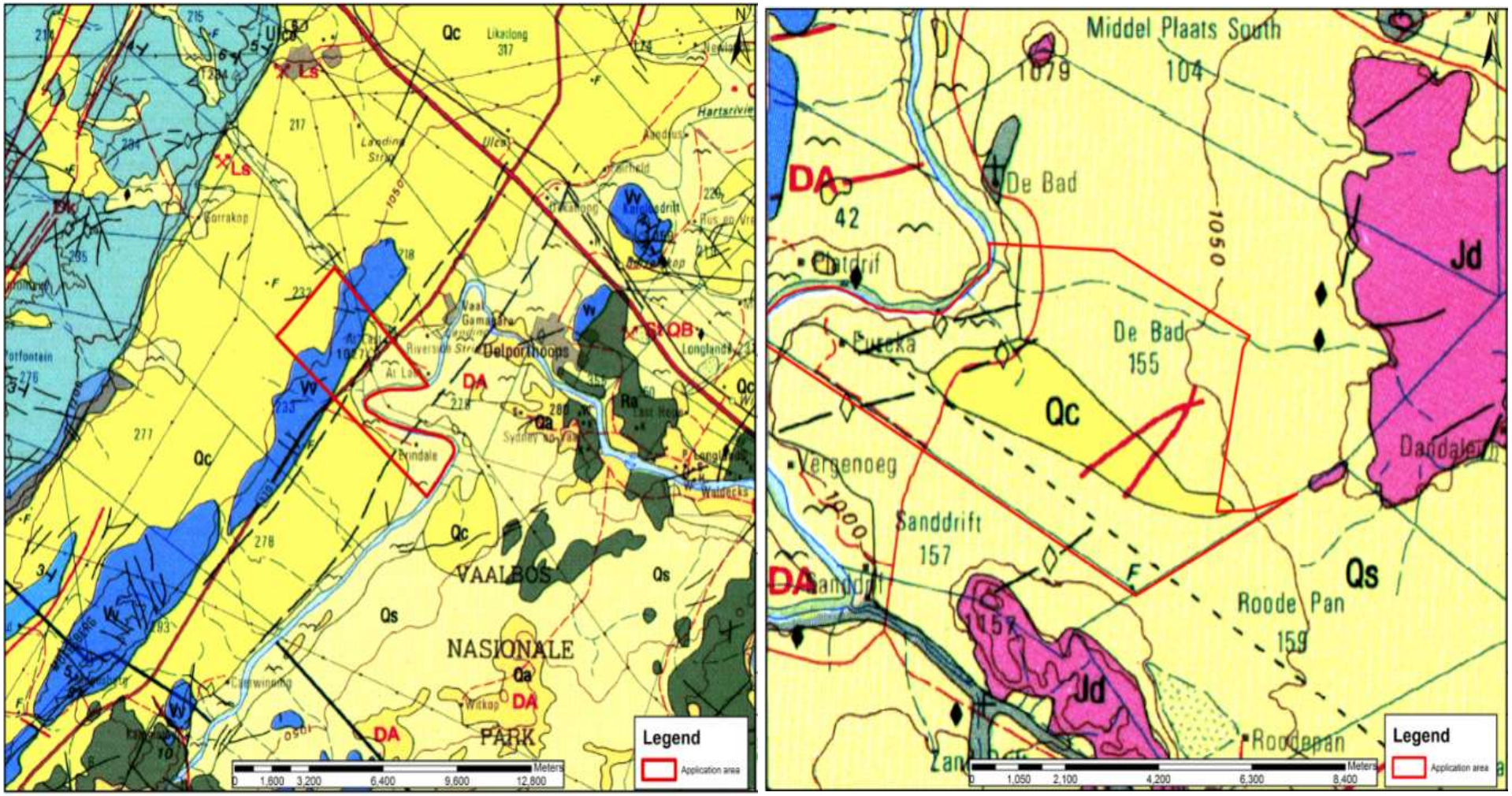
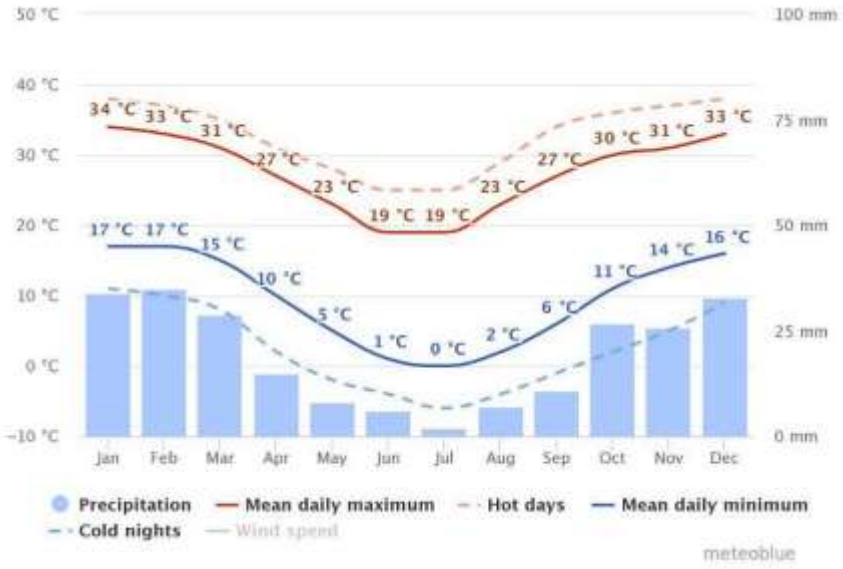


Figure 14. Geological maps of At Last and De Bad

(2) *CLIMATE:*

Climate and rainfall: The weather provides hot summers and cold dry winters with rains during the autumn. It is not unusual for the winter night time temperatures to drop below freezing. Temperature data for the region range from 19°C in June to 34°C in January. The region is the coldest during July when the temperatures drops to 0°C on average during the night.

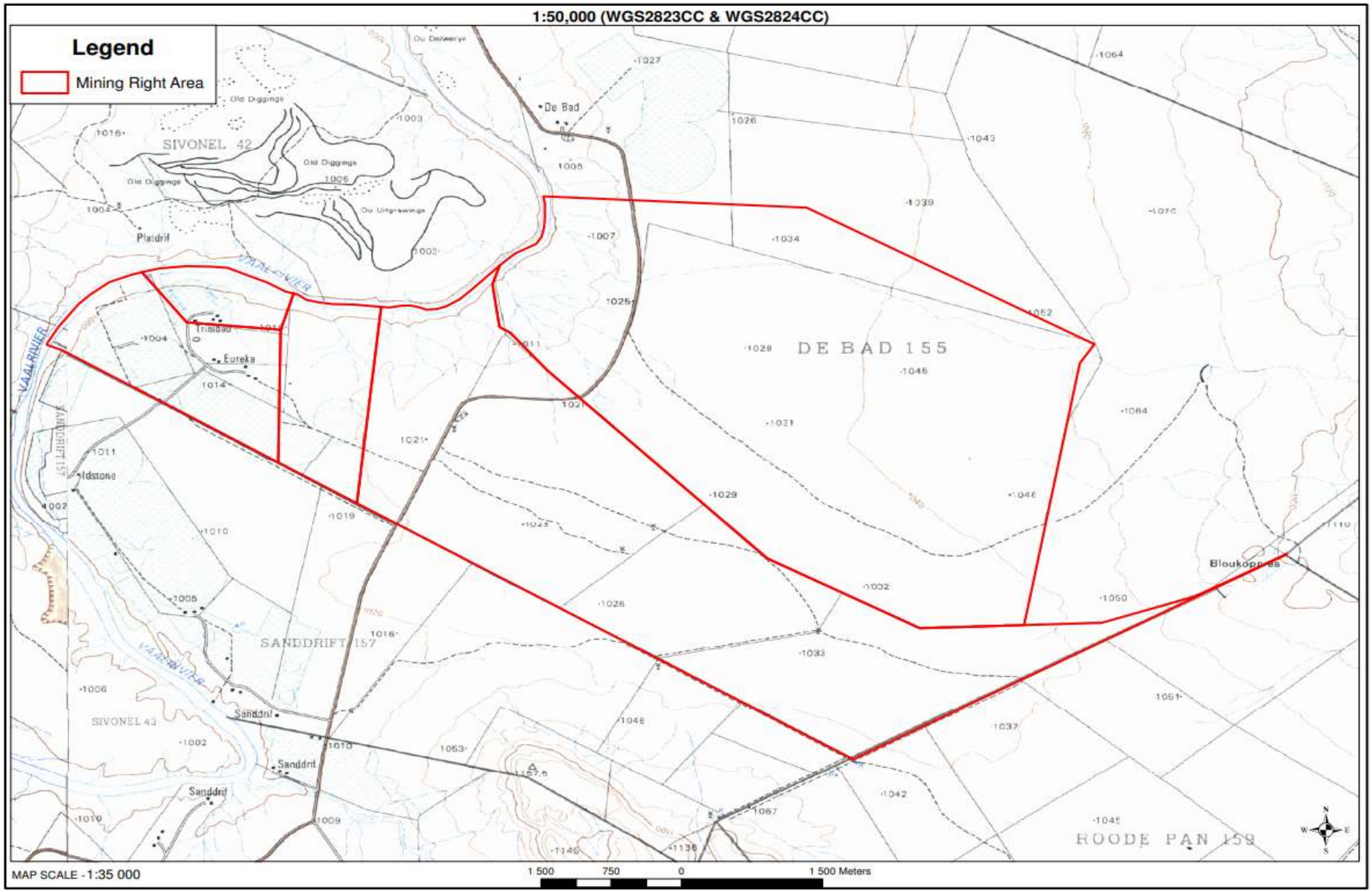


The project area falls within the summer rainfall area with a mean annual average of 280 mm indicating January as the wettest months with an average of 34 mm and July as the driest receiving approximately 2 mm.

1.3 Topography

At Last borders the northern banks of the Vaal River, with agricultural irrigation lands next to the river. The project area and surrounding area are a relatively flat and featureless landscape with a very gentle slope toward the river.

De Bad and surroundings also shows a relatively flat and featureless landscape, but have a more visible slope towards the river, which forms the northern border of the project area.


1:50,000 (WGS2823CC & WGS2824CC)
Legend
Mining Right Area
DE BAD 155
SANDDRIFT 157
SIVONEL 42
HOODE PAN 159
De Bad
Plaidrif
Eureka
Idstone
Sanddrif
Old Diggings
VAAL RIVER
MAP SCALE - 1:35 000
1 500
750
0
1 500 Meters

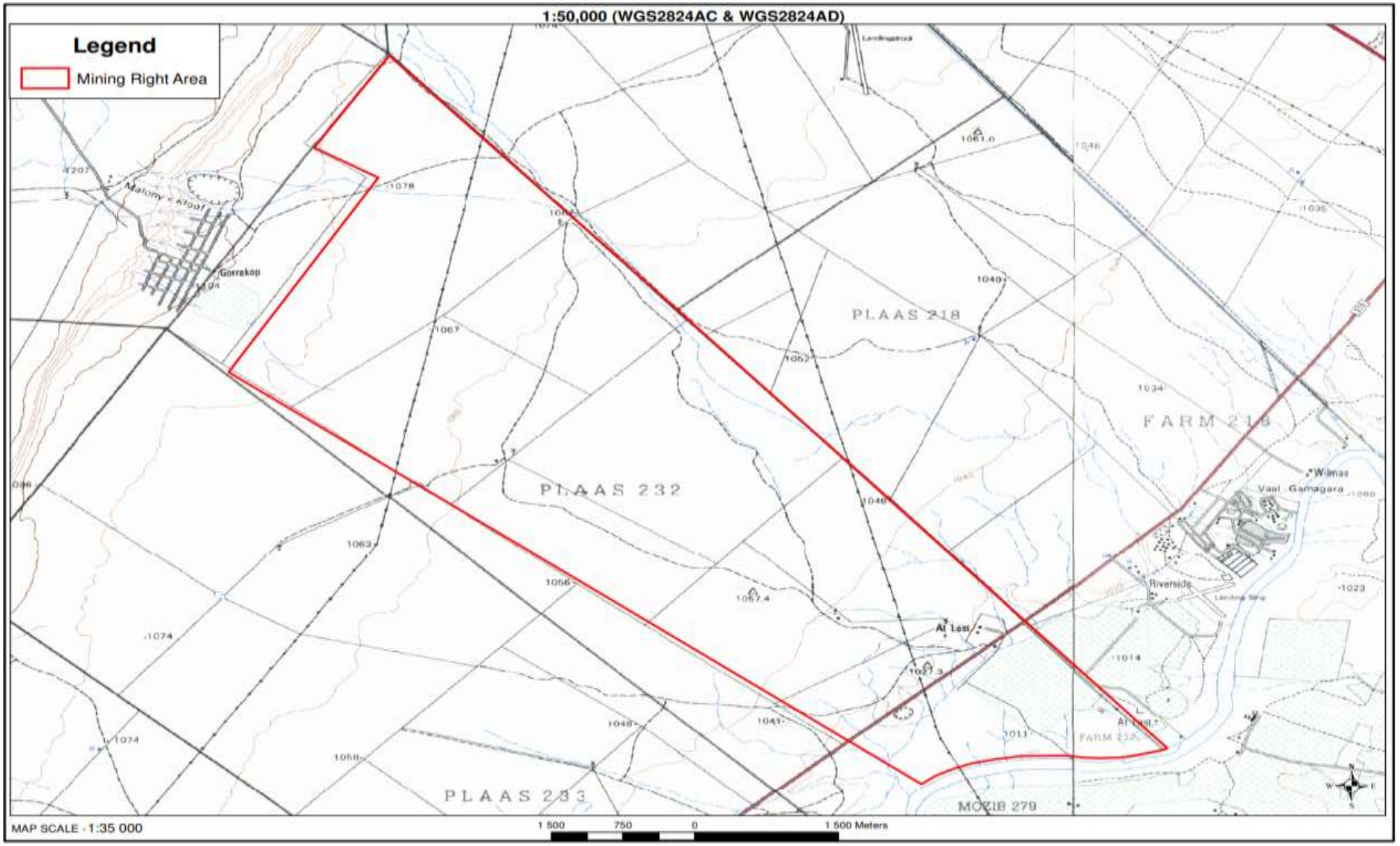


Figure 15. Topographical Map 1:50 000 application area indicated by purple block.

1.4 Soils

Alluvial deposits of the lower Vaal and Middle Orange Rivers are almost exclusively developed on a lava bedrock of the Ventersdorp Supergroup, and deposits occur where the Vaal, Orange and Riet Rivers flow off the younger Karroo cover and on to the hard basement. The deposits extend intermittently along the Vaal River from Windsorton in the north, to Schmidtsdrift in the south. On the Orange River they occur between Hopetown in the south and Douglas in the north, and continue intermittently for several tens of kilometers downstream of the Vaal Orange Confluence. (The Mineral Resources of South Africa, 6th Edition)

1.5 Pre-mining Land Capability

Land capability of each soil type was assessed in terms of arable land, grazing land, wilderness land and wetlands as defined by the MEM Guideline for planning and authorisation (Department of Minerals and Energy 2000). The land capability of the project area is considered to be of low agricultural potential. The land is only suited for grazing (game farming) and limited crop production.

1.6 Land Use

The current land uses of the project area and surroundings can be best described as agricultural lands, livestock and/or game farming and mining in the district.

A significant amount of disturbance has already occurred on the property, as a result of the ground being worked during the prospecting phase as well as historical mining activity.

Most of the area surrounding the proposed project area consists of extensive grazing land, there are some areas under irrigation pivots to the east and west of the properties.

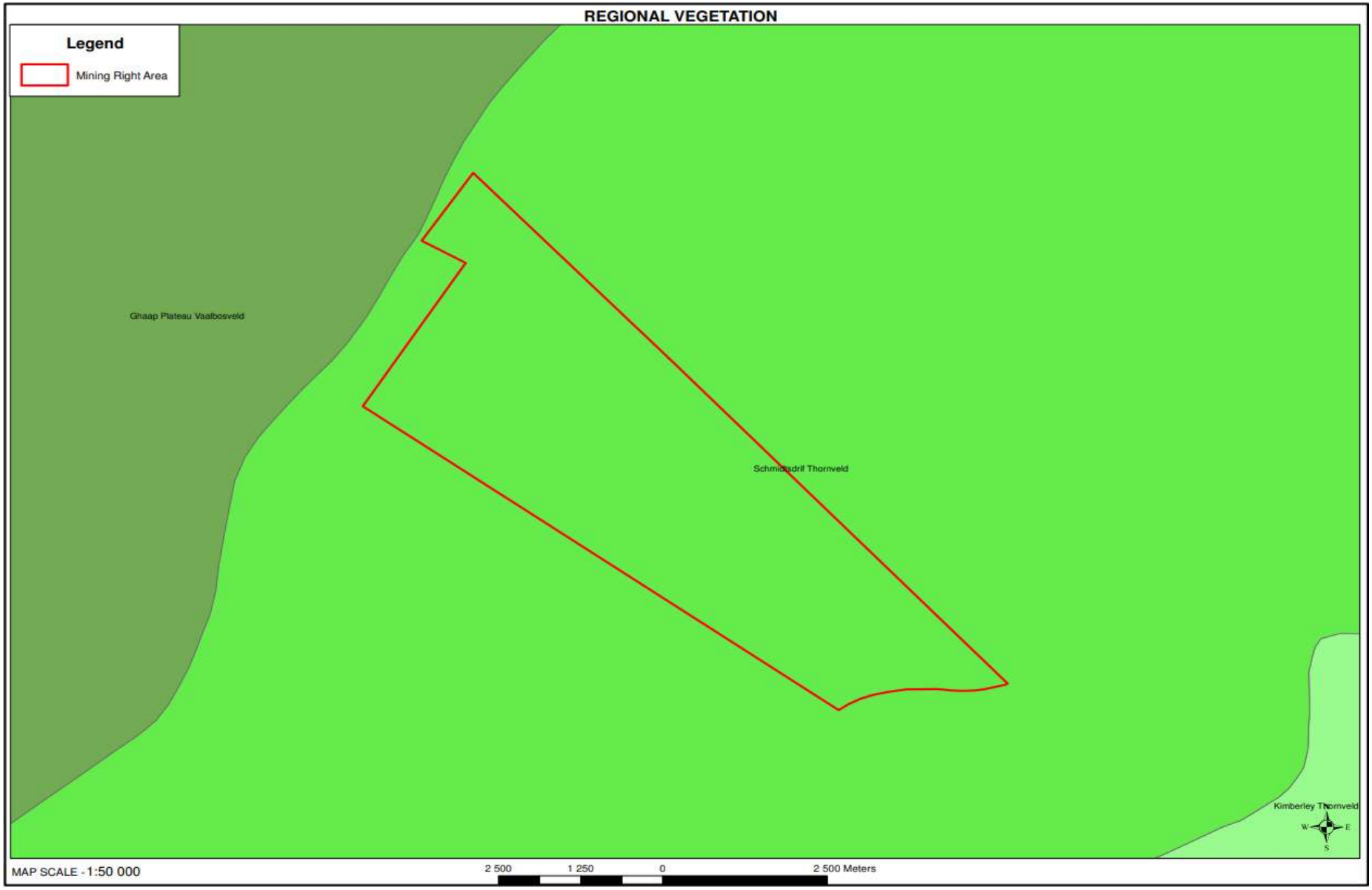
Specific environmental features and/or infrastructure occur on site or within close proximity include:

- Agricultural lands
- Eskom powerline
- Farm buildings
- Fountain
- Furrow
- Non-perennial pans
- Public gravel road
- Reservoir
- R370 Provincial road
- Vaal River
- Water boreholes

1.7 Flora and Fauna

Flora: The project areas falls within the Kimberley Thorn Bushveld (Biome 32), which is an open savanna, with Umbrella Thorn (Vachellia tortilis) and Camel

Thorn (Vachellia erioloba) as the dominant species and scattered individuals of Shepherd's Tree (Boscia albitrunca) and Sweet Thorn (Vachellia karroo). The shrub layer is poorly to moderately developed in places and individuals of Camphor Tree (Tarchonanthus camphoratus), Spike-flowered Black Thorn (Vachellia mellifera), Wild raisin (Grewia flava) and Lycium hisutum occur widely scattered. The grass layer is fairly well developed and grasses such as Redgrass (Themeda triandra), Common Nine-awn Grass (Enneapogon cenchroides), Lehmann's Lovegrass (Eragrostis lehmanniana), Elionurus muticus and Cymbopogon plurinodis are conspicuous.


REGIONAL VEGETATION
Legend
Mining Right Area
Ghaap Plateau Vaalbosveld
Schmidtsdrif Thornveld
Kimberley Thornveld
MAP SCALE - 1:50 000
2 500
1 250
0
2 500 Meters

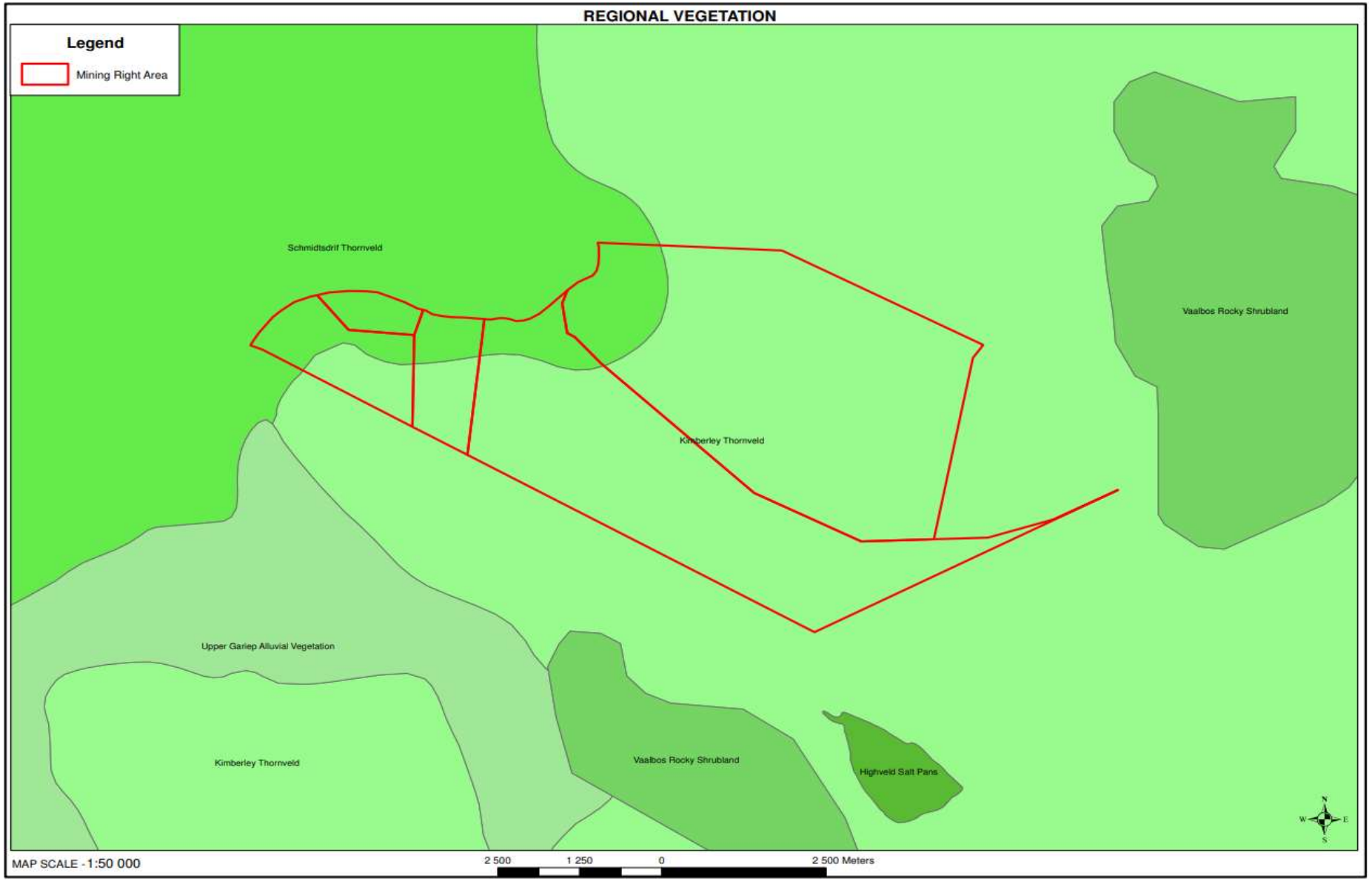


Figure 16. Regional Vegetation Map, the Mining Right application is indicated in red.

NATURAL FAUNA:

Commonly occurring species:

Amphibians

A species checklist was compiled from literature for the area to ascertain if there are any amphibian species of special concern known to occur in and around the area. Only six species of amphibians are known to occur within this area and none of these species are listed as species of special concern.

SPECIES	COMMON NAME
Rana fuscigula	Cape River Frog
Xenopus laevis	Common Platanna
Pyxicephalus adspersus	Giant Pyxie
Bufo gutturalis	Guttural Toad
Bufo gariepensis	Karoo Toad
Cacosternum boettgeri	Common Caco

List of Amphibians known to occur in and around the proposed mining area.

Reptiles

A species checklist was compiled from literature for the area to ascertain if there are any reptile species of special concern known to occur in and around the area. Of the 34 species identified only one, the Rock Monitor is considered to be a species of special concern as it is listed as Vulnerable in the Red Data Book.

SPECIES	COMMON NAME	STATUS
Psammobates oculifer	Kalahari Tent Tortoise	
Geochelone pardalis	Leopard Tortoise	
Pelomedusa subrufa	March Terrapin	
Typhlops lalandei	Delalande's Blind Snake	
Dispholidus typus	Boomslang	
Lamprophis fuliginosus	Brown House Snake	
Lycophidion capense	Cape Wolf Snake	
Dipsina multimaculata	Dwarf Beaked Snake	
Naja nivea	Cape Cobra	
Crotaphopeltis hotamboeia	Herald Snake	
Dasypeltis scabra	Common Egg Eater	
Psammophis trinasalis	Fork-marked Sand Snake	
Psammophis notostictus	Karoo Sand Snake	
Pseudaspis cana	Mole Snake	
Bitis arientans	Puff Adder	
Monopeltis capensis	Cape Spade-snouted Worm Lizard	
Zygaspis quadrifrons	Kalahari Round-headed Worm Lizard	
Mabuya capensis	Cape Skink	
Mabuya spilogaster	Kalahari Tree Skink	

Mabuya variegate punctulata	Variegated Skink	
Mabuya sulcata	Western Rock Skink	
Mabuya occidentalis	Western Three-striped Skink	
Cordylus polyzonus	Karoo Girdled Lizard	
Meroles suborbitalis	Spotted Desert Lizard	
Pedioplanis lineoocellata	Spotted Sand Lizard	
Pedioplanis namaquensis	Namaqua Sand Lizard	
Nucras tessellata	Striped Sandveld Lizard	
Varamus niloticus	Nile Monitor	
Varamus exanthematicus	Rock Monitor	Vulnerable
Agama anchietae	Southern Rock Agama	
Agama atra	Ground Agama	
Chamaeleo dilepis	Flap-neck Chamaeleon	
Pachydactylus bibronii	Bibron's Gecko	
Pachydactylus capensis	Cape Gecko	

List of reptiles known to occur in and around the proposed mining area.

Birds

Although a few birds are commensal, rapidly and successfully adapting to modified environments, the majority of birds are sensitive to disturbance and either migrate away from, or suffer greater mortality within, degraded habitats. Due to their ability to fly away they are however tolerant of low levels of disturbance. An extensive bird life is found on the mine despite the disturbances caused by mining.

Mammals

Mammals within the study area did include the following:

COMMON NAME	SCIENTIFIC NAME	STATUS
Vervet monkey	*Cercopithecus aethiops*	
Chaema baboon	*Papio ursinus*	
Cape hare	*Lepus capensis*	
Scrub hare	*Lepus saxatilis*	
Ground squirrel	*Xerus inausis*	
Springhare	*Pedetes capensis*	
Porcupine	*Hystrix africaeaustralis*	
Bat-eared fox	*Otocyon*	
Black backed jackal	*Canis mesomelas*	
Striped polecat	*Ictonyx striatus*	
Cape clawless otter	*Aonyx capensis*	Unknown
Suricate	*Surcata suricatta*	
Yellow mongoose	*Cnictis penicillata*	
Slender mongoose	*Calerella sanguinea*	
Aardwolf	*Proteles cristatus*	Rare
Brown hyaena	*Hyeana brunnea*	
Caracal	*Felis caracal*	
African wild cat	*Felis lybica*	Vulnerable

Ant bear	*Orycteropus afer*	Vulnerable
Warthog	*Phacochoerus aethiopicus*	
Common duiker	*Sylvicapra grimmia*	
Steenbok	*Raphicerus*	
Springbok	*Antidorcus marsupialis*	
Kudu	*Tragelaphus strepsiceros*	

List of mammals known to occur in the study area

Endangered or rare species:

Eight Species of special concern have been identified according to the Red Data Book – Birds (Barnes, Keith 2000), and include:

COMMON NAME	SCIENTIFIC NAME	CONSERVATION STATUS
Greater flamingo	*Phoenicopterus ruber*	Near threatened
Lesser flamingo	*Phoenicopterus minor*	Near threatened
Secretary bird	*Asagittarius serpentarius*	Near threatened
White backed vulture	*Gyps africana*	Vulnerable
Lappet faced vulture	*Torgos trageliotus*	Vulnerable
Tawny eagle	*Aquila rapax*	Vulnerable
Martial eagle	*Polemaetus bellicusos*	Vulnerable
Kori bustard	*Adreotis kori*	Vulnerable

List of red data list birds known to occur in and around the proposed mining area.

No species is limited to this site only, with most of them being generalist and having a wide distribution range. However, reasonable measure must be put in place to protect endangered and protected species if they are encountered on this site.

The mobility and in many case the adaptability of many bird species has meant that they more than any other vertebrate group have taken advantage of many of the changes we have brought about in the environment.

As this site and the fact that this area is within the river there is a possibility that some habitats can be destroyed although most wildlife will probably immigrate to adjacent undisturbed land.

1.8 Hydrology

Surface Hydrology

The study area falls within the primary catchment area C and within the quarternary catchment of C91A (Last Hope) and C92B (De Bad) which forms part of the Lower Vaal Management Area (WMA).

The Lower Vaal WMA is situated partly in the North-West Province and partly in the Northern Cape Province with a small fraction of the areas also lying within the Free State province. The drainage regions included in the study area are: D41 (excl D41A), parts of D42C and D42D, parts of D73A and D73C, C31, C32, C33, C91 and C92 (excl C92C).

Drainage regions C31, C32, C33, C91 and C92 are divided into the Harts River catchment and the Vaal River catchment as described below. The Harts River drains a catchment area of approximately 31 000 km2 and has one major tributary, the Dry Harts River which joins the Harts River just downstream of Taung.

The stretch of Vaal River considered here is the reach between Bloemhof Dam and the Orange and Vaal River confluence. The total catchment area is almost 22 500 km2.

The land use in the Lower Vaal WMA is primarily livestock farming, with some dry land cultivation in the northeast. Intensive irrigation is practised at Vaalharts as well as locations alongs the Vaal River. Diamond bearing intrusions occur near Kimberley (the most important urban area) and alluvial diamonds are found near Bloemhof. Iron ore and other minerals are found in the south-eastern parts of the WMA.

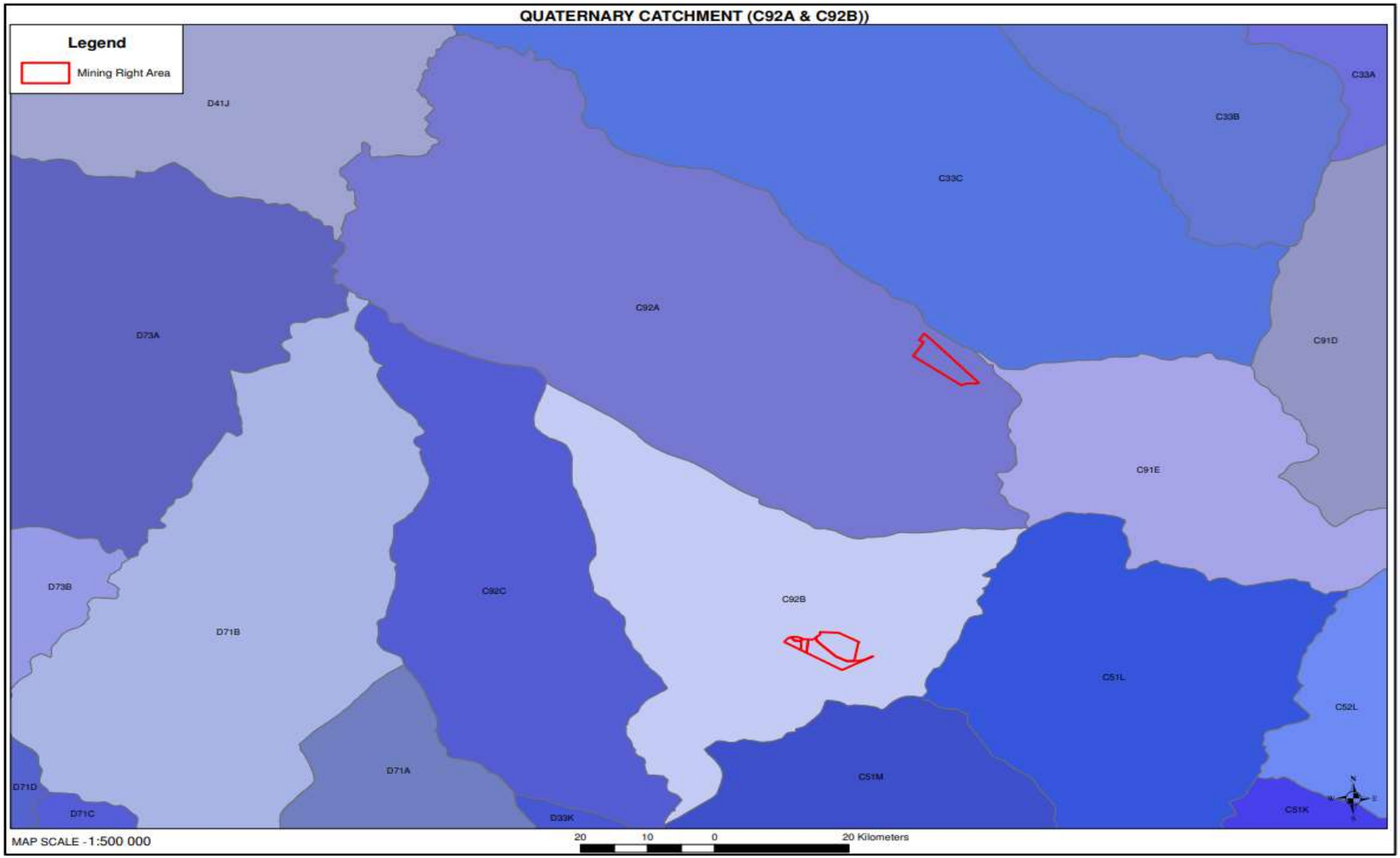


Figure 17. Quaternary Catchment Map

Water Quality

While high salinity concentrations are currently a serious problem in the Vaal River System, the current trends indicates that the problem is not expected to increase substantially in the future. The issue at hand is how to handle the current situation in terms of management measures and reduction. Eutrophication on the other hand is a looming threat, and the system is considerd to be a high risk. (DWAF 2007 Vaal Reconciliation Study)

Eutrophication (nutrient enrichment) is caused by excessive inputs of N & P. The effects and problems associated with eutrophication in the Vaal River are profound and have become a matter of major concern to all water users. The impacts are ecological, social and economical.

Phosphorus (P) is generally the limiting nutrient for algal growth and therefore controls the primary productivity of a freshwater body. In the Vaal River, the phosphorus levels have been shown to be high (mean, >100µg/ℓ) and have shown an increasing trend during the past ten years.

It is generally recognised that an increase in nutrient loading is a prerequisite of increased eutrophication in rivers.

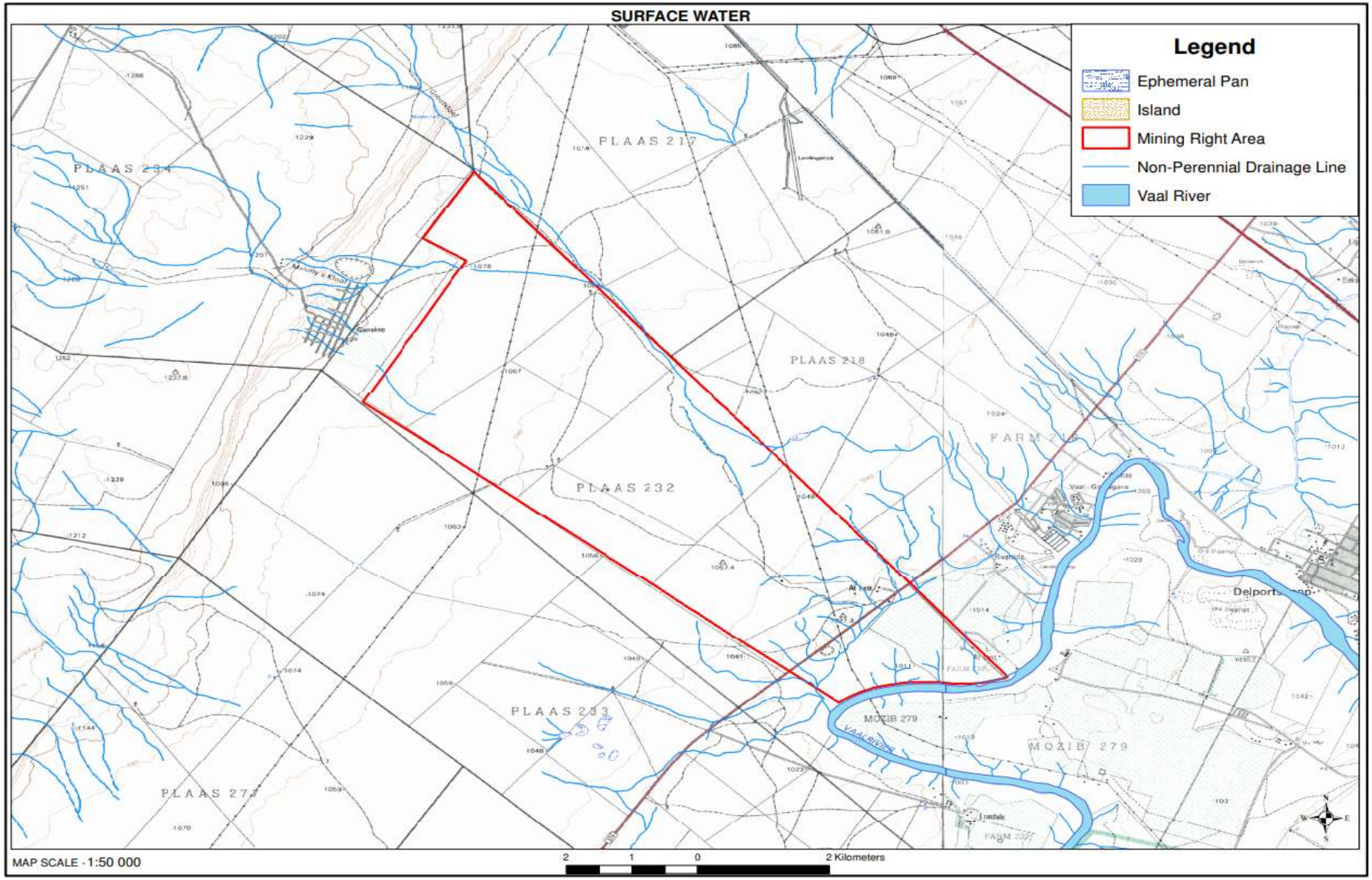
A summary of the tropic status of the Vaal River impoundment for the relevant study area (Roos 2007), namely the Bloemhof Dam (above the study area) and the Douglas Barrage (below the study area) is given below.

Table 4. A summary of the trophic status of the Vaal River surrounding the proposed development area

Dame Name	Mean TP (µg/ℓ)	Potential for algal productivity	Mean annual CHI –a (µg/ℓ)	% of Chl-a >30 µg/ℓ	Nuisance value of algal bloom productivity	Trophic status
Bloemhof	100	Significant	5.5	35%	Significant	Hypereutrophic[1]
Douglas Barrage	60	Significant	8.5	2%	Moderate	Oligotrophic[2]

[1] Hypereutrophic systems are very nutrient-rich characterized by frequent and severe nuisance algal blooms.
[2] An oligotrophic system is one with low primary productivity, the result of low nutrient content. These systems have low algal production.

This indicates that the water quality in the Upper and Middle Vaal management areas are worse than in the lower Vaal management area at present. Eutrophication of aquatic ecosystems can be reversed by decreasing input rates at P and N. In the long-term, reducing nutrient inpus is the best preventative measure of eutrophication problem in the Vaal Barrage would probably mitigate the water quality problems downstream of the Vaal River.


SURFACE WATER
Legend
Ephemeral Pan
Island
Mining Right Area
Non-Perennial Drainage Line
Vaal River
PLAAS 234
PLAAS 217
PLAAS 218
PLAAS 232
PLAAS 233
PLAAS 277
MOZIB 279
MOZIB 279
Delport
MAP SCALE - 1:50 000
2
1
0
2 Kilometers

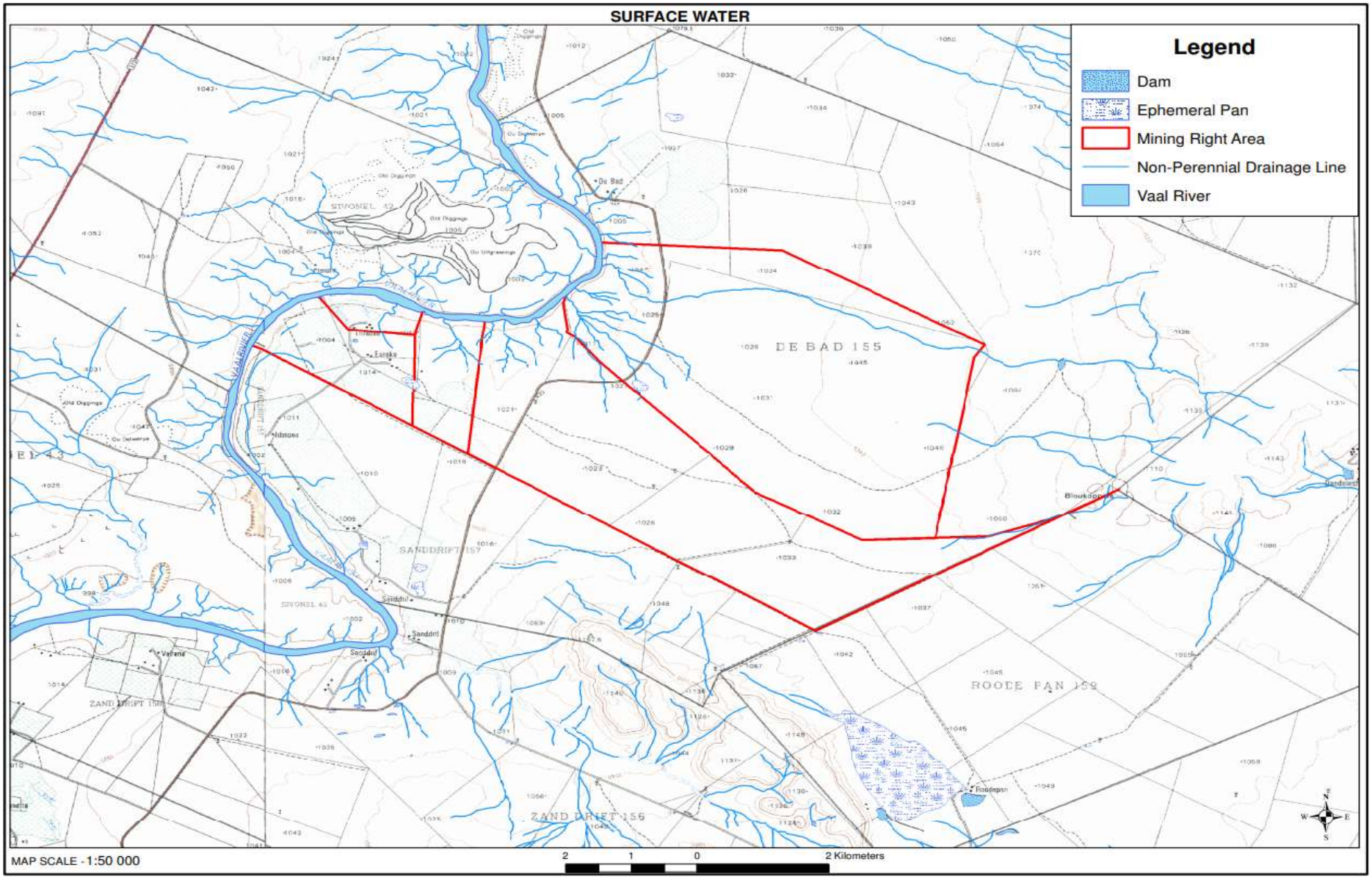


Figure 18. Surface Water Map

Geohydrology

Ground water utilisation is of major importance in Lower Vaal WMA, it's the only source of water over much of the WMA. Ground water is mainly used for rural domestic supplies, stock watering, water supplies to several towns, but also for irrigation. There is also concern over impacts of upstream farm dams and alien vegetation on yield from ground water, there is major de-watering of ground water aquifers for mining purposes within the Lower Vaal WMA.

The quality of ground water is generally good although it does tend be brackish (mineralised) water in the drier areas. There has been pollution of dolomitic ground water experienced at Pering Mine near Reivilo within the WMA as a result of the mining activities.

1.9 Sites of Archeaological and Cultural Interest

In terms of section 38 of the National Heritage Resources Act, 1999 (Act No. 25 of 1999), a Phase 1 Archaeological Impact Assessment must be undertaken.

The study must be undertaken in order to establish if any localities of heritage significance are present on the property.

In terms of Palaeontology the farms is indicated as High sensitivity and a Palaeontological study will also be done.

1.10 Air Quality

With reference to the Scheduled Processes under the Second Schedule to the Atmospheric Pollution Prevention Act, 1965 (Act No. 45 of 1965), no scheduled process relates to any proposed mining activtiy.

Existing Sources

The current source of air pollution in the area stems from numerous mining operations along the Vaal River and from vehicles traveling on the gravel roads of the area. Farming activity, especially ploughing of the irrigation fields, may generate dust during certain periods of the year.

New Source

The source of air pollution on the farm will be nuisance dust generated by the opencast mining process, the loading of gravels onto the transport trucks, the dumping of gravels over each sites primary screen or feeder bins as well as from the movement of trucks and vehicles on the mining roads. Gas emissions from machinery will be kept within legal limits.

Areas of Impact

The prevailing wind (occasionally slightly) is from the east (June & October) and the south-west (October - January) but the strongest winds are from the north-west. The average monthly wind speeds are generally below 6.3 m/s.

There is a potential for fall-out dust to impact on the surrounding farm properties – 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.

If dust is generated, it is expected to be visible from the surrounding farmland or mines along the Vaal River.

1.11 Noise

Noise on site will come from the large vehicles (tip trucks, front-end loaders, back actors), from the working pans.

1.12 VISUAL ASPECTS:

The mining site De Bad will not be visible from the N8 tar road that runs to Groblershoop, but could be visible from the gravel road that runs through the farm. The Last Hope site could be visible from the R370 tar road that runs through the property. The sites will be visible to the farm Owners which reside on the properties.

The negative visual impacts associated with open excavations and the washing pans will however have a negative impact since it will be visible to the landowners. There is however no method of reducing the impact during mining operations (operational phase), it can only be mitigation done by doing concurrent rehabilitation of open excavations as mining progress.

1.13 BROAD-SCALE ECOLOGICAL PROCESSES:

Transformation of intact habitat on a cumulative basis could contribute to the fragmentation of the landscape and could potentially disrupt the connectivity of the landscape for fauna and flora and impair their ability to respond to environmental fluctuations. The sites had been indicated on the screening tool as having high sensitivity in terms of broad scale ecology. A specialist ecological study will be conducted and included into the EIA EMP document.

1.14 SOCIO-ECONOMIC STRUCTURE OF THE REGION:

The Northern Cape is geographically the largest province in South Africa having a land mass increased from 361,830 km² to 373,239 km² with the introduction of the new provincial boundaries and covers approximately one third of the country's surface area.

The following information is found in the Integrated Development Plan (IDP) 2017/18 – 2021/22 of the Frances Baard District Municipality.

The Frances Baard District Municipality (FBDM) forms part of the five District Municipalities of the Northern Cape Province. FBDM shares its northern boundary with the North West Province and its eastern boundary with the Free State Province. Furthermore, FBDM comprises of four local municipalities; Dikgatlong, Magareng, Phokwane and Sol Plaatje municipality, which is the most populous as it is the heart of economic activities of the area.

The capital of the Northern Cape, Kimberley, is located less that 500km from Johannesburg and approximately 1,000 km from Cape Town.

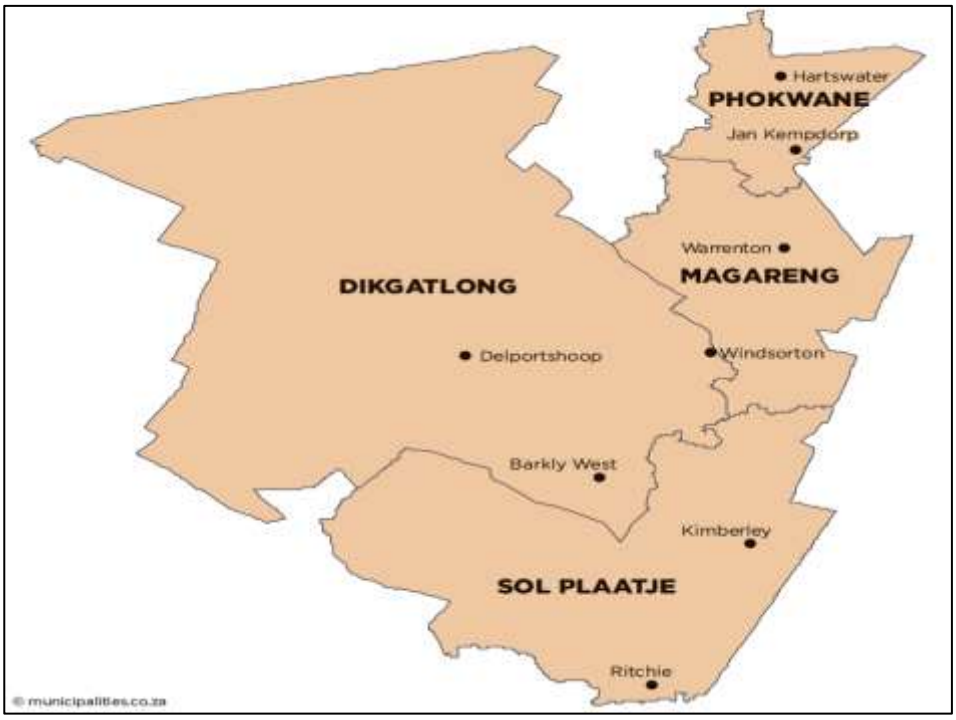


Figure 19: Locality Map

The At Last project falls within the Dikgatlong Local Municipality which is a Category B municipality with seven wards situated approximately 35 km north-west of Kimberley on the northern bank of the Vaal River. The municipal area covers approximately 7 315 km² and borders with the Magareng Municipality in the north-east and Sol Plaatje in the south-east. Agriculture and mining form the economic activities of the area.

The De Bad project is located in the Sol Plaatje Local Municipality which has a geographical area of 1877.1 km² and comprises of the urban areas of Kimberley, Ritchie and surrounding villages and farms. Kimberley is the administrative centre of the FBDM and the seat of the Northern Cape Provincial Administration. The main economic activities consist of retailers, industries as well as mining and farming. It accommodates about 255 351 people and contributes 78.85% to the GDP of FBDM. Over the years Sol Plaatje municipality decided to adopt a different approach

in preparing its IDP different from the approach adopted by municipalities in the district. Instead of identifying community priority issues, it preferred instead to cluster development into themes i.e. Institutional Building Programme, Service Delivery Programme, etc.

Population

Currently, FBDM has a total population of 387 741 people, which represents 32.5% of the Northern Cape population. The chart in figure 20 clearly illustrates that Solplaatje consists of the largest population in the district of 66%, followed by Phokwane (16%); Dikgatlong (12%); and Magareng has the least population of 6%.

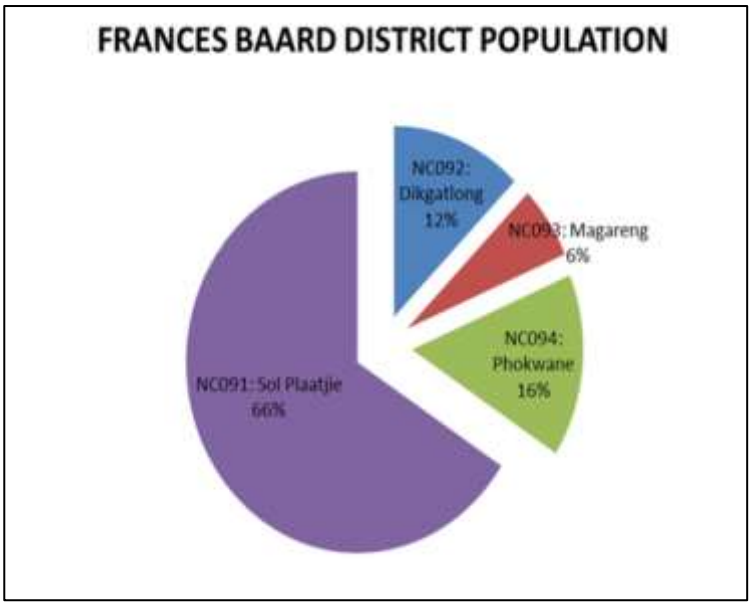


Figure 20. Frances Baard District Population. (Source: Community Survey, 2016).

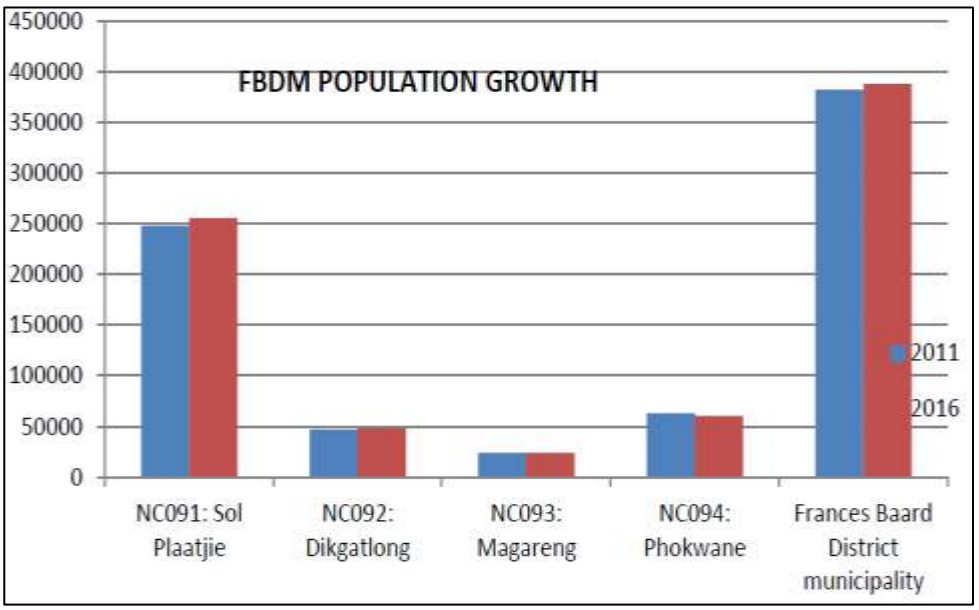


Figure 21. Population Growth (Source: Community Survey, 2016)

According to the 2016 community survey as depicted on figure 21 above, FBDM 's growth rate has increased by 1.5% since 2011 (382083 – 387741). A slight growth in Sol Plaatje Local Municipality (248037 -255351); and Dikgatlong Local Municipality (46839-48164). Followed by a decline in Phokwane Local Municipality (63000 – 60168); and Magareng Local Municipality (24207- 24059).
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.

The Sol Plaatje municipality is unique in the country reflecting the reality of the province. The spread of the population by race groups (Figure 22) shows a relatively large share of non-Africans in the total population, at 46% compared to 20% nationally. This implies that all race groups play an important role in shaping social relations.

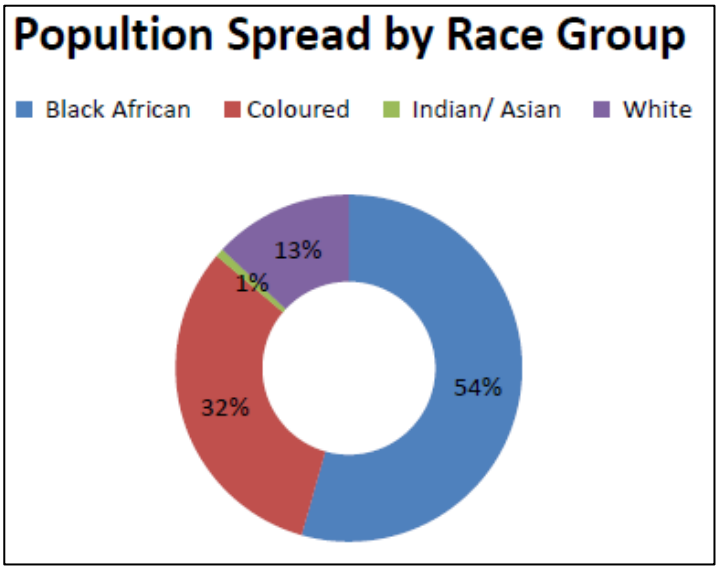


Figure 22. Population Spreas by Race Group for the Sol Plaatje Local Municipality (Source: Stats SA and Quantec).

Age & Gender Composition

The Age & Gender Profile of the local population is illustrated by Table 5. With regards to this profile, the following observations were made:

Table 5. Age Distribution (Source: Community Survey, 2016)

AGE	0 – 6	7 - 18	19 – 25	26 - 35	36 - 40	41 – 50	51 - 65	66 - 116
FBDM Actual	53847	83007	46632	58747	27374	44330	44794	29010
FBDM Age Distribution %	14%	21%	12%	15%	7%	11%	12%	7%
Sol Plaatje	34138	52640	31330	40449	18465	30341	29156	18831
Dikgatlong	6815	11438	5733	6572	3208	5236	5759	3402
Magareng	3414	5664	2962	2980	1572	2652	2685	2131
Phokwane	9480	13265	6607	8746	4129	6101	7193	4646

Based on table 5, the district population is fairly young with 69% of the population aged 40 years and younger. Those between the ages of 41 and 65 years account for 23% and only 7% of the population is of retirement age, i.e. 66 years and older.

Table 6. Age and Gender Distribution of the Dikgatlong Local Municipality (Source: Stats SA: Census 2011 (2016 Municipal Demarcations), Community Survey 2016).

Age	0-14		15-34		35-64		Older than 64		Total	
Gender	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%

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

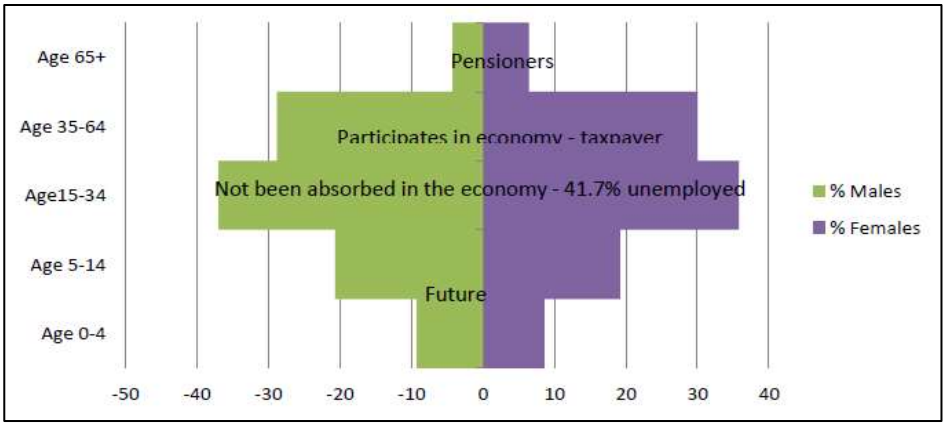


Figure 23. Age and Gender Distribution for the Sol Plaatje Municipality (Source: Stats SA and Quantec)

The age distribution indicates the presence of about two thirds (66.2%) of the population in the economic activity age groups. This bodes well for economic activity as this indicates a pool of labour available in the area however the low skills base needs to be taken into account.

HIV/AIDS Prevalence

In the IDP of the Frances Baard District Municipality, reference is made to the HIV/AIDS prevalence in the area. It indicates that the number one cause of death in 2015/2016 was HIV/AIDS. However, it was found that deaths caused by HIV/AIDS have decreased and the current disease responsible for the most deaths in the District is Tuberculosis (TB).

Water

Access to water is a constitutional right to everyone as stipulated by Section 27 (b) of the Constitution of South Africa 1996. Municipalities are mandated by amongst others the Municipal Structure Act 1998, the Municipal Structures Amendment Act 2000 and the Water Services Act 1999, to provide potable water to households within their areas of jurisdiction.

According to the Community survey 2016 by Statistics SA, it is estimated that about 5 493 households in the Frances Baard district have no access to water and about 16 317 households lack access to proper sanitation.

From the graph below (Figure 24) it is evident that a large number of households in the Dikgatlong Local Municipality 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.

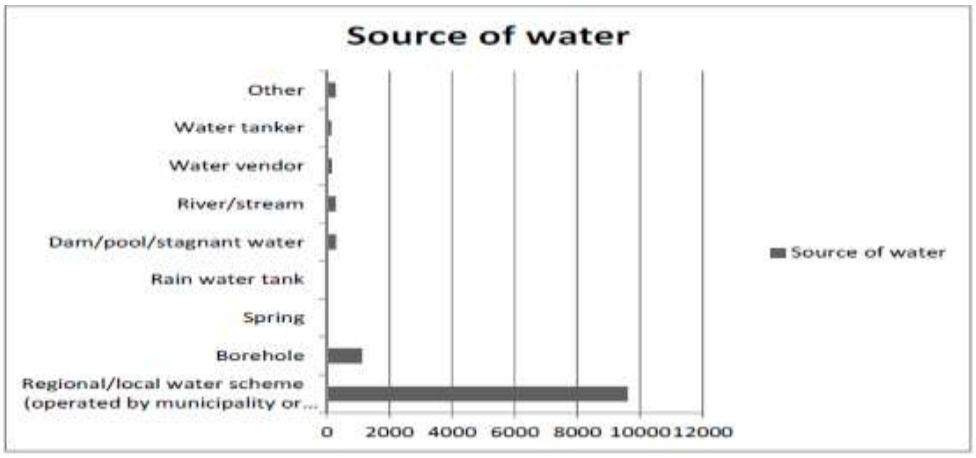


Figure 24. Sources of water in the Dikgatlong Local Municipality.

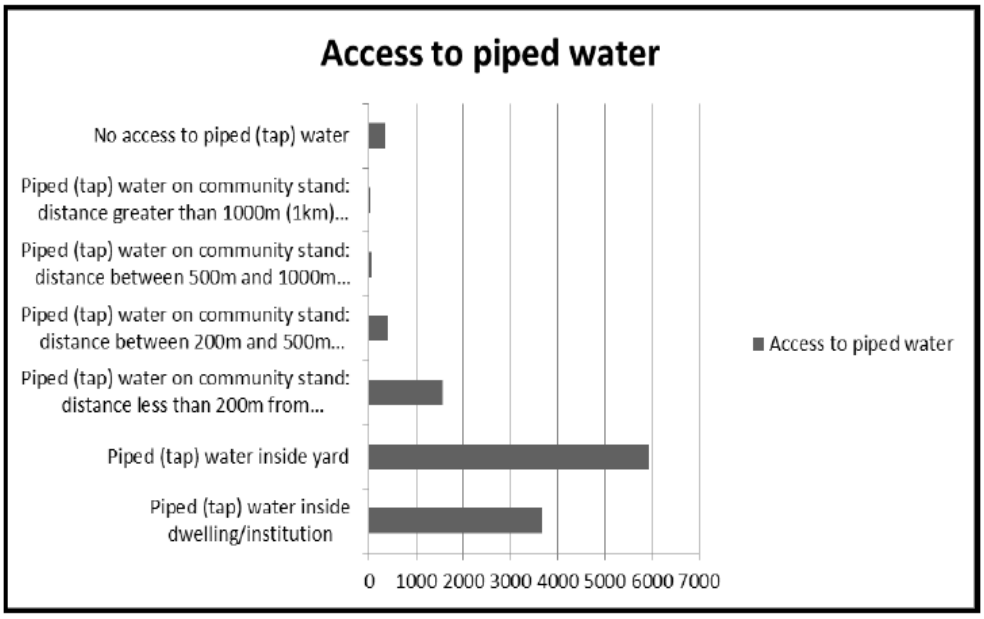


Figure 25. Access to piped water in the Dikgatlong Municipality.

The majority of household (5935) in the Dikgatlong Municipality have access to piped water inside their yard, followed by those who have access to piped water inside their dwelling (3670) (Figure 26). 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.

Municipal services are provided to both domestic and commercial users within the Sol Plaatje Local Municipality. The estimate of service points for commercial users is around 3000. This figure is low and is unable to perform cross subsidization. Attraction of investment in property development, industries and commerce is required to build the base of commercial or no-residential users of municipal trading services.

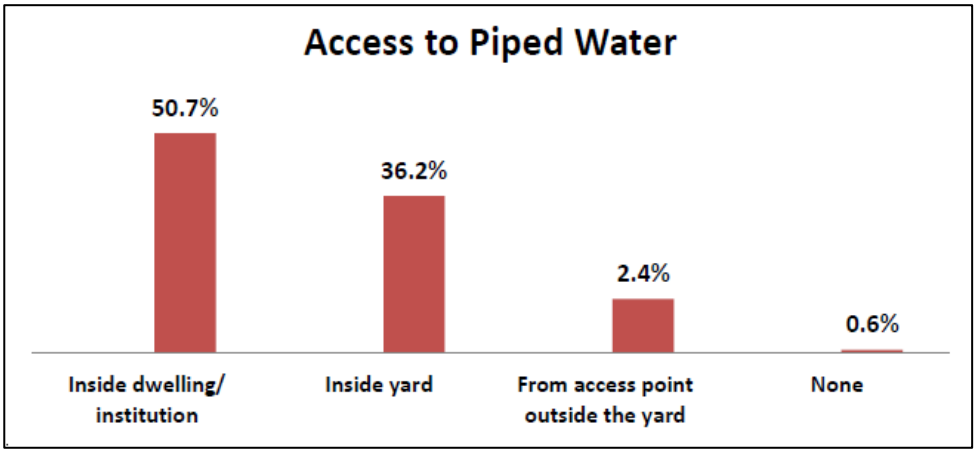


Figure 26. Access to pipe water in the Sol Plaatje Municipality. (Source: Stats SA and Quantec)

Sanitation

Sewerage and sanitation are basic needs of communities which can pose serious health and hygiene risks for communities and the environment at large if not properly managed and monitored.

According to the White Paper on Basic Household Sanitation, 2001, basic sanitation is defined as:
"The minimum acceptable basic level of sanitation is:

- Appropriate health and hygiene awareness and behaviour;
- A system for disposing of human excreta, household waste water and refuse, which is acceptable and affordable to the users, safe, hygienic and easily accessible and which does not have an unacceptable impact on the environmental; and
- A toilet facility for each household."

According to the Community survey 2016 by Statistics SA, it is estimated that about 16 317 households lack access to proper sanitation.

Within the Dikgatlong Municipality 13.72% of households do not have access to basic sanitation, while 1.84% still uses the bucket toilet. The 13.72% of none access, is higher that the Provincial one which is 8.04% of households with no access to basic sanitation. Council has started to address backlogs on sanitation with the implementation of Amaloo-loo and MUSA systems in all areas with buckets and where no sanitation system exists.

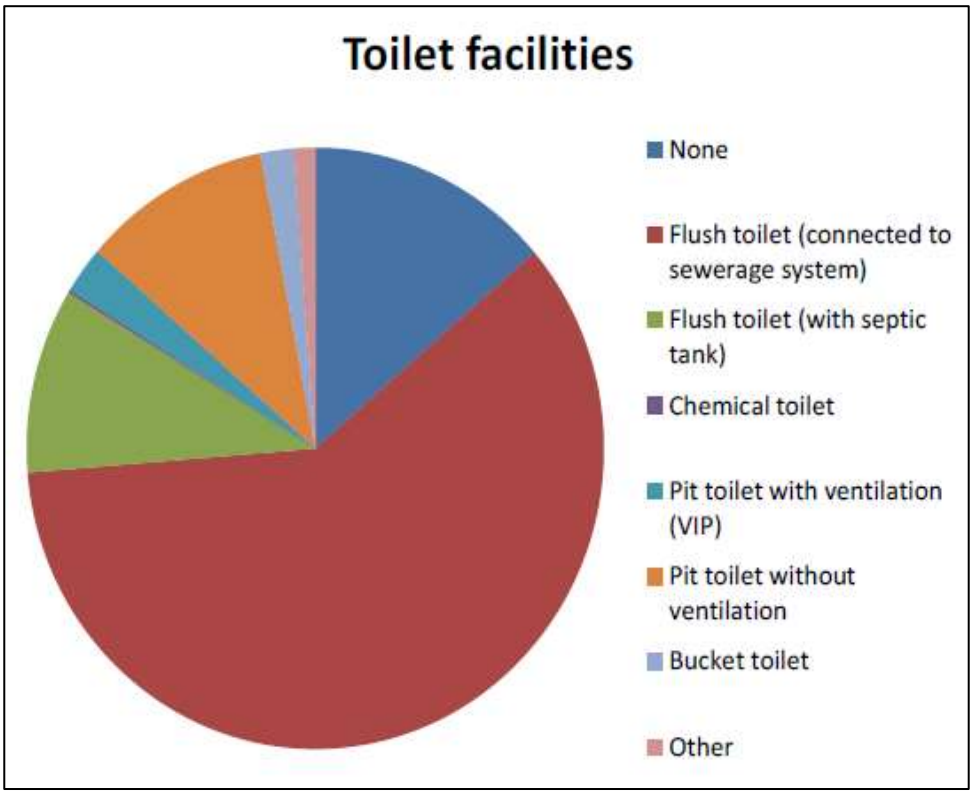


Figure 27. Toilet facilities in the Dikgatlong Municipality.

Within the Sol Plaatje Municipality 83.3% of households have access to flush toilets which is connected to sewage systems. Sanitation provision is dependent on land preparation and is linked to the formalisation of land and development. Pit (0.8%) and bucket (8.9%) latrines are more likely to be evident in informal dwellings. Only 4.5% of households have no access to sanitation facilities.

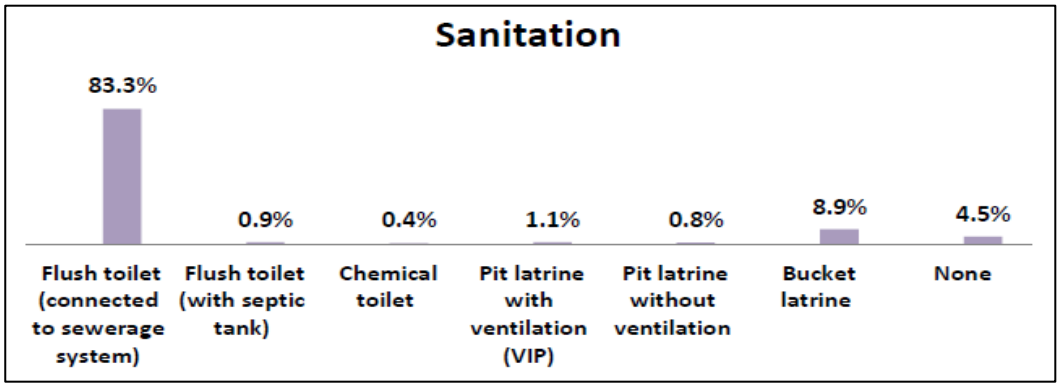


Figure 28. Sanitation facilities in the Sol Plaatje Municipality.

Refuse Removal

Proper waste management is important for sustainable development because if waste is not disposed of properly, it can cause environmental and health problems.

Table 7. Refuse removal in the France Baard District for Dikgatlong and Sol Plaatje (Source: Stats SA – Community Survey 2016)

District and local municipality	Removed by local authority/private company/ community members at least once a week		Removed by local authority/private company/ community members less often than once a week		Communal refuse dump		Communal container/ central collection point		Own refuse dump		Dump or leave rubbish anywhere (no rubbish disposal)		Other	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
DC9: Frances Baard	78 561	69,3	4 784	4,2	2 780	2,5	616	0,5	16 835	14,9	8 605	7,6	1 150	1,0
NC091: Sol Plaatje	59 526	82,7	1 538	2,1	1 605	2,2	537	0,7	3 373	4,7	4 526	6,3	834	1,2
NC092: Dikgatlong	3 529	23,8	1 774	12,0	280	1,9	41	0,3	7 190	48,5	1 783	12,0	226	1,5

Table 7 indicates the type of refuse removal in the Frances Baard District Municipality as well as the Dikgatlong and Sol Plaatje Local Municipalities. Within the Dikgatlong Municipality 23,8% of households have their refuse removed by a local authority at least once a week, while 48,5% 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. The other challenge confronting waste management is that all the landfill sites are not licensed and they are often vandalised. Waste

management are faced with serious challenges since the start of violent protests which resulted in the setting alight of service delivery vehicles and escalation of illegal dumping. According to the Community Survey conducted in 2016, 82.7% of households within the Sol Plaatje Municipality has their refuse removed at least once per week and 2.1% less often than a week by the local authority/private company/community members. 7,4% Of Households make use of either communal refuse dumps (2,2%), communal container (0,7%) or has their own refuse dumps (4,7%).

Electricity

In accordance with the Community survey 2016 over 92.7 % of the households in the Frances Baard district have access to electricity for lighting. This leaves a gap of 28 360 households, but with the recent completion of electricity master plans planning should improve.

The majority of household (75.86%) within the Dikgatlong Municipality 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.

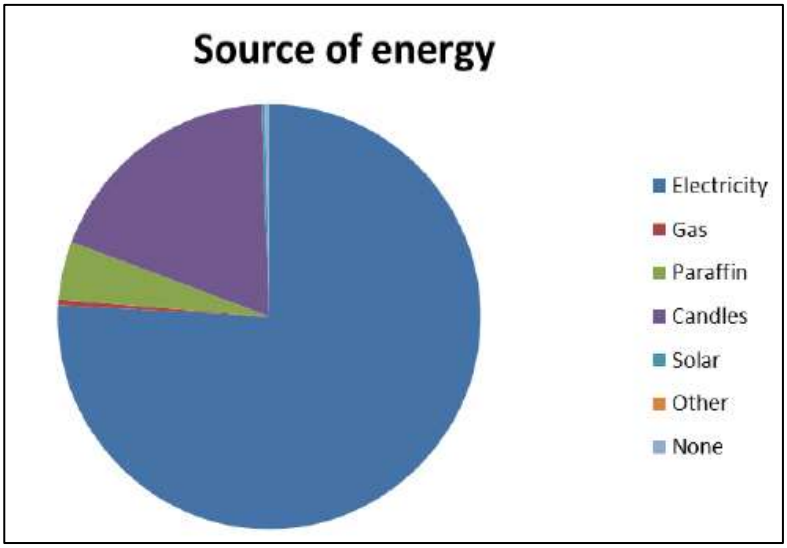


Figure 29. Source of energy for the Dikgatlong Municipality.

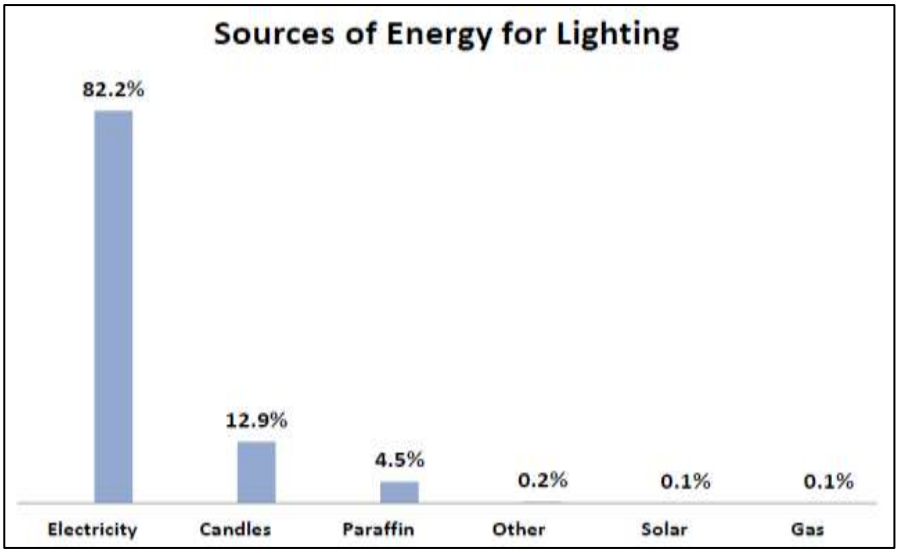


Figure 30. Sources of energy for the Sol Plaatje Municipality (Source: Stats SA and Quantec).

Electricity is used in 82,2% of households in the Sol Plaatje Municipality as a source of energy for light (Figure 3-12). Candles and paraffin are the second and third most sources of energy with 12,9% and 4,5% respectively. Very little use is made of other sources of energy including solar and gas sources.

Housing

Table 8 below indicates the form of dwellings in which the households within the Frances Baard District Municipality and the Sol Plaatje and Dikgatlong Local municipalities resides in.

Table 8. Distribution of households by type of main dwelling and municipality. (Source: Stats SA -Community Survey 2016)

	Formal dwelling		Traditional dwelling		Informal dwelling		Other	
District/municipality/province	N	%	N	%	N	%	N	%
DC9: Frances Baard	**94 869**	**83,7**	**294**	**0,3**	**17 660**	**15,6**	**508**	**0,4**
NC091: Sol Plaatje	61 793	85,9	129	0,2	9 829	13,7	188	0,3
NC092: Dikgatlong	11 255	75,9	117	0,8	3 204	21,6	248	1,7

According to table 8 75,9% of the households within the Dikgatlong Municipality resides in formal dwellings with 21,6% occupying informal dwellings. A total of 0,8% of households within the Dikatlong Municipality resides in traditional dwellings.

The households within the Sol Plaatje Municipality mostly resides in formal dwellings (85,9%) with only 13,7% occupying informal dwellings and 0,2 % residing in traditional dwellings.

Education

Education prepares individuals so that they are able to play an active role in the labour market, which directly affects their quality of life as well as the economy of a county and the area they live in. Through the education level, one can then understand the skills that an area has and its potential to contribute positively to the economy (Stats SA). According to the Community Survey of 2016, the District Comprises of large numbers of low levels of education. Table 9 indicates that 49,21% of the population of the Frances Baard District Municipality has an education level of between Grade 8 and Matric.

Table 9. Level of Education within the France Baard District Municipality.

Highest Level of Education	No of people	% of population
No schooling	55494	14.31%
Grade 0 - Grade 7/Standard 5/ABET 3	111538	28.77%
Grade 8/Standard 6/Form 1 - Grade 12/Standard 10/Form 5/Matric/NCV Level 4/ Occupational certificate NQF Level 3	190821	49.21%
NTC I/N1	203	0.05%
NTCII/N2	421	0.11%
NTCIII/N3	614	0.16%
N4/NTC 4/Occupational certificate NQF Level 5	1076	0.28%
N5/NTC 5/Occupational certificate NQF Level 5	506	0.13%
N6/NTC 6/Occupational certificate NQF Level 5	1275	0.33%
Certificate with less than Grade 12/Std 10	218	0.06%
Diploma with less than Grade 12/Std 10	285	0.07%
Higher/National/Advanced Certificate with Grade 12/Occupational certificate NQF	2109	0.54%
Diploma with Grade 12/Std 10/Occupational certificate NQF Level 6	5912	1.52%
Higher Diploma/Occupational certificate NQF Level 7	1675	0.43%
Post-Higher Diploma (Master's	1066	0.27%
Bachelor's degree/Occupational certificate NQF Level 7	5287	1.36%
Honours degree/Post-graduate diploma/Occupational certificate NQF Level 8	2612	0.67%
Master's/Professional Master's at NQF Level 9 degree	721	0.19%
PHD (Doctoral degree/Professional doctoral degree at NQF Level 10)	147	0.04%
Other	887	0.23%
Do not know	4569	1.18%
Unspecified	304	0.08%

Table 10. Total population older than 20 years with no schooling in 2011 and 2016 (Source: StatsSA: Census 2011 (2016 Municipal Demarcations), Community Survey 2016

	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%

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 Municipality 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. 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.

Table 11. Population older than 20 years with Grade 12 (Source: StatsSA: Census 2011 (2016 Municipal Demarcations), Community Survey 2016)

	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%

Table 12. Population older than 34 with Higher Education (Source: StatsSA: Census 2011 (2016 Municipal Demarcations), Community Survey 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%

Of the population, living in the Sol Plaatje Municipality, over 20 years, 30% have matric and higher education, while 10% indicate no schooling. The remaining 60% have some primary schooling and some secondary schooling. This will pose a serious problem for the future economic trajectory as skills will have to be built to suit the economic path and in the short-term skills will have to be brought in from skilled areas.

Unemployment

The unemployment rate of the district has also not been stagnant for the past five years. Based on the graph below (figure 31), since 2010, unemployment levels in the district have been increasing instead of

deteriorating. According to STATSSA: 2016, FBDM has an unemployment rate of 39.4%, whilst Phokwane (47.8%), Magareng (53.9%), Dikgatlong (44%) and Sol Plaatje (36.2%) are also characterized by such unemployment levels. FBDM, through its local economic development initiatives seek to address such issues and improve the state of unemployment levels in the district.

The number of those who are not economically active, within the Dikgatlong Municipality, 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) (Figure 32). 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. There is a need to have initiatives that make it easy for women to find employment

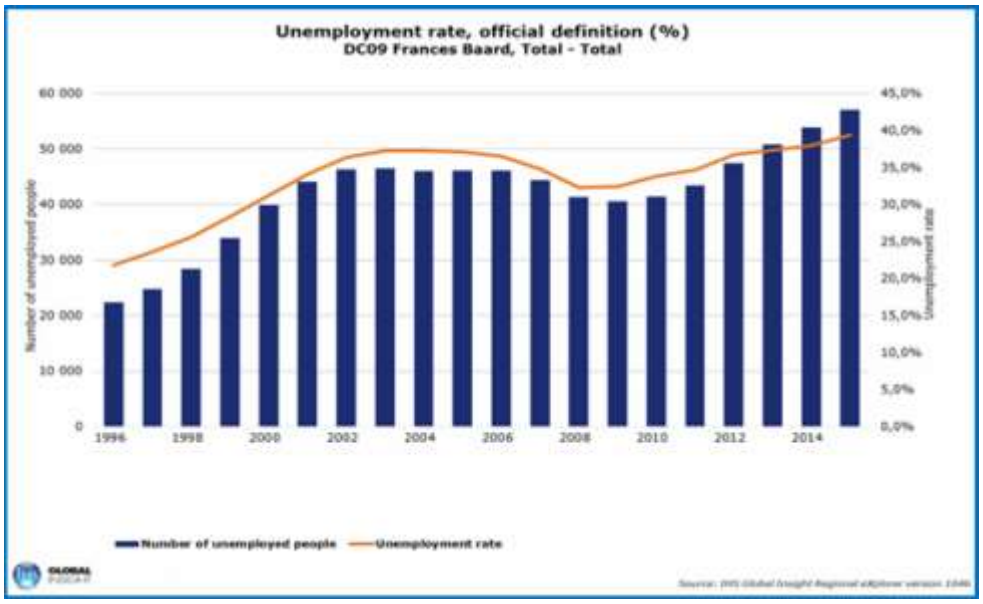


Figure 31. Unemployment rate of the Frances Baard District Municipality. (Source: Global Insight, 2016)

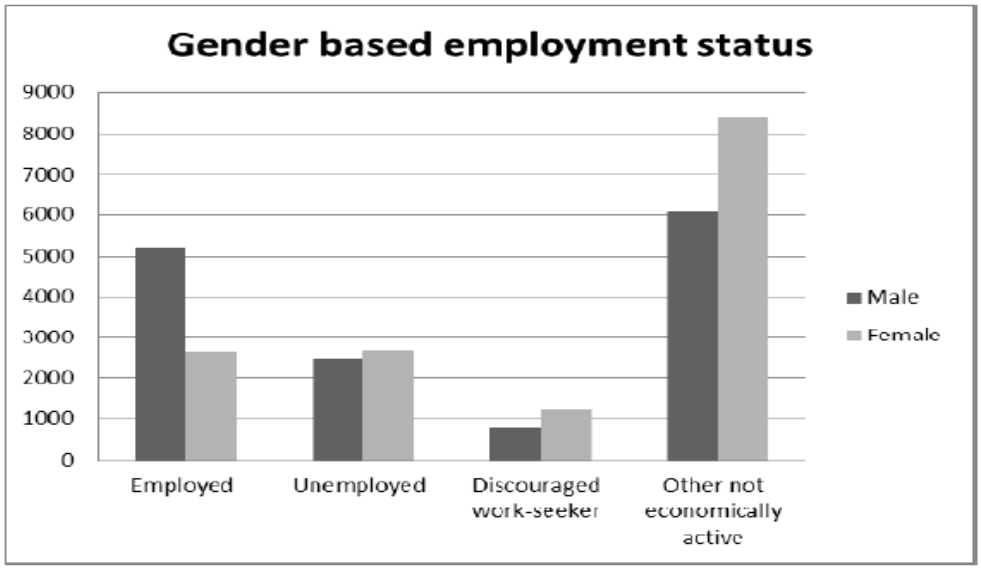


Figure 32. Employment status according to gender for the Dikgatlong Municipality.

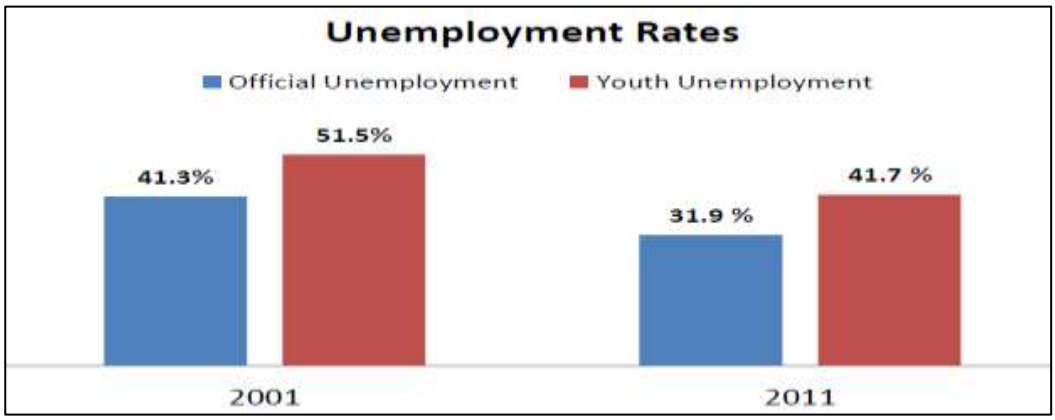


Figure 33. Unemployment Rates for the Sol Plaatje Municipality.

Of the economically active people in the Sol Plaatje Municipality, 31.9% are unemployed (narrow definition of unemployment) and 41.7% of the economically active youth (15 – 34 years) in the area are unemployed. Although the unemployment rates is high, it has decreased from 2001 to 2011.

Economic Analysis

FBDM has the strongest economic potential in the Northern Cape, accounting for 36% of the provincial GDP. The graph in figure 3-16 stipulates that the economy of the district consists of the primary sector (14%) (agriculture and mining), secondary sector (9%) (Manufacturing, electricity and construction) and tertiary sector (77%) (Trade, transport, financial and social services).

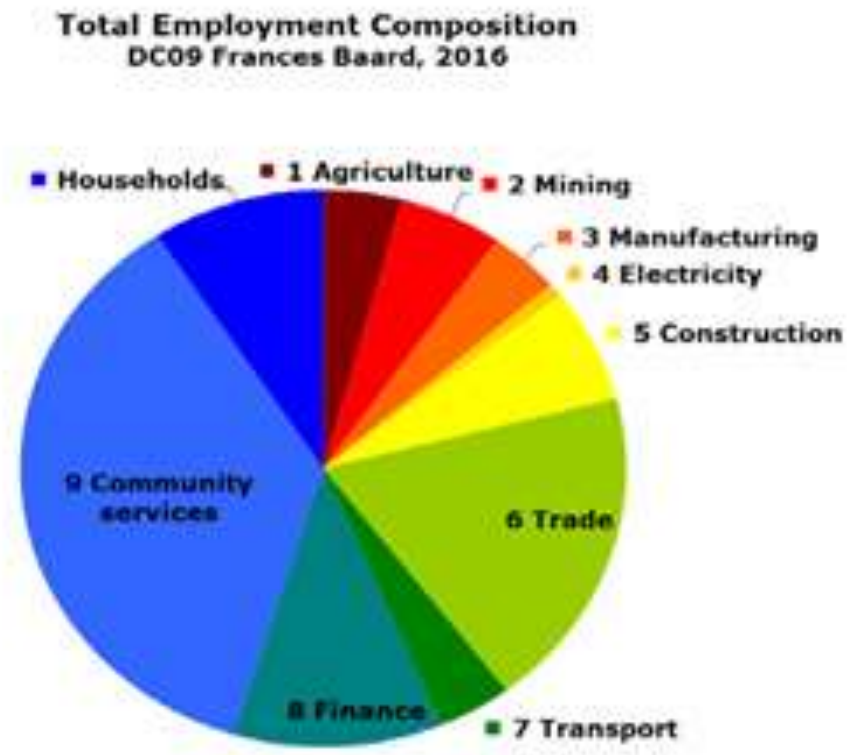


Figure 34. Total employment Composition of the Frances Baard District Municipality.

Local government has a responsibility to create an enabling environment for economic growth and job creation. The Dikgatlong Local Municipality, has adopted a LED Strategy, to assist it in creating those necessary conditions. As the municipality acknowledges the role that the informal economy is playing in its local area, it is in the process of drafting an Informal trading policy to regulate, in a developmental way, the operation of the informal economy.

The formal sector employs 17.73% of employment people while the informal economy has employed 4.29%. The role of the informal economy cannot be underestimated, as it provides those who are unskilled an opportunity to create livelihood for themselves. Dikgatlong Local Municipality acknowledges and appreciated the positive contribution that the informal economy plays in its municipal area and local economic growth. People who work in private households as domestic workers, gardeners, drivers and child minders for individual homes accounts for 3.32% of employable people.

Tourism is one of the key area that drives growth in the Province this is also true for the Dikgatlong Municipality. There is currently a proposed alluvial diamond hiking trail. There is also a need for SAHRA to work with the municipality to see how best to utilise the heritage sites, so that they can make a contribution to the economy of the municipality.

The Sol Plaatje area has a relatively small and somewhat insignificant contribution to the national gross domestic product but has a special place in the provincial economy (Figure 3-17). Sol Plaatje municipality makes up 24% of the share of the provincial economy. The share of Sol Plaatje is estimated at R16.5 billion. This makes up 76% of the contribution of the Frances Baard District to the national economy. Growth rates have been low estimated at 0.6% over the period 1995 to 2013. With the downward turn in the national economy it is likely that this figure would have dropped to between 0.5% and 0.4%.

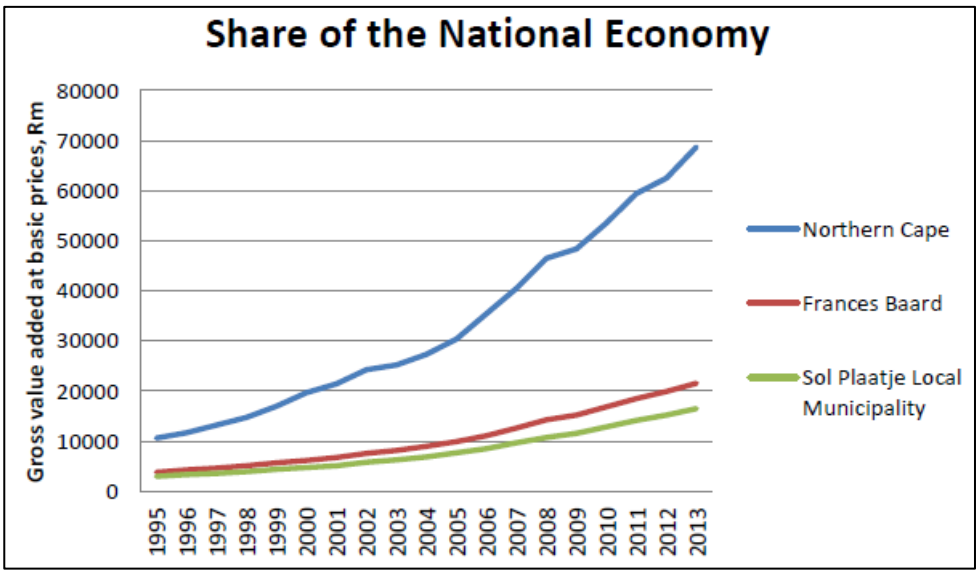


Figure 35. Contribution of Sol Plaatje to National Economy (Source: Quantec)

There has not been a strong replacement and anchor for the dwindling mining sector, which through its diamond trading over 100 years ago, led to the establishment of a stock exchange in Kimberley. Manufacturing which is spurned from mining has a small presence in the area.

The local economy has strong competition from smaller centres such as Upington, which despite its smaller size, may also take the place of Kimberley as a regional service provider. Sol Plaatje's role as primary service provider for the broader region is also challenged by Bloemfontein (located 170km to the east), which offers a more diverse range of functions and services. This overlap is due largely to Kimberley's location related to the discovery of diamonds in the area rather than its role as a regional service centre (which may have seen it situated in a more "logically'). Its position in a less than central location within the province means that areas within the Northern Cape might in fact bear a stronger relationship to Cape Town as a place for high order services.

Tourism has potential to become the anchor however a massive programme to uplift the area, to modernise and globalise the city to attract and retain tourists' interests will be required to reap benefits. Another trigger to the economy could be the Integrated Human Settlements programme of national government and the province. The

Northern Cape does not have local distribution points for building materials, bricks and cement. The city is well placed to be become the regional service provider.

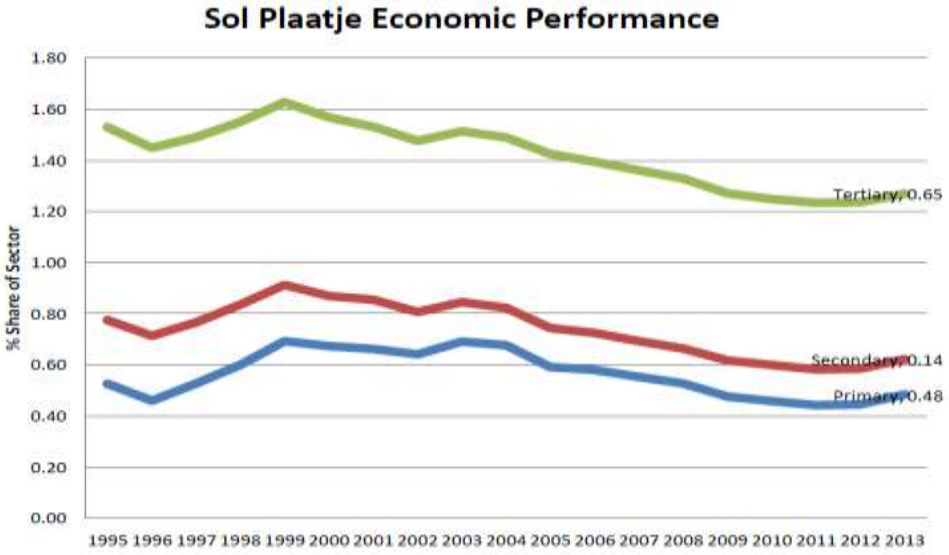


Figure 36. Economic performance of the three economic sectors in the local economy (Source: Quantec)

A closer view of the performance of the local economy, reveals that the tertiary sector, wherein tourism and trade are counted, has a higher performance rate.

All three sectors of the economy show a downward path of decline. Kimberley fulfils the role of provincial capital and thus forms a hub for a range of government services. The provincial government and district municipal offices are both located in the Kimberley and form an important employer and contributor to the need for services. This explains the higher share in the tertiary sector of the economy.

A large part of the employment opportunities in the area were created by the manufacturing sector, especially through the manufacturing of herb beer, jewellery, sheep and leather clothing and dried fruit. Manufacturing could still be stimulated particularly on agro-processing activities, mineral beneficiation including clay, brick and jewellery.

Agricultural production covers: Ground Nut, Cotton, Wheat, Soybeans, Grapes and Lucerne. Many of the products, which are currently produced in the Sol Plaatje municipality, are not processed locally. Linked to the possible development of the agricultural sector, there is the potential to develop the agro-processing sector including meat, fruits and vegetables, oil extraction, leather, muesli and muesli by-products. This sector could be stimulated with a focus on new technological practices (which incorporate labour intensive practices) including organic farming, biotechnology and hydroponics. The focus is

both on intensive agriculture (crops) as well as livestock and game farming (meat). Spatially, farming will occur within the rural areas of the municipality. A key imperative is to encourage new start ups although barriers to entry may include land ownership issues.

Key economic activities

The Northern Cape economy is anchored by the primary sector specifically the mining industry with the primary sector contributing 32.6%, secondary 6.2% and the tertiary sector 49.8% (Statistics SA: GP p0441: 2010). Although the tertiary sector contributes almost 50%, the mining industry alone contributes 24.6% to the provincial value addition. Northern Cape recorded an average real annual economic growth rate of 2.5% between 1996 and 2007. Average real annual economic growth rate of South Africa for the same period (1996 to 2007) was 3.6%.

(15) *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 rememberance.
6. **Archaeological and palaeontolocial sites.**
7. Graves and burial sites.
8. Lake areas, offshore islands and the admirality 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.

The relevant specialists will be appointed to assess whether there are any sensitive landscapes within the applicationa area.

(b) Description of the Current Land Use

(1) *Land Use before Mining:*

The application area is used for game farming and grazing at the moment.

(2) Evidence of Disturbance:-

The area is part of historical mining.

(1) Existing Structures:-

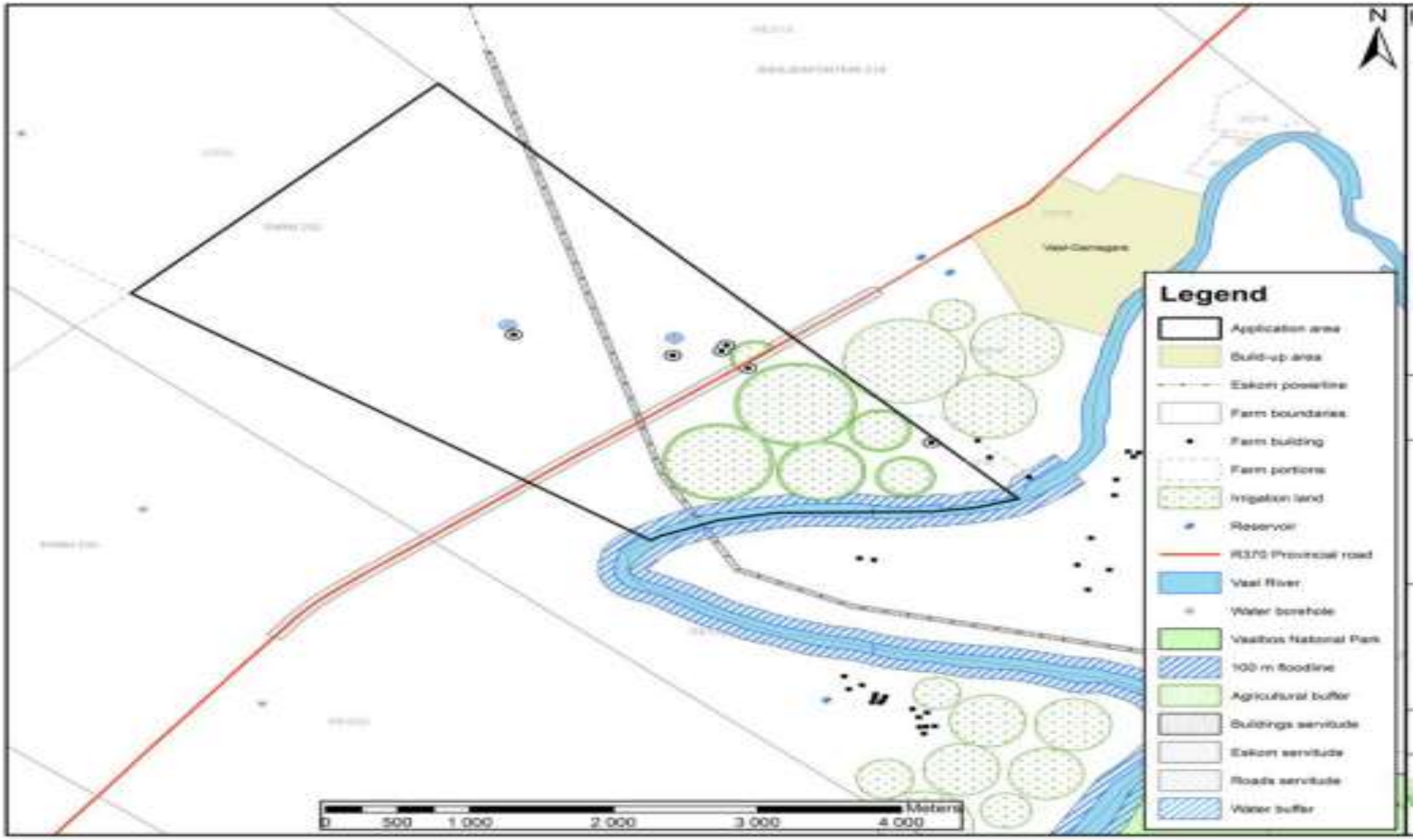
The only structures close to the application area is the farm house and infrastructure for watering of the animals.
All 100m safety borders from formal infrastructure will be kept.

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

The infrastructure on site comprehensively discussed in section d(ii) as part of the mining methodology discussion, as well as in section g as part of the mine footprint description. Furthermore, a comprehensive description of the environment was presented in section (i) as part of the baseline report.

(d) Environmental and current land use map

(Show all environmental, and current land use features)



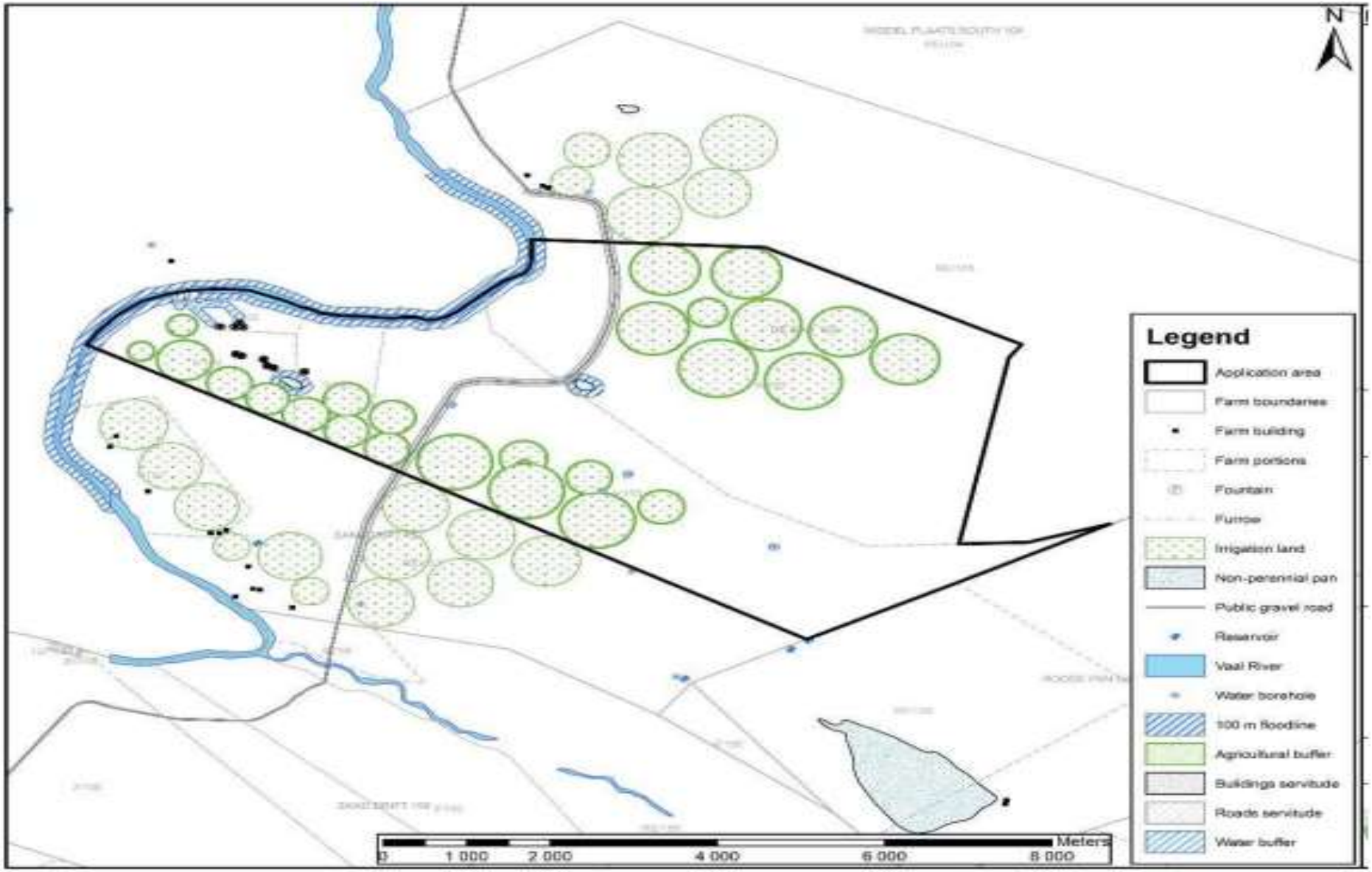


Figure 37. Environmental and current land use map

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.)

Nature of Impact	Significance	Probability	Duration
Sterilisation of mineral resources.	Very low	Highly unlikely	Decommissioning
Changes to surface topography due to topsoil removal, alluvial mining, placement of infrastructure and development of residue deposits.	Low to Medium	Certain	Long Term Life of operation
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
Loss of land capability through topsoil removal, disturbances and loss of soil fertility.	Very low	Possible	Short term
Loss of land use due to poor placement of surface infrastructure and ineffective rehabilitation.	Very low	Possible	Short term
Pollution of underground water sources.	Low	Possible	Long Term Residual
Deterioration of water resources through alluvial mining.	Medium to High	Possible	Long Term Residual
Deterioration in water quality through spillages and runoff from sites.	Medium to high	Possible	Long Term Life of operation
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
Proliferation of alien invasive plants species.	Low to Medium	Possible	Long Term Residual
Displacement of faunal species.	Low	Possible	Long Term Life of operation
The loss, damage and fragmentation of floral and faunal habitats; potential loss of ecosystem function.	Low to Medium	Certain	Long Term Residual
Sources of atmospheric emission associated with the mining operation are likely to include fugitive dust from materials handling operations, wind erosion of stockpiles and vehicle entrainment of road dust.	Low	Certain	Life of Operation Decommissioning
Increase in continuous noise levels; the disruption of current ambient noise levels; and the disruption of sensitive	Low to medium	Certain	Long Term Life of Operation

receptors by means of increased noise and vibration.			
Visual impact of the mine infrastructure, slimes dams and visibility of dust.	Medium to Low	Certain	Life of Operation Decommissioning
Potential negative impacts on traffic safety and deterioration of the existing road networks.	Low	Possible	Life of Operation Decommissioning
The deterioration of sites of cultural and heritage importance.	Low	Possible	Life of Operation
Loss of agricultural/grazing 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 site closure.	Low to Medium	Certain	Short-term and Closure
Loss of trust and a good standing relationship with the IAPs.	Low to medium	Possible	Life of Operation Decommissioning
Positive socio-economic impacts during operation, upliftment of previously disadvantaged communities.	Medium to high	Certain	Life of Operation Decommissioning to residual

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

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

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**
  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. The 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 unusuable 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 the 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 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: 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 dumping of materials prior to approval by the mine manager.

Topography

Level of risk: Low to Medium

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: Low to Medium

Mitigation measures

- At no point may plant cover be removed within the no-development zones.
- 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.

- The run-off from the exposed ground should be controlled with the careful placement of flow retarding barriers.
- The soil that is excavated during construction should be stock-piled in layers and protected by berms to prevent erosion.
- All stockpiles must 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 area and not in any storm water run-off channels or any 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 the eroded areas, must occur.
- Rehabilitation of the erosion channels and gullies.
- 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: 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.

Land Capability and Land Use

Level of risk: Medium to High

Mitigation measures

- Ensure that optimal use is made of the available land through consultation with land owner and 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.
- Ensure that land which is not used during construction is made available for grazing.

Groundwater

Level of risk: 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: Low to Medium

Mitigation measures

- Sufficient care must be taken when handling hazardous materials to prevent pollution.
- Under no circumstances may ablutions occur outside the provided facilities.
- If servicing and washing of the vehicls occur on site, there must be specific areas constructed for these activities, which must have concrete foundations, bunding as well as oil traps 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 an approved waste site.
- Spill kits must be easily accessible and workers must undergo induction regarding the use thereof.
- At all times care should be taken not to contaminate surface water resources.
- Store all litter carefully to prevent it from washing away or blown into any of the drainage channels or Kamfersdam within the area.
- Provide bins for staff at appropriate locations, particularly where food is consumed.
- The mining site should be cleared daily and litter removed.

- Conduct ongoing staff awareness programmes in order to reinforce the need to avoid littering, which contributes to surface water pollution.

Indigenous Flora

Level of risk: Low to Medium

Mitigation measures

- Minimise the footprint of transformation.
- Encourage proper rehabilitaiton of mined areas.
- 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 of destruction by 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.

All Invasive Plants

Level of risk: Low to Medium

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: Low to Medium

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.
- The extent of the mine should be demarcated on site layout plans, and no construction personnel or vehicles may leave the demarcated area except those authorised to do so. Those areas surrounding the mine site that are not part of the demarcated development area should be considered as a no go zone for employees, machinery or even visitors.
- 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 to Medium

Mitigation measures

- Mining activities must be planned, where possible in order to encourage faunal dispersal and should minimise dissection or fragmentaton 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: 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 dimoand 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: Low to Medium

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 events.
- 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: Low

Mitigation measures

- Infrastructure should be placed to optimise the natural screening capacity of the vegetation.
- Where practical, protect existing vegetation clumps during 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 unsightly elements.
- Dust suppression procedures should be implemented especially on windy days during earth works.

- 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: Low

Mitigation measures

- Implement measures that ensure the adherence to traffic rules.

Heritage Resources

Level of risk: Low

Mitigation measures

- The heritage if any is encountered and cultural resources (e.g. graveyards, ruins, historic structures, etc.) must be protected and preserved by the delination of no go zones.
- Intact bedrock strata should be avoided during mining of terrace gravels where possible.
- Stone tools should be avoided where possible and fresh exposure 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 to medium

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.
- Commitments as set out in the SLP must be attained.

Interested and Affected Parties

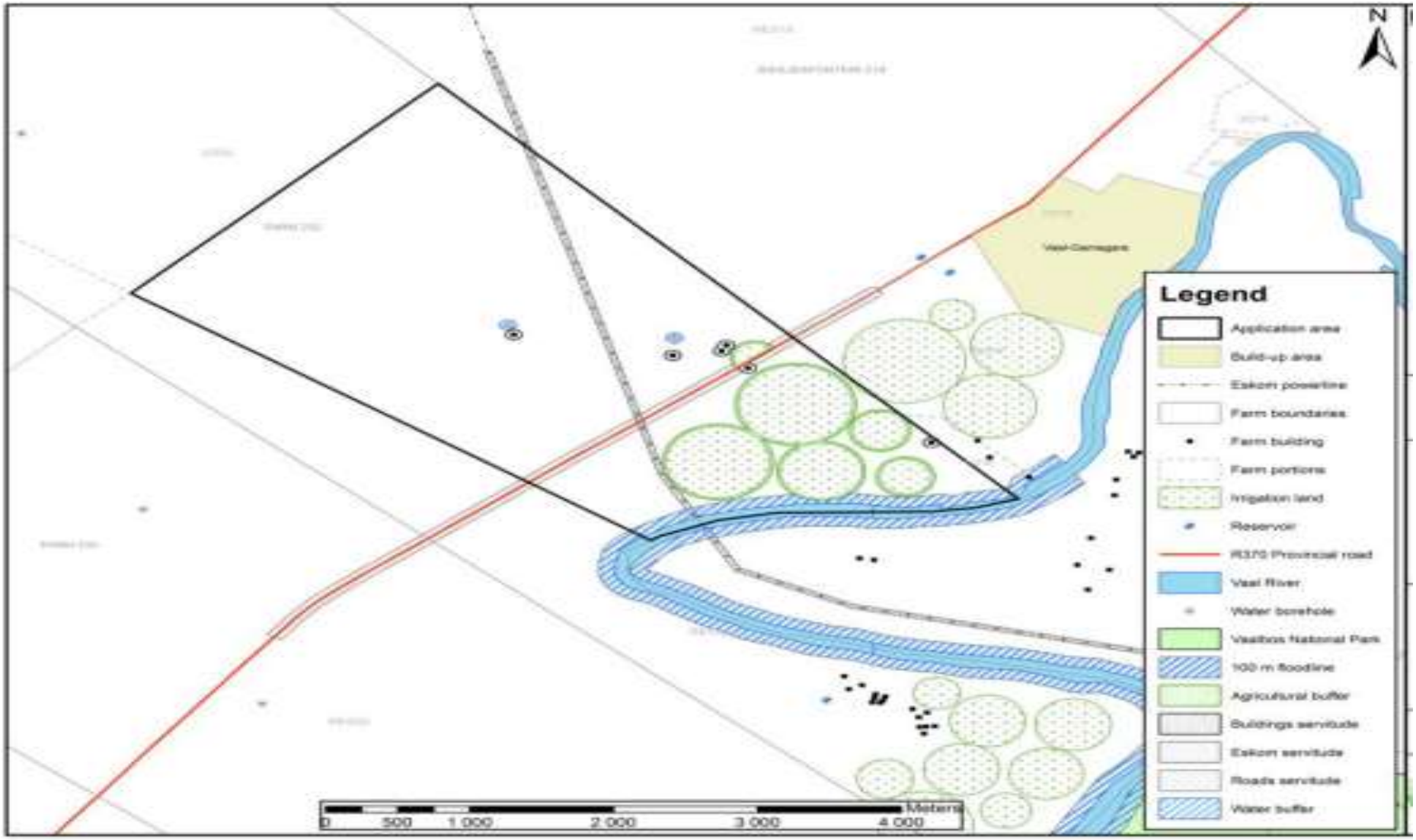
Level of risk: Very low

Mitigation measures

- Maintain active communications 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)



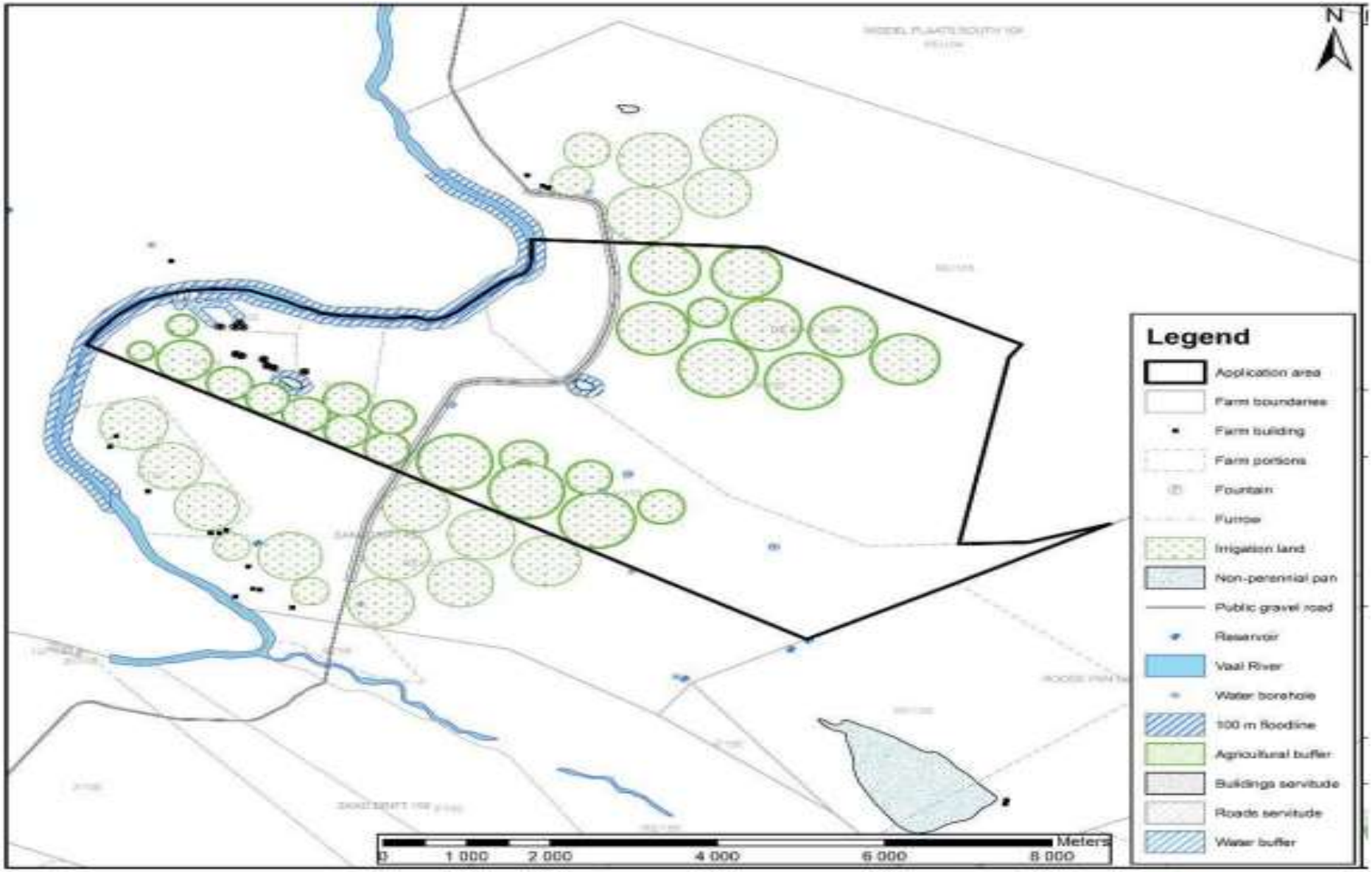


Figure 38. Final site layout plan

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 motivating 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 that was .

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 will be 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.

- **No-go option:**
  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 one of the economically beneficial options for the areas.

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 economical 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, dicard dumps or dams, water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control berms, roads, pipelines, powerlines, conveyers, 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 blocks have been excavated.

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: Stormwaterdam / 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;

(ii) Description of aspects to be assessed by specialists:

The application area is next to the Vaal River. The neccesarry water studies (wetland and surface water with the ecological studies will be conducted as well as heritage and palaentological studies will be done.

(iii) 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.

(iv) 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.

(v) 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.

(vi) Particulars of the public participation process with regard to the Impact Assessment process that will 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 24 January 2022. Attached to each of these letters was a Draft Scoping report, containing information relating to the proposed project for comments.
A newspaper advert will be placed in the DFA local newspaper on 28 January 2022.

Notices were placed at the entrances to the farms and along the fence line and in the library in Barkly-West.

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:

(Describe the process to be 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 and record of such consultation will be required in the EIA at a later stage.)

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.
- 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.
- Environmental documents will be sent to all registered IAPs and this documentation (Scoping, EMP and EMPR) will be made available in public libraries.
- 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:

(Information to be provided must include the initial site plan and sufficient detail of the intended operation and the typical impacts of each activity, to enable them to assess what impact the activities will have on them or on the use of their land.)

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).

(vii) 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 made the following evaluation criteria need to be described

Table 13. 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 14. Explanation of EXTENT 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 Dikgatlong and Sol Plaatje area
4	Regional/District	Direct and Indirect impacts affecting environmental elements within District (Barkly-Wes and Kimberley District)
5	Provincial	Direct and Indirect impacts affecting environmental elements in the Northern Cape Province

Table 15. 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 16. Explanation of SEVERITY of the impact

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:

(Severity + Extent + Duration) x 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 17.

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.

(viii) 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 suppy dams and boreholes, accommodation, offices, ablution, stores, workshops, processing lant, 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	• Soil contamination • Groundwater contamination • Odours	• Maintenance of chemical toilets on regular basis. • Removal of containers upon closure.	Very low
Clean & Dirty water system	• Surface disturbance • Groundwater contamination • Soil contamination • Surface water contamination	• Maintenance of berms and trenches. • Oil traps used in relevant areas. • Drip trays used. • Immediately clean hydrocarbon spill.	Low/Medium
Diesel tanks	• Groundwater contamination • Removal and disturbance of vegetation cover and natural habitat of fauna • Soil contamination • Surface disturbance	• 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	• Dust • Possible Groundwater contamination • Noise • Removal and disturbance of vegetation cover and natural habitat of fauna • Soil contamination	• Access control • Dust control and monitoring • Groundwater quality monitoring • Noise control and monitoring • Continuous rehabilitation • Stormwater run-off control • Immediately clean hydrocarbon spill • Drip trays	Medium

	• Surface disturbance • Surface water contamination	• Erosion control	
Generators	• Groundwater contamination • Noise • Removal and disturbance of vegetation cover and natural habitat of fauna • Soil contamination • Surface disturbance	• Access control • Maintenance of generator and bund walls • Noise control and monitoring • Oil traps • Groundwater quality monitoring • Immediately clean hydrocarbon spill	Medium
Office – Pre-fabricated office blocks on concrete	• Removal and disturbance of vegetation cover and natural habitat of fauna • Soil contamination • Surface disturbance	• Immediately clean hydrocarbon spill • Rip disturbed areas to allow re-growth of vegetation cover	Very low
Parking bay	• Dust • Groundwater contamination • Noise • Removal and disturbance of vegetation cover and natural habitat of fauna • Surface disturbance	• 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	• Dust • Noise • Groundwater contamination • Removal and disturbance of vegetation cover and natural habitat of fauna • Soil contamination • Surface disturbance	• Access control • Maintenance of processing plant • Dust control and monitoring • Groundwater quality and level 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	Medium
Water distribution Pipeline	• Surface disturbance • Possible Groundwater contamination	• Maintenance of pipes.	Low

	• Soil contamination • Surface water contamination		
Roads	• Dust • Possible Groundwater contamination • Noise • Removal and disturbance of vegetation cover and natural habitat of fauna • Surface disturbance	• 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	• Possible Groundwater contamination • Removal and disturbance of vegetation cover and natural habitat of fauna • Soil contamination • Surface disturbance • Surface water contamination	• Access control • Maintenance of fence. • Stormwater run-off control • Immediately clean hydrocarbon spill	Low
Stockpile area	• Dust • Possible Groundwater contamination • Noise • Removal and disturbance of vegetation cover and natural habitat of fauna • Surface disturbance	• 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
Topsoil storage area	• Dust • Removal and disturbance of vegetation cover and natural habitat of fauna • Soil disturbance • Surface disturbance	• 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	• Groundwater contamination	• Storage of waste within receptacles	Low

	• Surface water contamination	• Storage of hazardous waste on concrete floor with bund wall • Removal of waste on regular intervals.	
Mine Residue Deposit – Slimes	• Dust • Possible Groundwater contamination • Noise • Removal and disturbance of vegetation cover and natural habitat of fauna • Surface disturbance	• 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
Washbay	• Possible Groundwater contamination Removal and disturbance of vegetation cover and natural habitat of fauna • Soil contamination	• 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.	• Vaal river water and usage • Surface disturbance	• Monitor water quality and quantity • Maintenance of tanks (check for leaks).	Low

(ix) Other information required by the Competent Authority:

1. 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:-

a. 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 parson including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim, attach the investigation report as Appendix '7' 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.

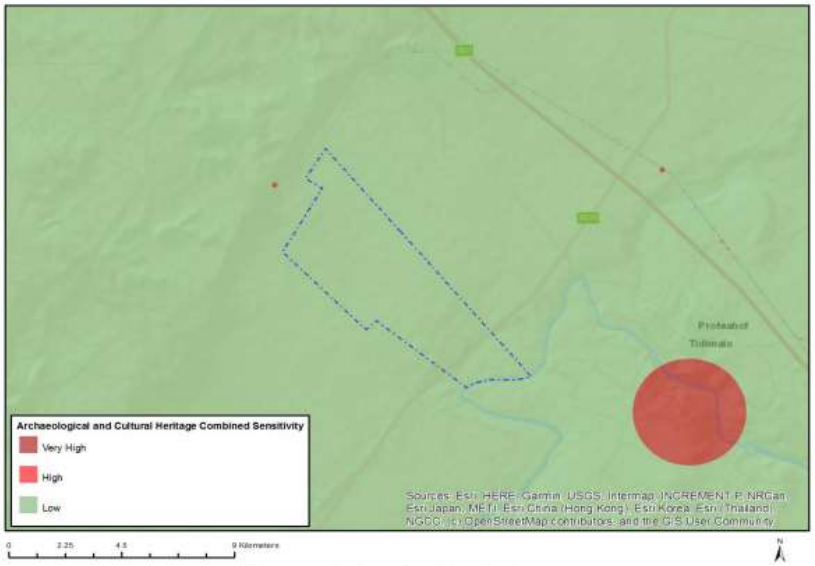
b. Impact on any national estate referred to in Section 3(2) of the National Heritage Resources Act:

(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 25 of 1999) with the exception of the national estate contemplated in Section 3(2)(i)(vi) and (vii) of that Act, attach the investigation report as Appendix '8' and confirm that the applicable mitigation is reflected in 2.5.3, 2.11.6 and 2.12 herein.)

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

During Screening the Last Hope site was indicated as Low for Archaeological and Culture Heritage theme and High sensitivity on Palaeontology.

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY

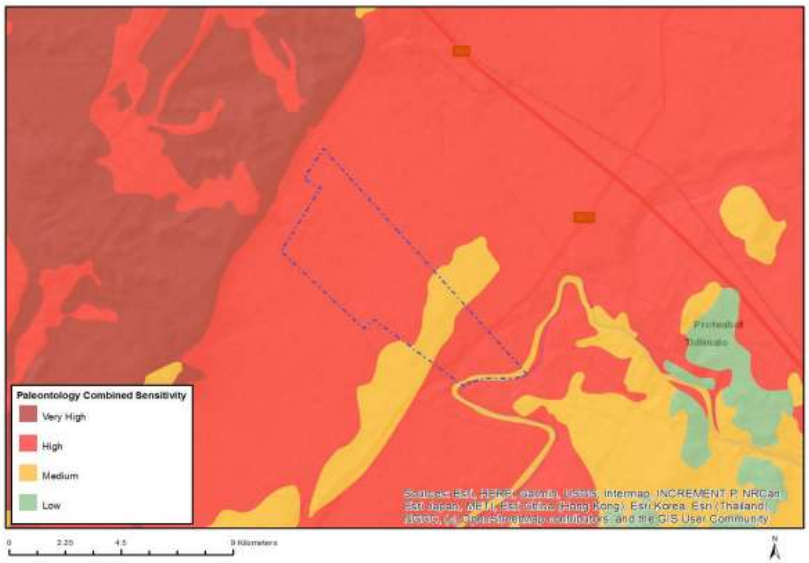


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY



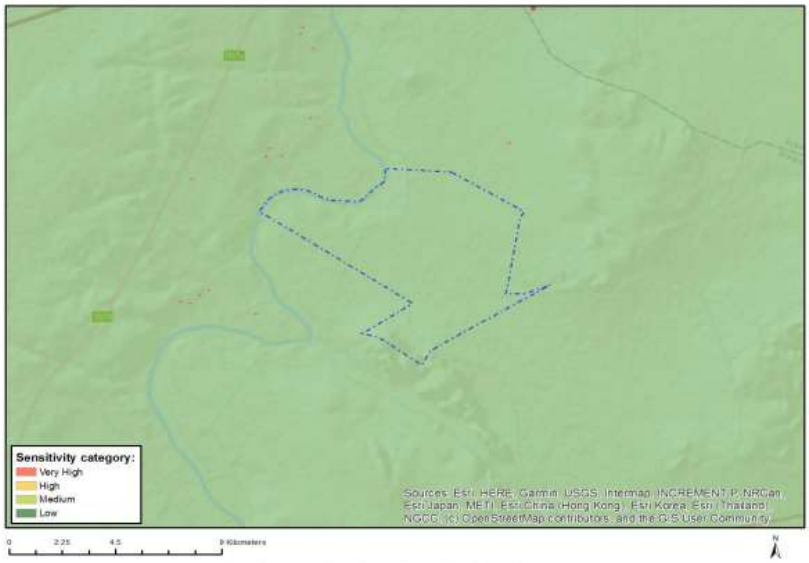
Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Features with a High paleontological sensitivity
Medium	Features with a Medium paleontological sensitivity

During Screening the De Bad site was indicated as Low for Archaeological and Culture Heritage theme and High sensitivity on Palaeontology.

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY

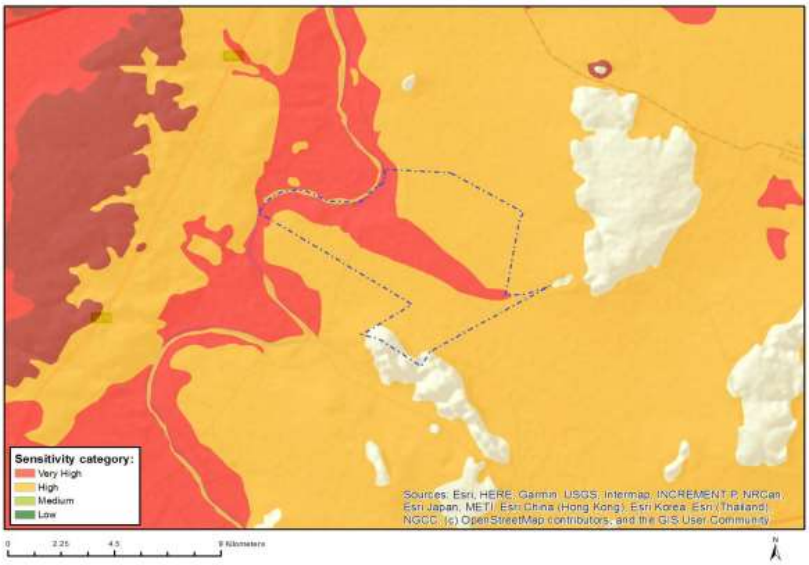


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Features with a High paleontological sensitivity
Medium	Features with a Medium paleontological sensitivity

(x) 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 details, 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 '9'.)

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.

Site selection of the mining areas was guided by:

- Comments received during the consultation process during prospecting,
- Geological investigation / Bulk sampling results,
- Current land use,
- Proximity to historical mining sites,
- Proximity to the Vaal River,
- Proximity to receptors,
- Proximity to infrastructure and
- Natural undisturbed areas.
- Careful consideration has been given to current land use. Alternative sites located on active farming lands have been excluded.

The mining operation will provide ±46 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.

(xi) 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 EAP
Date: 21 January 2022

(xii) 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 EAP
Date: 21 January 2022

- END –