mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

Final
ENVIRONMENTAL IMPACT ASSESSMENT REPORT
AND
ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

MINING RIGHT & WASTE MANAGEMENT LICENCE

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:	Prime Spot Trading 11 (Pty) Ltd
TEL NO:	+27 16 421 3820
FAX NO:	+27 16 421 1454
POSTAL ADDRESS:	P.O. Box 364, Vereeniging, 1930
PHYSICAL ADDRESS:	Portion 59 (previously a ptn of ptn 1) of the Farm Vischgat 467 IR – Covering 95.7740 Hectares
FILE REFERENCE NO. SAMRAD:	GP 30/5/1/2/2/**10049** MR
MINERALS:	RM – Aggregate - I M - Dimension Stone(General) - M St - Stone Aggregate; Gravel- I
MINING METHOD:	Opencast

REPORT NUMBER: PRI-VIS_007-17 – Final

DATE: July 2017

REPORT COMPILED BY: Andrew Nicholson

Umhlaba Environmental Consulting CC

Tell: (011) 791 3389
Fax: (011) 791 3384
E-mail: info@umhlaba.co.za

P.O. Box 731504
Fairland, 2030

ACKNOWLEDGEMENTS: Umhlaba would like to acknowledge the following people who assisted in providing the information required for the compilation of the report:

- NF Van Tonder
- Specialist
- All registered interested and affected parties

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

Abbreviations	Definition
CV	Curriculum Vitae
dBA	A-weighted decibel
DMR	Department of Mineral Resources
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
EIA	Environmental impact assessment
EIAr	Environmental Impact Assessment Report
EIR	Environmental impact report
EMPr	Environmental Management Programme Report
GN	General Notice
Ha	Hectares
I&APs	Interested and/or affected parties
MPRDA	Mineral and Petroleum Resources Development Act
NEMA	National Environmental Management Act
Prime Spot	Prime Spot Trading 11 (Pty) Ltd
SACNSP	South African Council for Natural Scientific Professionals
SANS	South African National Standards
WULA	Water Use License Application

Abbreviations for various legislation considered – used in the management table

Abbreviation	Legislation
CSA	Constitution of South Africa
NEMA	National Environmental Management Act, Act 107 of 1998 (as amended)
EIA Regs 2014	**NEMA**: Environmental Impact Assessment Regulations; Listing Notices 1, 2 and 3: (GNR982, 983, 984 & 985, GG38282 of 4 Dec 2014)
FP Regs	**NEMA**: Regulations pertaining to financial provision for prospecting, exploration, mining or production operations (GN1147, GG 39425 of 20 November 2015),
MPRDA	Mineral and Petroleum Resources Development Act, Act 28 of 2004 (as amended) and regulations.
MHSA	Mine Health and Safety Act, Act No.29 of 1996
NWA	National Water Act, Act 36 of 1998
GN 704	**NWA**: Regulations on Water Use for Mining and Related Activities, promulgated in terms of the National Water Act 36 of 1998 (GN 704, GG 20119 of 4 June 1999),
NEM:WA	National Environmental Management: Waste Act, Act 59 of 2008
NSSW	**NEM:WA**: National Norms and Standards for the Storage of Waste (GN926, GG37088 of 29 November 2013)
WA: List	**NEM:WA**: List of Waste Management Activities (GN921, GG37083 of 29 Nov 2013)
SAWIS	**NEM:WA**: National Waste Information Regulations (GN625, GG35583 of 13 Aug 2012)
Residue	**NEM:WA**: Regulations regarding the Planning and Management of Residue Stockpiles and Residue Deposits from a Prospecting, Mining, Exploration or Production Operation (GN632, GG 39020 of 24 July 2015)
NEM:AQA	National Environmental Management: Air Quality Act, Act 39 of 2004, as amended
NDCR	National Dust Control Regulations (GN 827, GG 36974 on 01 November 2013)
NAEIS	National Atmospheric Emission Reporting Regulations (GNR 283, GG38633 of 02 Apr 2015)
NHRA	National Heritage Resources Act, 25 of 1999
NEM:BA	National Environmental Management: Biodiversity Act 10 of 2004
Alien	**NEM:BA**: Alien and Invasive Species Lists, 2014 (GN599, GG37886 of 01 Aug 2014)
ECA:NC	Noise Control Regulations in terms of Section 25 of the Environment Conservation Act 73 of 1989

EXECUTIVE SUMMARY

Prime Spot Trading 11 (Pty) Ltd, (Prime Spot), has applied for a mining right & associated waste management licence over a portion of portion 1 of the Farm Vischgat 467IR (approximately 95 hectares). During the application process the portion of land has been sub-divided and is now known as **Portion 59** of the Farm Vischgat 467IR.

The application is to mine aggregate and stone via opencast mining methods. Pertinent information to this application is;

- The application is preceded by a prospecting right (**GP 10198 PR**) in the name of Prime Spot.
- There was an established mining operation on the site (**not** Prime Spot), which has resulted in a small quarry & a disturbed footprint associated with the old crushing plant and stockpiles.

The Final Scoping Report for the application was accepted by the Department of Mineral Resources (DMR) on the **23rd of February 2017**. A draft Environmental Impact Assessment Report (EIAr) and the Environmental Management Programme Report (EMPr) was made available to registered interested and affected parties (I&APs) from 2 May through to 3 July 2017. This document represents the final EIAr and EMPr which has been finalised after consideration of the feedback received from the I&AP's.

Planned activity: The intention is to continue and expand mining from an existing pit and reuse the existing disturbed area for future processing and stockpiling of the rock. At full production the mining rate anticipated would be 24 000 tons of product per month. Based on the anticipated production rate, the existing resource would allow for a life of mine of over 60 years. In summary mining activities would include;

- Vegetation and topsoil removal
- Overburden removal – to be sold if possible, as fill material
- Drilling & blasting hard rock (approximately 1 to 2 blasts per month depending on size of blast)
- Loading and hauling from the pit to a crushing plant
- Processing blasted rock through a crushing plant and stockpiling
- Selling aggregate product from site (possibility of 30 to 40 trucks per working day at full production)

Supporting services will consist of the following:

- Access roads
- Water (borehole for potable purpose and using water collected within the pit for dust suppression)
- Electricity (Eskom – connection already available)
- Sanitation (French drain or mobile chemical toilets)
- Administration (mobile container)
- Workshop and oil trap
- Fuel (contained within a bunded area)
- Waste management

Mine closure: Future mine closure (which based on available reserves, will be over 60 years time) will include:

- Mine closure will comply with the legal requirements of the day when closure is implemented.
- At the end of the life of mine, the quarry will be made safe through sloping at least the top 2 benches to an angle of repose. Water will be allowed to accumulate in the base of the quarry.
- All infrastructures (with no future value for the landowner at the time of closure) will be demolished and removed from site.
- The site will be assessed for potential contamination. Any contamination noted will be appropriately removed.
- All disturbed surfaces will be profiled, top soiled and revegetated.
- If necessary, the material contained in the berms and dumps will be used as a medium to profile areas and to encourage revegetation. If not required the berms and dumps will be left re-vegetated.

By making use of the DMR guideline document for calculating financial provision, the 2017 / 2018 financial provision for the existing disturbance at the proposed mining right area is R 1 163 000.00. Based on the planned activities proposed for future mining an end of life liability of R 8 117 000.00 has been estimated.

An initial financial provision of **R 1 163 000 million** has been proposed to cover the potential closure liability of the mine for the first year of operations.

Specialist studies: The plan of study in the approved Scoping Report committed Prime Spot to commissioning the following specialist studies;

- Blasting impact assessment
- Structural assessment of access bridge used to access the property
- Traffic impact assessment
- Completion of a groundwater impact assessment
- Presentation of the results of a heritage impact assessment.

In addition, a specialist vegetation assessment was commissioned and only finalised at the end of June 2017. Due to the delay in commissioning and finalisation of the vegetation assessment, the document has **only** been made available, for a 2 week period, to the registered interested and affected parties for comment.

The above mentioned reports have been completed and included as appendices to this report.

Consultation: During the initial public participation process for the Scoping report the following **concerns** were raised:

- Rand Water is extremely concerned about the potential impact on their existing canal and pipeline running to the south of the mining right area (which provides over 70% of water for Gauteng) and the potential impact on a future canal and pipeline planned. This objection resolves around the potential impacts of blasting activities on the structural integrity of rand water infrastructure (canal and pipeline) and the access bridge which is proposed to be used.
- The Hlapolosa Family Delegation strongly object to the application due to the impact mining will have on family graves which are within the middle of the mining right area. While these graves have been excluded from the mining right area they remain within the middle of the proposed mine.
- Potential impact on groundwater availability and groundwater quality from mining
- Impacts of additional traffic on the Vischgat road in terms of deterioration of the road, dust and safety concerns. Specific concerns about the cumulative impact of traffic and where the road is a single file road.
- Impacts associated with dust and noise
- Other impacts associated with blasting activities (fly rock)
- Fencing of the mining property
- General environmental impacts (fauna / flora / protected bird area) of mining in a rural / environmentally sensitive area.
- Socio-economic impacts such as potential impact on surrounding property values, crime, influx of people from the mine and informal housing. The overall wellbeing of the local community.
- The strain on local infrastructure and availability of electricity.
- Impact on wetlands within the area.
- Impact on the Vaal River
- Impact on agriculture and residential areas
- Health impacts (associated with air pollution)
- Dispute the granting of the preceding prospecting right
- Verbally being informed that the property in question is subject to a land claim
- Economic viability and potential market for the proposed mine.
- Need to take cognisance of local spatial development plans
- Need to implement effective concurrent rehabilitation
- Procurement and employment opportunities

Further consultation: During the EIR phase of this application the following additional consultation has been undertaken:

- Notification of registered I&APs of the acceptance of the final scoping report on 2 March 2017.
- A newspaper advert concerning the project was published by a journalist on 7 April 2017.
- One on one meetings with Rand Water (24 April 2017) and representatives of the Hlapolosa family (26 April 2017).
- Notification of registered I&APs of the availability of draft EIAr via email on 2 May 2017
- SMS notification of the public meeting (to I&APs who did not provide an email address) on 11th May 2017
- Public meeting held on 16th May 2017
- Notification to all registered I&AP's of an extension to submit comments to 2 July 2017 via email on 19 May 2017 and via sms on 22 May 2017
- A meeting with community representatives on 7 June 2017
- Notification of the availability of the vegetation assessment on 10 July 2017.

During the EIR Phase of the project, all of the original concerns raised during the Scoping phase were re-iterated, the following **additional** concerns have been raised / re-iterated;

- Community (Bantu Bonke) have enquired about potential ownership in the project.
- Requests for an indication of guarantee of jobs to be given to the local community members.
- Concern over the potential future destruction of the grassland habitats identified in the vegetation specialist study.
- Impact on the cemeteries (on affected families) specifically from the inevitable disturbance caused by mining. The need for the destruction of heritage sites. The fact that mining will permenant alter the potential land use of the site which is subject to a land claim.
- Impact on wetlands identified in the vegetation survey.
- While the traffic impact assessment may indicate that the road is capable to handle additional traffic, it is not a fair reflection of the current status of the Vischgat road and other surrounding roads, which are in a terrible state. Any additional trucks will compound the existing proble.
- The potential impact on Rand Water infrastructure has been raised by numerous concerned I&AP's.
- The destruction of suitable habitats for protected birds (Grass Owl)

Alternatives: Due to geological reasons, no reasonable or feasible site alternatives have been identified. After determining the viability of other operational alternative identified in the Scoping report, the following is applicable;

- *Relocation of graves:* Representatives of the family whose relatives are buried on the property have confirmed that they do not support the moving of the graves from the current location.
- *Pit dimensions:* Based on the outcome of the blasting specialist study, there is no need to adapt the dimensions of the proposed pit to accommodate the closest point to the Rand Water servitude. The original distance proposed between the edge of the pit and the Rand Water servitude was 470m. The blasting impact assessment has confirmed that this distance would suffice in terms of ensuring that the impact from blasting (in terms of ground vibration) would be acceptable.

Impact assessment: The **key findings** from the environmental impact assessment can be summarised as follows;

- The most significant impacts, ranked as **High** prior to consideration of management measures and **Medium High** after consideration of successful implementation of mitigation measures are;
  - the impact on the **cemeteries and other heritage findings on site**. While the cemetery in the middle of the proposed mining area has been excluded from the mining right application area, no amount of mitigation can prevent "disturbance" occurring.
  - In addition, after completion of a **vegetation** assessment, it is apparent that undisturbed primary grassland patches will be destroyed through the expansion / development of the pits.
- The next most significant impact ranked as **Medium High** prior to consideration of management measures and **Medium** after consideration of successful implementation of mitigation measures is the potential impacts associated with **blasting activities**. With implementation of appropriate mitigation measures the potential impacts associated with blasting can be reduced.
- The potential socio-economic impacts associated with additional traffic and use of the Vischagt road has been allocated a **Medium High** ranking prior to consideration of management measures and **Medium** ranking after consideration of successful implementation of mitigation measures.

All 4 of the above key findings have also been raised as serious concerns by interested and affected parties during the scoping and EIA phase of this project.

As with any proposed development there are negative and positive impacts. The positive impacts associated with this proposed mine include;

- Job creation within the local area (22 people will gain direct employment)
- Support of necessary suppliers to facilitate mining will indirectly be positive in terms of job creation
- Implementation of community upliftment projects through adhering to the social and labour plan
- Provision of a product (aggregate) within the region. The competitive pricing of aggregate is largely determined by distance from the market.

Author's opinion: From a biophysical point of view (excluding ecological aspects), it is the author's opinion, that the negative impacts identified can be effectively avoided / managed / mitigate to an acceptable level. It is acknowledged that should the mine proceed a portion of primary grassland vegetation and its associated faunal habitats will be destroyed. Assuming successful mitigation of the negative impacts, through implementing the mitigation measures proposed within this document, the author would support a positive

authorisation. With this, the positive impacts associated with the proposed mine (job creation / wealth / source of aggregate / social upliftment) would be realised.

While the physical impacts impacts on the graves within the middle of the mining right can be reduced, there are no management measures which can be effectively implemented that can mitigate the additional long term cultural / heritage / spiritual "disturbance" that will be caused by the proposed mining operations. In addition the other heritage finding (foundations of buildings) ranked as low significance by the Heritage specialist will need to be destroy during the expansion of Pit 2.

Mining (specifically the development of the open cast pits) will change the current and future landuse of the portion of land under application, permenantly.

Environmental monitoring campaigns: Prime Spot will implement the following environmental monitoring campaigns;

- Dust fallout monitoring (monthly reporting)
- Surface water and groundwater monitoring (monthly reporting)
- Environmental noise monitoring (if valid noise complaints are received)
- Blast monitoring (each blast)
- Consumption monitoring (Fuel / water / Electricity) monthly
- Ecological monitoring (alien vegetation removal)

Environmental awareness training: Environmental awareness training will be implemented through the following training initiatives:

- Induction training (repeated annually)
- In house tool box meetings (weekly)
- Adhoc environmental training

1. IMPORTANT NOTICE

In terms of the Mineral and Petroleum Resources Development Act (MPRDA), No. 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 (EIA) and an Environmental Management Programme (EMP) report in terms of the National Environmental Management Act (NEMA), No. 107 of 1998, it cannot be concluded that the said activities will not result in unacceptable pollution, ecological degradation or damage to the environment.

In terms of Regulation 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 Regulation 17(1)(c) the competent Authority must check whether the application has taken into account any minimum requirements applicable or instructions or guidance provided by the competent authority to the submission of applications.

It is therefore an instruction that the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or a permit are submitted in the exact format of, and provide all the information required in terms of, this template.

Furthermore please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulation and will lead to the Environmental Authorisation being refused.

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

2. OBJECTIVE OF THE IMPACT ASSESSMENT PROCESS

The objective of the environmental impact assessment process is to, through a consultative process ─

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

PART A:
SCOPE OF ASSSSMENT AND IMPACT ASSESSMENT REPORT

BACKGROUND: Prime Spot Trading 11 (Pty) Ltd, (Prime Spot), has applied for a mining right & associated waste management licence over a portion of portion 1 of the Farm Vischgat 467IR. During the application process the portion of land has been sub-divided and is now known as Portion 59 of the Farm Vischgat 467IR.

Pertinent information to this application is;

- The application is preceded by a prospecting right (**GP 10198 PR**) in the name of Prime Spot
- There was an established mining operation on the site (**not** Prime Spot), which has resulted in a small quarry and a disturbed footprint, associated with the old crushing plant and stockpiles.

The intention is to continue and expand mining from the existing pit and reuse the disturbed area for future processing and stockpiling of the rock.

The mining right application, for dimension stone, aggregate and stone aggregate, by Prime Spot, was submitted to the Department of Mineral and Resources on **31 August 2016** and assigned reference number **GP 10049 MR**. The final scoping report was accepted by the Department of Mineral Resources in terms of regulation 22(a) of the NEMA EIA Regulation, 2014 on **23rd of February 2017**.

A draft EIR report was initially made available to all registered interested and affected parties from **2 May 2017** originally through to **31 May 2017**. A public meeting was held on 16th of May 2017. An extension for the commenting period was provided to the **2 July 2017**.

This final EIAr and EMPr report is based on assessing the impacts and proposing appropriate mitigation measures for the activities documented within the submitted final scoping report after consideration of the comments received from I&AP's on the draft EIR.

3. CONTACT PERSON AND CORRESPONDENCE ADDRESS

a) DETAILS OF

(i) Details of the EAP

Name of the Practitioner:	Andrew Nicholson
Tel No.:	011 791 3389
Fax No.:	011 791 3384
E-mail Address:	andrew@umhlaba.co.za

(ii) Expertise of the EAP

(1) ***The qualifications of the EAP***

- BSC Hons Biological Sciences / Post Graduate Degree in Natural Resource Management
- See **Appendix A.1**.

(2) ***Summary of the EAP's past experience***

(In carrying out the Environmental Impact Assessment Procedure).

- Over 14 years of experience of environmental management for the mining industry of South Africa.
- See **Appendix A.1**.

b) LOCATION OF THE OVERALL ACTIVITY

Farm Name:	At the beginning of the application process, the application was for a portion of the remaining extent of Portion 1 of the Farm Vischgat 467 IR. On 8 February 2017, the property on which the proposed mine is to be located has been sub-divided and is now known as **Portion 59** (a portion of portion 1) the Farm Vischgat 467. See **Appendix A2** for a copy of the successful registration of the sub-division.
Application Area (Ha):	95.7740 Ha – See Figure 2 below
Magisterial District:	Vereeniging
Municipality	Ward 1 of Midvaal Municipality
Distance and Direction from Nearest Town:	Vereeniging (the site lies approximately 15km south-east)
21 Digit Surveyor General Code for each Farm Portion:	T0IR00000000046700001

c) LOCALITY MAP

Figure 1 below provides a locality map of the mining right application area in relation to the nearest towns.

Figure 2 provides a copy of the original regulation 2(2) plan which demarcates the proposed future mining right area. Please note that while the area under application remains the same, the area is now referred to as Portion 59 (not a portion of portion 1).

Please note that an area within the middle of the mining right area, which has been **excluded** from the mining right application are graves (with a buffer zone between 24m and 41m around the graves).

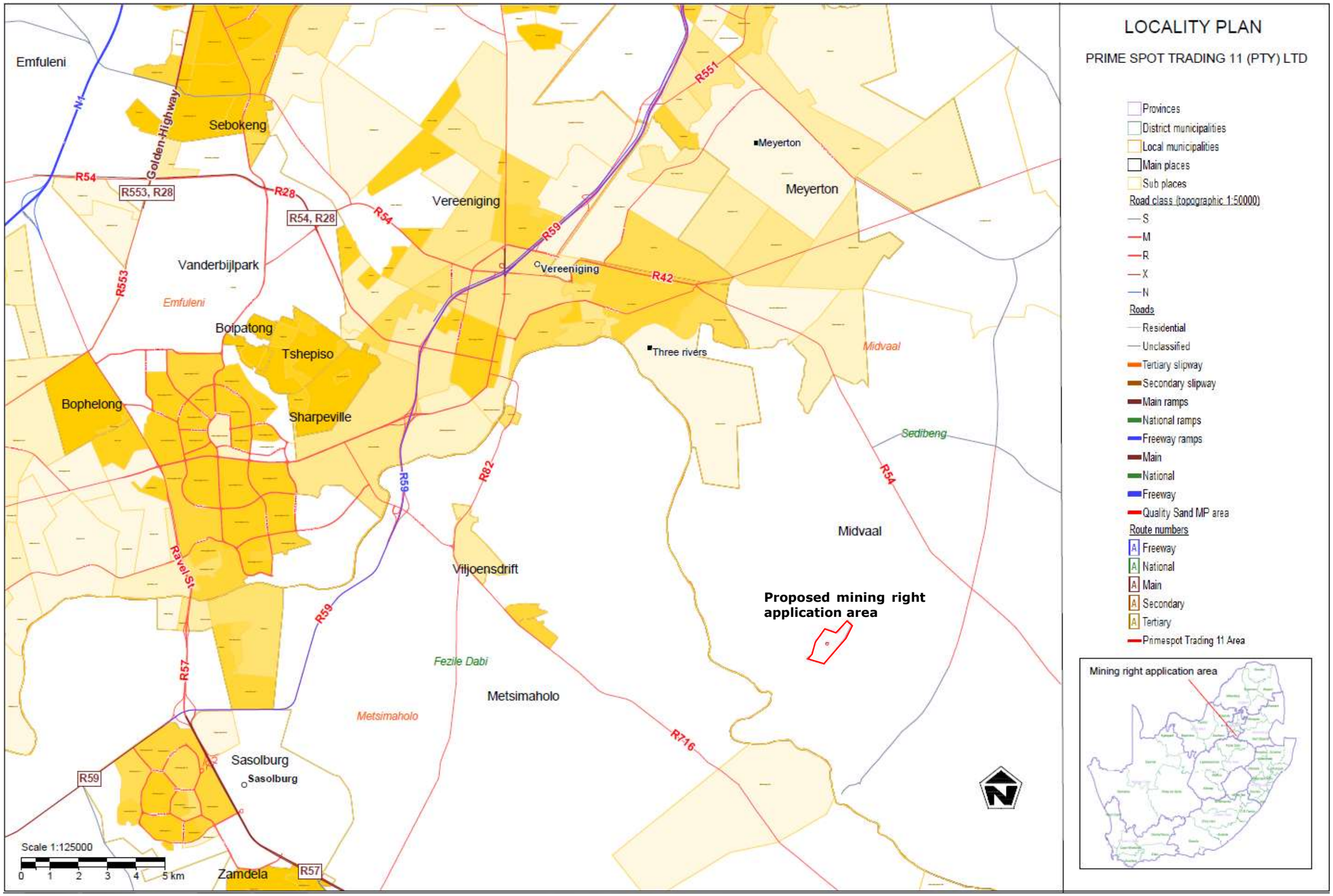
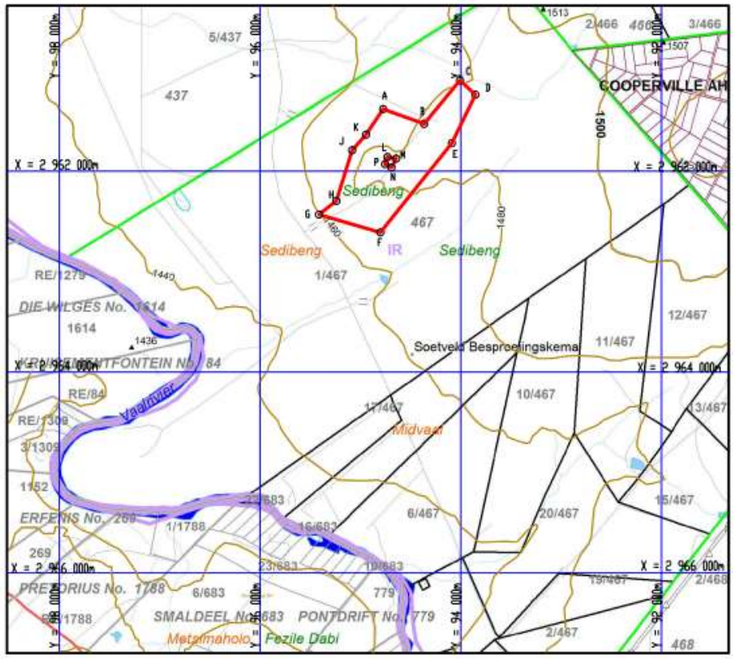


Figure 1: Locality map.



Legend

- Application Area
- Farm Boundaries
- Portion Boundaries
- 20m Contours

Scale 1 : 12 500

REGULATION 2(2) PLAN

GP 30/5/1/2/2 ( ) MR

Prime Spot Trading 11 (Pty) Limited
Co Reg No: 2006/022977/07

SIDES Meters		ANGLES OF DIRECTION	CO-ORDINATES WGS 84 WG 29		
				Y+	X+
AB	434.418	289:42:45	A	94773.770	2961381.870
BC	561.289	29:27:50	B	94364.810	2961528.400
CD	210.520	313:03:56	C	94008.060	2961095.070
DE	535.247	25:54:40	D	93854.260	2961238.820
EF	1140.272	38:41:49	E	94088.150	2961720.260
FG	637.684	106:13:48	F	94801.050	2962610.200
GH	220.829	231:56:34	G	95413.320	2962431.970
HJ	527.441	197:19:19	H	95239.440	2962295.840
JK	208.472	221:29:10	J	95082.400	2961792.320
KA	306.168	213:50:50	K	94944.300	2961636.150

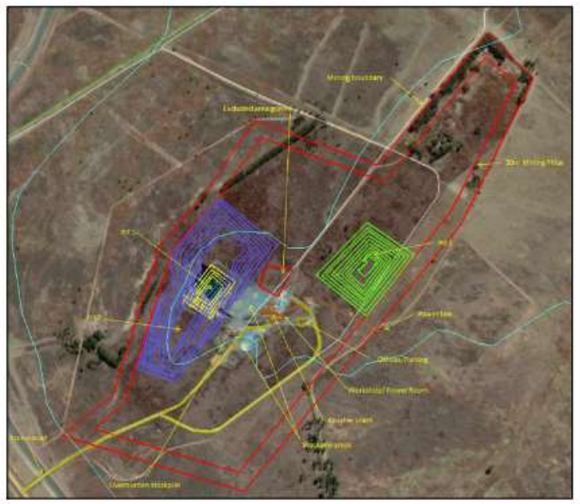
IN EXTENT: 96.4592 Ha

SIDES Meters		ANGLES OF DIRECTION	CO-ORDINATES WGS 84 WG 29		
LM	88.001	280:15:12	L	94730.709	2961859.378
MN	99.912	27:47:40	M	94644.104	2961875.044
NP	72.397	117:43:51	N	94690.693	2961963.429
PL	74.365	198:52:55	P	94754.775	2961929.741

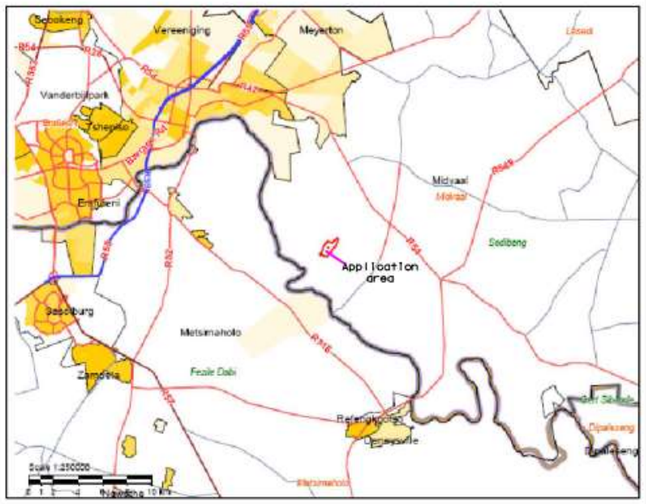
IN EXTENT: 0.6852 Ha

TOTAL EXTENT: 95.7740 Ha

SITE LAYOUT PLAN



LOCALITY PLAN



LEGEND

DESCRIPTION

The figure A,B,C,D,E,F,G,H,J,K and A Excluding Figure L,M,N,P, representing a portion of the remaining extent of Portion 1 of the farm Vischgat 467 IR, Magisterial District of Vereeniging in respect of which application is made for a mining right for aggregate, stone aggregate and dimension stone in terms of Section 22 of the Minerals and Petroleum Resources Development Act (Act 28 of 2002),as amended, .

Compiled by: Authorization For Minerals CC

P O Box 603
Fochville
2515

Tel/Fax: 018 771 5709
Mobile: 0824664278
E-Mail: eddie.afm@vodamail.co.za

Date 19 February 2016

Signed Date:

Approved Date:

Figure 2: Original Regulation 2(2) plan depicting the mining right area covered by the application.

d) DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY

Figure 3 below provides a visual indication of the intended mining activities to be implemented over the area covered by the application as depicted in Figure 2 above. Of the 95 hectares covered by the application approximately 30 hectares **(only)** will be disturbed by this proposed mining operation.

(i) Listed and specified activities

The table below provides a summary of the intended activities to be implemented and the listed activities triggered. Please note after completion of the specialist vegetation assessment, it became clear that additional triggers associated with the clearance of indigenous vegetation was required. Hence the table below has been updated since the completion of the Scoping Report.

NAME OF ACTIVITY (ALL ACTIVITIES INCLUDING ACTIVITIES NOT LISTING) *(E.g. for mining,- excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors.)*	**AERIAL EXTENT OF THE ACTIVITY** *(Ha or m²)*	**LISTED ACTIVITY** *(Mark with an X where applicable or affected)*	**APPLICABLE LISTING NOTICE** *(GNR 983, GNR 984 or GNR 985 / Not listed)*[1]
Mining Right Application	95.7740	X	Activity 17 of GNR 984
Waste Management Licence	95.7740	X	GNR 633 and GNR 921
Construction activities			
1. Re-establish crushing plant on previous disturbed footprint Establish mobile equipment Re-establish essential services (Electricity / Water)	1 Ha	Not listed	
2. Construct the required workshop and other infrastructure (bund wall for fuel tank / weigh bridge)	0.5 Ha	Not listed	
Operational activities			
1. Mine planning	95 Ha	Not listed	
2. Vegetation and topsoil removal	20 Ha		Activity 4(11) of GNR 633 Activity 27 of GNR 983

[1] *Template on DMR website referenced repealed legislation. The current legislation has been provided above and underlined.*

NAME OF ACTIVITY (ALL ACTIVITIES INCLUDING ACTIVITIES NOT LISTING)	AERIAL EXTENT OF THE ACTIVITY	LISTED ACTIVITY	APPLICABLE LISTING NOTICE
			(as amended) Activity 12 of GNR 985 (as amended)[2]
3. Overburden removal	20 Ha		Activity 4(11) of GNR 633
4. Drilling and blasting / expansion of quarry pit	25 Ha	Not listed	
5. Loading and hauling	25 Ha	Not listed	
6. Processing (i.e. crushing and screening)	1 Ha	X	Activity 21 of GNR 984
7. Stockpiling product	2 Ha		Activity 4(11) of GNR 633
8. (Existing) Access roads	1.1 Ha	Not listed	
9. Water	n/a	Not listed	
10. Electricity	n/a	Not listed	
11. Sanitation	100m^2	Not listed	
12. Administration	200m^2	Not listed	
13. Workshop	400m^2	Not listed	
14. Fuel	50m^2	Not listed	
15. Waste management area	50m^2		Activity 3(2) of GNR 921
Closure activities (high level)			
1. Make quarry safe	25 Ha		
2. Remove all infrastructure	1.5 Ha		
3. Rehabilitate all disturbed areas with indigenous vegetation.	30 Ha	Not listed	
4. Monitoring and maintenance	30 Ha	Not listed	

***** Please note that the aerial extent of activities is represented as estimates.

Refer to **Figure 3** below for an anticipated site layout.

[2] The need to include these listed activities (27 of 983 and 12 of 985) was determined after completion of the floral specialist study completed at the end of June 2017

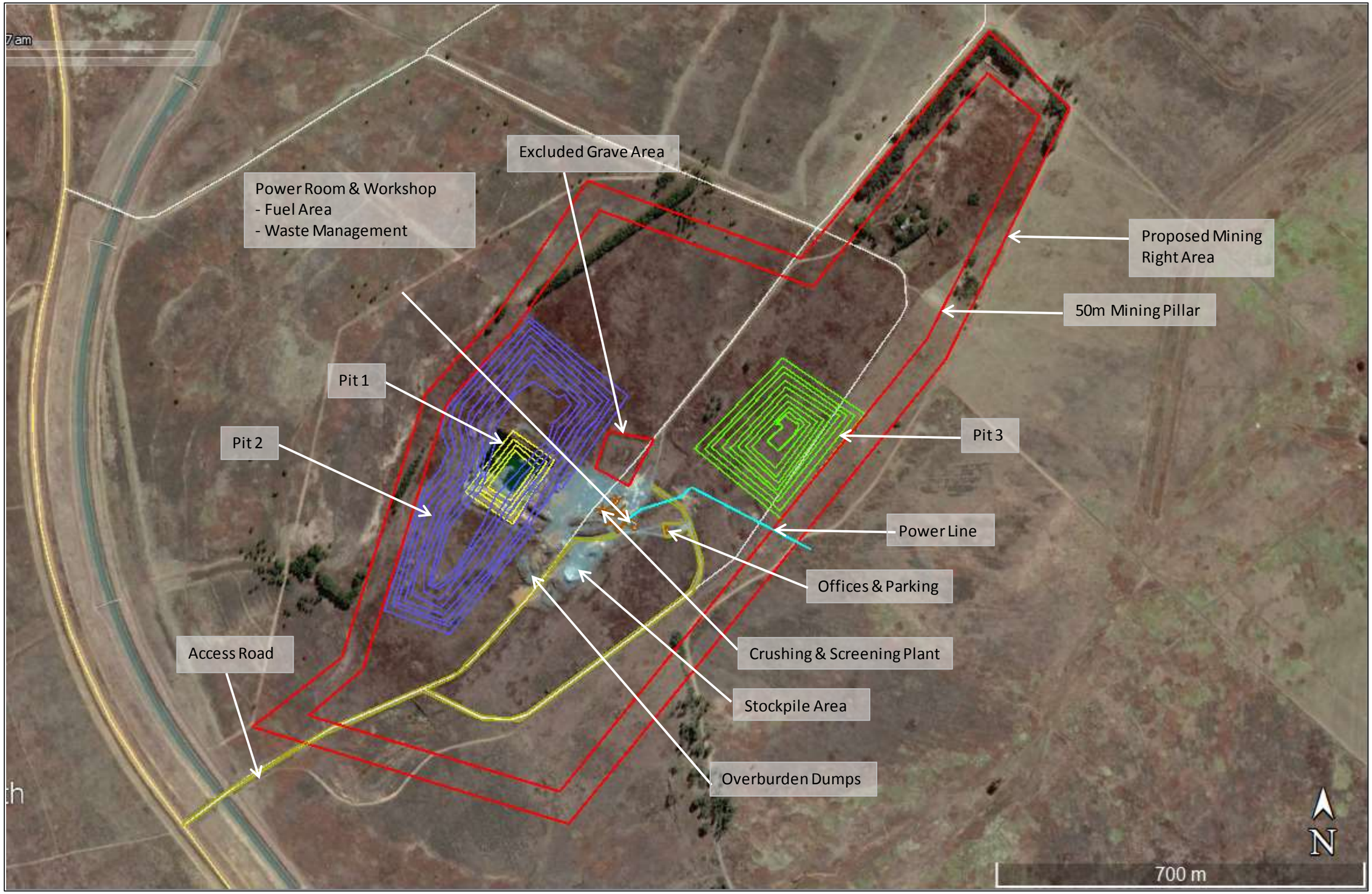


Figure 3: Anticipated site layout.

(i) Description of the activities to be undertaken

Prime Spot Trading 11 (Pty) Ltd has applied for a mining right and associated waste management licence to mine **dimension stone**, **aggregate and stone aggregate** via open cast mining methods.

A pertinent aspect that is central to this application is that historic mining activities that have taken place over the site. Hence, previously there was an established mining operation on the site.

Proposed mining activities will involve the removal of dimension stone, aggregate and stone aggregate from the earth via opencast mining methods. Mining is planned to initially commence from the existing defunct quarry pit (refer to **Photograph 1**) that is located within the proposed mining right area and will progress to other areas of the site as shown in Figure 3 above.

Photograph 1: Existing defunct quarry pit located within the proposed mining right area.

The proposed mining activities will typically include the following activities:

Construction activities:
Limited construction is required. The reason being is due to the fact that historical mining took place on the site. An existing crusher structure remains on site. The same footprint will be used for the new proposed operation. See **Photograph 2** below for a visual indication of the historical disturbance.

Construction will include:

- Re-establishment of the crushing plant / upgrading of existing infrastructure
- Re-establishing electrical connections
- Re-equipping the borehole and pipeline from the borehole to the infrastructure area.
- Construction of a concreted workshop area / waste area / bunded area for a fuel tank and installation of a weigh bridge.
- Placement of all mobile equipment (office / sanitation).
- Fencing and establishing access to the graves which avoids the disturbed areas
- Fencing of the entire mining right area
- Initial dewatering of the pit using the water for irrigation purposes.

Photograph 2: Evidence of the historical disturbance.

Operational activities can be summaries as follows:

Mining activities:

- **Mine planning**: Before implementing mining activities and throughout the life of the operation, mine planning will be implemented to ensure that mining is undertaken in a responsible manner.

  Information concerning, available resource, an indication of the location of the various pits and pit dimensions is provided below.

  Resources: The available resources as extracted from the geological report which was compiled from the prospecting results indicate the following waste / resources within the various pits.

Table 1: Available resources

	Tonnes Waste	Tonnes Ore
Pit 1	13,904	638,076
Pit 2	227,113	13,586,078
Pit 3	99,052	4,602,763

Based on the above resources statement (and an anticipated mining rate of 288 000 tons per annum), Pit 1 & 2 will be mined over approximately 49 years. Thereafter pit 3 has an additional resource to extend mining activities for another 16 years.

Figure 4 below provides a visual indication of the location of the proposed pits. Pit 1 is already in existence. Pit 2 is an expansion of pit 1 and pit 3 would be a new pit after completion of pit 2.

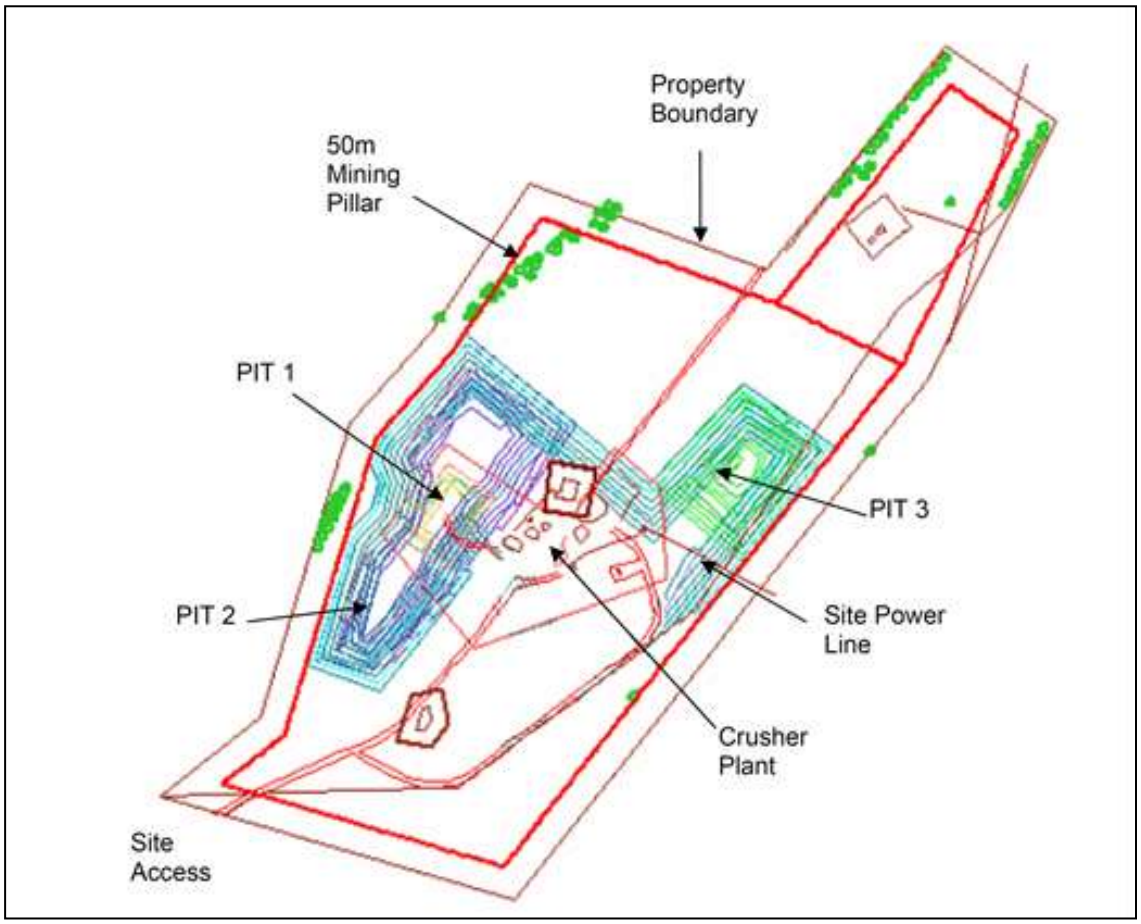


Figure 4: Plan showing the location of the proposed pits

Pit design dimensions

Table 2 below provides an indication of the proposed pit dimensions. The maximum depth anticipated is up to 80m below surface.

Table 2: Available resources

Design Element	Width/Angle	Gradient	Comments
Batter Angle/Slope Angle	45°	-	-
Soil Stripping Distance	25m	-	-
Mine Boundary Pillar	50m	-	-
Ramps/Haul Roads	14m	10%	Ramps may be increased to 11% within the design where appropriate
Bench Height	5m/10m	-	5m benches used to depth of 1464m, 10m thereafter
Bench Toes	*n/a/*	Flat	Toes projected at - 89.75°from crest strings
Bench Crests	*n/a/*	Flat	-
Berm Width	*10m*	Flat	-

- **Vegetation and topsoil removal:** As mining will commence over already disturbed areas (associated with historic mining activities) there will be minimal to no removal of vegetation and topsoil, initially. Topsoil stripping will take place 50m ahead of the mining face. When mining progresses onto new ground it will become necessary to clear the vegetation and remove the topsoil to expose the overburden. Topsoil will be stripped and stored in berms not exceeding 2m. The berms will be placed along the exterior of the final pit dimensions (within the mining pillar) or used in concurrent rehabilitation projects.

- **Overburden removal:** Overburden material includes the decomposed material above the competent mineral reserves. In order to expose the mineral reserves for mining, the overburden requires removal. Where possible, overburden will be removed by mechanical digging using an excavator. In instances where the material is too hard, conventional drilling and blasting methods will be utilised to loosen the material. Once loosened the overburden material will be transported to overburden dumps by haul trucks. Where possible overburden will be processed into a product (fill material) and sold. When selling is not possible, overburden will be stored adjacent to the final extent of the pit (and separately to the topsoil material).

- **Drilling and blasting:** The mineral reserves (dimension stone, aggregate and stone aggregate) will be loosened by conventional drilling and blasting. The frequency of drilling and blasting will be dependent on the demand for product. It is anticipated that a production rate of 288 000 tons per annum (24 000 tons per month) could be achieved. At this production rate blasting would occur approximately once a month (depending on the scale of the blast). The explosives required for the blasting activities will be delivered to the benches as and when required. Blasting aims to fragment the rock to the desired size suitable for processing through the crushing plants. Where this is not achieved, the larger boulders will be broken up using a hydraulic hammer. Based on the available resource within the 3 pits, mining will take place in pit 1 & 2 for up to 49 years followed by pit 3 for another 16 years.

- **Loading and hauling:** Blasted material will then be loaded onto haul trucks by means of an excavator and / or front-end loader, and taken to the primary crusher where it will be loaded into the feedbin or be stockpiled adjacent to plant in an emergency stockpile.

Crushing activities:

- **Processing:** The processing plant will consist of a primary plant as well as secondary and tertiary plants which will assist in producing the various products for sale. If necessary mobile crushing plants will be used.

- **Stockpiling:** The various products will be stockpiled in a stockpile yard from which dispatch to clients will take place.

Supporting services will consist of the following:

- **Access roads:** Due to the past farming activities on the property and more recently historic mining activities, existing access roads are available and will be used. A security office which will regulate access onto the mine will be located on the access road to the site.

- **Water:** Water supply requirements will be met by obtaining water from an on-site borehole and rain water collected in the quarry pit. The borehole will serve as water supply for drinking purposes and water from the from the quarry will be used as process water (i.e. for dust suppression, etc).

- **Electricity**: A transformer is available at the site and the electrical connection will be made from this transformer. It is possible that generators will also be available for use during times of electricity supply disruptions.

- **Sanitation**: Sanitation facilities (for approx. 22 people at full production) will either comprise of chemical toilets or a French-drain system.

- **Administration**: An on-site container office will be erected to serve as the administration office. Administration functions will include: documenting the sales to customers; documenting supplies; and maintaining copies of required legal documentation which must be present on a mining site.

- **Workshop**: A workshop, where maintenance activities will be carried out, will be constructed on site. It will be designed with the appropriate concrete flooring and storm water control structures which will flow into an oil separator system.

- **Fuel**: An above-ground fuel tank (less than 30 000 litres) and dispenser will be installed within a bund. The re-fuelling bay will, ideally, be concreted.

- **Waste management:** A temporary waste storage area will be designated on site. All waste, hazardous and general wastes, will be stored in this area prior to disposal. The services of waste removal contractors will be used to remove the waste streams from the site and dispose of it.

Closure activities:
The life of mine is approximately 65 years based on a production figure of 288 000 tons per annum and the current available resource. Due to the long life of mine, no specific closure options have been considered. At this point in time, closure would include;

- Mine closure will comply with the legal requirements of the day when closure is implemented.
- At the end of the life of mine, the quarry will be made safe through sloping at least the top 2 benches to an angle of repose. Water will be allowed to accumulate in the base of the quarry.
- All infrastructure (with no future value for the landowner) will be demolished and removed from site
- The site will be assessed for potential contamination. Any contamination noted will be appropriately removed.
- All disturbed surfaces will be profiled and revegetated.
- If necessary, the material contained in the berms and dumps will be used as a medium to profile areas and to encourage revegetation. If not required the berms and dumps will be left re-vegetated.
- Once physical closure activities have been implemented a care and maintenance and monitoring plan will be implemented for at least 3 years until it can be proven that final rehabilitation has been successful.

e) POLICY AND LEGISLATIVE CONTEXT

This mining right application triggers listed activities that may not commence without an environmental authorisation in terms of the:

- EIA Regulations, 2014 promulgated under the NEMA. Listing Notice 2, of the EIA Regulations of 4 December 2014; and
- List of Waste Management Activities, 2013 promulgated under the NEM:WA

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED
LEGISLATION	
Constitution of the Republic of South Africa, 1996 Everyone has the right: a. to an environment that is not harmful to their health or well-being; and b. to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that i. prevent pollution and ecological degradation; ii. promote conservation; and iii. secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social	This basic environmental right contained in the bill of rights is preserved throughout the environmental legislation. The particulars regarding the impact assessment process is described in Section (h)(v) – (viii) and Section (i)(i) – (v) of this report. To give effect to Section 24 of the Constitution, an application for environmental authorisation is being made in terms of reasonable legislative and other measures.
Minerals and Petroleum Development Resources Act, Act 28 of 2002 (MPRDA) and the MPRDA Amendment Act, Act 49 of 2008. The MPRDA makes provision for equitable access to and sustainable development of the nation's mineral and petroleum resources. The recent amendment MPRDA resulted in changes to align specific environmental legislation associated with mining activities and aligned sections of NEMA and MPRDA to provide for one environmental management system. • The application is undertaken in line with Section 22 of the MPRDA • The DMR is the competent authority overseeing the environmental authorisation process.	This application is for a mining right which is over a granted prospecting right area.
National Environmental Management Act, Act 107 of 1998 (as amended)(NEMA) **2. Principles**.—(1) The principles set out in this section apply throughout the Republic to the actions of all organs of state that may significantly affect the environment and— a. shall apply alongside all other appropriate and relevant considerations, including the State´s responsibility to respect, protect, promote and fulfil the social and economic rights in Chapter 2 of the Constitution and in particular the basic needs of categories of persons disadvantaged by unfair discrimination; b. serve as the general framework within which environmental management and implementation plans must be formulated; c. serve as guidelines by reference to which any organ of state must exercise any function when taking any decision in terms of this Act or any statutory provision concerning the protection of the environment; d. serve as principles by reference to which a conciliator appointed under this Act must make recommendations; and e. guide the interpretation, administration and implementation of this Act, and any other law concerned with the protection or management of the environment.	The principles of NEMA have been considered throughout the report

(2) Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.

(3) Development must be socially, environmentally and economically sustainable.

(4) (a) Sustainable development requires the consideration of all relevant factors including the following:

i. That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied;
ii. that pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;
iii. that the disturbance of landscapes and sites that constitute the nation´s cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied;
iv. that waste is avoided, or where it cannot be altogether avoided, minimised and reused or recycled where possible and otherwise disposed of in a responsible manner;
v. that the use and exploitation of nonrenewable natural resources is responsible and equitable, and takes into account the consequences of the depletion of the resource;
vi. that the development, use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised;
vii. that a risk averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions; and
viii. that negative impacts on the environment and on people´s environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.

(b) Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option.

(c) Environmental justice must be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons.

(d) Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing must be pursued and special measures may be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination.

(e) Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.

(f) The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured.

(g) Decisions must take into account the interests, needs and values of all interested and affected parties, and this includes recognising all forms of knowledge, including traditional and ordinary knowledge.

(h) Community wellbeing and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means.

(i) The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment.

(j) The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers must be respected and protected. (k) Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law. (l) There must be intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment. (m) Actual or potential conflicts of interest between organs of state should be resolved through conflict resolution procedures. (n) Global and international responsibilities relating to the environment must be discharged in the national interest. (o) The environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people´s common heritage. (p) The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment. (q) The vital role of women and youth in environmental management and development must be recognised and their full participation therein must be promoted. (r) Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure. **Section 28** of NEMA imposes a duty on any person who causes, has caused or may cause significant pollution or degradation to take reasonable measures to prevent, minimise and rectify significant pollution and environmental degradation. Non-compliance with the duty of care allows a competent authority to require that specified measures be taken (and if not taken, the competent authority may take those steps itself and recover the costs from various parties). Liability is retrospective.	
Environmental Impact Assessment Regulations, GN R 982 of 4 December 2014 Regulation 21 – 26 and Regulation 39 to 44. These regulations set out the process required to undertake the scoping and EIA process including the public participation process that must be undertaken as part of the EIA.	A scoping/EIA process and public participation process is being followed in terms of the EIA Regulations (2014). This report forms part of the EIR phase of the EIA being undertaken and the public participation process is described in Section (h)(ii).
National Environmental Management: Waste Act, Act 59 of 2008 (NEM:WA) The Act was established to regulate waste management for the protection of human health and the environment by providing reasonable measures for: • Minimising the consumption of natural resources • Avoiding and minimising the generation of waste • Reducing, reusing, recycling and recovering waste • Treating and safely disposing of waste as a last resort • Prevention pollution and ecological degradation • Securing ecologically sustainable development while promoting justifiable economic and social development; • Promoting and ensuring the effective delivery of waste services; • Remediating land where contamination presents, or may present, a significant risk of harm to health or the environment. • Achieving integrated waste management reporting and planning	The mining right application includes and covers the requirement for a waste management licence and has been submitted to the DMR as part of an Environmental Authorisation.

No person may commence with, undertake or conduct a waste management activity, except in accordance with a waste management licence. The DMR is the applicable licencing authority for waste management activities associated with mining activities.	
List of Waste Management Activities that Have, or are Likely to Have a Detrimental Effect on the Environment, GN R 921 of 29 November 2013 Category A: Regulation 3 For the commencement of a waste management activity, a basic assessment process as set out in the Environmental Impact Assessment (EIA) Regulations made under Section 24(5) of NEMA as part of the waste management licence application contemplated in Section 45 read with Section 20(b) of NEM:WA must be undertaken. Category B: Regulation 3 For the commencement of a waste management activity, a scoping and environmental impact assessment process as set out in the Environmental Impact Assessment (EIA) Regulations made under Section 24(5) of NEMA as part of the waste management licence application contemplated in Section 45 read with Section 20(b) of NEM:WA must be undertaken.	An application for a waste management licence has been submitted to the DMR as part of an Environmental Authorisation for activities listed in Section D(i). of this report. Since activities are triggered under both Category A and B and both processes are applicable, the full scoping and EIA process is being followed.
National Water Act, Act 36 of 1998 (NWA): The NWA provides for fundamental reform of the law relating to water resources, where the ultimate aim of water resource management is to achieve the sustainable use of water for the benefit of all users. Specific water use of concern includes disposing of waste in a manner which may detrimentally impact on a water resource. The purpose of this Act is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in ways which take into account - (i) meeting the basic human needs of present and future generations; (ii) promoting equitable access to water; (iii) redressing the results of past racial and gender discrimination; (iv) promoting the efficient, sustainable and beneficial use of water in the public interest; (v) facilitating social and economic development; (vi) providing for growing demand for water use; (vii) protecting aquatic and associated ecosystems and their biological diversity; (viii) reducing and preventing pollution and degradation of water resources; (ix) meeting international obligations; (x) promoting dam safety; (xi) managing floods and droughts, and (xii) for achieving this purpose, to establish suitable institutions and to ensure that they have appropriate community, racial and gender representation. Chapter 4 of the NWA requires the licensing of a variety of activities concerning water uses which is captured in Section 21 and includes; *(a)* taking water from a water resource; *(b)* storing water; *(c)* impeding or diverting the flow of water in a watercourse; *(d)* engaging in a stream flow reduction activity contemplated in section 36; *(e)* engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1); *(f)* discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit; *(g)* disposing of waste in a manner which may detrimentally impact on a water resource;	A groundwater assessment has been undertaken by a Specialist which has determined the groundwater conditions of the site and the need to dewater. A water use license application process has been submitted.

(h) disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process; *(i)* altering the bed, banks, course or characteristics of a watercourse; *(j)* removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and *(k)* using water for recreational purposes.	
Regulation 704 (GN704) (Government Gazette 20118, 4 June 1999) Was drawn up to address these issues in relation to mining activities. Compliance to the requirements of GN704 is a legal requirement for all mining operations.	Considered when proposing appropriate mitigation measures.
National Heritage Resources Act, 25 of 1999 ("NHRA") NHRA serves to protect and manage South African heritage and cultural resources, which include places, buildings, structures and equipment of cultural significance, historical settlements and townscapes, archaeological and paleontological sites, graves and burial grounds. The Act protects any heritage resources from damage by developments by stipulating in Section 38 that any person intending on undertaking any form of development which involves the activities listed below must, at the earliest stage of initiation, notify the South African Heritage Resources Association (SAHRA): **A.** the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length; **B.** the construction of a bridge or similar structure exceeding 50 m in length; **C.** any development or other activity which will change the character of a site— i. exceeding 5 000 m2 in extent; or ii. involving three or more existing erven or subdivisions thereof; or iii. involving three or more erven or divisions thereof which have been consolidated within the past five years; or iv. the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority; **D**. the re-zoning of a site exceeding 10 000 m2 in extent; or **E**. any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority.	It must be noted that two cemeteries are located on the property. The one within the middle of the proposed mining area has been excluded from the application area. A number of other sites of cultural significance have been identified within the area designated for the expansion of "Pit 2". Appropriate phase 2 investigation and permits for destruction will need to be obtained prior to the disturbance of the other sites.
The National Environmental Management: Biodiversity Act, 2004 (NEM:BA) NEM:BA is to provide for the management and conservation of South Africa's biodiversity within the framework of the NEMA. This includes: the protection of species and ecosystems; the sustainable use of indigenous biological resources; the fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resources; and the establishment of a South African National Biodiversity Institute (SANBI). Section 52 of the Act provides for listing of threatened or protected ecosystems, in one of four categories: Critically Endangered (CR), Endangered (EN), Vulnerable (VU) or Protected. The main purpose of listing threatened ecosystems is to reduce the rate of ecosystem and species extinction and includes the prevention of further degradation and loss of structure, function and composition of threatened ecosystems. Threatened terrestrial ecosystems have been delineated based on the South African Vegetation Map, national forest types and priority areas identified in a provincial systematic biodiversity plan.	The SANBI Land Use Decision Support Tool was consulted when determining the ecological baseline of the site. A specialist vegetation assessment has identified primary grassland vegetation been present on site. Alien vegetation will be managed in accordance to the Act.
National Environmental Management: Air Quality Act, Act 39 of 2004 (NEM:AQA) NEM:AQA has placed the responsibility for air quality management on local authorities that will be tasked with baseline characterisation, management and operation of ambient monitoring networks, licensing of listed activities, and emissions reduction strategies. GN893 of 2013 provides the list of activities in	The principles of the NEM:AQA will be applied to the activities covered by this application.

terms of Section 21(1)(a) for which licensing is required in terms of Chapter 5 of the Act. This notice further establishes minimum emission standards for the listed activities.	
National Dust Control Regulations (GN R 827) (Government Gazette 36974, 1 November 2013) The purpose of these regulations is to prescribe general measures for the control of dust in all areas.	Considered when proposing appropriate mitigation targets
GUIDELINES	
Integrated Development Plan for the Midvaal Local Municipality (2016/2017 Final report. This report includes the latest spatial development plan for the municipality.	Considered when completing the socio economic conditions of the municipal area within which the proposed application area is situated. A rezoning application is being made.
SANS 10103:2008 The Measurement and Rating of Environmental Noise with Respect to Land Use, Health, Annoyance and to Speech Communication	Considered when proposing appropriate mitigation targets.
SANS 1929: Ambient Air Quality – Limits for Common Pollutants	Considered when proposing appropriate mitigation targets.
SANS 1137: Standard test method for the collection and measurement of dust fall (settleable particulate matter).	Considered when proposing monitoring requirements.

f) NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES

This application was primarily influenced by the fact that an established mining operation once took place over the site. These historic mining activities ceased due to lapsing of the mining authorisation (as opposed to reaching the end of life of mine i.e exhausting of viable mineral resources). This proposed mining right application (being undertaken by Prime Spot) can be viewed as a continuation of the mining activities that have already occurred over the property. Prospecting results have indicated that there **still** is a viable mineral resource to facilitate mining for over another 60 years.

If this mining right and associated waste management licence is granted, the following benefits could translate:

- Employment opportunities (approximately 22 people salaries and its multiplier effect x4). Additional salaries within the area will have an influence on raising the purchasing power in the local economy.
- Support of community development projects through the commitments made in the Social and Labour Plan.
- Change to the competitive dynamic of the aggregate market within the region. The introduction of a new player into the market should provide savings for service providers to the construction industry and stimulate activity.
- Projects such as the proposed second Rand Water canal or the Rand Water Road could benefit from having a source of aggregate in close proximity to the proposed project. One of the biggest expenses associated with aggregates is transport cost. Having a source of aggregate in close proximity to large projects will reduce the transport costs associated with obtaining aggregate.
- Minimal additional impacts on the existing environment due to the proposed mining right application area already being located within a disturbed footprint (i.e. the historic mining operation).

g) MOTIVATION FOR THE PREFERRED DEVELOPMENT FOOTPRINT WITHIN THE APPROVED SITE INCLUDING A FULL DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED DEVELOPMENT FOOTPRINT WITHIN THE APPROVED SITE

(i) Details of the development footprint alternatives considered

The aim of this section is to provide the details of the **alternatives** considered as part of this project with reference to the properties on which the activities will occur, the type of activities to be undertaken; the design or layout of the activities; the technology to be used; the operational aspects and the option of not implementing the activities.

(a) *The property on which or location where it is proposed to undertake the activity*

The proposed mining right is located on a portion of Portion 59 of the Farm Vischgat 467 IR and covers 95.7740 hectares in extent. With regards to locational alternatives the following aspects were taken into account:

- The applicant (Prime Spot) holds a prospecting right for dimension stone, aggregate and stone aggregate over the property to which the proposed mining right application pertains;
- Historic mining activities that have taken place over the property and that remnants of a defunct mining operation remains;

The results of prospecting has established that there still is viable mineral resources over the property (to facilitate mining activities for a further 50 years, plus) and as such this proposed mining right application can be viewed as an extension of the historic mining activities that took over the site.

Hence, **locational alternatives were not considered** as the site has been selected based on it geology, i.e. the occurrence of the mineral resource (dimension stone, aggregate and stone aggregate) and the fact that previously there was an established mining operation on the site.

(b) *The type of activity to be undertaken*

No **alternative activity** other than mining has been considered. There are no viable alternative methods, other than open cast mining, to extract the mineral resource (dimension stone, aggregate and stone aggregate). As mentioned above, historically mining took place over the property. These historic mining activities ceased due to lapsing of the mining authorisation. Mining will continue from expanding the existing pit. Open cast mining methods for aggregate operations are well established throughout South Africa.

(c) *The design or layout of the activity*

The design and layout options associated with this proposed project are primarily influenced and limited by the occurrence of the geological resource (i.e. mining can only take place where there is a viable mineral resource).

The economic viability of extraction of the resource is also dependent on the need and cost associated with the stripping of overburden. The areas demarcated for mineral extraction from pit 1, 2 and 3 are the most viable in terms of economically acceptable overburden stripping ratios.

In addition, the proposed site layout maximises the use of historically disturbed areas (i.e the placement of the crushing infrastructure and stockpile areas).

Based on the feedback during the initial consultation period, the following was considered (in terms of site layout);

- Adapting the dimensions of pit 2 which will be mined closest to the Rand Water servitude to ensure that the likelihood of an impact on the structural integrity of infrastructure within the servitude (from blasting activities) is insignificant. Based on the results of a blasting impact assessment report, with the implementation of appropriate mitigation measures, the impact on the Rand Water servitude will be “low”. Therefore the original design to extend the final pit 2 dimensions to 470m away from the servitude remains applicable. Blast monitoring results from the expansion of the pit will be used to continually assess the risk associated with the Rand Water servitude during the life of mine.

- Based on the feedback received from the Hlapolosa family, the option of the moving of the graves from the excluded area within the middle of the mining right area, is **not** been considered. The proposed access route (**Figure 5**) to the graves which will be formalised during the construction phase will avoid the physical mining areas for at least the first 49 years (until pit 3 is started upon).

  Through making use of this route, access through the physical mining activities to the graves will be prevented and therefore aspects such as the need for personal protective clothing are avoided.

Based on the above, **no alternative layout options** (to that presented in Figure 3) were identified.

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

No alternative technology has been considered for the mining right activities as drilling and blasting followed by crushing and screening is the only viable method of processing the mined material into products, with the required specifications, for use in the construction and other related markets.

(e) *The operational aspects of the activity*

The operational aspects of the proposed mine have been guided by the impact assessment completed as part of this report. No other operational alternatives have been considered.

(f) *The option of not implementing the activity*

In essence, the “no-go” option would ultimately imply that the state of the environment would remain as it is presently.

Considering that historic mining activities have taken place over the property and remnants of a defunct mining operation remains and that prospecting results has established that there still is viable mineral resources over the property, the “no-go” option would result in the sterilisation of a viable mineral resource. In addition, should the proposed project not materialise the following incidental aspects will also not materialise:

- Employment opportunities (approximately 22 people) (salaries and its multiplier effect, its influence on raising the purchasing power in the local economy).
- Support of community development projects (through the Social and Labour Plan)
- No change to the competitive dynamic of the aggregate market in the region. The introduction of a new player into the market should provide savings for customers to the construction industry and stimulate activity.

On the alternative side, the no go option is the **only** option available, to guarantee **no** additional disturbance (in terms of cultural / heritage / spiritural terms) on the graves (cemeteries) and surrounding heritage findings located within the middle of the mining right application area.

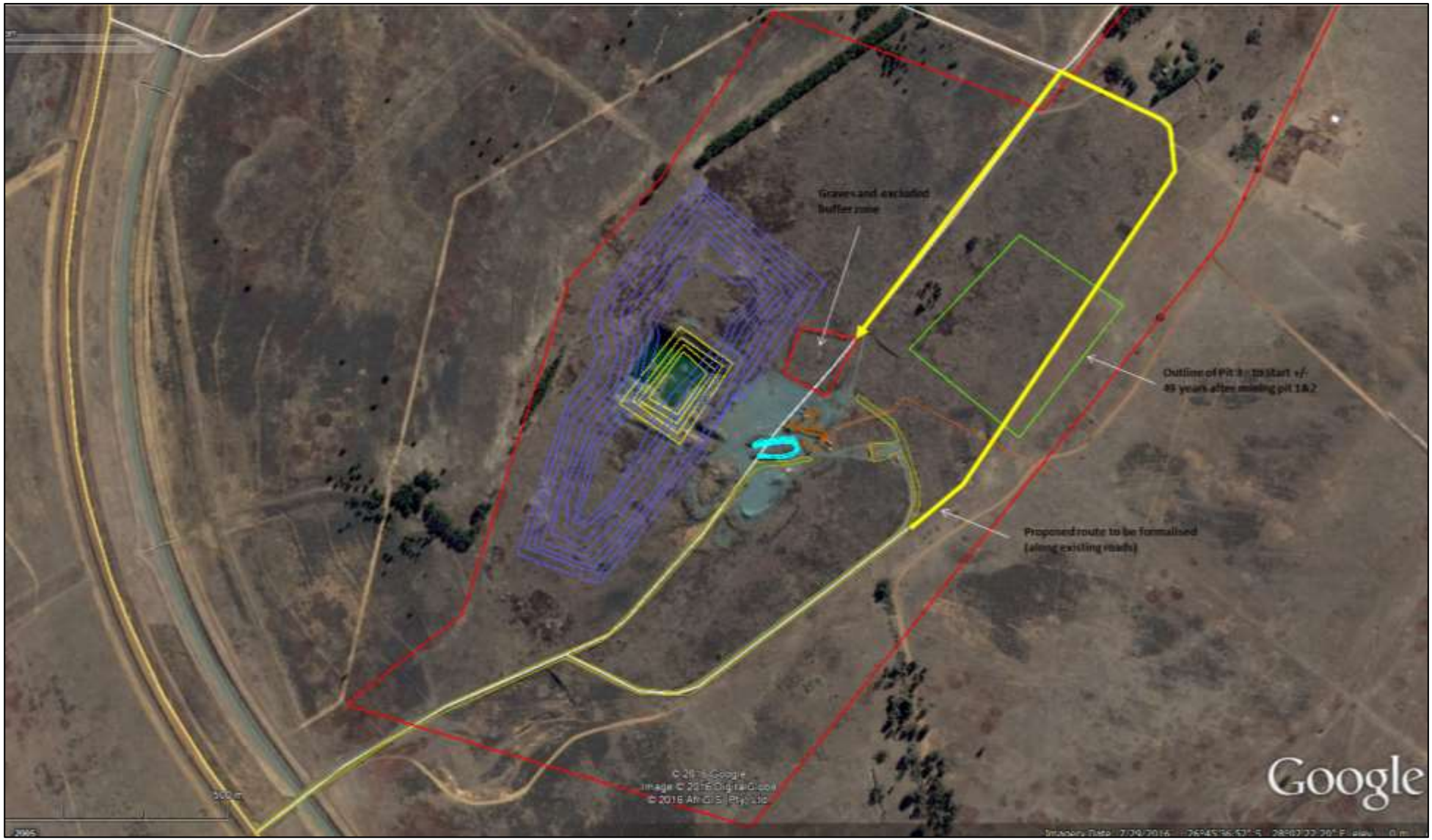


Figure 5: Plan showing the proposed route to be used to access the excluded graves.

(ii) Details of the public participation process followed

Below is a *summary* of the public participation process followed during the "Scoping Phase" of this application. The initial consultation process ran from **14 September 2016 through to 13 October 2016**.

Full details of the initial consultation process is presented in the final scoping report and **not repeated** in this document. During the initial consultation process the following approach for undertaking the consultation process was adopted:

Identifying all known Interested and affected parties (I&AP's) including:

- Surrounding landowner
- Relevant government departments
- Rand Water
- Municipal councillor
- Midvaal Municipality
- Surrounding mining / prospecting right holders
- Stakeholders identified during the consultation process for the original prospecting right
- NGO's – Save the Vaal
- List of I&AP's as provided by the nearby Sky Sands mining operation

I&APs' were captured on the I&AP database. See **Appendix 3.1** for a copy of the latest database showing registered I&AP's. A registered letter inclusive of a Background Information Document (**BID**) was sent out to all I&AP's captured on the database. Where email addresses were obtained / available, an email including a BID was sent to all known I&AP's.

Newspaper advertisements were placed in the Vaal Ster (13th September 2016) and the Vaalweekblad (14th September 2016).

A site notice was appropriately displayed at the entrance to the site and along the main access road (Vischgat Road) to the site for the period of 13 September to 13 October 2016.

All people who responded to the newspaper adverts and site notice were captured on the I&AP register.

Between 13 and 16 September 2016 the following individuals were met to discuss the project and drop off a BID:

- Jason (representative of the surrounding landowner)
- Chantell De Lange (BarnLabs)
- Dumisani Mumlaba (Alzu Piggery)
- Clemance (employee of adjacent plot owner)
- P Herbst (Sky Sands)
- J.E Enslin (private landowner in the area)
- L J Viljoen (private landowner in the area)
- A.G Maile (Bantu-Bonke liason officer)

A public meeting was held at the Bantu-Bonke community hall on 29th September 2016 from 16:00 through to 20:00. The public meeting was advertised in the newspaper adverts, on the site notices, within the BID and on all letters and emails sent out to interested and affected parties.

The draft Scoping Report was released for a 30-day comment period from 13 September 2016 to 13 October 2016. Copies of the Draft Scoping Report were made available at the following locations:

- Offices of Umhlaba Environmental Consulting CC; and
- **On the Umhlaba website (www.umhlaba.co.za).**
- **Emailed** (on request)
- At the recommendation of one I&AP during the public meeting the draft document was also lodged at the Vereeniging and Meyerton libraries.

A consolidated summary of the main issues raised in relation to the draft scoping report, are as follows:

- Rand Water is extremely concerned about the potential impact on their existing canal and pipeline running to the south of the mining right area (which provides over 70% of water for Gauteng) and the potential impact on a future canal and pipeline planned. This objection resolves around the potential

impacts of blasting activities on the structural integrity of rand water infrastructure (canal and pipeline) and the access bridge which is proposed to be used.
- The Hlapolosa Family Delegation strongly object to the application due to the impact mining will have on family graves which are within the middle of the mining right area. While these graves have been excluded from the mining right area they remain within the middle of the proposed mine.
- Potential impact on groundwater availability and groundwater quality from mining
- Impacts of additional traffic on the Vischgat road in terms of deterioration of the road, dust and safety concerns. Specific concerns about the cumulative impact of traffic and where the road is a single file road.
- Impacts associated with dust and noise
- Other impacts associated with blasting activities (fly rock)
- Fencing of the mining property
- General environmental impacts (fauna / flora / protected bird area) of mining in a rural / environmentally sensitive area.
- Socio-economic impacts such as potential impact on surrounding property values, crime, influx of people from the mine and informal housing. The overall wellbeing of the local community.
- The strain on local infrastructure and availability of electricity.
- Impact on wetlands within the area.
- Impact on the Vaal River
- Impact on agriculture and residential areas
- Health impacts (associated with air pollution)
- Dispute the granting of the preceding prospecting right
- Verbally being informed that the property in question is subject to a land claim
- Economic viability and potential market for the proposed mine.
- Need to take cognisance of local spatial development plans
- Need to implement effective concurrent rehabilitation
- Procurement and employment opportunities

The evidence of the above referenced initial consultation process was submitted with the Final Scoping Report on 7th February 2017 and has therefore **not been provided again** in this document.

As for the EIA phase of the application, the following public participation process has been followed;

1) All **registered** I&AP's as captured within the Scoping Phase of the project were informed of the DMR acceptance of the final scoping report in an email on **02nd March 2017**. The email included;

"Dear I&AP

Thank you for your interest provided to date, in the Prime Spot - Mining Right & Waste Application.

The purpose of this email is to provide you with an update concerning the application.
- *The final scoping report was accepted by the Department of Mineral Resources (DMR) on 23rd February 2017.*
- *Umhlaba have 106 days to complete the EIA phase of the application which **will** include another 30 day review period of the draft Environmental Impact Report (EIR) for registered I&AP's.*
- *Commissioned specialist studies are ongoing with the goal of them being finalised before the end of March 2017.*
- *A Draft Environmental Impact Report (EIR) will be completed for the beginning of May 2017.*
- *A public participation process (inclusive of another public meeting) will commence upon completion of the draft EIR – The exact dates will be communicated to all I&AP's in due course*
- *The draft EIR will be finalised after completion of the review period.*

I will notify you as and when we plan to commence on the next phases consultation process. Should you have any questions or queries, in the meantime, please do not hesitate to contact me.

Regards

Andrew Nicholson"

2) Additional new paper article (not commissioned by Umhlaba) was published concerning the project. See **Appendix 3.2** for copies of the articles.

3) Individual information sharing meetings were held with Rand Water on 24th April 2017 and the Hlapolosa family representatives on the 26th April 2017. During these meetings an update on the process followed thus far was provided and details of the outcome of the various specialist studies. Feedback from the meeting has been captured in Table 3 below. The attendance register for the Rand Water meeting is provided in **Appendix 3.6**.

4) The draft Environmental Impact Report was initially released for a 30-day comment period from **2 May 2017** to **31 May 2017**. Copies of the Draft Environmental Impact Report were made available at the following locations:
   - Offices of Umhlaba Environmental Consulting CC; and
   - On the Umhlaba website (www.umhlaba.co.za).
   - The Vereeniging and Meyerton libraries.

   The email that accompanied the release of the draft report (emailed on 02nd May 2017) was as follows;

"Dear Registered I&AP

Thank you for your interest provided to date, in the Prime Spot - Mining Right & Waste Licence Application. The purpose of this email is to provide you with an update concerning the application.

- *The final scoping report was accepted by the Department of Mineral Resources (DMR) on 23rd February 2017.*
- *Commissioned specialist studies have been completed.*
- *A **Draft** Environmental Impact Report (EIR) inclusive of the completed specialist studies are now available on the public participation page of the Umhlaba website (www.umhlaba.co.za) for a 30 day commenting period. These documents can be downloaded. Should you have any problems downloading the documents, please let me know and I can email them. Links to the documents is provided below;*

  EIR Draft Report
  Appendix - A4 - Groundwater
  Appendix-A5- Heritage
  Appendix-A8-Blasting
  Appendix-A11-Financial-Provision

The way forward:

- *Please review the draft EIR report and specialist studies. After reviewing, if you wish, please provide feedback by close of business on **31 May 2017**.*
- *A public meeting (to provide an overview of the draft EIR and findings from the specialist studies) will be held on;*
  - ***16th May 2017** between **17:00 and 19:00** at **Bantu Bonke Hall –** Should you require details of the location of the community hall please contact me.*
  - *Confirmation of your attendance would be appreciated*
- *Once the commenting period is completed, the draft report provided will be finalised taking cognisance of all feedback received. All comments received from I&AP's will be presented within the final report, which the DMR will use to make a decision on the application.*
- *Once the draft report is finalised it will be lodged for consideration to the DMR, who have 107 days to make a decision on the application*
- *Once a decision has been made on the final document, the outcome will be communicated to all registered I&AP's.*

Should you have any questions or queries, in the meantime, please do not hesitate to contact me.

Regards

Andrew Nicholson"

5) All registered I&AP's (who has not provided email addresses) were sent an SMS of the date and time of public meetings to be held for the EIA phase of the project. This sms was sent on **11 May 2017** and contained the following;

   "Prime Spot Mining Right App. – Public meeting at Bantu Bonke Hall @17:00 on 16 May – contact andrew@umhlaba.co.za if you require more detail"

6) A Public meeting was held;
   - 16th May 2017 @ 17:00 at the Bantu-Bonke community hall, Three Rivers

   A copy of the public meeting presentation, the attendance registers and feedback from the public meetings has been provided in **Appendix 3.3.**

Summerised comments raised during the public meeting have been captured in Table 3 below. See the minutes of the meeting for detailed comments.

7) An email notifying all registered I&AP's of an **extension** to the commenting period to 2 July 2017, was sent 19 May 2017 and included the following;

   "Dear I&AP

   Thank you for your interest provided to date, in the Prime Spot - Mining Right & Waste Licence Application. The purpose of this email is to provide you with an update concerning the application.

   - *Umhlaba has been granted an extension by the Department of Mineral Resources for the submission of the Final Environmental Impact Assessment Report and Environmental Management Programme Report. As a result, we are in a position to extend the commenting period until **02 July 2017**.*
   - *A vegetation specialist has undertaken a site visit (12 May 2017) to determine the flora sensitivity of the site. Once his report is finalised you will be notified of its availability for comment.*
   - *A specialist bird opinion will be sort. This can only be obtained after the vegetation specialist report has been completed.*

   As per previous communication;
   - *The **Draft** Environmental Impact Report (EIR) inclusive of the original completed specialist studies is available on the public participation page of the Umhlaba website (www.umhlaba.co.za). These documents can be downloaded. Should you have any problems downloading the documents, please let me know and I can email them. Links to the documents is provided below;*

   EIR Draft Report
   Appendix - A4 - Groundwater
   Appendix-A5- Heritage
   Appendix-A8-Blasting
   Appendix-A11-Financial-Provision

   Should you have any questions or queries, in the meantime, please do not hesitate to contact me.

   Regards

   Andrew Nicholson"

   In addition, an SMS was also sent to those I&AP's which had not provided email addresses, the sms was as follows;

   "Prime Spot Mining Right App – Extension granted for review of draft EIR & specialist studies until 2 Jul 17 – contact andrew@umhlaba.co.za for more detail"

   A copy of the granting of the requested extension to the EIA process by the DMR is provided in **Appendix 3.4**.

8) On the 5th of June 2017 an email was sent out to all those people who attended the public meeting and who had provided an email address concerning the minutes of the public meeting. The email content was as follows:

   "Dear Interested and Affected Party

   Thank you for attending the public meeting (on 16th May 2017) of the above referenced mining right application. Please find attached a copy of the draft minutes of the public meeting.

A copy of the draft minutes and the presentation will be available on our public participation page of our website (www.umhlaba.co.za) before the close of business today. Should you have any comments on the draft minutes, please forward them through to me so I can make the appropriate changes. Please remember that comments on the Draft EIR are due on or before 02 July 2017.

Regards

Andrew"

Subsquent to the emailing of the minutes, no feedback on the minutes has been received.

9) A meeting with community leaders of Bantu Bonke Community was held on 7 June 2017. A copy of the attendance register, feedback from the meeting and written feedback from the community is provided in **Appendix 3.5**.

10) All I&AP's who had provided an email address were informed of the completion of the vegetation assessment in an email sent on 10 July 2017. The email content was as follows;

"*Dear I&AP*

Thank you for your interest provided to date, in the Prime Spot - Mining Right & Waste Licence Application. The purpose of this email is to provide you with an update concerning the application.

- *The vegetation assessment has been completed and is available on the public participation page of the Umhlaba website (www.umhlaba.co.za), or can be accessed using the following link; Vegetation Assessment .*

Should you wish to comment on the vegetation assessment, please forward comments through to Umhlaba by 24 July 2017. Umhlaba will acknowledge in the Final Environmental Impact Report (EIR) that I&AP's have not had sufficient time to review and comment on the vegetation assessment.

Should you have any questions or queries, in the meantime, please do not hesitate to contact me.

Regards

Andrew Nicholson"

11) All pertinent written feedback received during the EIR process is included in **Appendix 3.6**. A summary of concerns raised in provided in Table 3 below.

A summary of the **main** feedback raised during the EIA phase is as follows:

- All the concerns noted during the Scoping phase were re-iterated.
- Cemeteries located within the mining right area
- The impact on flora, wetlands and bird life
- Traffic / Status of existing roads
- Blasting concerns on Rand water infrastructure
- General concerns about blasting
- Dust
- Impact on groundwater resources
- The socio-economic benefit of the project to the local community. Specifically requested additional detail concerning;
    - Job opportunities and required skills
    - Jobs identified for women in mining
    - Potential ownership of the project
    - Local economic development project that the mine is going to contribute to
    - The value the mine will bring to the community
    - Implications for the local school

Table 3 below includes details of all the feedback received during the Scoping Phase and EIA phase of the project. The feedback between the different phases has been distinguished by using different colour writing. Feedback from the Scoping phase is presented in black ink and feedback from the EIA phase is presented in blue ink.

The backing I&AP documentation concerning the scoping phase is contained in the appendicies of the final scoping report and is **not** repeated in this document. Only additional feedback received during the EIA phase is captured within the appendicies of this document.

(iii) Summary of issues raised by I&APs

Table 3: List of I&APs notified and/or consulted with a summary of the issues raised.

INTERESTED AND AFFECTED PARTIES *List the names of persons consulted in this column, and Those who must be consulted were in fact consulted, marked as RM=Registered mail, E=Email, M=One on one Meeting, PM=Public Meeting, T=Telephone*		**DATE COMMENTS RECEIVED - Scoping Phase**	**DATE COMMENTS RECEIVED - EIR Phase**	**ISSUES RAISED** **(Issues raised during scoping in black – Any reference to Appendix 2 is linked to Appendix 2 of the final Scoping Report not this report.** **(Additional issues raised during EIR in blue – where feedback was provided in writing the full feedback is provided in Appendix 3.6)**	**EAPS RESPONSE TO ISSUES AS MANDATED BY THE APPLICANT** **(Additional / Updated responses for the EIR provided in blue – Where applicable and information is available comments raised in the Scoping phase have been reconsidered)**
AFFECTED PARTIES					
Landowner/s					
Tradmil Trading 10 (Pty) Ltd	M+E	08-Sep-16		**Fully support** the application. (See **Appendix 2.1** of the Scoping Report (S.R)**)**	Support for the application noted
Group Five Engineering and Construction (Pty Ltd (Previous owner of Sky Quarries)	E +T	20-Jan-16		Email **support** of the application and indicated historical information gathered by Group Five can be used during the application process. No additional comments have been provided during the EIAr phase	Support for the application noted
Lawful Occupier/s of the Land					
N/A					
Landowners or Lawful Occupiers on Adjacent Properties – The application area is entirely surrounded by 1 directly adjacent landowner					
Qunihove - Laurence Sher	E				
Jason	T+E+M	15-Sep-16		During a meeting with a director of Prime Spot the need to ensure fencing of the property was raised.	Prime Spot will fence the property based on the need of the proposed mining operation or contribute to the fencing of the property should the fencing needs (as requested by the adjacent landowner) be more expensive that what is required for fencing of the mine. Commitments to ensure the property is fenced is contained within the EMPr section of the report.
Justine	E			None	
Serge	E			None	
Municipal Councillor					
Cllr Wayne de Agrella	T+E+PM			Telephonically mentioned the application needs to consider Cumulative impact - specifically linked to potential traffic load on the access road. During the PM, indicated was **not in support** of the application due to the following main reasons: 1) Implication of additional traffic on the public road 2) Need to take a long term view (500 years) 3) Implication on the wetlands of the area 4) The area is rural and mining impacts on this rural landscape.	The impact assessment has considered cumumlative impacts when determining significance of impacts. 1) A traffic impact assessment has been completed (**Appendix 7**) which has highlighted that from a traffic perspective the project can proceed. It is acknowledged that the state of the roads within the vicinity of the proposed mine especially the un tarred section of the Vischgat road are terrible and additional trucks will only compound the current poor state. The proposed mine can not be held liable or accountable for the maintenance and upkeep of public roads, this is the responsibility of the roads department. 2) The potential geological resource of the site allows for a mine lasting approximately 65 years, however a 30 year mining right has been applied for. 3) A temporary and a seasonal wetland have been identified during the vegetation assessment of the site (See **Appendix 5**). No mining activities will take place within 100m of the identified wetlands. Follow up studies have been committed to during the construction phase to determine the need for any additional mitigation measures in order to avoid any impact on the identified wetlands. No off site wetland will be affected by the proposed mine. 4) Agreed, the area is predominantly rural in nature, although there are other mining operations in close proximity to the proposed Prime Spot Mine, namely coal mining and sand mining.
Cllr Dalene Venter	PM	11-Oct-16	10-May-17 15-May-17 16-May- 17	A summary of the concerns is as follows: 1) Impact of additional trucks on already seriously affected roads 2) Air pollution 3) Impact on protected bird area 4) Impact on Rand Water infrastructure Serious implications include; residential, agricultural, environmental, health risks with air pollution etc. See Appendix 2.8 of the S.R for a copy of the full feedback. During the EIAr phase Cllr Venter raised the following (email correspondence contained in Appendix 3.6); **10 May 2017**: 5) Raised concern that a number of I&AP's were note receiving notification of project updated and were not aware of the proposed public meeting. **15 May 2017**: 6) Requested 30 day extension to the commenting period 7) Highlighted the area falls under an Ecological Support Area important to Bird species and therefore Birdlife SA should be consulted and specialist assessment should be undertaken.	1) A traffic impact assessment has been completed (**Appendix 7**) which has highlighted that from a traffic perspective the project can proceed. It is acknowledged that the state of the roads within the vicinity of the proposed mine (especially the un tarred section of the Vischgat road) are terrible and additional trucks will only compound the current poor state. The proposed mine can not be held liable or accountable for the maintenance and upkeep of public roads, this is the responsibility of the roads department. 2) Dust mitigation measures have been proposed and the mine has committed to at least 1 years of dust fallout monitoring to confirm that dust fall out from the operation is effectively controlled. 3) No specialist bird assessment has been completed. Based on the outcome of the vegetation assessment (**Appendix 5**) it is fair to say there is a high likelihood that the site is suitable for the protected Grass Owl. The mine has committed to compiling and implementing a Ecological Management Plan which will aim to preserve areas of the site not demarcated for future mining. The primary grassland areas which overlap with the proposed expansion of pit 2 and the development of pit 3 will be destroyed. 4) A detailed blasting assessment (**Appendix 9**) has been completed for the project. The report indicates that the potential impact on Rand Water infrastructure can be effectively managed. Reccomendations from the report have been committed to in the EMPr section of this report. 5) Once feedback was received, an additional sms was compiled and distributed to all

				8) The previous petition (of 432 people) itself raised concerns to the application. 9) Request a second round of participation whereby I&AP's can review revised reports prior to the final submission to the DMR. **16 May 2017** During a conversation prior to the public meeting Cllr Venter raised the following concerns; 1) The road infrastructure within the area is terrible and any project that adds to truck numbers will add to the deteriation of the roads. 2) Raised concerns about a sasol pipeline within the area of the application as well as the potential impact on the rand water infrastructure. 3) Re-itterated the ecological impact of the proposed project.	cellphone numbers of registered I&AP's to inform them of the meeting on the 10th of May (6 days prior to the public meeting). 6) An extension was provided from 31 May through to 2 July to provide comments. This was communicated to all registered I&AP's via email and sms on 19th May 2017. 7) Agree that a portion of the mining right application area is regarded as an "Ecological Support Area important to birds. The vegetation assessment has highlighted that the site contained suitable habitats for Grass owls which has been acknowledged in the report. No specific bird assessment has been completed (as the report has acknowledged that the chance of grassowls being present is high) and Bird Life has not specficially been contacted for comment. 8) I acknowledge that the petition included as part of the scoping report was itself an objection to the applicaton. 9) Due to time limitations associated with the completion of the EIA process a second round of consultation will not be held. All registered I&AP's were provided with an extension to review and comment on the draft EIAr and the completed specialist studies. - With regards to road infrastrucuture, I agree with the comments and concerns raised, however the applicant can not be held responsible for maintaining public roads. - During all investigations, and assessment undertaken during the EIA, I have not come across any evidence of a sasol pipeline traversing the mining right application area. - Potential impacts on Rand Water infrastructure have been assessed in the completion of a blasting impact assessment (Appendix 9) and a bridge assessment (Appendix 8).
Cllr Salone U.V Rensburg	PM			None	
Municipality					
Midvaal Municipality	RM+ E			None Indicated in the WULA consultation that a formal response from the Municipality would follow (Appendix 3.6).	No formal response received thus far.
Raphasha Moyogobo	PM			None	
Wandisa Ndevu	PM	13-Oct-16		Below is a summary of the objection. A full copy of the objection is provided in **Appendix 2.9** of the S.R 1) In terms of the Midwaal Spatial Development Framework the property is demarcated for "Agricultural Use" and thus a formal land use application would be required prior to commencement of the activities outside the scope of agricultural.	The landowner of the property is Tradmil Trading, who have appointed Vaalplan Town and Regional Planners to undergo the required town planning application. See **Appendix 2.9** of the S.R for a letter providing evidence of the appointment. Feedback from Vaalplan dated 19 April 2017 (**Appendix 3.6**) indicated that the application has been completed and submitted to Midvaal.
L J Sergane	PM			None	
Organs of State (Responsible for infrastructure that may be affected Eg. Roads Department, Eskom, Telkom, DWA)					
Rand Water	Letter	29-Sep-16		Written response was provided. Full copy of the written response is contained in **Appendix 2.8 of S.R**. In summary the issued raised are as follows: **Rand Water objects to the application:** 1) The rand water canal and pipelines feed water from the Vaal Dam to the Rand Water Zuikerbosch Water Treatment Plant (70% of all water supply to Gauteng) - This infrastructure will be affected (*verbally informed* by blasting activities and truck movement over the access bridge to the site) 2) A second canal and BG4 pipeline are planned 3) Dispute the granting of the preceding prospecting right due to lack of consultation with Rand Water 4) The land where the canal and pipelines are constructed is protected in terms of Section 48 (1)(c) of the MPRDA 5) If granted, Rand Water would have to comply with the Mine Health and Safety Act	In order to determine appropriate mitigation measures to prevent an impact on the Rand Water servitude, Prime Spot have (during the EIA phase): 1) Commission a blasting impact assessment 2) Commission a structural engineer to assess the existing bridge and advise on what measures are required to ensure the structural integrity of the bridge is maintained. Neither of the studies have indicated that impacts will be created that can not be mitigiated. The reccomendations from both of the studies have been incorporated into the management measures of the EMPr. In reference to the other concerns raised: 1) The second canal and BG4 pipeline are acknowledged. As and when EIA authorisation is applied for, Prime Spot would like to be regarded as an interested and affected party. 2) The prospecting right boundary was more than 380m away from the edge of the canal (See Figure 6 below). None of the proposed prospecting activities (i.e drilling activities) would have impacted on the Rand Water servitude. As a result Rand Water was not deemed as a pertinent interested and affected party. The decision maker for the granting of a prospecting right is the DMR. 4) The Rand Water servitude (containing the canal and current pipe) falls outside the mining right area hence will not fall under the ambit of the MPRDA or the MHSA. See Figure 6 below.
	T+E+RM+PM			Mr Reynold handed over the Rand Water Letter referenced above. In addition to the points raised above, the following feedback was provided verbally; 1) Will comments and responses be circulated to all I&AP's 2) Requested how the public meeting was being recorded 3) Raised concerns of blasting and trucks crossing the existing bridge on the existing canal and pipeline and the planned canal and 3.5m diameter BG4 pipeline. 4) Traffic volume on existing road - specifically where the road is reduced to single flow 5) Impact of the additional trucks resulting in additional deterioration to the existing road 6) Requested indication of the volume of additional traffic 7) Electricity supply is limited	1) All comments and responses have been captured within this table. The final scoping report will be made available to all who have registered as interested and affected parties. 2) The public meeting was recorded through the taking of summarised minutes and recorded. 3) A blasting impact assessment and a structural engineer will be commissioned during the EIA phase to evaluate blasting concerns and concerns of the bridge. 4 & 5 & 6) A traffic impact assessment will be commissioned during the EIA phase. 7) Electricity was available for the previous mining operation on site. Existing connections will be re-established.
	PM				
	E			None	

	E			1. The shapefiles for the infrastructure proposed as well as road connections/access roads. 2. Coordinates of the development; 3. A layout plan for the development including development footprint; 4. Specialist studies being undertaken; 5. Confirmation as to whether wayleaves will be required, from Rand Water 6. The detail about the facility that will receive the sewerage. 7. An agreement that the identified sewerage facility is aware of the development and that they have the capacity to accept the sewerage from the site without overloading the facility. Will there be any discharges other than the sewerage system that will increase storm water entering the environment. If so, has the development considered retention and stilling ponds to slow down high peak flows. If the sewerage facility cannot accept the additional load into their facility then this will have a negative impact on the environment and the pollution load into the river systems.	The information requested was emailed through to Ms Knoeigh on 28 September 2016 and 04 October 2014.
	M		25 Apr 17	A meeting was held on **25 April 2017**. See **Appendix 3.6**. A summary of the outcome of the meeting with Rand Water is presented below: 1) There was a mention of the Rand water servitude being 300m wide. 2) Rand Water will consult their structural engineers to determine an acceptable blast vibration limit (we have currently captured within the blast report 25mm/s at the canal). Once you have the engineers feedback, please can your forward it to me so we can update our report. 3) We will ask the structural engineer to provide an opinion on the implication of vibration caused by trucks crossing the bridge. 4) The following was brought to our attention; a. There are plans to construct a second canal – most probably closer to the proposed mining operations b. There are plans in place to increase the height of the existing canal by 600mm – our blasting specialist indicated an acceptable blast vibration limit for freshly poured concrete is 5mm/s c. We need to ensure that the EMP includes the sharing of monitoring data d. The proposed randwater new road is approved although the timelines on construction are not set.	1) Based on the information I have the mining right application area falls outside of the Randwater Servitude. Previously we had our mapping person provide a KML demarcating the servitude. This was sent to Rand Water to confirm correctness. 2) The EAP welcomes Rand Water wiliness to obtain third party opinion concerning the specialist studies completed. Unfortunately the opinion is currently not available. 3) See comment above. 4) a. Based on my information available the second canal would need to be placed further away from the proposed mining operation in order to stay within the existing servitude. The applicant is not against the placement canal. b. As and when the canal height is raised, blasts can be adapted to reduce the vibration to conform to safe requirements concerning the setting of the concrete. c. The EMP includes a commitment to share the blast monitoring results. d. Should this project be approved, it will be in an ideal location to provide aggregate for any future construction projects.
	E		04 May 17	Further email correspondence on 4 May 2017 requested; 1) Revised structural assessment for the bridge, the report provided thus far is only certification for the bridge to carry road legal heavy vehicles. 2) Ecological assessment 3) Traffic assessment 4) Any report or documentation you may have which shows where the “Rand Water” acceptable tolerance limit was obtained, the one that was used in the assessments.	1) With regards to the revised structural assessment for the bridge, the following is an extract from the feedback of the engineer; *“We confirm also that we do not anticipate that the trucks passing over the bridge will cause a vibration that wil affect the bridge or the canal below. However it is important to ensure that the positions where the gravel roads meet the concrete approach slabs does not become potholed. If this becomes a problem, then it may be necessary to extend the hard surface approach road by a distance of 10m each side using concrete slab or asphalt.”* 2) A vegetation assessment was distributed to Rand Water on 10 July 2017. 3) The traffic impact assessment was provided with the Draft EIR on 02 May 2017. 4) With regards to the Rand Water Acceptable tolerance limit, the following feedback was provided by the specialist; *“There is no formal documentation regarding the limit. Somewhere in in the process the limit of 25 mm/s came up and we have used that as the limit. Exactly where and how seems to be out of reach. I do feel that the limit may actually be higher but as a good baseline it can work.Changes the limit to anything higher is not going to make any difference. The expected levels are low. Changing to anything less is well worth contesting. The canal can handle a lot more and any pipeline, which is normally considered by RWB at a 50 mm/s limit. There is the odd time that they do put 25 mm/s on a steel pipe.”*
	E		09 May 17	Further email correspondence on **9 May 2017** requested; Rand Water confirmed it will commission their own specialists to confirm blasting results and therefore requested an extension to complete the work.	As the EAP responsible for the environmental authorisation process, I appreciate Rand Water’s approach in commissioning an external specialist.
	E		28 June17	Email correspondence confirmed: Rand water is struggling with the procurement process to appoint the required blasting specialist and committed to sending results as soon as possible. Requested a 2 week notification for the deadline to provide comments.	As and when the feedback from the third party is available it will be considered and if necessary the limit considered, acceptable, will be amended.
	E		17 July 17	The following concerns were raised on the vegetation assessment: 1. I was curious why you refer to p12 conservation status of Central Free State Grassland is Vulnerable (Driver et al., 2005 and Mucina et al., 2006) when the site is not on the orange free state. (I do understand it is perhaps a grass type, but just confirm that GDARD agrees) 2. You mention C-plan, what does GDARD and Midvaal say in terms of their conservation target for that area. 3. You mention p14 a favorable time for conducting the study, please could you be more specific. 4. What species would you have looked out for being that it was winter and need to come back? 5. You provide the reference date of 2009 for you red list that you used. Did you confirm your red list with GDARD. I think there are more up to date lists that they will confirm in writing. 6. From the habitat types you observed would you expect that they could be suitable habitat for Grass owl?	A summary of the feedback from the specialist to the queries is as follows: *1. Central Free State Sandy Grassland is a regional vegetation type, the distribution of which is mostly in the Free State, but also marginally into Gauteng.* *2.C-Plan version 3.3 is the current conservation plan for Gauteng, as determined by GDARD. It is their own assessment; therefore, I am pretty sure they agree with it. Midvaal is a municipality and will have a Spatial Development Framework, but the SDF will be a planning assessment, not a biodiversity tool.* *3. The vegetation must be surveyed during a season when the majority of the plant species are detectable in the field. The optimum time is the core of the growing season, but there are also early season species (for example bulbs and early flowering annuals), whereas grasses tend to flower in late summer. As summer wanes into autumn and then into winter, there is a gradual reduction in the species that are likely to be visible in the field. It is therefore optimal to survey during the height of the growing season. Nevertheless, this does not negate the value of a survey at any other time.* *4. No species in particular.*

					5. *I get my lists from GDARD on a project-by-project basis. The reference dated 2009 is for the original national Red List that was published. Immediately after that date in my report (page 13) is an explanation that the online list is updated continuously.* 6. *I did not do a grass owl assessment; my study was on flora and vegetation.*
Department of Water Affairs	RM		10 May 17	None	The Water use license was submitted to DWS on 10 May 2017. Please find attached proof of submission in **Appendix 3.6**. During communiciation with the consultant responsible for the Water Use License on 13 July 2017, it was confirmed that as of that date, no official feedback or comments had been received concerning the project or the application.
Lesiba Mabona	T+E			None	
Gauteng Province Roads and Transport	RM			None	
Freeman Masuku		E		None	
Unathi Vena	T&E	E	3 Mar 17	Requested that all communication is also directed to Mr Freeman Masuku (Appendix 3.6).	All communication from 3 March 2017 also included copying in Mr Masuku as requested.
Communities					
George Maile (Banto Bonke Community)	T + M		16 May 17	During the public meeting, Mr Maile raised the following concerns: 1) Concerned about traffic/road upgrade, said the departments have failed to upgrade and maintain the road. 2) Asked Andrew to write that roads needs upgrade in the report 3) Wanted Andrew to indicate which specific skills will be needed for the mine.	1. The traffic specialist report (**Appendix 7**) has confirmed from a traffic point of view, there won't be a need to upgrade the Visghat road. The final report has been updated that while the road can handle the traffic, the current state of the road is terrible and of need of serious maintenance and attention. 2. Based on my non specialist opinion the Vischgat road (specifically the dirt section of the road) is of need of serious maintenance. However the responsibility of the maintenance of a public road can not rest with the proposed mine. The mine cannot afford to upgrade the road. It would make the project uneconomical. 3. The presentation at the public meeting was geared towards the draft EIR. A separate meeting was set up and held with the community concerning the commitments made in the social and labour plan. During this meeting the skills required for the various job opportunities was explained (See **Appendix 3.5**).
Maria Modise (Banto Bonke Community - Chairperson)	T	PM	07 June 17	Attended / Chaired a community meeting on 7th June 2017 Feedback provided below	See feedback below
Hlapolosa Family Delegation	T+E			Verbally informed that the Hlapolosa have lodged a land claim for the property Initially a separate meeting was requested, this request was subsequently withdrawn with confirmation family members would attend the public meeting.	The details of the land claim will be investigated during the EIA phase. The land claims commissioner has been sent a registered mail concerning the application. Additional communication during the EIA phase will be requested with representatives of the Hlapolosa family.
Peter Hlapolosa (chair)	T	04-Nov-16		Objection provided on 04th of November and therefore not included in the original final Scoping Report. The **full written objection is included in Appendix 2.8 of the S.R**. In summary the objections raised are; 1) The families are affected as land claimants to our ancestral land and graves in particular. 2) The current obligations with post prospecting processes (adhering to a waste management plan) are not been adhered to. 3) The above is noted during family member's visits to the graves. 3) Objections raised in the public meeting by various entities and people have not been properly captured in the scoping report as the scoping report highlights 2 main issues when everyone vehemently objected. 4) With regards to the issue of the removal of the graves, the family's stance will never change. 5) The possibility of creating a servitude is unheard of. 6) The **scoping report should be rejected**. 7) The land claim number is **R /3/118/267/42790** 8) Past visiting from family members have hesitated to visit the graves due to past safety measures during prospecting. This further adds to a hurdle when full mining will be at place. 9) We remain opposed to mining activities 10) timeframes within which the applicant is moving seriously affects our and other communities member rights.	In response to the summarised objections; 1) It is acknowledged that the families who have graves and ancestral interest in the land will be affected by this application should it be granted. 2) The current obligations are the responsibility of the previous mining permit holder, Tradmil Trading 10 (Pty) Ltd. 3) As an independent EAP I have endeavoured to capture all comments and concerns received. Going forward, I will regard all objections as equal and not highlight my perceived main concerns with the application. 4) In recognition of the families stance concerning the moving of the graves not being an option. This will no longer be considered as a possible alternative. Future recommendation will aim to suggest possible solutions to mitigate the stress of obtaining access to the graves. 5) Access options to the graves will be presented within the draft EIR for consideration. 6) The decision to accept or reject the scoping report lies with the DMR. 7) The Land Claims Commissioner has acknowledged the said claim. Full details of the response from the Land Claims Commissioner are provided in **Appendix A13**. 8) The concern about safety when visiting the graves is acknowledged and will be considered when proposing access alternatives contained within the draft EIA. 9) The objection from the Hlapolosa and other families of Vischgat is acknowleded. 10) The timeframes in which the application is proceeding is determined by the relevant EIA regulations. In the EMPr commitments have been made to create an access protocol with input from the affected family
	M		26-Apr-17	Representatives of the Hlapolosa family agreed to meet the EAP on 26th April 2017 to obtain an updated concerning the project and to ask questions. The following is a summary (as perceived by the EAP) of the outcomes of the meeting as provided to Prime Spot; They family representatives provided me some history into the family and the importance of the graves (both sets) to the family and community at large. Some interesting facts include; - Over 4 generations of the family buried on the farm - The "Family" seem very extensive – sounds like a whole community - A number of the "uncles" can recount the whole family tree from the various graves. - Provided a description of the importance of the layout of the graves - Provided information concerning the other heritage structures (located within the footprint of the proposed pit) and the importance of these structures. - Indicated that the land claim lodged is not a Family land claim but a community land claim. - Indicated that they had been frustrated by previous access requirements to visit the graves and the need to use PPE.	As the EAP managing the application process, I appreciate the wiliness of the Hlapolosa family to be involved in the environmental authorisation process and to provide input. With regards to the feedback, the meeting highlighted the importance and sensitivity of the both the graves and the farm portion in question to the affected family. I trust I have managed to convey that importance within the impact assessment. Commitments have been made within the EMPr for the mine to develop an access protocol with the affected family to ensure that access to the graves is as viable as possible. The proposed access road to the graves will be maintained. The EIAr has **not** considered the option of moving the graves. The graves within the middle of the proposed mining right area have always been excluded from the application I have acknowledged in the report that no amount of management measures would be able to effectively prevent "disturbance" occurring. Within the vicinity of the graves there will be blasting, crushing, stockpile, vehicle movements and other general mining activities, which will all create a level of "disturbance". Commitments have been made to apply for a permit from the South African Heritage Resources Agency (SAHRA) for the destruction of the other

				In summing up, • No consent will be provided to move the graves • The impact is caused by "disturbance" to the graves and surrounding structures	sites (identified in the heritage study) which lie within the mining path of Pit 2 at the appropriate time.
T.T Hlapolosa	PM	PM	16 May 17	Verbally during the PM Mr Hlapolosa indicated he; **Strongly objects** to the application and advised Prime Spot to stop proceeding with the application. The reasons for the objection are based on; 1) The Hlapolosa family have numerous family members buried in a cemetery in the centre of the mining area. 2) Advised that we liaising with the DMR concerning their objections to the past mining activities 3) Expect the disturbance from the previous mining activities to be rehabilitated 4) Cannot be expected to have to wear PPE when visiting their relatives 5) Raised concerns about the directors of Prime Spot and there historical link to Tradmil Trading. Requested proof of mineral resource on the site. During the EIA public meeting the following concerns were raised by Mr Hlapolosa (see minutes of the public meeting); 1) Public meeting must be translated into Sesotho 2) Queries why was the application proceeding due to the extent of objections being raised. 3) Need to correctly refer to the "graveyard" as a "cemetery" 4) Indicated that the EAP was liaring to the attendies of the public meeting by indicating 22 jobs would be created. 5) Requested Umhlaba document their opinion concerning the project. 6) Asked if the minutes were been recorded and highlighted that the previous minutes were contaminated	The strong objection to the application is acknowledged and understandable. The graves have been excluded from the mining right area to guarantee that they will not be affected by the mine however it is acknowledged that while not part of the mining right, the graves are within the middle of a mining right and hence the significant impact on the family. Additional communication during the EIA phase will be requested with representatives of the Hlapolosa family to determine if the family would be open to the moving of the graves, or, if not acceptable, what measures could be implemented to ensure as minimal impact as possible to the graves and the access to the graves for the family members. 1) Due to time limitations, the minutes of the meeting were not translated to Sesotho. 2) The choice to continue with the application is for Prime Spot to make. The final decision maker with regards to authorisation or not, is the Department of Mineral Resources. 3) This final report has been update, to update the description of the graveyard to a cemetery 4) At no time has the EAP liared. If approved, during the operational phase the mine will create 22 direct jobs. No guarantees can be provided that all 22 jobs will be sourced from the local community as it is based on the need for specific skills. 5) The EAP's initial opinion on the application has been provided in the draft EIR. This has been slightly updated in the final report to reflect the impact of the primary grassland which will be destroyed should mining proceed. 6) Minutes were recorded. Draft minutes were distributed to attendies of the public meeting. To date no feedback has been received on the draft minutes from any registered I&AP.
	L		09 Jun 17	A letter documenting concerns was provided. A full copy of the letter is contained in **Appendix 3.6**. In summary the letter re-itterated the following concerns: 1) The proposed operation will impact negatively on the graves of the family on site, the total graves in the cemetery on site is around 60. This remains a heritage and sacred 2) The preceding prospecting right was objected to. 3) Previous mining standard and or performance has not been proper and of good standards. 4) There is evidence that the prospecting activities effected the cemetery. 5) There is debris around the graves and surrounding wires have been broken. 6) There is enough evidence of our concerns raised in the past against the applicant and to-date the situation never improved. 7) The family have lodged a land claim and we are of the opinion that the proposed mining methods will have a long time and permenant negative impact on the land. Chief amongst the post impact effects are that the area will be left with two huge pits which cant be rehabilitated and this will equally affect the claim. 8) The production rate of 24 000 toms per month for over 30 years shows the intended extent of irreparable impact and longevity of the mining programme 9) The heritage study talks to the occupation of the site probably between the 1800's and 1900's. This is an indication of how far the family is attached to the area. 10) The cumulative impacts of blasting will affect the stability of major water infrastructure. 11) The matter must be referred to REMDEC.	1) Agreed, while the physical impact on the graves can be minimised through excluding them from the mining right area and scaling blasts to ensure the impact from blasts are minimised, the EAP agrees there will be a disturbance caused by mining operations on the graves. 2) The objection to the prospecting right is noted. 3) Previous mining of the site was not undertaken by Prime Spot 4) Noted. 5) Noted – commitments have been made in the EMPr to ensure that the graves and associated buffer is always maintained during the life of the mine. 6) Agreed – Representatives of the Hlapolosa family have actively raised concerns in the past. 7) Feedback from the land claims commissioner concerning the claim is provided n Appendix 13. Once mining is completed, 2 open cast pits will remain on site. Mining will change the potential future landuse of the site. 8) Based on the available reserves and the proposed mining rate, mining activities could be taking place on the site for up to 65 years. 9) The heritage assessment is provided in Appendix 6. 10) Based on the feedback from the blasting specialist, the likelihood of an impact on rand water infrastructure is low (See Appendix 9). 11) The DMR are the decision makers with regards to the application.
	E			Requested a copy of recording of the public meeting held on 16 May 2017.	A recording of the public meeting was couried to the Hlapolosa family.
M.J Hlapolosa	PM			Requested a copy of the public meeting presentation. Requested a copy of the recording of the public meeting	The presentation was emailed through on 06 October 2016 Confirmed receipt of the digital recording on 13 March 2017
Dept. of Land Affairs					
Land Claim Commissioner	RM			None	Feedback concerning the current Land Claim provided in **Appendix A13**
Traditional Leaders					
N/A				None	
Dept. of Environmental Affairs					
Gauteng Department of Agriculture and Rural Development	RM+E			None - While GDARD have been included in all communication, no comments have been provided. It is our experience that the in the past GDARD will provide comment on the final document once provided to them by the DMR	None
Other Competent Authorities Affected					
South African Heritage Resources Agency	RM			None	
The Regional Manager of the	Hand delivered			None	
Department of Mineral Resources	E	19-Sep-16		Acknowledgment of the application was received on 19 September 2016	Acknowledgement of the application is appreciated.

OTHER AFFECTED PARTIES					
Sky Sands	E+M	13-Sep-16		Assisted Prime Spot in providing details of possible I&AP's who should be contacted.	The assistance concerning potential I&AP's was appreciated.
Alzu Piggery Farms	T+E	29-Sep-16		A feedback form has been provided in **Appendix 2.8**. In summary the concerns raised include; 1) Impact of the proposed mine on the water table 2) Dust 3) Noise The existing piggery is dependent on good supply of water. Dust and noise will have a negative effect on production and health status of the pigs.	The Alzu piggery is approximately 1800m north west of the mining right area. Due to the distance, it is unlikely that the mine will have a significant impact on the piggery. However Prime Spot will; 1) A geohydrological assessment has been completed and provided in **Appendix 4**. Based on the outcome of the study the zone of influence on groundwater is estimated to be +/- 500m. Based on the reccomendations from the specialist a follow up study has been committed to in the EMPr. 2) Dust mitigation measures have been proposed and the mine has committed to at least 1 years of dust fallout monitoring to confirm that dust fall out from the operation is effectively controlled. 3) Noise mitigation measures have been proposed and the mine has committed to implement noise monitoring (if complaints concerning noise are received) to confirm that noise from the operation is effectively controlled.
Dumisani Mohlaba	M	13-Sep-16		None	
Emlomo Mining (Pty) Ltd	RM			None	
BarnLab	E			None	
	M&E	13-Sep-16		None	
Richtrau 253 (Pty) Ltd Panfontein Colliery	E			None	
Save the Vaal	E	27-Sep-16		Emailed requested to be kept informed as a registered interested and affected party.	Save the Vaal will be kept informed as a registered interested and affected party.
Godfrey	E			None	
Humprey Jooste	E	11-Oct-16		We own Portions 47 – 50 (a Portion of Portion 6) of the Farm Vischgat, approximately 4km away from the proposed Mining Site and we use 40 hectares for agricultural / recreational purposes. My main concerns are: 4.1. Possible damage to the environment. 4.2. Ensuring the proper rehabilitation of the area being mined. (Preferably continuous rehabilitation). 4.3. Possible air and water pollution. 4.4. The overall well-being of the Local Community. 4.5. The strain on local infrastructure, especially roads, water etc. 4.6. Increased water usage for mining activities. 4.7. The proper and regular maintenance of specifically the public gravel / dirt road (D 1321?) 4.8. Road safety and problems due to the increased number of trucks per day. 4.9. The proper fencing of the mining area. 4.10. How mining will affect our property values. 4.11. The overall size of the Mine? 4.12. The protection of the Rand Water canal.	Prime Spot; 1. Acknowledged that mining will result in an inevitable damage to the environment, Prime Spot endeavours to minimise the damage through the implementation of appropriate mitigation measures 2. When possible, concurrent rehabilitation will be committed to. 3. Dust mitigation measures have been proposed and the mine has committed to at least 1 years of dust fallout monitoring to confirm that dust fall out from the operation is effectively controlled. A water monitoring programme has also been committed to in line with the outcome of the geohydrological specialist study. 4. Prime Spot will implement its approved Social and labour plan should the right be granted. 5. A traffic impact assessment has been completed (**Appendix 7**) which has highlighted that from a traffic perspective the project can proceed. It is acknowledged that the state of the roads within the vicinity of the proposed mine (especially the un tarred section of the Visghcat road) are terrible and additional trucks will only compound the current poor state. The proposed mine can not be held liable or accountable for the maintenance and upkeep of public roads, this is the responsibility of the roads department. 6. A geohydrological assessment has been completed and provided in **Appendix 4**. Based on the outcome of the study the zone of influence on groundwater is estimated to be +/- 500m. 7. The proposed mine can not be held responsible for the maintenance of a public road. If approved and the mining operations proceed, as a road users, the mine will petition the responsible authorities to ensure that the road is effectively maintained. 8. The mine has committed to implement road awareness within the environmental awareness plan contained in the EMPr section of this report. 9. The mine will be fenced. 10. The property in question is approximately 4km away and the impacts from the mine on the property are likely to be minimal. 11. The size of the mining right area under application is 95 Hectares. Approximately half of this area will be physically impacted by future mining activities. 12. Based on the feedback from the blasting specialist, the likelihood of an impact on rand water infrastructure is low (See Appendix 9).
Kobus Ensslin	M	15-Sep-16		None	
Pierre De Brynn	E+PM	29-Sep-16		Raised the following concerns during the PM: 1) One of the closest residents to the proposed mine and concerned about the impacts of blasting 2) Concerned about the impact on groundwater supply and quality	Mr De Brynn residents is approximately 1000m north of the mining right boundary and 1700m north of the closest edge of "pit 3". Due to the distance between where blasting may take place and the residential area, it is unlikely that there will be any impact. However Prime Spot will; 1) Commission a blasting impact assessment 2) Finalise a geohydrological assessment Based on the blasting impact assessment (**Appendix 9**) impacts from blasting activities fall within the “acceptable” limits for Mr De Brynn house. A geohydrological assessment has been completed and provided in **Appendix 4**. Based on the outcome of the study the zone of influence on groundwater is estimated to be +/- 500m. Groundwater monitoring will be implemented to confirm the ground water assumptons made by the specialist.
Liep Viljoen	M			None	

INTERESTED PARTIES					
Moabi Makabe	T+E			Verbally indicated interest in employment / procurement opportunities.	Prime Spot will implement a policy in which; 1) Local community (who have the required skill set) will receive preferential employment opportunities 2) Local service providers (who provide a good quality are cost appropriate service and have the correct BEE ratings) will received preferential opportunities to provide services to the proposed mine.
E.P Muller	E	27-Sep-16		I'm against the opening of a mining operation in a highly productive agriculture environment. The impact of a mine in the community will have an impact on our food securities and underground water.	While it is acknowledged that the surrounding land is rural in nature and used for agricultural purposes, the mining site itself does not lend itself to having high agricultural potential. A geohydrological assessment has been completed and provided in **Appendix 4**. Based on the outcome of the study the zone of influence on groundwater is estimated to be +/- 500m. Groundwater monitoring will be implemented to confirm the ground water assumptons made by the specialist.
Suikerbos DBU	E	27-Sep-16		Suikerbos DBU is a farming community in the area. Lots of our members is neighbouring land owners. We are affiliated with the Transvaalse Agriculture Union. We are concern with the impact the mine will have. Food security and underground water is our biggest concern.	While it is acknowledged that the surrounding land is rural in nature and used for agricultural purposes, the mining site itself does not lend itself to having high agricultural potential. A geohydrological assessment has been completed and provided in **Appendix 4**. Based on the outcome of the study the zone of influence on groundwater is estimated to be +/- 500m. Groundwater monitoring will be implemented to confirm the ground water assumptons made by the specialist.
A M Hearn	PM +E			Mr Hearn requested the following: 1) All documentation is also placed within the Meyerton and Vereeiging libraries to ensure that all have access. (*Mr Hearn assisted the EAP in provided reccomendation concerning which libraies were most suitable.)* 2) Indicated that the mining right application should take cognisance of the spatial development plan of the region. 3) Requested details about the economic viability of the project and details of the market. 4) Details concerning the operational hours of the proposed activities 5) Raised concern about traffic impacts 6) Indicated that the community have successfully ensure that a proposed coal mine has been rejected and **do not support mining**.	1) Plans have been made to place all documentation at the respective libraries. 2) The existing spatial development plan for the area indicates the area as being rural and supports rural activities. 3) The market for the potential mine is the infrastructure development projects planned within the area (such as the second rand water canal and pipeline) 4) Crusher operating hours will be restricted to: • Monday to Friday: 06h00 to 18h00 • Saturday: 06h00 to 14h00 • Sunday: 06h00 to 14h00 (maintenance only) 5) A traffic impact assessment has been completed (**Appendix 7**) which has highlighted that from a traffic perspective the project can proceed. It is acknowledged that the state of the roads within the vicinity of the proposed mine (especially the un tarred section of the Vischgat road) are terrible and additional trucks will only compound the current poor state. The proposed mine can not be held liable or accountable for the maintenance and upkeep of public roads, this is the responsibility of the roads department. 6) The objection to the mining right application is acknowledged.
P Nothnagel	PM				
J Templeton	PM			Verbally on behalf of civil society, strongly objected to the application.	The objection to the mining right application is acknowledged.
Marista Grobler	E	29-Sep-16		A feedback form has been provided in Appendix 2.8. In summary concerns raised include: 1) Inflow of informal works / informal housing - increasing possibility of crime 2) Have a children's centre which may be impacted which in turn will impact there income and quality of life. 3) Source borehole water - which may be impacted 4) Impact on property value	Based on preliminary research, it appears that Ms Groblers property is approximately 13km directly north of the proposed mine. Due to the distance between the mine and the property it is highly unlikely that any impact will materialise from the proposed mine. Where possible (based on available skills) the mine will employ the required 22 employees locally.
403 I&APs	E	No comments received		On 11th October 2016 Umhlaba was forwarded a list of approximately 403 people who wish to be registered as interested and affected parties. Due to the time of capturing all names and contact details within the excel version of the I&AP registered, all names are not provided in this table. However a complete list of the names and contact details (as provided to Umhlaba) is contained within Appendix 2.1.	During the course of the EIA phase of the application, the 426 people will be captured on the excel I&AP register and all registered persons will be kept up to date with details concerning the application. All I&AP's have been kept in touch with the application either via email (where email addresses were provided and legible) or via sms.
R Roelofs	E	12-Oct-16		1) Residential and Agricultural 2) Noise at night 3) Water pollution 4) Road maintenance 5) Dust on roads 6) Property value	1) No residential areas are in close proximity to the proposed mine. The proposed mine will not impact on surrounding agricultural activities. 2) Noise mitigation measures have been proposed and the mine has committed to implement noise monitoring (if complaints concerning noise are received) to confirm that noise from the operation is effectively controlled. Operational hours do not extend into the night. 3) A geohydrological assessment has been completed and provided in **Appendix 4**. Based on the outcome of the study the zone of influence on groundwater is estimated to be +/- 500m. Groundwater monitoring will be implemented to confirm the ground water assumptons made by the specialist. 4) The onsite roads will be maintained by Prime Spot. The proposed mine can not be held responsible for the maintenance of a public road. If approved and the mining operations proceed, as a road users, the mine will petition the responsible authorities to ensure that the road is effectively maintained 5) Dust mitigation measures have been proposed and the mine has committed to at least 1 years of dust fallout monitoring to confirm that dust fall out from the operation is effectively controlled.. 6) The author cannot answer the question on property values with certainty. At a guess, the impact of the proposed mine on future property value is unlikely. The reasons being are that there is the remnants of an existing mine already and hence if there were to be an impact, it would have already occurred. Secondly the distance between the mine and closest residential property is approximately 1.7km.
Eon Roelofs	E	12-Oct-16		1) Property value 2) Water pollution 3) Road maintenance 4) Dusty roads 5) Noise 6) Agricultural 7) Residential	

Maria Rebuzzi	E	12-Oct-16		A summary of the feedback is as follows; 1) Road conditions will worsen (potholes) 2) Road safety 3) Pollution from the mine that will affect fauna and flora, bird life and the river A copy of the feedback is provided in **Appendix 2.8**	1) A traffic impact assessment has been completed (**Appendix 7**) which has highlighted that from a traffic perspective the project can proceed. It is acknowledged that the state of the roads within the vicinity of the proposed mine (especially the un tarred section of the Visghcat road) are terrible and additional trucks will only compound the current poor state. The proposed mine can not be held liable or accountable for the maintenance and upkeep of public roads, this is the responsibility of the roads department. 2) All truck drivers entering the mining site will be subjected to induction on an annual basis. During this induction road safety will be discussed. See the environmental awareness plan. 3) The mine has committed to develop an ecological management plan in an effort minimise the impact of the proposed mine on the surrounding environment.
Elise Tempelhoff	E		27-Mar-17 10- Jul-17	Requested information on the project and to be kept informed. Commented on the many indigenous and sensitive flora in the area, as well as wetlands.	Subsequent to the request to be kept informed, Ms Tempelhoff has been sent all project updated. Agreed – the vegetation assessment has highlighted that primary grassland will be destroyed by the expansion of pit 2 and the development of pit 3. Temporary and seasonal wetlands have been identified which will not be destroyed, (mining activities will maintain at least a 100m buffer from the identified wetlands) but may be impacted. Follow up studies have been committed to to understand the potential impact and if any further mitigation measures are required.
HPG Heenop	E	12-Oct-16		The mining area is an environmentally sensitive area. See **Appendix 2.8**	Appropriate mitigation measures will be proposed during the EIA phase in order to minimise the impact of the proposed mine on the surrounding environment.
ADDITIONAL INTERESTED PARTIES (Identified during the WULA process) – WULA I&AP Register provided in Appendix 3.6					
Michelle Jansen Van Vuuren		WULA	25 April 17	Impact on Vaal River & Rand Water Impact on roads	Mining activities will take place approximately 2km away from the Vaal River and therefore the likelihood of an impact on the Vaal river is very low. Based on the feedback from the blasting specialist, the likelihood of an impact on rand water infrastructure is low (See Appendix 9). A traffic impact assessment has been completed (**Appendix 7**) which has highlighted that from a traffic perspective the project can proceed. It is acknowledged that the state of the roads within the vicinity of the proposed mine (especially the un tarred section of the Visghcat road) are terrible and additional trucks will only compound the current poor state. The proposed mine can not be held liable or accountable for the maintenance and upkeep of public roads, this is the responsibility of the roads department.
Amanda Spekking		WULA	25 April 17	Impact on Vaal River & Rand Water Impact on roads	
Harry Katrakilis		WULA	25 April 17	Impact on Vaal River and Rand Water Impact on roads	
Heida De Koker		WULA	25 April 17	Impact on Vaal River and Rand Water Impact on roads	
Myrna Broderick		WULA	25 April 17	Object against the mine and WULA	Objection noted.
Gio Pelliccia			25 April 17		
Lauren Pelliccia			25 April 17		
Adv.Hendrik Schmidt		WULA	25 April 17	The mine will be allowed to operate at a distance of only 50 meters away from the Gauteng Water canal for which the Rand Water Borad is the responsible government agency.	Rand Water have been extensively engaged through out the Environmental Authorisation process. The closest mining activities (involving blasting) will come to the rand water infrastructure is +/- 470m. Based on the feedback from the blasting specialist, the likelihood of an impact on rand water infrastructure is low (See **Appendix 9**). Should additional feedback be provided by Rand Water, it will be considered.
Roelof Scott		WULA	25 April 17	Risk of Damage to Gauteng water canal RWB	
M Venter		WULA	25 April 17	50m away from the Gauteng Water Canal	
Anglo American		WULA	25 April 17	EAP contact details requests when next info will be released	Since been provided the contact details, the representative of Anglo American has been copied in on all the project updates.
A Botha		WULA	25 April 17		
Gail Andrews		WULA	25 April 17	All traversing along and over Rand Water pipelines. Possible leaks from other services that could cause ground stability to change	Based on the feedback from the blasting specialist, the likelihood of an impact on Rand Water infrastructure is low (See **Appendix 9**). An assessment of the bridge crossing the Rand Water canal onto the property has indicated that it is suitable for use by the trucks and should not have an impact on the canal See **Appendix 8**. Preventative mitigation measures suggested by the specialist have been incorporated in the EMPr.
The Lungile Trust		WULA	25 April 17		
Johan van Zyl		WULA	25 April 17		
Saul Greenblatt		WULA	25 April 17		
DWS assessing official		WULA	25 April 17		
John & Janet Silverthorne		WULA	25 April 17	Proposal supposed to be halted 2016?	I suspect the adjacent feedback is in relation to a proposed coal mine. This application is for a new aggregate mining operation.
Barry & Christine Klein		WULA	25 April 17		
INTERESTED PARTIES Identified during the second public meeting					
H Steyn	PM		16 May 17		
Samuel Zaas	PM		16 May 17		
Sandi Manzana	PM		16 May 17	Raised concern about disabled persons in terms of Job opportunity? Requested a job opportunity	If approved, during the operational phase the mine will create 22 direct jobs. No guarantees can be provided that all 22 jobs will be sourced from the local community as it is based on the need for specific skills.
Mirriam Motloung	PM		16 May 17		
LS Telane	PM		16 May 17	Was concerned about the Rand water canal and Graveyard	Based on the feedback from the blasting specialist, the likelihood of an impact on Rand Water infrastructure is low (See **Appendix 9**).

				What will the youth and adults of this community benefit in this mine? Air pollution A qualified translator should of being present at the meeting	With regards to the graveyard, the one cemetery is located outside any area identified for future mining and therefore will not be impacted. The second cemetery is in the middle of the mining right area. While it has been excluded from the mining right application (and therefore cannot be mined) “disturbance” caused by future mining will be inevitable. Mine will provide 22 jobs and no accommodation on site, the mine will give Bantu Bonke community first preference for the jobs but it needs to be people with the right skills for the jobs. Dust mitigation measures have been proposed and the mine has committed to at least 1 years of dust fallout monitoring to confirm that dust fall out from the operation is effectively controlled. A person who could translate was available at the meeting.
Ikaneng Mofokeng	PM		16 May 17	Based on what Andrew has said it shows they will need people who will be qualified for the job and in the community there are limited people that have skills, so she wants to know if training can be offered to people to acquire those skills needed. Concerned about the number of people who will be hired from the community as most people don’t have the skills, it will only be operators who will be hired and mostly its men, so she wants to know what about women?	Responded that if people from the community don’t have the right skills for the job, such as blasting etc, the mine will have to look for right skills from outside the immediate local area. There is social and labour report that shows the mine needs to employ certain percentage of women in mining (40% I think), it is a legal requirement to have women in mining. Feedback on the social and labour plan was provided to the community on 7 June 2017.
Lerato Sejake	PM		16 May 17		
Thabo Tsotetsi	PM		16 May 17	Asked what permanent solution the mine has about the road that it will make sure it doesn’t damage the road further. When you blast there is fine dust/ashes that comes out and can damage the vegetation, what are you going to do to make sure it doesn’t damage the environment. Concerned about groundwater Concerned about the impact of dust on vegetation Asked if there is a permanent solution for the Cemetery?	The road is the public road, it’s the relevant authorities responsibility to maintain the road. The traffic impact assessment indicated that based on the type of road and current traffic levels using the road the application can proceed. The traffic impact assessment did not look into the status of the road. Upon driving the road myself today I can understand the concerns been raised. Based on the groundwater specialist study, groundwater will not be significantly impacted by the proposed operation. No chance of any acid mine drainage, as neither the geology nor the mining process are expected to release AMD constituents. Did highlight that the current nitrate levels within the water contained in the existing pit is high. Hence, initially water from dewatering of the quarry will be used for irrigation. The mine will monitor dust fallout through the use of dust buckets. Dust suppression measures will be implemented to reduce dust generation from the operation. No. I have communicated with the family, they are not interested to move the graves.
T.T Hlapolosa	PM		16 May 17	Feedback concerning comments raised during the PM is provided above	See response provided above.
H Katrakius	PM		16 May 17		
Merrian Mosia	PM		16 May 17		
Mmanthakwedi Kalake	PM		16 May 17		
R Jadaan	PM		16 May 17	Concerned about the road, speed and traffic. Asked how many trucks a day will use the road?	40 Trucks a day, that’s the maximum. Prime Spot will encourage all trucks to cover loads with a tarpaulin. All truck drivers will undergo awareness training which will include informing them of the need to adhere to speed limits. In addition all drivers access the proposed mine will be tested for alcohol.
Fiston Mulumba	PM		16 May 17		
Shayne Welnian	PM		16 May 17	Wanted to know what is the waste management plan for the mine?	Explained that they will be septic tank or French drain and the mine will use waste management services to take the waste out. Due to been a small mine there was no need to connect to a sewage network.
Motsamai Mokhobo	PM		16 May 17	Asked to be send a copy of social and labour plan	A copy was duly sent on 17th May 2017.
Abram Ngake			16 May 17	Concerned about the explosion impact in or outside of the mine.-fly rocks How big is the hole in the mine and how many years will the mine be operating?	A specialist study has indicated that the impacts from blasting can be effectively managed. Depending on the size of blast, you can manage the potential impacts. Blasting will be designed to ensure that blast rock falls within the quarry. Specialist for blasting will manage the size of the blasting and will make sure the rocks fall in the quarry not outside. All applicable safety measures (as recommended by the specialist) will have to be taken for blasting. The current pit is about 150m long by 100m wide. There is opportunity to continue mining for another 60 years based on the proposed production rate of the mine. Mining would start from the existing pit and expand outwards.
T Mpondo			16 May 17	What are the positives and negatives of this project? What will be the overall percentage of benefits that Bantu Bonke community will get. What are impacting of blasting	Main Negatives • Impact on graves • Roads • Blasting Main Positives • Employment (both direct and indirect) • Transport cost of aggregate will be lower for local projects There will be benefits from the implementation of the social and labour plan, such as

					bursaries. • Ground vibration • Air Blast • Fly rock Based on the specialist study, all impacts from blasting can be effectively managed.
Tshawe			16 May 17	Asked what will the community benefit? Asked what benefit would there be for the school	There will be employment opportunities and benefit from the implementation of the social and labour plan commitments
INTERESTED PARTIES attending the community meeting - 7 June 2017					
Maria Modise	M		7 Jun 17	Attendance register of the community meeting is provided in Appendix 3.5. The purpose of the meeting was to address the social and labour plan concerns raised during the public meeting on 16th May 17. A summary of the social and labour plan commitments was provided (Appendix 3.5) and discussed with the community (See Appendix 3.6 for a copy of the summary. Out of the meeting the 2 concerns / points were raised; 1) Requested information concerning where stakeholders linked to Bantu Bonke Agricultural project were obtained from 2) Inidicated that the community should be provided the opportunity to have 26% ownership in the project Subsequent to the meeting the community have provided written feedback (**Appendix 3.5**) indicating that they are still busy consulting with legal representatives and at the time of completing the letter neither agreed or disagreed with the application. Further communication can be expected.	At the time of submission of the application, Prime Spot has an existing BEE partner.
Serema Motsoeneng	M				
Zwelinjani Tshawe	M				
Bafana Tshawe	M				
Selinah Utloa	M				
Motsamai Mokhobo	M				
Selinah Moisi	M				
M Fontisi	M				
S Manzana	M				

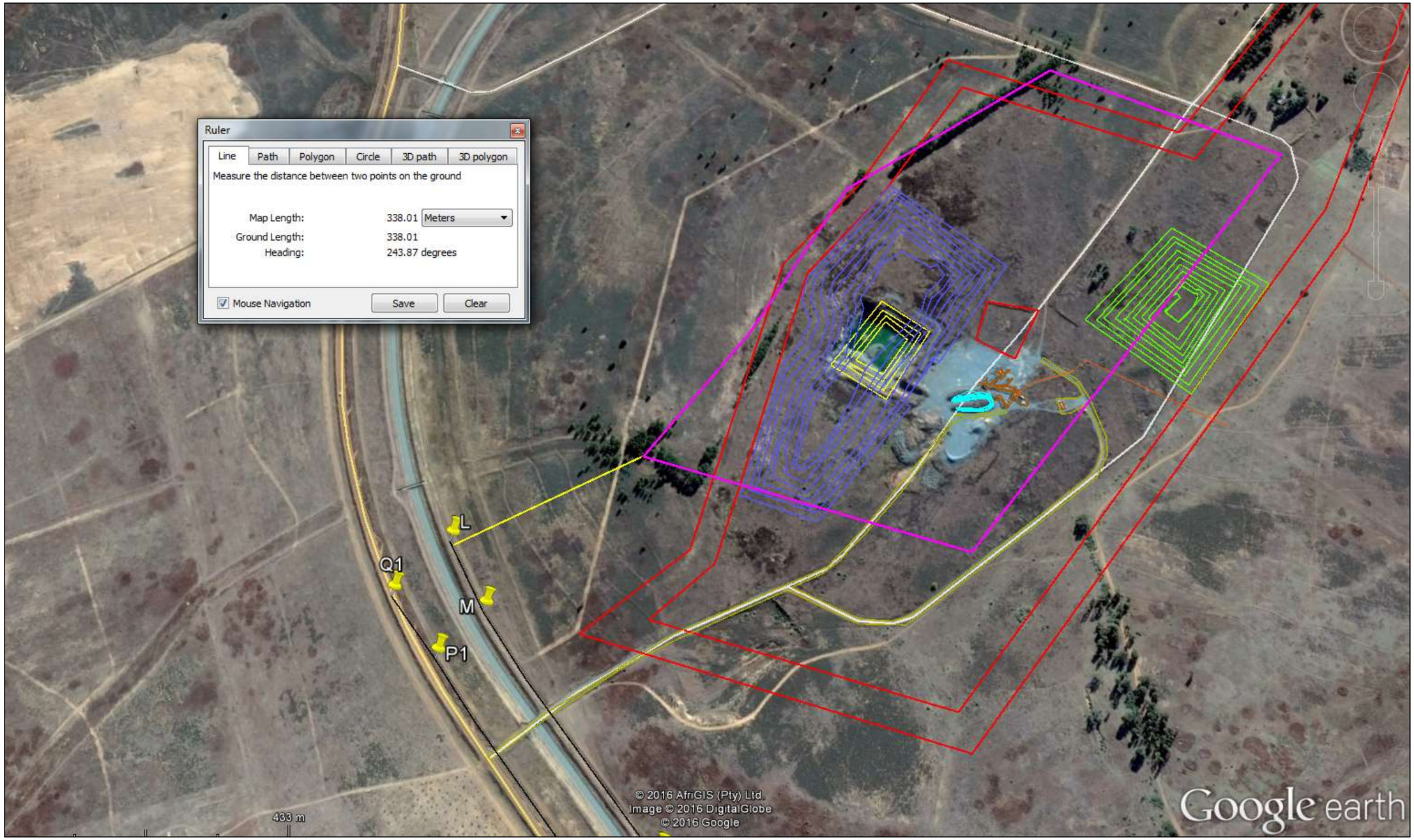


Figure 6: Plan showing the outline of the preceding prospecting right area (in pink) and the mining right area in relation to the Rand Water Servitude.

(iv) The environmental attributes associated with the development footprint alternatives

(1) *Baseline Environment*

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

Climate

The following information has been extrapolated from the Amended Environmental Management Programme for Sky Sands – compiled by Umhlaba Environmental Consulting CC (December 2007).

The nearest weather monitoring station where rainfall and temperature data are recorded is located within a 15km radius of the site (Table 4). As there are no major topographical barriers between the mining site and the weather station, the long-term weather data recorded at this station is considered representative of the climatic conditions experienced on the site. The information presented in this section of the report has been obtained from the South African Weather Services (SAWS).

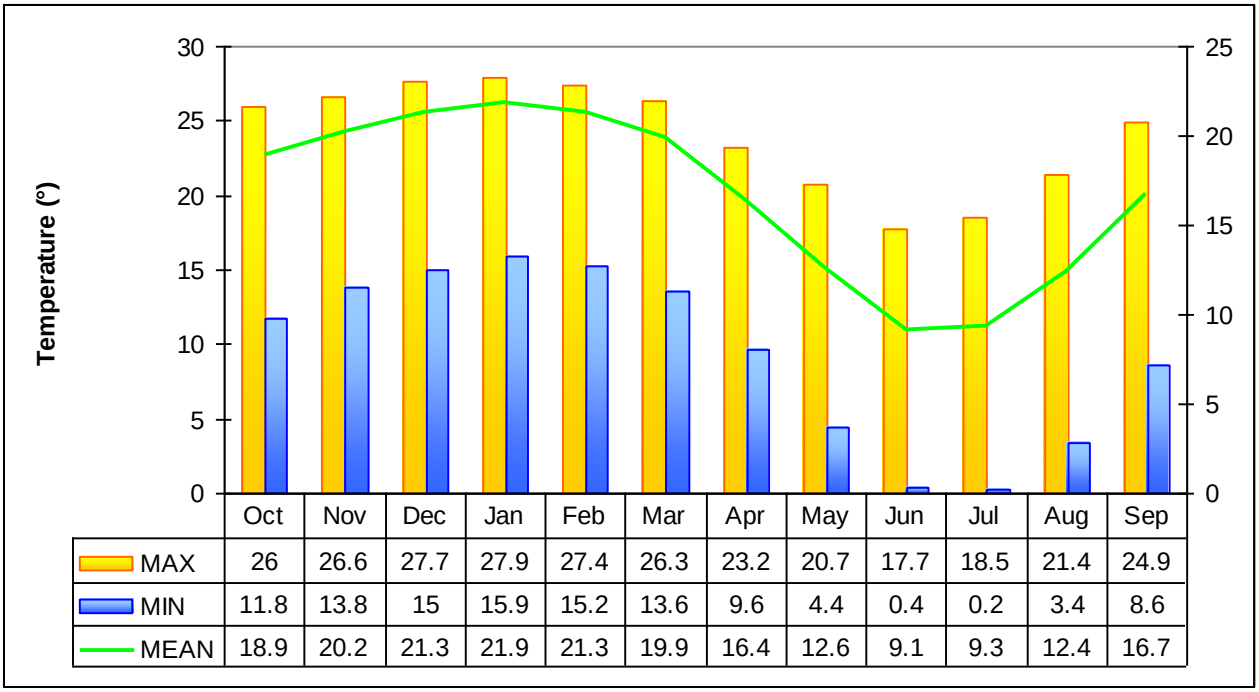
Table 4: Weather Station used for climatic information.

GAUGE NUMBER	STATION NAME	LOCATION	ALTITUDE	RECORDS USED	DATA RANGE
0438731	Vereeniging	S 26° 41' E 27° 55'	1440 meters	1961 - 1990	29 years

SAWS recommend using a minimum of a thirty year period to generate what is known as the "normal" climatic conditions. This is to allow for the fluctuation in climatic conditions, particularly when considering rainfall. The rainfall and temperature data extends only over a 29 year period. However, as no more long-term data were available at the time of writing this report, this data has been used. Note that all graphs and tables illustrating / presenting precipitation and / or evaporation information are presented from October to September. This is because the South African hydrological cycle runs from October to September.

Mean Monthly, Maximum and Minimum Temperatures

Temperature data has been obtained from the SAWS meteorological station in Vereeniging. Based on the available data, the average maximum, minimum and mean monthly temperatures show a seasonal trend, with the highest temperatures experienced during "summer" (December to February) and lowest temperatures during "winter" (June to August) (Figure 7).

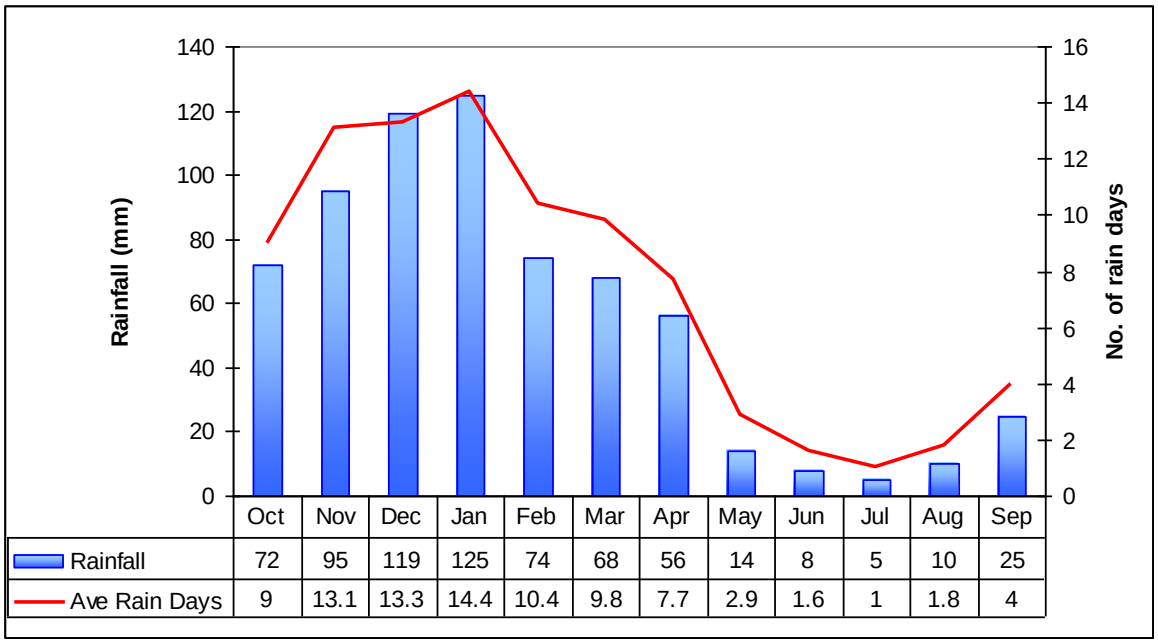


	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
MAX	26	26.6	27.7	27.9	27.4	26.3	23.2	20.7	17.7	18.5	21.4	24.9
MIN	11.8	13.8	15	15.9	15.2	13.6	9.6	4.4	0.4	0.2	3.4	8.6
MEAN	18.9	20.2	21.3	21.9	21.3	19.9	16.4	12.6	9.1	9.3	12.4	16.7

Figure 7: Average maximum and minimum temperatures for Vereeniging weather station for the period 1961 to 1990.

Precipitation

Precipitation data has been obtained from the SAWS station in Vereeniging. Based on the long-term average rainfall data recorded for the Vereeniging rainfall station (1961 to 1990), the region is characterised by summer rainfall, with 82% of the annual rainfall occurring between October and March (Figure 8). Very little rainfall is expected in winter (June to August), where less than 10mm per month is recorded.



	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Rainfall	72	95	119	125	74	68	56	14	8	5	10	25
Ave Rain Days	9	13.1	13.3	14.4	10.4	9.8	7.7	2.9	1.6	1	1.8	4

Figure 8: Average monthly rainfall and number of rain days for SAWS Vereeniging weather station for the period 1961 to 1990.

Evaporation

Evaporation data has been obtained from Water Research Commission (WRC) publications, Midgley *et al.* (1994a). The extrapolated annual evaporation for the proposed mining site is between 1,650 mm per annum (Midgley *et al.*, 1994b). Evaporation rates recorded for the Vaal Dam station follow a similar fluctuation to the temperature patters with the highest evaporation rates being recorded between September and March when maximum daily temperatures exceed 24°C . As is typical in South Africa, the monthly evaporation rates exceed the monthly rainfall figures, with the magnitude of the excess varying with climatic conditions, such as temperature and wind.

Table 5: Average monthly rainfall and evaporation for the Vaal Dam evaporation station for the period 1938 to 1979 (data from Midgley *et al.*, 1994a).

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Rainfall (mm)	65.5	93.1	98.9	108.1	80.2	74.9	44.2	18.8	7.7	7.4	8.2	22.5
Evaporation (mm)	186.5	173.1	176.6	169.3	145.4	142.7	114.8	99.3	79.9	88.8	120.6	155.9
Deficit (mm)	-121.0	-80.0	-77.6	-61.2	-65.2	-67.8	-70.6	-80.5	-72.2	-81.4	-112.4	-133.5

Monthly Mean Wind Direction and Speed

Annual average and monthly average wind roses have been generated using hourly wind speeds recorded at the SAWS station in Vereeniging, between 1993 and 2006 (**Figure 9 and 10**, respectively). The wind roses represented below indicate the wind frequencies for the 16 cardinal wind directions. The frequency of occurrence of winds within each direction is indicated by the length of the shaft compared with the dotted circles, representing a 5% frequency of occurrence. At the bottom of the annual average wind rose (**Figure 9**) and the page of monthly average wind roses (**Figure 10**) are wind speed classes. These illustrate the frequencies of occurrence of winds in each category, for each wind direction. The frequency of calm periods, wind speeds are below 1m/s, are indicated as a percentage value in the centre of each wind rose.

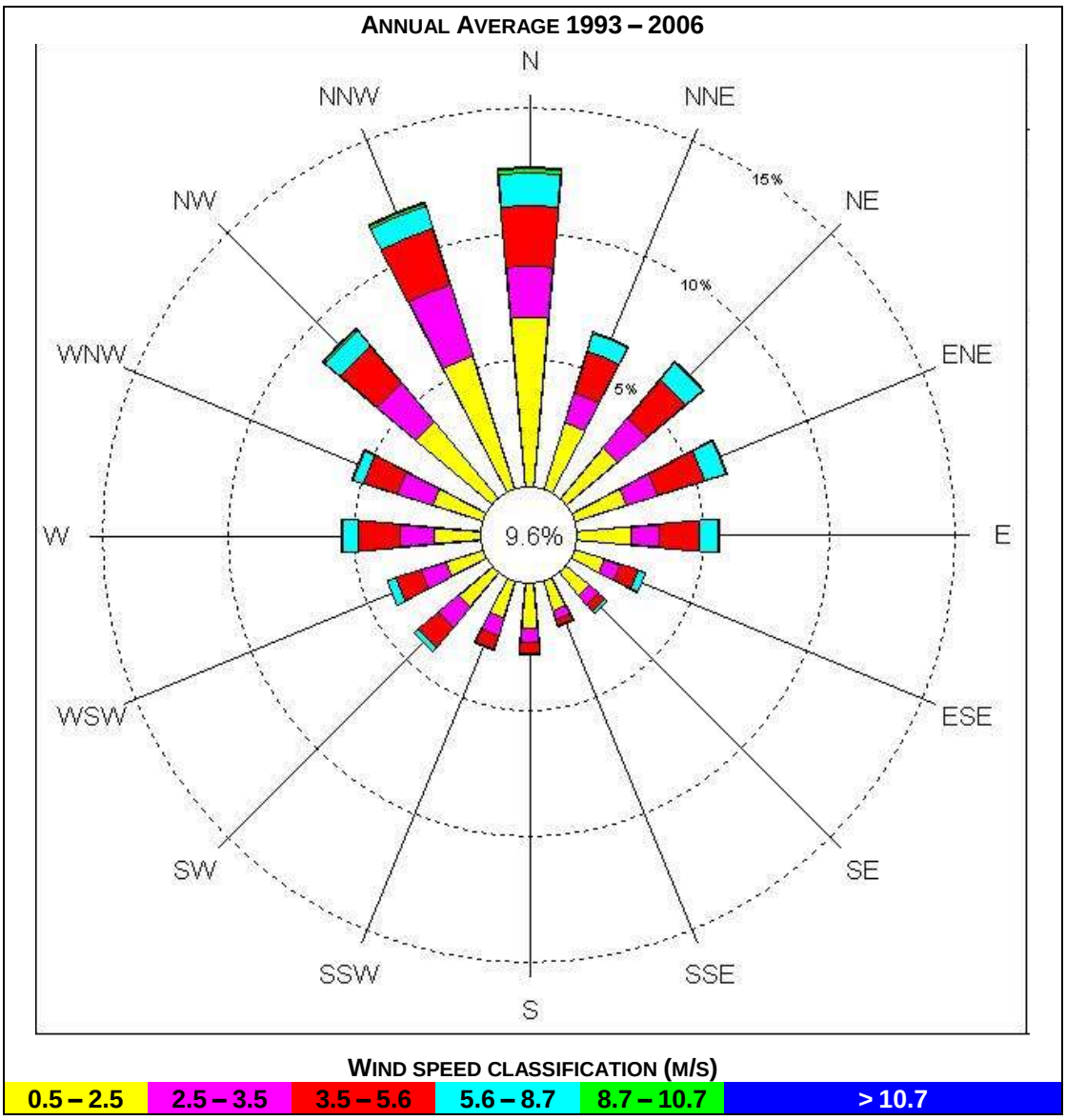
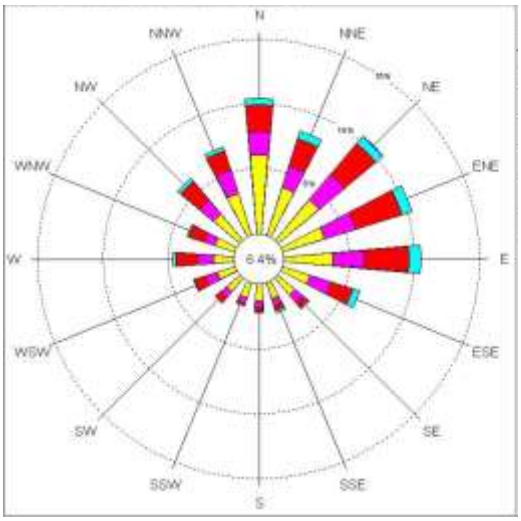


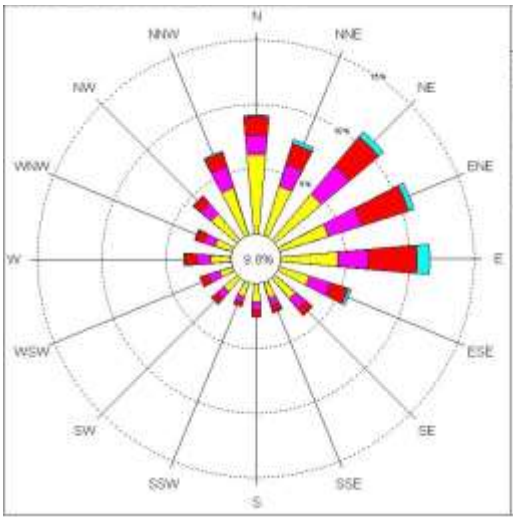
Figure 9: Annual average wind rose recorded for the SAWS station at Vereeniging, for the period 1993 to 2006.

The predominant wind direction for this region, occurring for most of the year, arises from a north-north-westerly direction. Prominent winds from north to north-westerly sector occur most commonly between April and December. Secondary less frequent components arises from the north-easterly sector, recording winds for more than 5% of the year. The strong gusts (>8.7m/s) recorded for this station are most frequently associated with winds from the prominent sector. On average, calm periods are recorded as occurring 9.6% of the year. The monthly average wind roses recorded at the Vereeniging weather station are presented in Figure 10. During a year, the frequency of north-westerly winds remains prominent. From April there is an increase in wind speed from all directions, with the strongest winds occurring between May and November and originating from the north-westerly quadrants.

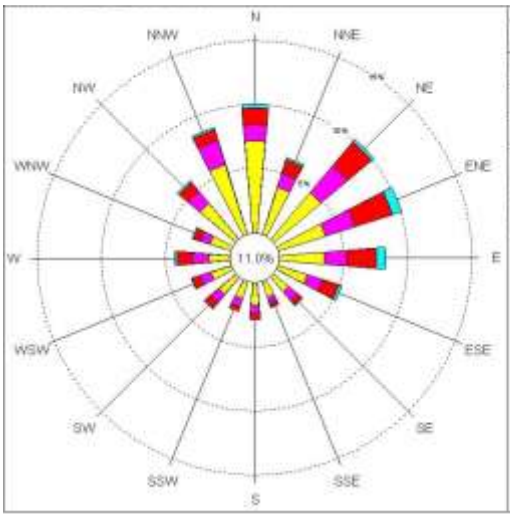
JANUARY 1993 – 2006



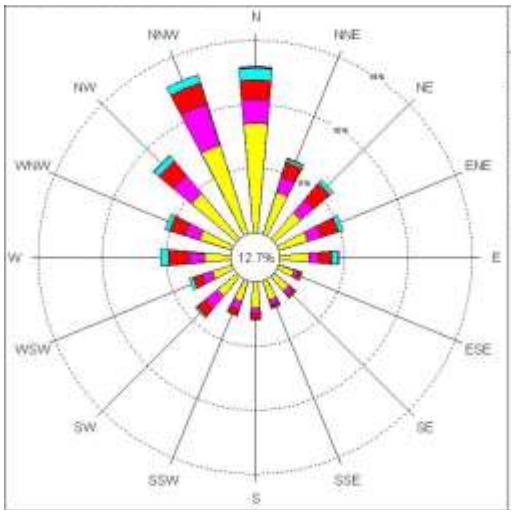
FEBRUARY 1993 – 2006



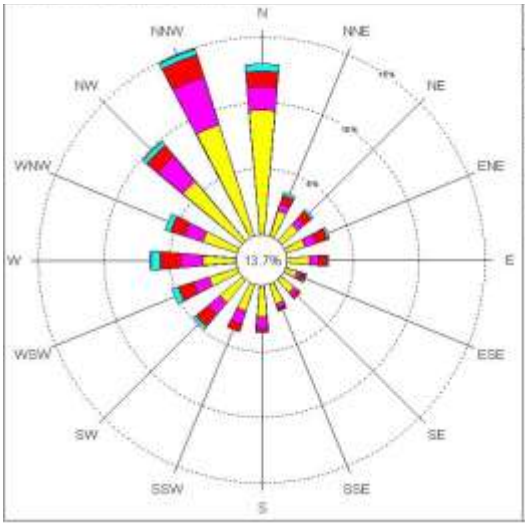
MARCH 1993 – 2006



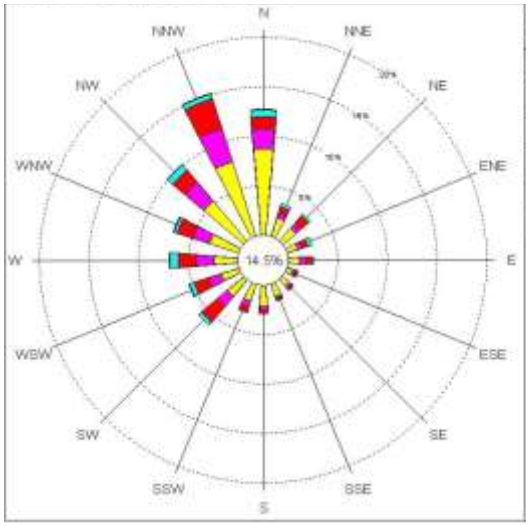
APRIL 1993 – 2006



MAY 1993 – 2006

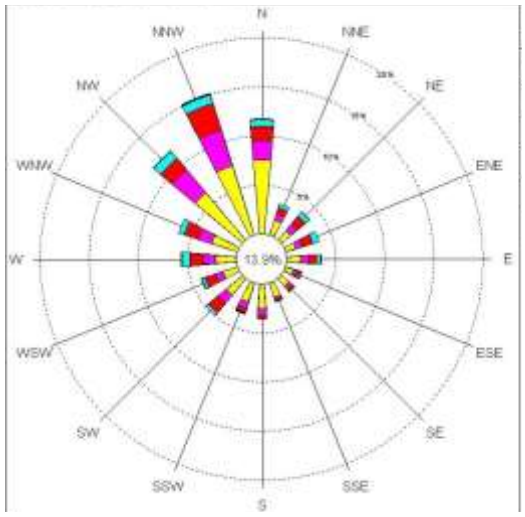
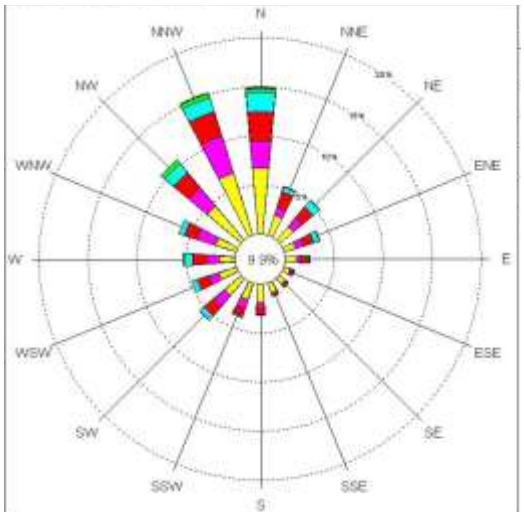
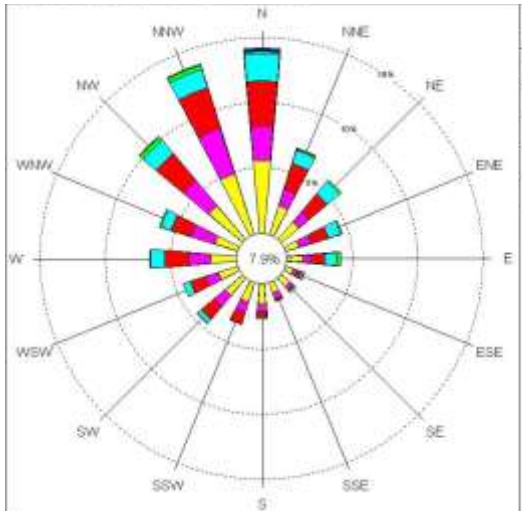
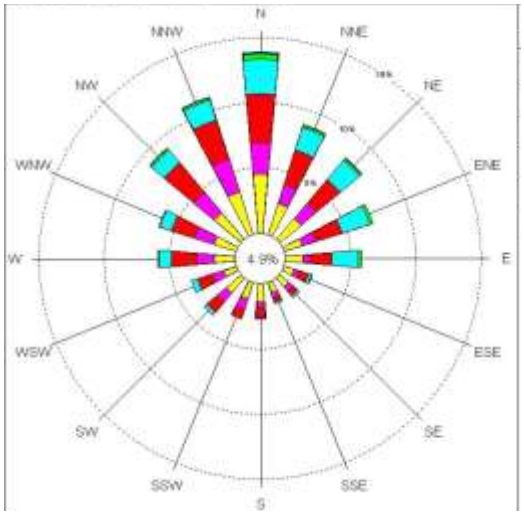
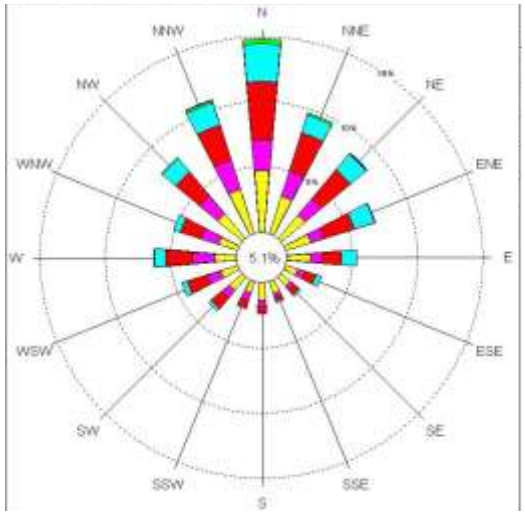
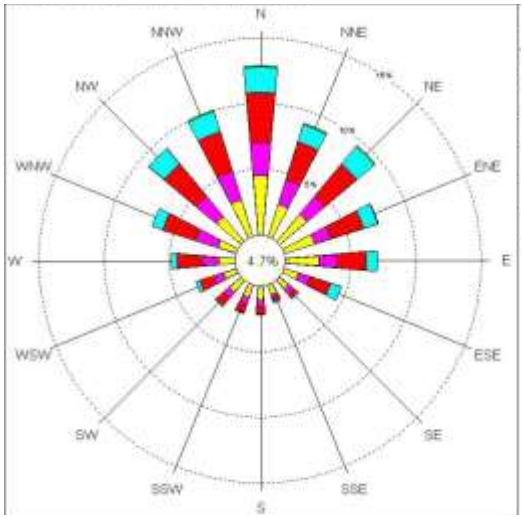


JUNE 1993 – 2006



WIND SPEED CLASSIFICATION (M/S)

0.5 – 2.5 M/S	2.5 – 3.5 M/S	3.5 – 5.6 M/S	5.6 – 8.7 M/S	8.7 – 10.7 M/S	> 10.7 M/S

JULY 1993– 2006	AUGUST 1993– 2006
	
SEPTEMBER 1993– 2006	**OCTOBER 1993– 2006**
	
NOVEMBER 1993– 2006	**DECEMBER 1993– 2006**
	

WIND SPEED CLASSIFICATION (M/S)					
0.5 – 2.5 M/S	2.5 – 3.5 M/S	3.5 – 5.6 M/S	5.6 – 8.7 M/S	8.7 – 10.7 M/S	> 10.7 M/S

Figure 10: Monthly average wind rose recorded for the SAWS station at Vereeniging, for the period 1993 to 2006.

Topography

The topography of the proposed area is flat (where mining activities are intended to take place), with a gentle slope to the south-west towards the Vaal River. The topography of the site rises from 1 460m in the south-west to 1 480m in the north-east (refer to Figure 11). The existing pit is located on a small hill which is recognised in the spatial development plan for the area.

The current topography of the site is largely unnatural as a result of the historic mining activities that have taken place over the property. Areas where mining related activities have taken place have resulted in steep gradients. These are most obvious on the sides of the pit. Thus, the topography can be considered to be predominantly flat, accentuated with steep gradients in certain places.

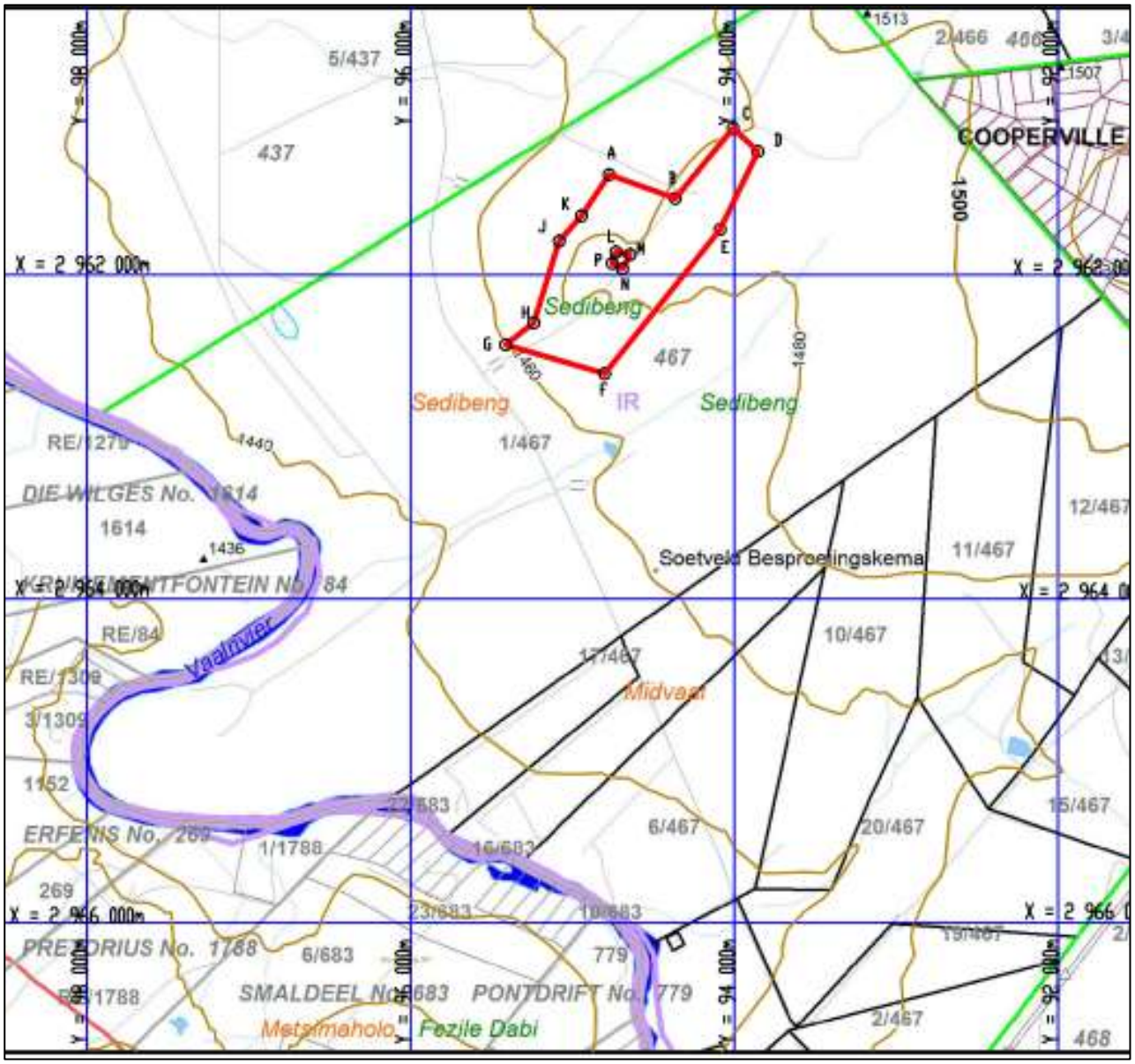


Figure 11: Topographic Map

Figure 12 below tries to provide a visual indication of the gentle hill associated with the site.

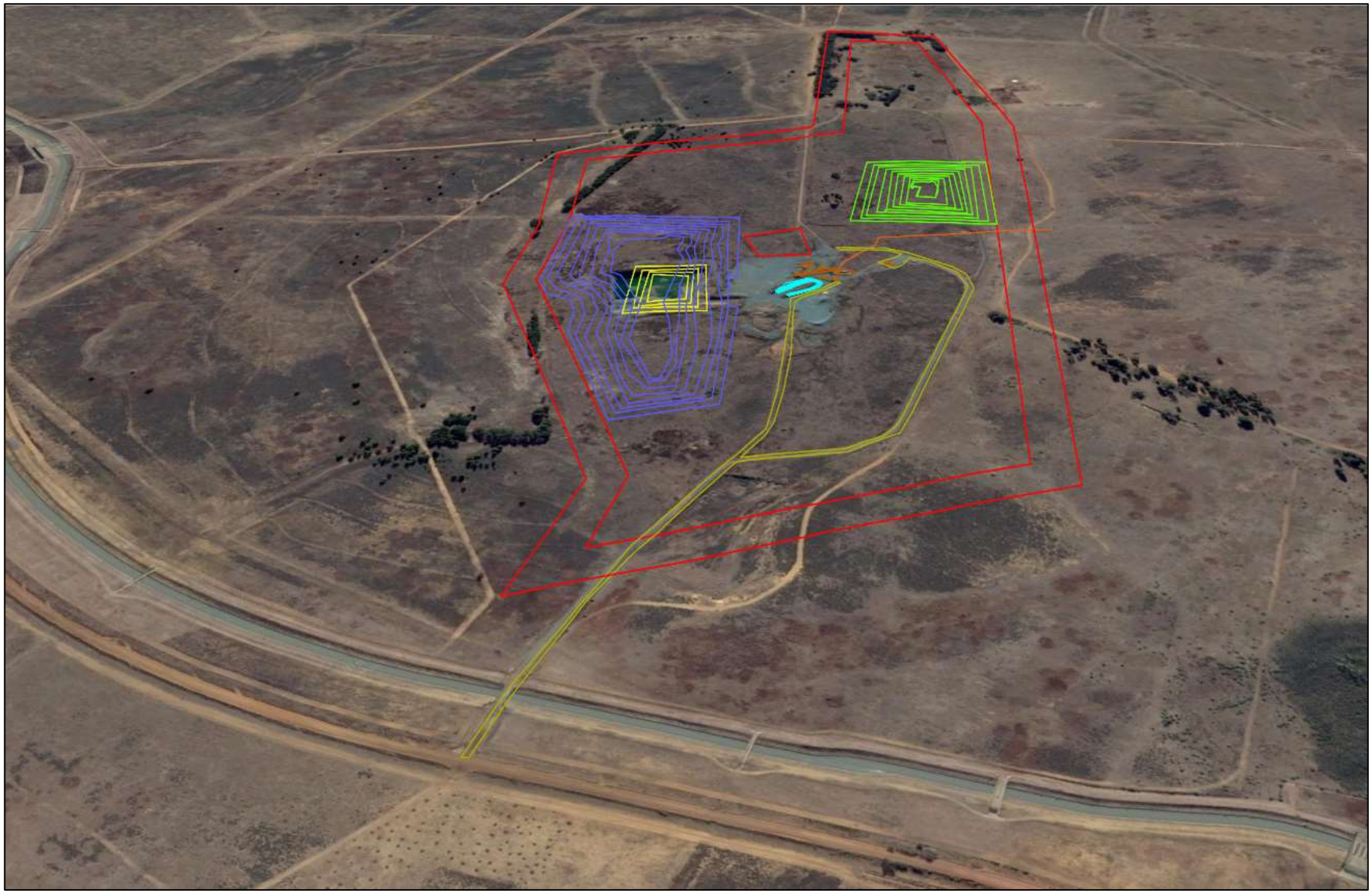


Figure 12: Google Earth 3D image

Soils

The following soil information for Vischgat, is sourced from the SANBI BGIS Land Use Decision Support (LUDS) Tool (April 2016).

The soil is classified as: imperfectly drained soils, often shallow and often with a plinthic horizon. The soil is described as: soils with a marked clay accumulation, strongly structured and a non-reddish colour. They may occur associated with one or more of vetic, melanic and plinthic soils. Refer to *Figure 13*. Due to the quarry area been located on a small hill the soil profile is shallow and does not support the potential for agricultural activities.

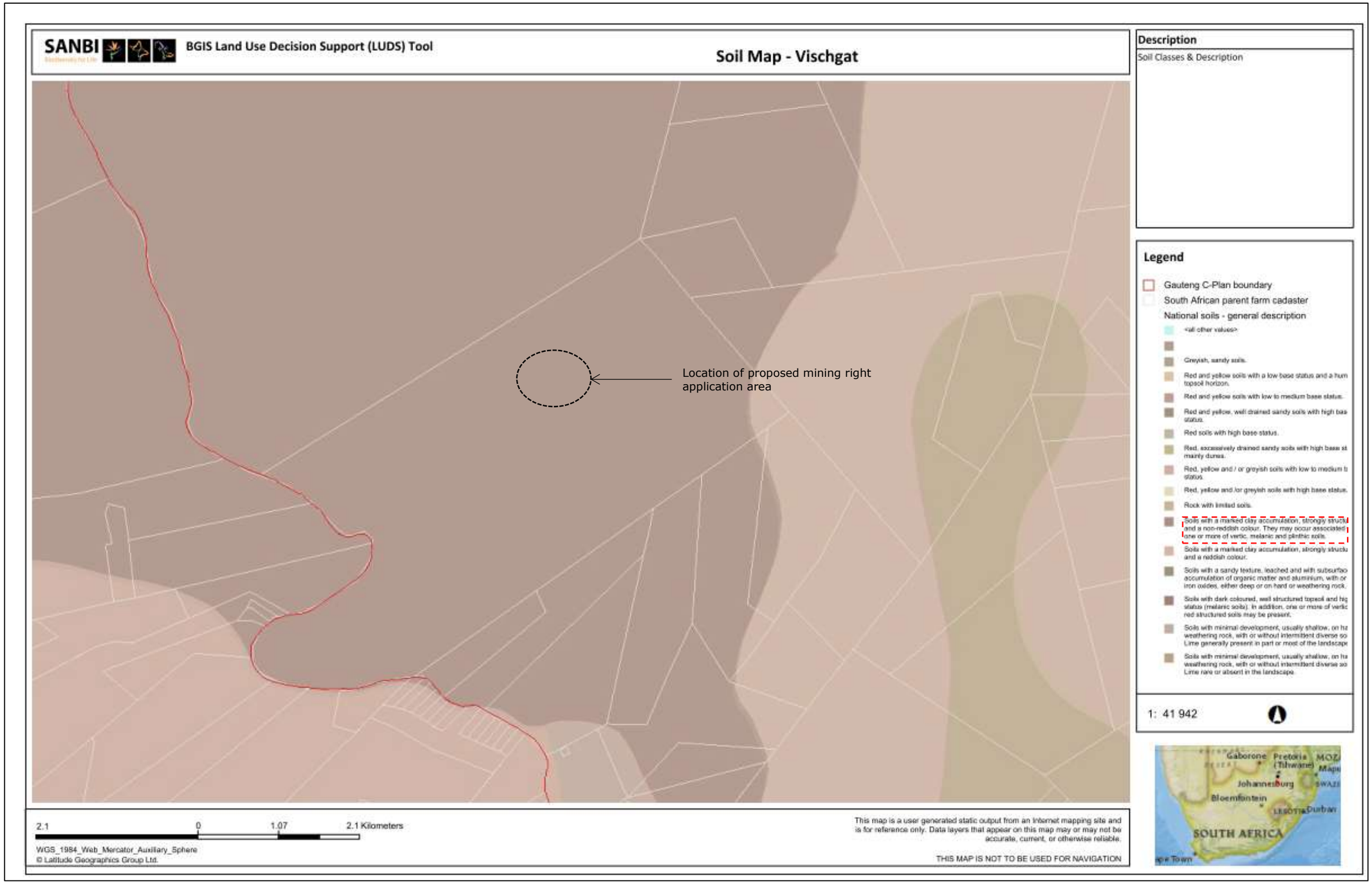


Figure 13: Soil Map

The following soil information for Vischgat, is sourced from the report titled "Vischgat Andesite Deposit Resource Estimation, Quarry Design and Mining Schedule, compiled by Deswick Mining Consultants, 2009).
The average thickness of soil was determined using statistics. The range is 1-2m, except for certain areas which has a thickness of 4m. A mean was determined using all borehole data (1.35m). The latter was used to translate the topography wireframe down in order to wireframe the base of the soil cover as correctly as possible. The soil intersection point's file was considered with the soil wireframe, and wireframe points were adjusted to coincide with the position of soil noted in the boreholes. The weathering profile on the site consists of soil with an average thickness of 0 – 2m. Refer to Figure 14 and Figure 15.

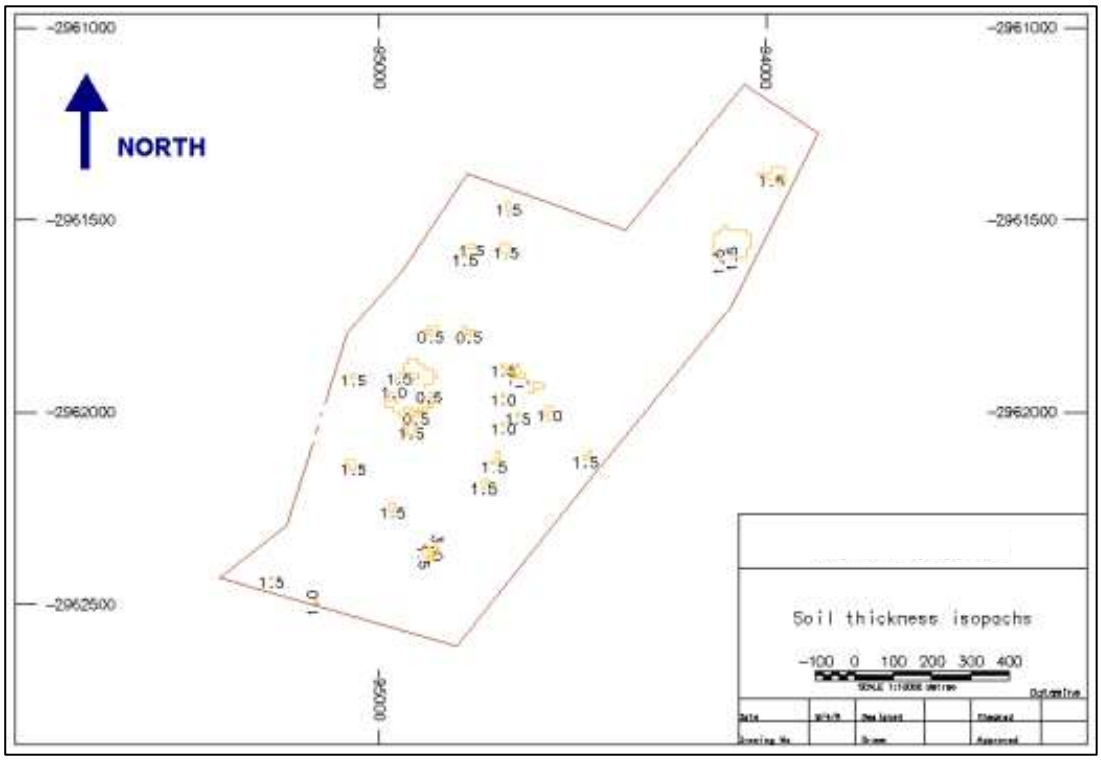


Figure 14: Soil thickness isopachs

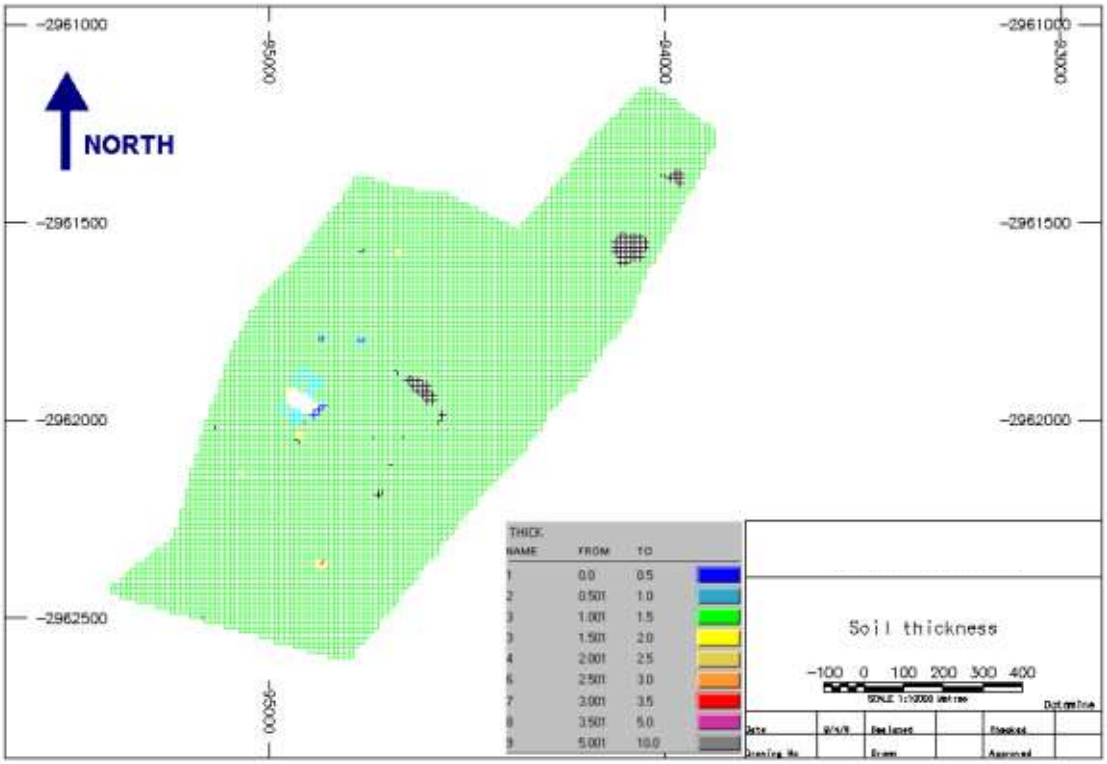


Figure 15: Soil thickness. The white area in the central western region show the existing pit with no soil. Black areas correlate to regions with soil thickness of 1.5m.

Geology: *As mentioned previously, the applicant (Prime Spot Trading) had a prospecting right over the property. Hence, the following geological description has been extrapolated from the Prospecting Work Programme that was associated with the prospecting right application.*

The area is partially underlain by alluvium, which is typically made up of a number of materials such as silt, clay, sand, and gravel. These sediments are typically deposited by a river. In this case, due to the proximity of the site to the Vaal River, the source of the alluvium is probably the Vaal River at an earlier stage in its history. The area is predominantly underlain by the Klipriviersberg Group.

According to Scheiderhan et al (**E.A. Schneiderhan, U. Zimmermann, J. Gutzmer**, *Sedimentary Provenance of the Neoarchean (2.8-2.65 Ga) Ventersdorp Supergroup on the Kaapvaal Craton, South Africa*, Department of Geology, Rand Afrikaans University, easc@rau.ac.za):

- "The basal Klipriviersberg Group is essentially comprised of volcanic rocks of basaltic to andesitic composition. The Klipriviersberg Group is unconformably overlain by the volcano-sedimentary Platberg Group that has been subdivided into the Kameeldoorns, Makwassie and Rietgat Formations.
- The Kameeldoorns Formation consists of volcanogenic and siliciclastic conglomerates, greywacke, reworked tuff beds, and small volumes of stromatolitic carbonate rocks, intercalated with volcanic rocks of mafic to intermediate composition.
- The Makwassie Formation comprises intermediate to felsic porphyry lava and fine-grained volcaniclastites, while the Rietgat Formation consists of intermediate volcanic rocks with rare volcanogenic conglomerates."

A geological map has been included below in Figure 16.

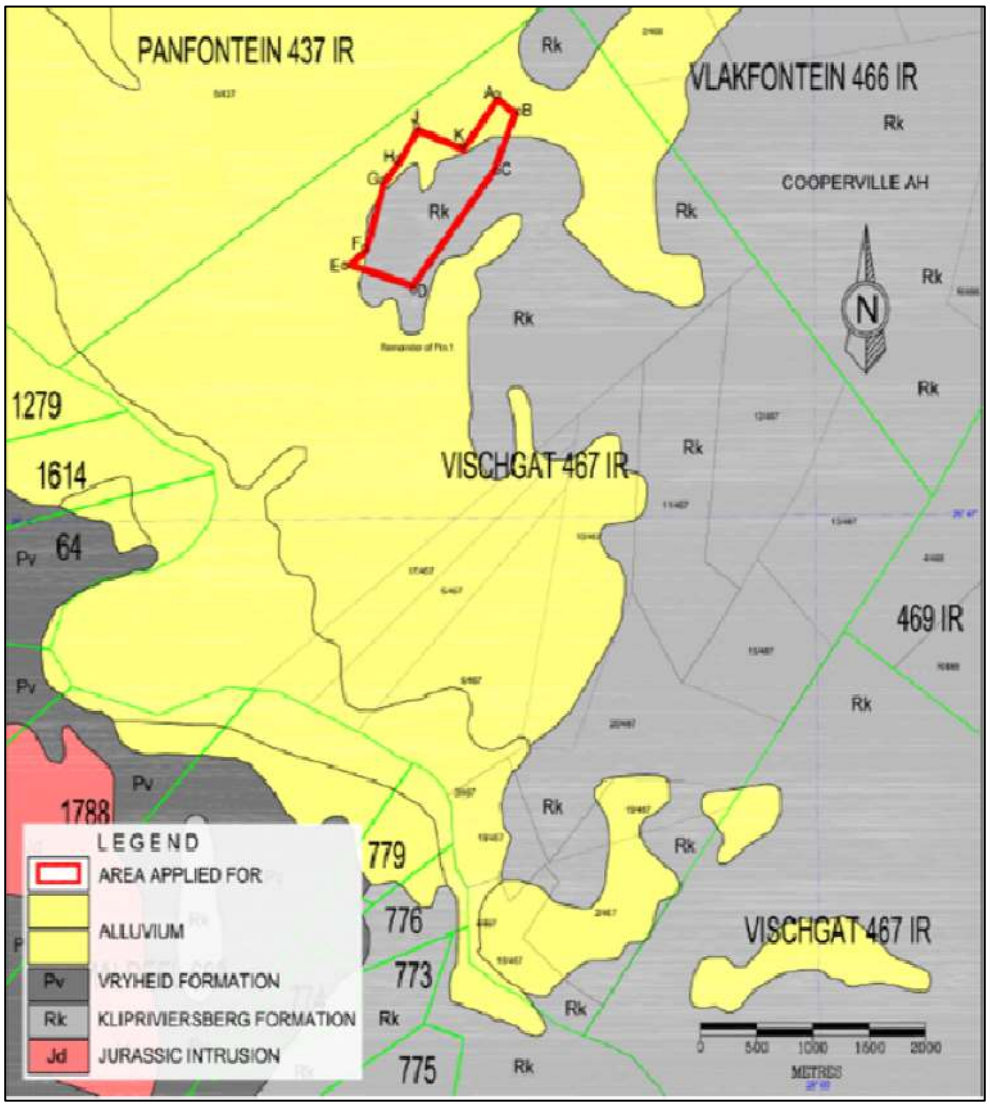


Figure 16: Geological Map of the area.

Surface Water

The mining area falls within the quaternary catchment C22F, which forms part of the primary drainage region of the Vaal Catchment Area (Midgley *et al.*, 1994b) (**Figure 17**). The catchment area characteristics of the quaternary catchment and the mining sites have been presented in Table 6.

Table 6: Characteristics of quaternary catchment C22F (Midgley et al., 1994a) and the mining area.

	SURFACE AREA	MEAN ANNUAL RUN OFF	MAR
Quaternary Catchment C22F	440 km^2	24 mm	10 700 000 m^3/a

There are no rivers or any other water course on the proposed mining right application area. The Vaal River is located approximately **2.0km** south west of the areas where mining activities will be implemented (1.6km from the closest edge to the mining right application area).

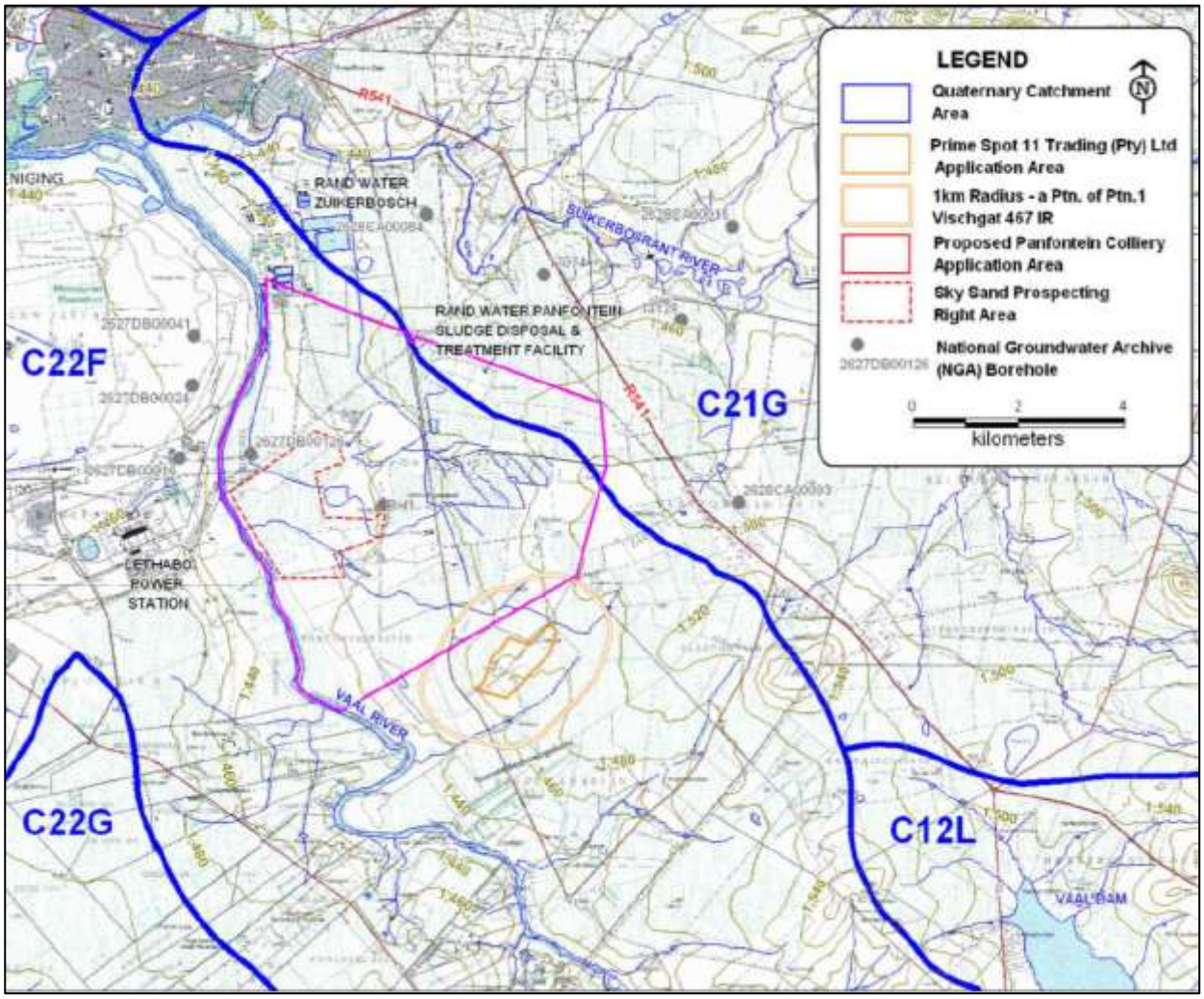


Figure 17: Quaternary Catchment delineation

A Rand Water Board canal (and pipelines) runs approximately 470m from the western boundary of the proposed "pit 2" within the mining right application area. The canal lies approximately 130m away from the south western edge of the southern edge of the mining right area. In addition there are two intermittent streams running either side of the proposed mining right area which drain towards the Vaal River. Neither of these streams are within 100m of the mining right area. See **Figure 18** below for a visual indication of the channel and intermittent streams.

Wetlands: According to desktop research the closest wetland is associated with a dam located approximately 800m south east from where mining activities will be implemented and approximately 450m away from the closest edge to the mining right area. A site specific vegetation assessment has identified 2 wetland areas in the northern and southern section of the mining right area (**Figure 26**). These have been discussed in the ecological section of the baseline environment.

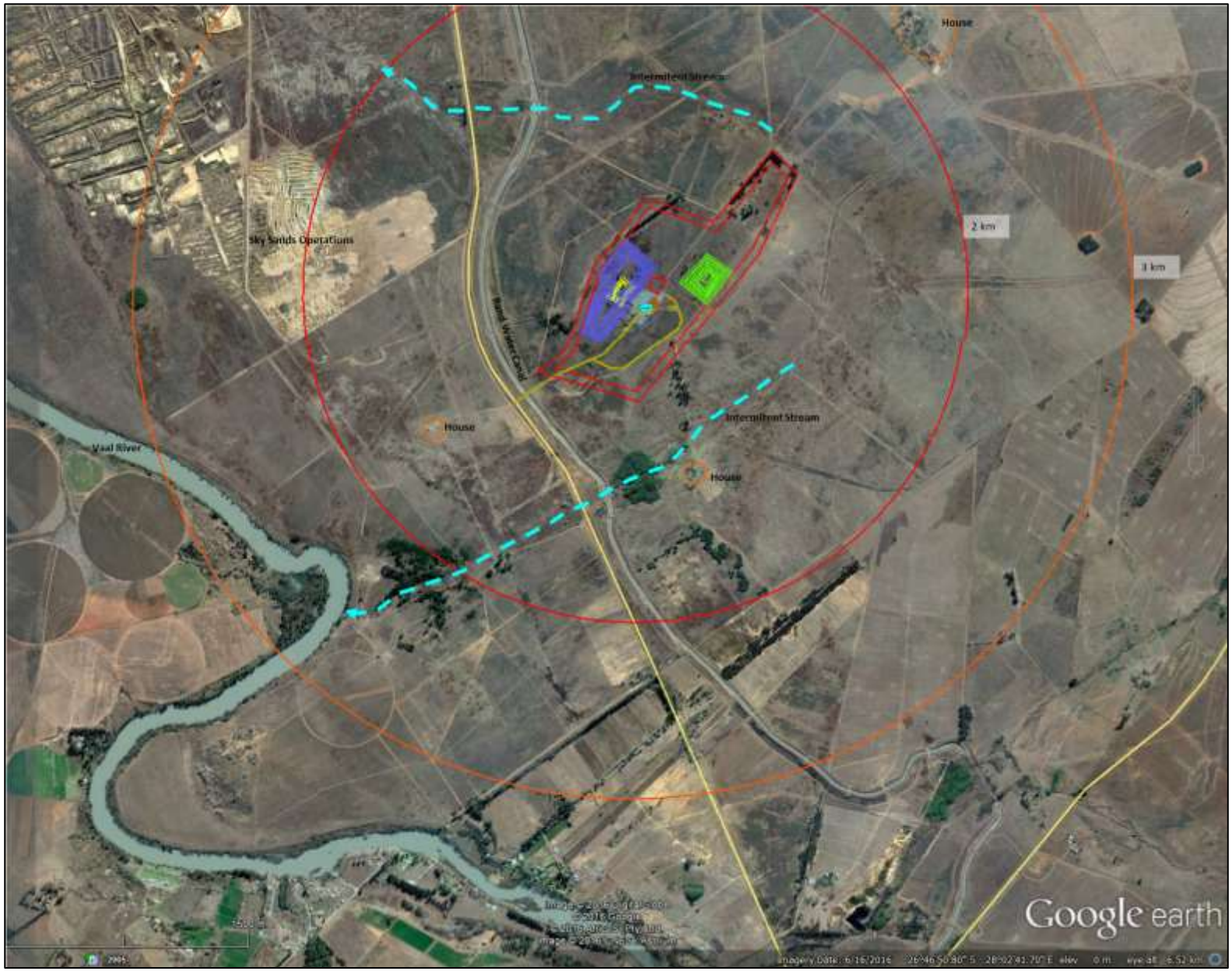


Figure 18: Surrounding surface water features.

Groundwater

A specialist groundwater assessment has been completed for the proposed mine by Groundwater Square. See **Appendix 4** for a full copy of the completed study. Pertinent sections of the report describing the baseline environment have been included below. The full report should be reviewed for full details.

A site visit and hydro census were conducted on the 23/3//2016. Pertinent hydrogeological information pertaining to both the site visit the hydro census is presented in Table 7 below. A map indicating the surveyed points in and around the study area is presented in Figure 19.

Table 7: Pertinent hydro-census information.

No Map	Latitude WGS84	Longitude WGS84	Elevation (mamsl)	Farm Name & Portion	Name of Owner	Contact Person	Cell:	Site Type
WP117	S26.76072	E28.05241	1486.00	Vischgar 467 IR	Tradmil Trading (Pty) Ltd.	Nico van Tonder	082 335 6698	Borehole
WP118	S26.76137	E28.05557	1485.00	Vischgar 467 IR Ptn.1	Old Mac Farm (Pty) Ltd	Jason Middleton	079 499 5332	Borehole
WP119	S26.77478	E28.05078	1471.00	Vischgar 467 IR	Old Mac Farm (Pty) Ltd	Jason Middleton	079 499 5332	Borehole
WP120	S26.77352	E28.03495	1451.00	Vischgar 467 IR	Old Mac Farm (Pty) Ltd	Jason Middleton	079 499 5332	Borehole
WP121	S26.76477	E28.04502	1482.00	Vischgar 467 IR	Tradmil Trading (Pty) Ltd.	Nico van Tonder	082 335 6698	Stone Quarry
WP122	S26.76471	E28.04784	1483.00	Vischgar 467 IR	Tradmil Trading (Pty) Ltd.	Nico van Tonder	082 335 6698	Graveyard
WP123	S26.76808	E28.04531	1478.00	Vischgar 467 IR	Tradmil Trading (Pty) Ltd.	Nico van Tonder		Graveyard
WP124	S26.77686	E28.04345	1455.00	Vischgar 467 IR	Old Mac Farm (Pty) Ltd	Jason Middleton	083 448 5298	Stream
WP125	S26.75390	E28.03615	1452.00	Panfontein 437 IR Ptn.5	Sky Sand (Pty) Ltd		011 391 7380	Stream

No Map	Status	Depth (m)	Collar Height (m)	Water Level (mbc)	Equipment	
WP117	Unused	80	0.28	7.84	Submersible	90m west of old farmhouse. Unused since 2010. Not connected to either power supply or reservoir. Yielding capacity = 0.14L/s.
WP118	In Use	80	0.55	22.80	Submersible	Solar powered 50mm submersible. Yielding capacity = 1.67L/s. Large Stock Units = 600, 2 x 5 000L JoJo tanks with float valve switch, linked to watering troughs. Sampled 2016/03/23 11h50. Recovering water level.
WP119	In Use		0.40	9.20	Submersible	50m east of farmhouse, 50mm submersible. Yielding capacity = 1.39L/s. Large Stock Units = 600, 1 x 5 000L JoJo tank with float valve switch, linked to watering troughs and house. Sample 2015/03/23 12h00. Recovering water level.
WP120	In Use	120	0.37	11.30	Submersible	130m south of 2 x farm cottages, 50mm submersible. Yielding capacity = 1.67L/s. Small Game Units = 100, 1 x 5 000L JoJo tank. Sample 2015/03/23 13h23. Recovering water level. Coal measures and andesite chippings observed around borehole.
WP121	Unused			15.00	None	Defunct Group Five Construction (Pty) Ltd Aggregate Quarry on property acquired by Tradmil Trading (Pty) Ltd, Sampled 2016/03/23 14h30.
WP122	In Use				None	Graveyard, 0.6852ha. Approximately 12 graves (identified), Older than 60 years (some graves), located south and west of a concrete crasher plant and is fenced off from the now defunct mining activities and is fenced off from the now defunct mining activities. Located some 115m east from the existing quarry.
WP123	Unused				None	Graveyard. Approximately 18 graves (identified), Older than 60 years (some graves), located some 250m south of defunct aggregate quarry.
WP124	Unused				None	Intermittent Vaal River tributary. No flow or ponding. Located 530m to 640m to the south.
WP125	Unused				None	Intermittent Vaal River tributary. No flow or ponding. At distances ranging between 780m to 850m to the north of the proposed mining activities.

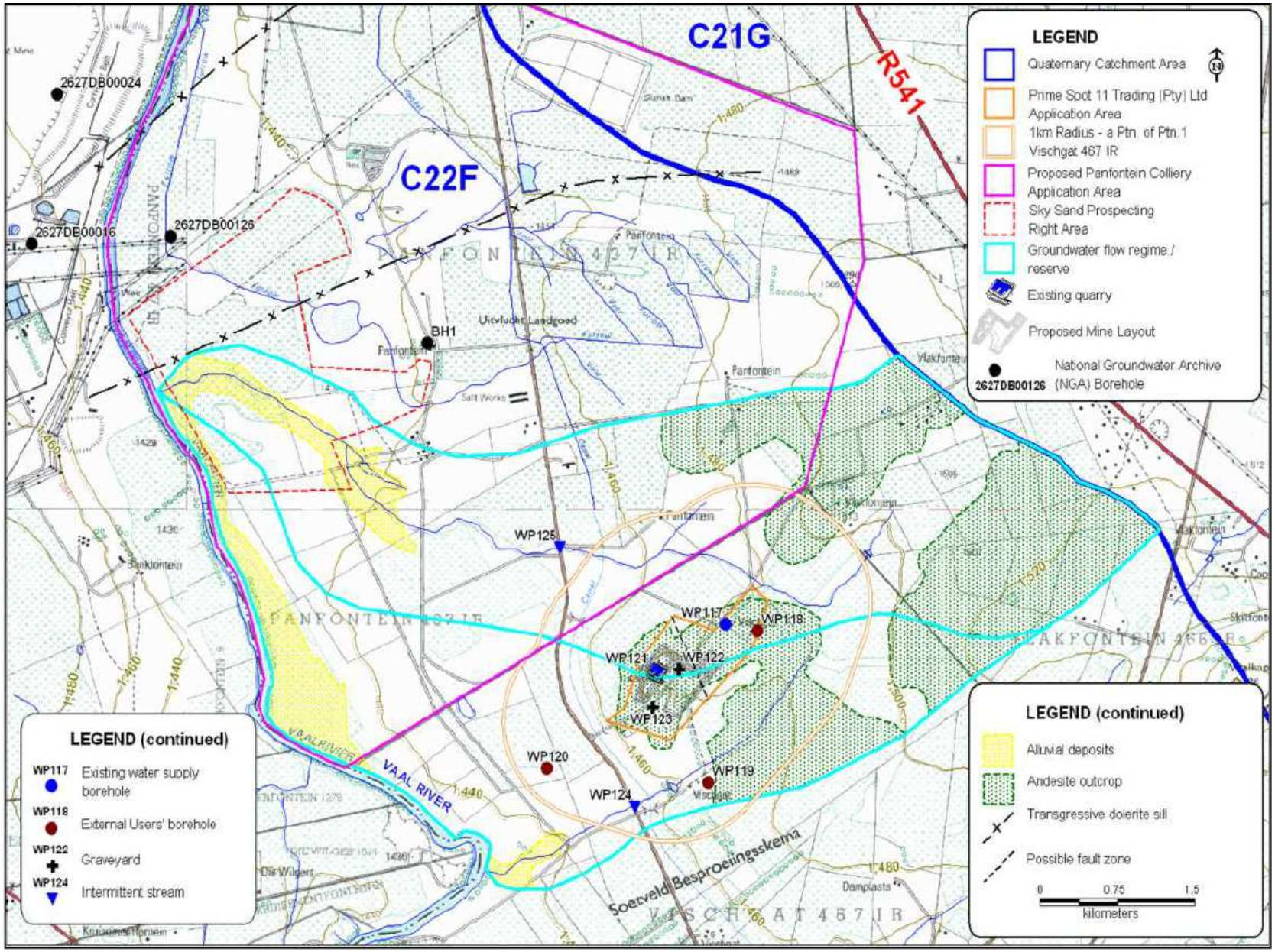


Figure 19: Site visit and hydro-census data points.

Based on the hydro-census, the following is a summary of the groundwater uses:

- The maximum daily groundwater use at the surrounding Old Mac Farm on Ptn.1 of the Farm Vischgat 467 IR is estimated at around 35m3/day;
- At the reported yielding capacity, the existing (currently unused) *Prime Spot* borehole (WP117) could produce between 4m3/day and 12m3/day, which should be enough for domestic use, when the *Prime Spot* quarry becomes operational.

A subsequent borehole pump test completed by Implement pump centre on the 3rd of April 2017 confirmed the following for the Prime Spot Borehole (WP 117);

- Depth of borehole – 43m
- Test done at a depth of 39m
- Borehole condition was good
- Borehole capacity was recorded at 1800 Litres per hour

A copy of the test certificate is provided in **Appendix 4**.

Local Geohydrology:

Table 8 below summarises the hydraulic aquifer parameters of the different aquifer types within the local area.

Table 8: Summary of hydraulic aquifer parameters of different aquifer types.

	Depth	Hydraulic conductivity	Porosity	Effective porosity/ Storage coefficient	Rainfall recharge &&	Borehole yield	Comment
Karoo-Ecca*							
Weathered upper aquifer	Seldom exceeds 20m	0.015m/d	2% -12%	3.6%	6.5 – 20mm/a (1% - 3% of MAP) **	100-2000L/h (0.03-0.56L/s)	Weathering generally comprise of a highly weathered/weathered zone, approximately 8m thick, followed by a slightly weathered/fractured zone up to a depth of >15 m.
Deep fractured aquifers	>20m	0.004m/d	2% - 12%	0.58%			The pores within the Ecca sediments are too cementated to allow any significant permeation of water. All groundwater movement is therefore along secondary structures, such as fractures, cracks and joints
Andesite							
Weathered profile	2m - 23m (avg. 8.5m)			0.001-0.01 !!	37 - 50mm/a (5.7% - 7.6% of MAP) !!		Weathered and partially weathered andesite – varies in thickness and distribution. The weathered andesite is a totally weathered product consisting of yellow clay with ferruginous nodules and is present to a maximum depth of 16m below surface.
	>80						Extent of rock
Other							
Dense basalt		10^{-6} - 10^{-3}m/d			26mm/a 4% of MAP &		
Fractured basalt		10^{-4} - 1m/d					
Vesicular lava		10^{-4} - 10^{-3}m/d					
Lava		<5x10^{-9} - 10^{3}m/d					

* after Hodgson *et al.*, 1998); ** Kirchner et al. (1991) and Bredenkamp (1978)
! British Geological Survey (2006; after Lewis, 1989)
!! Vegter, 1995; & Van der Walt et. al., 2010 && MAP=655mm/a

Relevant comments include;
Borehole yields:

- The existing Prime Spot borehole (WP117, near the farmhouse, 730m northeast of the quarry) yields 0.14L/s (the recent pump test measured 0.5 L/s);
- The three surrounding external users, boreholes (Klipriviersberg Group) range between 1.39L/s and 1.67L/s (average 1.59L/s);

Groundwater depth below surface (23/3/2016):

- The groundwater level of existing Prime Spot borehole (WP117, near the farmhouse) is 7.84m;
- Two other groundwater level depths recorded during the hydro census (Klipriviersberg Group), were 9.2m, and 11.3m (i.e. average of three groundwater level of 9.4m);
- One outlier value of 22.8m was recorded in a hole that was pumped prior to the measurement;
- NGA data for the surrounding areas (two water levels near the Suikerbosrand River - Klipriviersberg Group north of the study area) are:
    - Borehole 7km north: 16.8m (42.4m deep hole, water strike of 0.3L/s at a depth of 21m);
    - Borehole 8.8km north: 6.7m (72.9m deep hole, water strike of 0.4L/s at a depth of 62.2m);
- The mine water level elevation in the flooded andesite quarry was estimated at +/- 1467mamsl;
- Aquifer weathering compared to groundwater level depth:
    - In the existing quarry, the total weathered and partially weathered andesite range between 4m and 8m, compared to the average groundwater depth of 9.4m;
    - The deepest bedrock topography was estimated at 10m, 13m and 11m in Pit 2 and Pit respectively;
- Quarry groundwater level elevation:
    - This 15m deep level is being influenced seasonally by rainfall and runoff recharge;
    - Groundwater inflow occurs, probably at a very small rate, due to:
        - The groundwater level elevation of the pit being slightly deeper than the average surrounding groundwater level;
        - The hydraulic conductivity of the surrounding aquifers being relatively low;
- The mean annual rainfall deficit (average rainfall minus evaporation) is estimated at +/- 7m3/day;
- Due to the distance of the Prime Spot borehole from the farmhouse, the yield/groundwater level of this boreholes should not be impacted at the commencement of mining (distance 730m), but may potentially be impacted during mining of Pit 3 (distance <300m).

The groundwater flow within the area is probably perpendicular to surface topography, in a southerly direction towards the Vaal River.

Groundwater quality:
During the study, water quality samples were taken from WP118, WP119, WP 120 (all boreholes) and WP121 (water in the base of the quarry). Results are presented within the geohydrological report in **Appendix 4**. In summary;

- All borehole samples comply with the SANS 241-1:2015, Edition 2, limits for lifetime consumption, and are therefore of a very good quality. The nitrate concentrations for both external users' boreholes WP118 and WP119 are however slightly elevated, which is probably due to the cattle watering points in close proximity to these two boreholes.
- Water quality analyses of sample WP121, taken from the exiting, defunct aggregate quarry during the recent site visit. Both the SANS 241-1:2015, Edition 2, and the wastewater limit values applicable to discharge of wastewater into a water resource were used as compliance criteria. The "General Limit" applies as the resource is not a listed resource. With the exception of nitrate concentrations, the water quality variables in the quarry water comply with both standards for lifetime consumption except for the nitrate concentration. GN665 allows for the discharge up to 2,000 cubic metres of wastewater on any given day into a water resource that is not a listed water resource, provided the discharge complies with the general wastewater limit values as one of the conditions. The observed nitrate concentration of 18.7mg/L exceeds the "General Waste Water Limit" of 15mg/L.

Recent analysis of WP117 (the proposed borehole to be used for the mining operation) indicated that the water quality is good barring elevated nitrate levels. See **Appendix 4** for a copy of the water quality results.

Ecology
Since the completion of the draft EIAr, a specialist vegetation and floral assessment has been completed for the project. It is important to highlight that the report associated with this study was only finalised at the end of June 2017 and I&AP's have only had 2 weeks to comment on the content of the report.

A full copy of the report is included as **Appendix 5** and should be consulted for full details of the vegetation in its current state on the site.

Flora:
The site is broadly classified to fall within the Grassland Biome and more specifically within the Central Free State Grassland, with vegetation type code Gh6 (*Mucina and Rutherford, 2006*).

The following information is applicable to pristine conditions (*Mucina and Rutherford, 2006*).:

Distribution: Free State Province and marginally into Gauteng Province. A broad zone from around Salsolburg in the north to Dewetsdorp in the south. Altitude 1 300 – 1 640m, most of the at 1 400 – 1 460m.

Vegetation & Landscape Features: Undulating plains supporting short grassland, in natural condition dominated by *Themeda triandra* while *Eragrostis curvula* and *E. chloromelas* become dominant in degraded habitats. Dwarf Karoo bushes establish in severely degraded clayey soils are prone to *Acacia Karoo* encroachment.

Important Taxa: Graminoids: *Aristida adscensionis* (d), *A. congesta* (d), *Cynodon dactylon* (d), *Eragrostis chloromelas* (d), *E. curvula* (d), *E. plana* (d), *Panicum coloratum* (d), *Setaria sphacelata* (d), *Themeda triandra* (d), *tragus koelerioides* (d), *Agrostis lachnantha*, *Andropogon appendiculatus*, *Aristida bipartite*, *A. canescens*, *Cymbopogon pospischilii*, *Cynodon transvaalensis*, *Digitaria argyrograpta*, *Elionurus muticus*, *Eragrostis lehmanniana*, *E. micrantha*, *E. obtuse*, *E. racemose*, *E. trichophora*, *Heteropogon contortus*, *Microchloa caffra*, *Setaria incrassate*, *Sporobolus discosporus*.

Herbs: *Berkheya onopordifolia* var. *onopordifolia*, *Chamaesyce inaequilatera*, *Conyza pinnata*, *Crabbea acaulis*, *Geigeria aspera* var. *aspera*, *Hermannia depressa*, *Hibiscus pusillus*, *Pseudognaphalium luteo-album*, *Salvia stenophylla*, *Selago densiflora*, *Sonchus dregranus*.

Geophyte herbs: *Oxalis depressa*, *Raphionacme dyeri*

Succulent herb: *Tripteris aghillana* var. *integrifolia*

Low shrubs: *Felicia muricata* (d), *Anthospermum rigidum* subsp. *Pumilum*, *Helichrysum dregeanum*, *Melolobium candicans*, *Pentzia globose*.

Conservation: Vulnerable Target 24%. Only small portions enjoys statutory conservation (Willwm Pretorius, Rustfontein and Koppies Dam Nature Reserves) as well as some protection in private nature reserves. Almost a quarter of the area has been transformed either for cultivation or by building of dams. No serious infestation by alien flora has been observed, but encroachment of dwarf karoo shrubs becomes a problem in the degraded southern parts of this vegetation unit. Erosion low (45%), moderate (30%) or very low (20%).

According to Cplan (See **Figure 27** below) the southern third of the proposed mining right area is classified as an "important area" due to birds and presence of primary vegetation.

Site specifics:
Based on the outcome of the vegetation assessment the site can be classified into the following;

1) Natural grassland
2) Wetlands (drainage lines, seasonal wetlands and temporary wetlands
3) Degraded natural vegetation
4) Alien trees
5) Cultivated and/or previously cultivated areas
6) Transformed (man-made hard surfaces, quarries, stockpiles, roads or cleared areas)

Figure 20 below provides a visual indication of the location of the various areas as classified above.

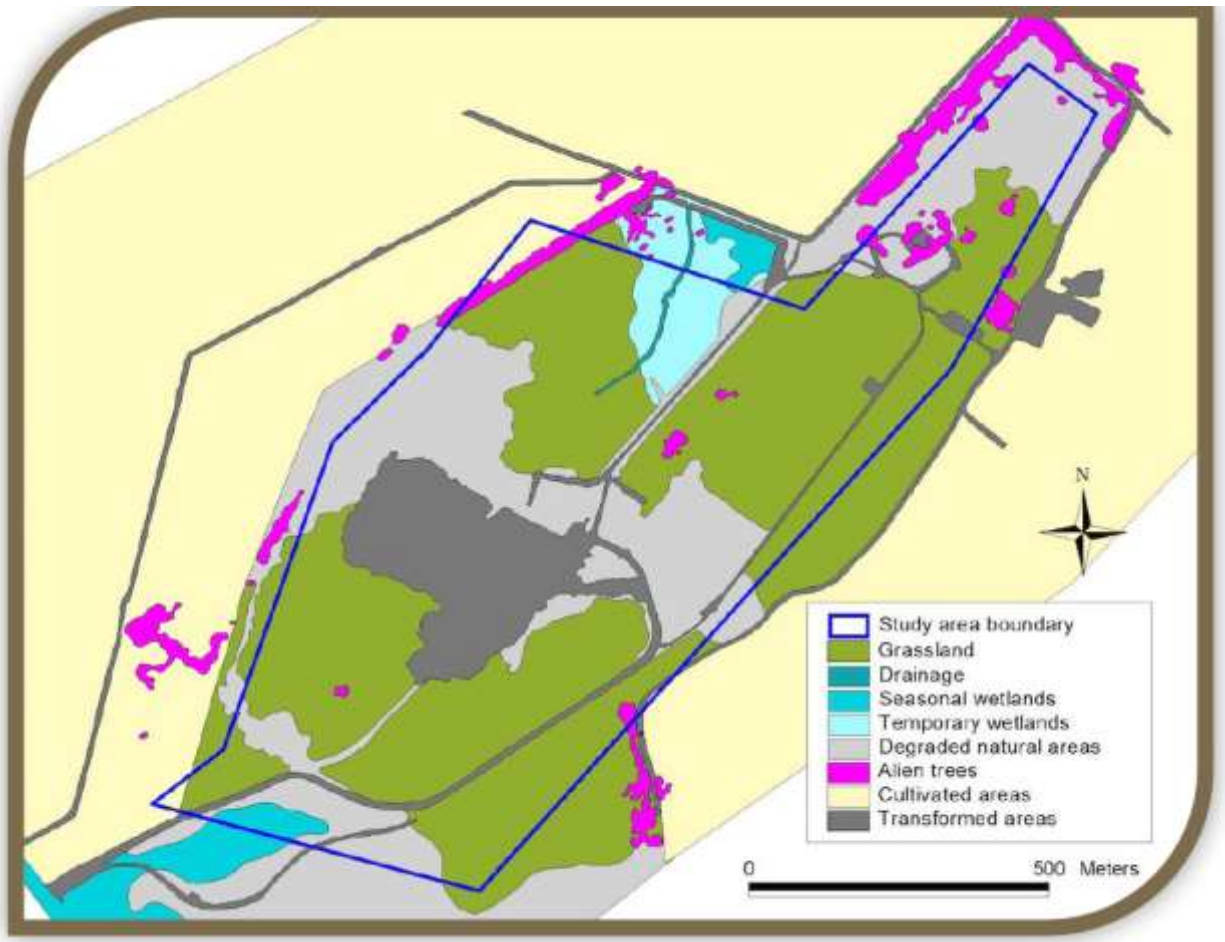


Figure 20: Vegetation map of the proposed mining right area.

Grassland on site is found in areas to the north and to the south of the existing quarry. It is found on moderately deep, sandy soils with occasional outcrops of rocks with shallow soils being quite common.

Dominant and common species in the grasslands include the following: Cymbopogon pospischilii, Setaria sphacelata var torta, Eragrostis curvula, Eragrostis chloromelas, Berkheya heterophylla, Hyparrhenia dregeana, Seriphium plumosum, Cynodon dactylon, Themeda triandra, Hermannia depressa, Lippia javonica, Conyza podocephala, Pollichia campestris, Heteropogon contortus, Ziziphus zeyheriana, Bewsia biflora, Cleome maculata, Aloe greatheadii, Helichrysum rugulosum, Andropogon appendiculatus and Asparagus laricinus.

There were a number of weeds commonly found in the grasslands, including Bidens pilosa, Bidens bipinnata, Tagetes minuta, Verbena bonariensis, Senecio consanguineous and Pseudognaphalium oligandrum. The species richness within these grasslands is comparable to other grassland areas in Gauteng.

There are two areas where seasonal wetlands occur on site, one at the northern end of the untransformed grasslands and one along the lower slopes at the southern end of the site. There is a long narrow drainage area in the northern part that runs through an area that is probably a temporary wetland. The drainage line has darker, more fine-grained soils, but the species composition is not markedly different to the surrounding grasslands. The temporary wetland drains into a small area of seasonal wetland dominated by the grass, Imperata cylindrica. The hillslope seepage wetlands at the southern end of the study area are also overwhelmingly dominated by Imperata cylindrical.

In general, the grasslands have been moderately impacted on site and are fragmented by roads, infrastructure and general disturbance. It is also lightly to heavily invaded by alien vegetation along the margins. The entire area surrounding the site consists of cultivated or previously cultivated areas. Despite this disturbance, the intact patches have maintained a high diversity and ecological integrity.

Areas of degraded grassland have lost the original species composition and have high evidence of disturbance and/or invasion by weeds. These are particularly evident around the existing quarry, but also in areas exposed to agricultural activities on other parts of the site.

There are rows of alien trees around the margins of the site, some of which have begun to spread into the grasslands on site. There are a moderate number of alien species occurring in these areas. The vegetation in these areas is either only alien trees or else a more open structure with either secondary vegetation or else remnant degraded patches of the original grassland that would have occurred originally in these areas.

A total of 110 plant species were recorded on site, of which 12 are declared weeds or alien invader plants or proposed declared weeds (as per the Conservation of Agricultural Resources Act), 12 are naturalized exotics and 6 are indigenous weeds of disturbed places. This leaves 80 indigenous species for the site, of which six are indicators of elevated moisture conditions (possible wetlands) and most of the remainder were found in the grassland patches. This is relatively high species richness, given the relatively small size of the site and the short duration of the field survey.

Plant species of concern:
Listed species known for the grid in which the site is located are listed in Appendix 1 of the vegetation assessment. The list contains 29 species assessed according to IUCN Ver. 3.1 (IUCN, 2001) criteria. Known habitat information for these species indicates that nineteen of them are unlikely to occur on site. Of the remaining species, there are five Declining species, four Near Threatened species and one Vulnerable species that have been previously recorded in the grid in which habitat conditions on site are partially or fully representative of those required for the species.

The Vulnerable plant species that has a possibility of occurring on site is *Khadia beswickii*. This species is found in open areas on shallow surfaces over rocks in grassland. Habitat similar to this occurs within the grasslands on site and it was considered that this habitat on site was suitable for the species.

The four Near Threatened species that could occur on site are *Adromischus umbraticola* subsp. *umbraticola*, *Drimia sanguinea*, *Lithops lesliei* subsp. *lesliei* and *Pearsonia bracteata*. The first species is a small succulent in the family Crassulaceae. It is found in rock crevices on rocky ridges, usually south-facing, or in shallow gravel on top of rocks, but often in shade of other vegetation. These habitat conditions are met by those found on site, but no individuals of this species were found in these areas.

The four Declining plant species that could occur on site are *Boophone disticha*, *Callilepis leptophylla*, *Crinum macowanii*, *Eucomis autumnalis*, and *Hypoxis hemerocallidea*. Habitat requirements for these species are provided in Appendix 1 of this report. These are all relatively conspicuous plants that are easily identifiable in the field. None were seen on site.

Based on the site visit and the analysis provided here, it is considered possible that one or more listed plant species (threatened, Near Threatened or Declining species) could potentially occur on site, although none of these were seen at the time of the survey. A more careful search during the flowering season of suitable habitat, especially rocky areas in the grassland, is required to confirm that none of these species occur there.

Fauna:
Providing an accurate list of the faunal species occurring on the property or in the vicinity of the property is not feasible. Therefore, a desktop survey has been undertaken, focusing on red data species. A list of the red data species that could potentially occur on-site has been generated by comparing the habitat requirements of the species recorded for the quarter degree square (2628CC – in which the study site is located) with the habitat available on-site.

Mammals: The red data mammal literature survey was undertaken using the following reference material.

- Mammals of the Southern African Sub region, Third Edition. (Skinner and Chimimba, 2005)
- Red Data Book of the Mammals of South Africa: A conservation Assessment. (EWT, 2004)
- Smithers' Mammals of Southern Africa, A Field Guide. (Smithers, 1996)
- Filed Guide Mammals of Southern Africa. (Stuart and Stuart, 1996)
- Mammals of the Southern African Sub region. (Skinner and Smithers, 1990)

Birds: The red data bird literature survey was undertaken using the following reference material.

- Robert's Birds of Southern Africa, seventh edition. (Hockey et al., 2005)
- The Eskom Red Data Book of Birds of South Africa, Lesotho and Swaziland. (Barnes, 2000)
- Sasol, Birds of Southern Africa. (Sinclair et al., 1998)
- The Atlas of Southern African Birds Vol 1: Non-passerines. (Harrison et al., 1997a)
- The Atlas of Southern African Birds Vol 2: Passerines. (Harrison et al., 1997b)
- Robert's Birds of Southern Africa, sixth edition. (Maclean, 1993)

Reptiles: The reptile literature survey was undertaken using the following reference material.

- Field Guide - Snakes and other Reptiles of Southern Africa.
- Branch, 1996)
- South African Red Data Book – Reptiles and Amphibians. (Branch, 1988)

Amphibians: The amphibian literature survey was undertaken using the following reference material.

- Atlas and Red Data Book of the Frogs of South Africa, Lesotho and Swaziland. (Minter et
- al., 2004)
- South African Red Data Book – Reptiles and Amphibians. (Branch, 1988)

The results of the survey are as follows:

Table 9: Red data mammal species found in the quarter degree square 2628CC.

Scientific Names	Common Names	SARDB	Habitat suitability
Mystromys albicaudatus	White-tailed Rat	EN	**Medium.**
Ourebia ourebi	Oribi	EN	**Low.** Habitat too disturbed
Rhinolophus blasii	Blassius's horseshoe bat	VU	**Low.** Requires caves or mine audits for roosting – no known caves in the area
Amblysomus septentrionalis	Highveld golden mole	NT	**Medium.** Recorded in sandy soils with rocky outcrops, much like the mining permit area
Atelerix frontalis	South African hedgehog	NT	**Medium**
Lutra maculicollis	Spotted-necked otter	NT	**Low.** River or lake too far from the site
Myotis tricolor	Temminck's hairy bat	NT	**Low.** Requires caves for roosting – no known caves in the area
Parahyaena brunnea	Brown Hyaena	NT	**Low.** Site too disturbed
Rhinolophus clivosus	Geoffroy's horseshoe bat	NT	**Low.** Requires caves or mine audits for roosting – no known caves in the area

Table 10: Red data bird species found in the quarter degree square 2628CC.

Scientific Name	Common Name	SARDB	Habitat Suitability
Anthropoides paradiseus	Blue Crane	VU	**Medium.** Found on cultivated land and on edgres of vleis
Cirus ranivorus	African Marsh Harrier	VU	**High.** Found in grassland near water. Hunt on cultivated land. Vaal river nearby
Eupodotis cafra	Whitebellied Korhaan	VU	**Medium.** Open grassland
Falco naumanni	Lesser Kestrel	VU	**High.** Open grassland near towns and farms
Morus capensis	Cape Ganet	VU	**Low.** No offshore coastal waters
Podica senegalensis	African Finfoot	VU	**Low.** Too far from reaches of streams, rivers, pans etc
Polemaetus bellicosus	Martial Eagle	VU	**Low.** No ideal nesting sites
Tyto capensis	African Grass Owl	VU	**High.** Low grass. Near water
Alcedo semitorquata	Halfcollared Kingfisher	NT	**Low.** No dense vegetation
Circus maurus	Black Harrier	NT	**Low.** Landtype unsuitable
Falco biarmicus	Lanner Falcon	NT	**Medium.** Enjoys wide variety of habitats
Falco peregrinus	Peregrine Falcon	NT	**Low/Medium.** No cliff-tops or gorges, but likes to hunt over cultivated land
Mycteria ibis	Yellowbilled Stork	NT	**Low.** Too far from inland water
Phoenicopterus minor	Lesser Flamingo	NT	**Low.** Too far from inland brackish water
Rostratula benghalensis	Greater Painted Snipe	NT	**Low.** No marshes or swamps
Sagittarius serpentarius	Secretarybird	NT	**Medium.** Habitat suitable

No red data reptiles and amphibians were identified in 2628 CC. Based on the outcome of the vegetation survey, the site represents a suitable habitat for the **Grass Owl**.

Heritage
A Cultural Heritage Survey has been completed over the property for the prospecting application. The results of the survey remain valid for the mining right application. A full copy of the report is contained in **Appendix 6**. Below is a summary of the baseline heritage environment as extracted from the report.

Description & Evaluation of Cultural Heritage Sites
Figure 21 below provides a visual indication of the location of the various findings from the heritage survey, which are summarised as follows:

- Two cemeteries (Sites 1 & 8) were recorded. According to the inscriptions the graves are mostly dated to the early to mid 1900s. However, most graves are unmarked and because the date is unknown they are be default protected by the NHRA (Act No 25 of 1999). It is unclear whether they are formal graveyards that were administered by a local authority.
- One modern house (Site 2) was recorded
- Four homesteads (Sites 3, 5, 6, & 7), were recorded featuring the foundations of several single-room square stone houses.
- One livestock enclosure (Site 4) was recorded that is probably associated with the homesteads. These sites indicate an early 1900s occupation of the site and can probably be associated with farm labourers. These structures are all older than 60 years and are therefore protected by the NHRA (Act no 25 of 1999).

No Stone Age or Iron Age settlements, structures, features or artefacts were recorded during the survey.

As a result of the awareness of the cemeteries and sensitivity of the grave yard (Site 1) which is in close proximity to the existing disturbance, Prime Spot has taken the approach of not including the area within the application to give comfort to affected persons that the area cannot be tampered with by future mining activities.

It has been raised as a contentious issue by the family of the relatives buried on site. The family strongly object to the application. When viewing the visitors book for the site undertaken on a number of times during the EIA process, there was evidence that the graves are visited regularly.

Figure 21: Heritage resources recorded on the Farm Vischgat 467 IR.

Socio-economic profile:
The following socio-economic background information has been extrapolated from the Midvaal Integrated Development Plan (IDP 2016/17). The proposed mine is located within Ward 1 (one of 14 wards) of the Midvaal Local Municipality which forms part of the Sedibeng District Municipality in the Gauteng Province. Midvaal is border by Mpumalanga to the East and the Free State to the South.

The spatial structure of the Midvaal Local Municipal area is predominantly that of a rural area with extensive farming constituting approximately 50 % of the total area of jurisdiction. There are two significant natural features impacting on the physical structure, namely the Suikerbosrand Nature Reserve (not affected in any way by this application) and the Vaal River (located +/- 2km south of the proposed mine) which forms the Southern boundary of both the municipality and the Gauteng Province.

Figure 22 below provides a visual indication of the location of the proposed mine in relation to the applicable portion of Midvaal Municipality. Of relevance is that the site falls within the area which is predominantly used for **agricultural activities**. Currently there is no development in closure proximity to the proposed mine.

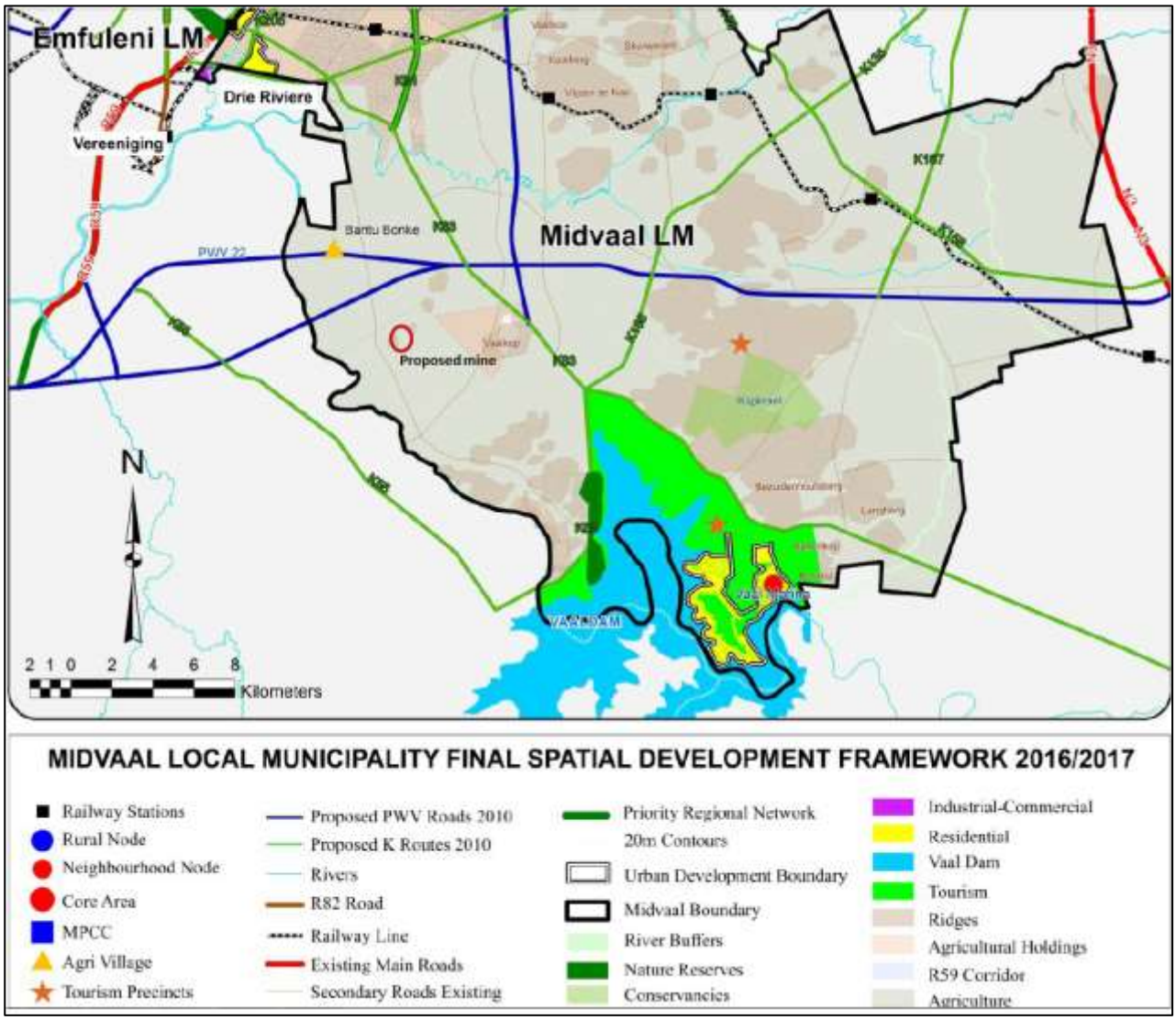


Figure 22: Extract from the Midvaal spatial development plan.

The Midvaal Local Municipality has a total population of 95 301 (Source StatsSA: 2011 Census). The total population grew from 52679 in 1996 to 95 300 in 2011, according to the 1996 and 2011 census data. The year on year growth for the total population for this period was 2, 78 %. The Black or African population grew at a rate of 3, 59 % and the White or European population grew by 1, 46 %.

The fact sheet below provides a summary of critical background information of Midvaal Municipality.

DESCRIPTION	MLM
Geographical size (sq. km)	1722
Number of people	95 301
Population growth (% per annum 2001 – 2011)	3,94
Number of Households	29 964
Population density (people per sq. km)	55,3
Number of Wards	14
Number of Councillors	27
% of households with formal housing	76,4
% of households with hygienic toilets	84,1
% of households with piped water at or above RDP level	75,8
% of households with electricity connections	79.3
% of households with formal refuse removal	83.1
Number of households in informal settlements	3 766
Unemployment rate (broad definition %)	18,8
Unemployment rate (narrow definition %)	9
% of people employed in the formal sector	73.20
% of people employed in the informal sector	10.11
% of people employed in private households	16.68
Dependency Ratio (per 100 (15 – 64)	41,9

Towns occurring within the Midvaal municipality are De Deur/Walkerville, Eikenhof, Meyerton (the highest order) and Vaal Marina. Three Rivers (located in Emfuleni Municipality) is located over 10km to the north west of the site as the crow flies.

The main economic sectors include community services (23%), manufacturing (20%), trade (17%) finance (13%), transport (9%), electricity (0%), construction (7%) and agriculture (2%) and mining (0%).

The population density within the vicinity of the mine varies from 0 to 113 persons per km^2. The most dominant population group in Ward 1 are Black Africans (approximately 71% of the population). Between 1996 and 2001, the population density in Ward 1 increased by 10%. Within Ward 1, 19% of the population has no schooling, while 25% have attended primary school and 6% have completed primary school.

The majority of the housing in the Ward 1 is formal housing. The percentage of formal houses in Ward 1 has increased since 1996, from 76% to 81%. However, the number of informal houses has also increased since 1996, from 6% to 14%.

Between 1996 and 2001 the number of households who have access to water inside their yard increased from 32% to 54%, but the percentage of households who have access to water within their dwelling has decreased from 32% to 22%).

The numbers of households that have flush toilets decreased between 1996 and 2001 from 43% to 35%). There has been an increase in the number of households without any sanitation from 1.5 to 5.6 %. Since

1996 there has been an increase in the number of households that use electricity as a source of lighting from 48 to 57%. The percentage of households whose refuse is removed by the municipality on a weekly basis remained constant since 1996 at about 9%.

Traffic:
During the scoping phase, traffic along the public access route to the site along the D1321 (Future K81) was raised as a concern. Hence a Traffic Assessment was commissioned and completed by Trinamics Consulting Engineers. A full copy of the traffic assessment is provided in **Appendix 7**.

Roads surrounding the property include;
- The property is situated off district road D1321 (future K81), commonly known as the Vischgat Road.
- This road falls under the jurisdiction of the Gauteng Department of Roads & Transport.
- In the vicinity of the property it is currently a dirt road.
- Basic Planning is available for future K81 (refer plan PRS 88/27/4Bp).
- Note that in the 2010 Gauteng Strategic Road Network Review it was suggested the road be down-classed from a class 2 road to a class 3 road.

Planned roads:
Rand Water is proposing the construction of a new surfaced road along the northern boundary of the Rand Water Panfontein Sludge Disposal Site, to link the R54 provincial road (future K83) with the D1321 (future K81). This road is located between the R54 and D1321

Provincial Roads on farm portions 6, 8, 9 and 70 of Uitvlught 434IR. Access to Rand Water`s Zuikerbosh Water Treatment Works (ZBWTW) is currently via a single-carriageway bridge, which is frequently flooded during minor and major storm events. Inaccessibility over the bridge poses a major risk to the operational requirements of the ZBWTW; and health and safety risk to employees and the community in general. It is for this reason that Rand Water has considered the construction of a new access road to the plant. Save for the above, no other roads are planned in the vicinity.

Traffic count (undertaken on 24th January 2017):
Road D1321 can be split in x3 sections:
- A surfaced portion between the R54 in the north and the Rand Water entrance. Daily two-way traffic ≈ 1 200 veh/day.
- A surfaced & gravel section between the Rand Water entrance and the Bantu Bonke informal township. Daily two-way traffic ≈ 750 veh/day.
- A gravel section south of the Bantu Bonke Township passing this property. Daily two-way ≈ traffic 285 veh/day

Findings and recommendations:
- Maximum new trip generation for the proposed activity Portion 1 of the Farm Vischgat 467IR is estimated at 40 x 30 ton trucks a day or around x5 trucks in and x5 trucks out in any peak hour.
- Although very far from the site (12.8km), the Sidra analyses have indicated that the impact on the R54 / D1321 intersection is negligible.
- Similarly, the impact on the single file bridge across the Suikerbosch River (11km away) has also been shown to be negligible.
- No roads upgrades are required as the traffic impact of the proposed activity is negligible.
- Access to the property has previously been determined at km 4.400 (per the basic planning of K81), and approved via a Section 7 of Act 8 report to Gautrans.
- The development can, from a traffic viewpoint, be approved.

It is important to highlight that while from a traffic volume point of view the project is viable, the state of the existing road network accessing and surrounding the site is very poor. Unless the road is repaired and maintained (by the responsible authority) any additional truck / vehicle will perpetuate the poor road conditions within the area. This concern has been raised by numerous interested parties.

Bridge crossing the Rand Water Canal:
Access to the proposed mining site is over a bridge which crosses then Rand Water Canal. Concerns about the suitability and structural integrity of the Bridge were raised during the scoping phase. A full copy of the report on the bridge is contained in **Appendix 8**. In conclusion the report confirms that the bridge is adequate to carry the load of trucks and other vehicles that have a mass up to and including normal road-

legal extra heavy vehicles. The engineer completing the report also confirms that they do not anticipate that the trucks passing over the bridge will cause a vibration that will affect the bridge of canal below.

(b) *Description of the current land uses*

The land covered by the proposed mining right application area is privately owned and is classified as agricultural land (for grazing purposes). A defunct mining operation is located on the property. The infrastructure that is present on site is associated with the defunct mining operation and includes:

- The quarry
- Overburden dump
- Remnants of the processing plant;
- Container facilities which served as administration offices;
- Stockpile yard
- Access roads

Based on the 2014 National Landcover Map (See **Figure 23** below), the proposed mining right area can be categorised as having the following land uses:

- The majority of the site (~80%) is grassland
- A bare area (~5%) has been acknowledged in the middle of the mining right areas, which represents the existing quarry and disturbed area
- Cultivated land exists to the north west and south east of the mining right area (~9%)
- A few trees are noted along the boundary of the mining right area (~1%)

The surrounding land uses are largely that of agricultural land, used for grazing of livestock and cultivation of maize. A Rand Water Board Canal is located approximately 470m south west of the edge of "pit 2" and just over 100m from the closest point of the proposed mining right application area. The closest point of the Sky Sands mining operation takes place approximately 1.2km to the south west of the proposed mine (See **Figure 24** below).

The following photographs of the site provide an indication of the existing land use on the proposed mining right area.

Photograph 3: Existing quarry

Photograph 4: Existing quarry

Photograph 5: Existing house in the northern section of the mining right application area

Photograph 6: Grassland (and exotic trees) surrounding the defunct quarry

Figure 23: Land use map.

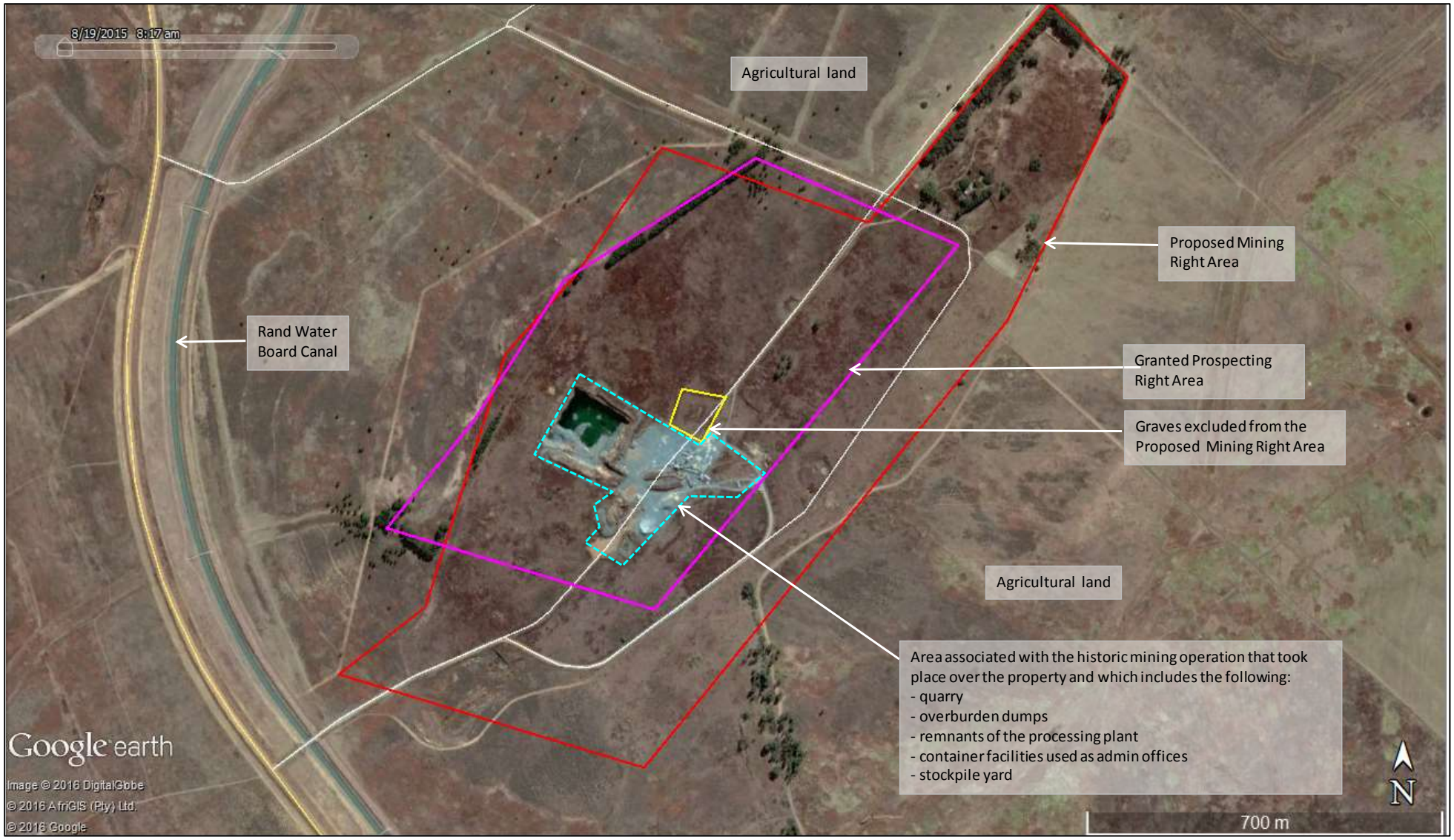


Figure 24: Surrounding land use map.

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

With regards to specific environmental features on site, the most significant is that of the cemetery located within the middle of the mining right application area. It needs to be highlighted that the graves (and a buffer between 20 and 40m) have been excluded from the application area; however remain within the middle of the proposed mine. See Photograph 7 below for a visual indication of the status of the existing graves.

Photograph 7: Graves located within the middle of the mining right area.

The second cemetery, while within the mining right area will not be impacted on from any of the proposed mining activities.

In addition to the graves, the vegetation assessment has highlighted sensitive areas covered by both indigenous grassland and temporary and seasonal wetlands.

(d) *Environmental and current land use map*
(Show all environmental and current land use features).

Figures 25 provides a visual indication of the environmental sensitive areas onsite as captured in the vegetation assessment.

Figure 26 provides an overlay of the vegetation sensitive areas onto the proposed site layout and the following is applicable concerning environmental sensitivity;

- The expansion of pit 2 to a southerly direction is predominatly into high sensitive grassland habitats
- The expansion of pit 2 to a northly direction is predominantly into disturbed areas
- At full extent the southern edge of Pit 2 will be +/- 180m away from a seasonal wetland
- At full extent the northern edge of Pit 2 will be +/- 160m away from a temporary wetland
- The proposed infrastructure area is located within a disturbed area
- The location of the proposed pit 3 is +/-90% over high sensitive grassland areas
- At full extent the western edge of Pit 3 will be +/- 100m away from a temporary wetland

Figure 27 provides an extended view of the environmental sensitive areas (as determined using available desktop information) around the proposed mining right areas. In **Figure 27**, the sensitive Vaal River is evident.

Figure 28 provides an indication of the surrounding land use to the proposed mine which is mainly agricultural land with intermittent houses.

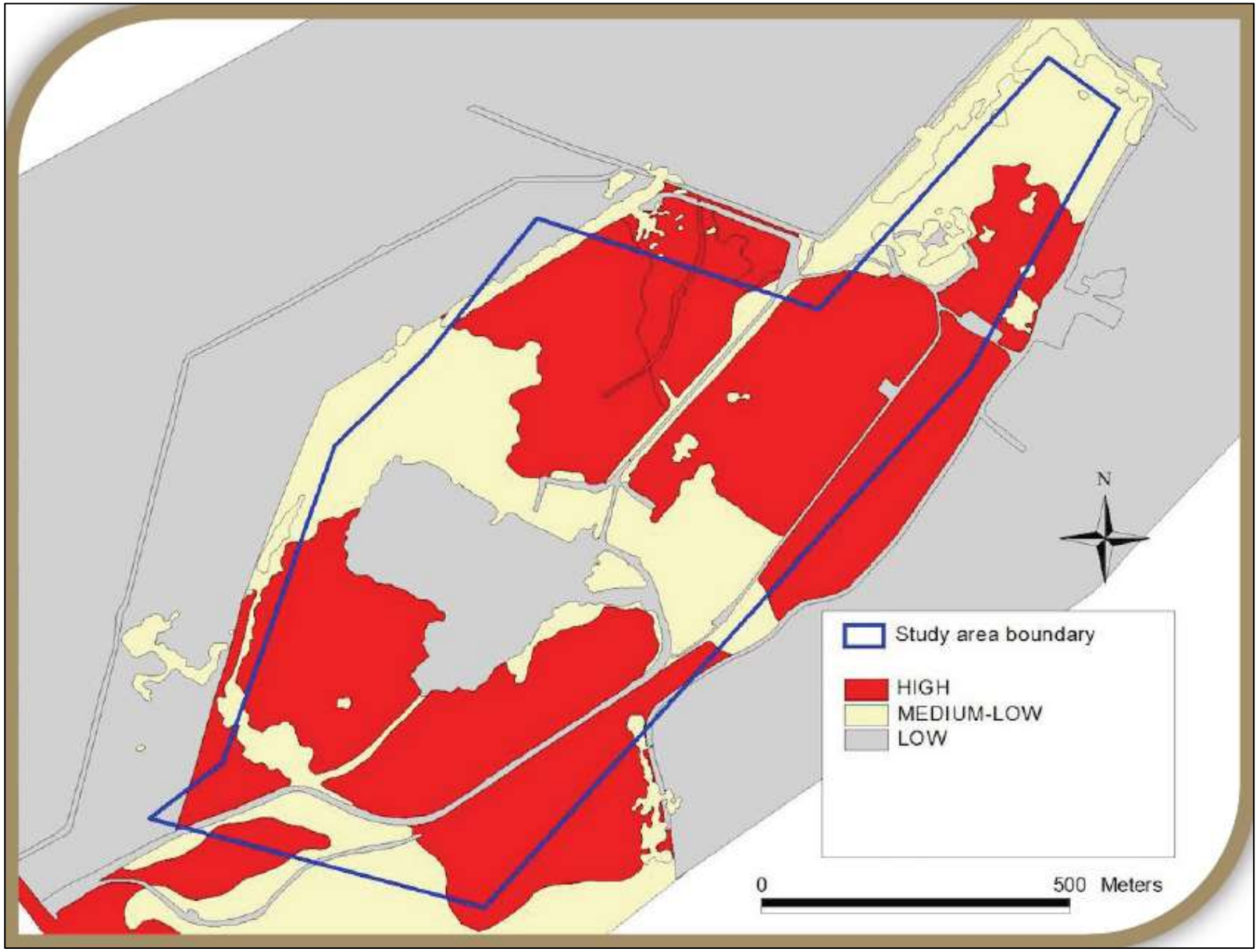


Figure 25: Vegetation sensitivity map.

Figure 26: Environmental sensitivity map.

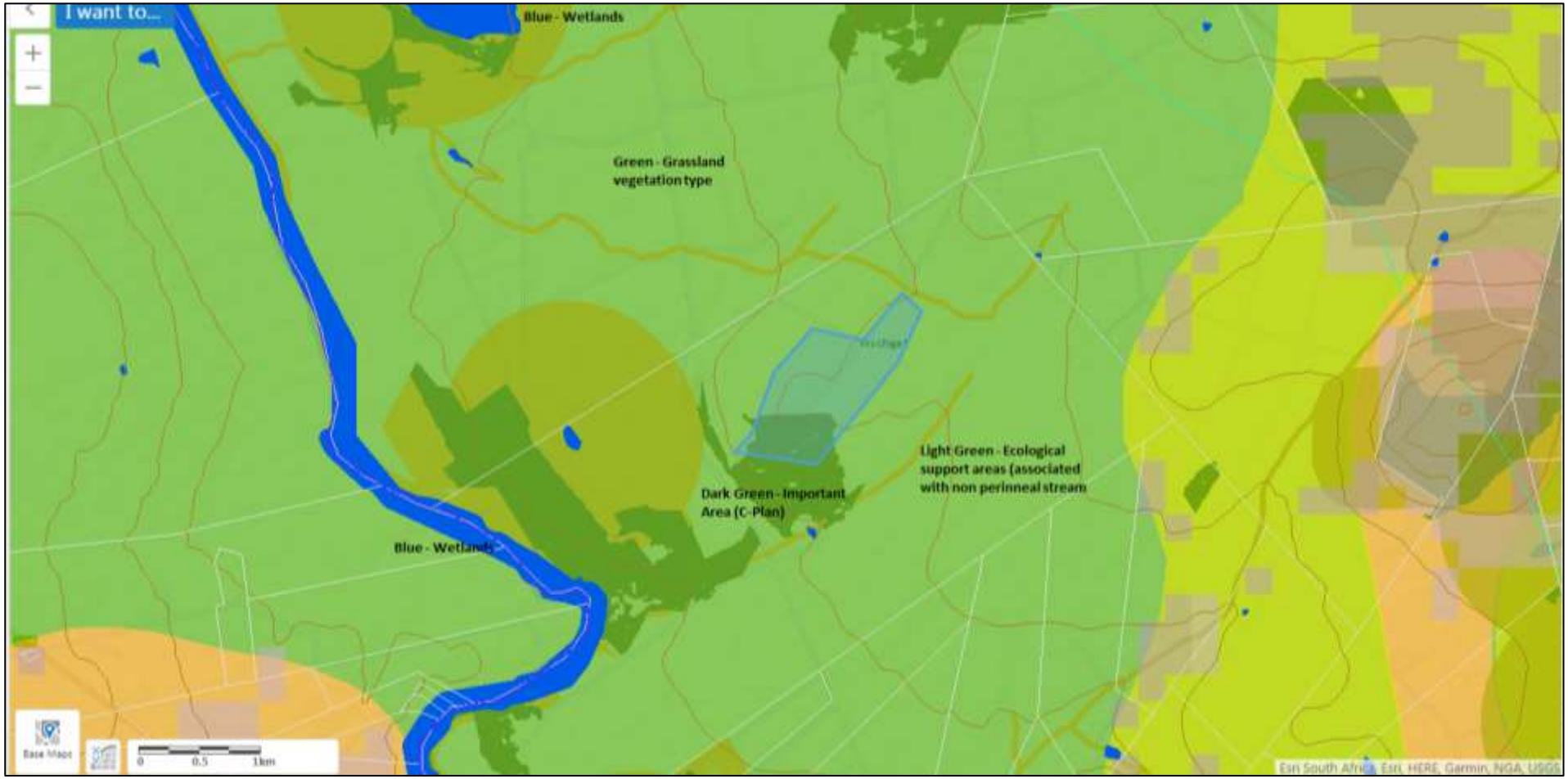


Figure 27: Extended Environmental sensitivity map (Desktop information).

Figure 28: Surrounding land use map.

(v) Impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts

Based on the author's understanding of the EIA regulations and the DMR template document, the impact assessment required in terms of this section, is meant to identify the impacts and risks of alternative development footprints (as contemplated in the accepted scoping report) to determine the preferred alternative which is then subject to a full impact assessment.

As no development footprint alternatives have been considered in this report, there is no need to assess the impacts and risks of alternatives. A full impact assessment of the preferred alternative is provided in Section H below.

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

N/A – See Section H below for details of the methodology used for the impact assessment of the preferred alternative.

(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

The preferred design and layout option associated with this proposed project are primarily influenced and limited by;

1) the occurrence of the geological resource (i.e. mining can only take place where there is a viable mineral resource).
2) the infrastructure establishment is based on utilising existing disturbed areas.

Two aspects (as identified in the Scoping Report) were investigated, which potentially could have given rise to alternative layout options, namely;

1) The moving of the graves (located in an excluded area – yet within the middle of the mining right application area).
2) The impact of blast vibrations from the mining of Pit 2 on infrastructure located in the Rand Water Servitude

With regards to the possible above alternatives, the outcome of the investigation was as follows;

- The Hlapolosa Family (whose relatives are buried in the cemeteries) have confirmed that moving the graves will not be supported by the family. Therefore the alternative mining design footprint associated with the implication of moving the graves was not considered.
- With regards to the buffer between blasting activities and the Rand Water infrastructure. The blasting specialist study (**Appendix 9**) confirmed that the blasting impacts of the initial site layout on the Rand Water infrastructure would be low, with the implementation of appropriate mitigation measures as contained within the study. Therefore, no amendments to the initial site layout were considered for blasting reasons.

Based on the above, no alternative layout options were identified.

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

Table 11 below provides an indication of possible mitigation measures investigated and proposed based on the main concerns raised during the consultation completed for the Scoping report and Draft EIAr.

Table 11: Issues raised and possible mitigation measure

COMMENTS RECEIVED ON THE DRAFT SCOPING REPORT	
I&AP COMMENTS RAISED	**POSSIBLE MITIGATION MEASURES TO ADDRESS I&AP COMMENTS**
• Impact of blasting on Rand Water infrastructure	• A blasting impact assessment has been completed and provided in **Appendix 9**. • Proposed mitigation measures contained within the specialist study have been captured within the environmental management programme.
• Impact on the bridge crossing the Rand Water canal through increased truck volumes	• A structural assessment of the existing bridge was completed to determine its suitability to be used for mining purposes (**Appendix 8**). • The specialist confirmed that the bridge was suitable for intended use. • Recommended mitigation measures to ensure continued suitability have been captured within the environmental management programme.
• Impact on graves	It needs to be stressed that due to the fact that the graves cannot be moved from the current location, it is **not possible** to totally mitigate the cultural heritage disturbance of mining operations on the graves. The mitigation measures proposed to minimise the impact include; • Maintain the area surrounding the graves • Fencing the excluded area off (this includes the graves and buffer) • Planting trees along the edge of the fenced off area to try and visually obscure the adjacent mining operations • Demarcate and maintain an access route from the entrance of the mine to the graves. • Be as flexible as possible (while maintaining safety within the mine) to allow family access to the graves.
• Impact on other heritage findings	• Undergo a phase 2 heritage impact assessment on all other heritage findings which will be destroyed as a result of expanding “pit 2”. • Obtain the necessary destruction permits from SAHRA.
• Impact of additional traffic on the Vischagt road	• A traffic impact assessment has confirmed that Vischagt road has the capability to accommodate the additional traffic that may arise from this proposed mine. • Implement safety awareness training of all truck drivers who access the proposed mine.
• Dust	• Implement appropriate dust mitigation measures • Implement a monitoring programme to ensure that mitigation measures are effective.
• Noise	• Implement appropriate noise mitigation measures • If necessary, implement a monitoring programme to ensure that mitigation measures are effective.
• Groundwater	• Implement an appropriate monitoring programme. • Re-assess the implication of mining on groundwater within 5 years of the commencement of mining activities.
• Cumulative impacts	• Ensure that the impact assessment addresses the potential of cumulative impacts.
• Security	• Fence the mining site
• Socio-economic	• Implement social and labour plan • Implement a preferential procurement and employment policy for locals
• Ecological impacts	A vegetation assessment has been completed and provided in **Appendix 5**. Minimise the impact on environment by keeping the disturbed footprint to a minimal. • Undertake follow up vegetation assessment for potential protected plant species and determining the extent of wetlands. • Develop and implement an alien vegetation plan • Develop and implement an ecological management plan • Implement measures to where possible, avoid pollution creation (such as bunding fuel tanks) and if avoidance is not possible then minimisation and mitigation measures should be used.

(ix) Motivation where no alternative sites were considered

The design and layout options associated with this proposed project are primarily influenced and limited by the occurrence of the geological resource (i.e. mining can only take place where there is a viable mineral resource).

The economic viability of extraction of the resource is also dependent on the need and cost associated with the stripping of overburden. The areas demarcated for mineral extraction from pit 1, 2 and 3 are the most viable in terms of economically acceptable overburden stripping ratios, while providing ample mineral resource (over a 50 year life of mine) to justify initial capital expense required to restart mining operations.

In addition, the proposed site layout maximises the use of historically disturbed areas (i.e the placement of the crushing infrastructure and stockpile areas).

Based on the feedback during the initial consultation period, the following was considered (in terms of site layout);

- Adapting the dimensions of the pit which will be mined closest to the Rand Water servitude to ensure that the likelihood of an impact on the structural integrity of infrastructure within the servitude (from blasting activities) is insignificant. Based on the results of a blasting impact assessment report, with the implementation of appropriate mitigation measures, the impact on the Rand Water servitude will be "low". Therefore the original design to extend the final pit 2 dimensions to 470m away from the servitude remains applicable. Blast monitoring results from the expansion of the pit will be used to continually assess the risk associated with the Rand Water servitude.
- Based on the feedback received from the Hlapolosa family the option of the moving of the graves from the excluded area within the middle of the mining right area is not been considered.

(x) Statement motivating the alternative development location within the overall site.

Based on the above, **no alternative layout options** (to that presented in **Figure 3**) were identified. Hence the preferred site layout option and mining method, as contained in the final scoping report can be considered the final site layout and final mining description.

h) Full Description of the Process Undertaken to Identify, Assess and Rank the Impacts and Risks the Activity will Impose on the Preferred Site (in Respect of the Final Site Layout Plan) through the Life of the Activity

The following information provides an explanation the impact assessment tool developed and used by Umhlaba Environmental Consulting to determine the significant environmental impacts of the proposed mining activities on the environment. The following definitions are applicable:

Environment (as defined in NEMA): The surroundings within which humans exist and that are made up of:

- the land, water and atmosphere of the earth;
- micro-organisms, plant and animal life;
- any part or combination of the above, and the interrelationships among and between them; and
- the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing;

Activity: A specific deed, action or function, that takes place at an operation.

- E.g. stripping of topsoil or mining of granite.

Aspect: Considered to be a direct effect of an activity, *which* has an influence on the environment. It is neither categorised as positive or negative.

- E.g. Mining of granite (an activity) causes dust fallout and noise (both are aspects of the activity).

Impact: The end-result of an aspect that occurred due to an activity, resulting in an influence (change) on the environment. The influence is either positive or negative. The determination as to whether an impact is positive or negative is subjective. For example:

- E.g. Dust, an aspect of mining (an activity), cause a nuisance to neighbouring houses (an impact – negative from the perspective of the homeowner).

Cumulative Impacts: Cumulative Impacts will be considered where off-site activities (not related to the operation being evaluated) will result in the same impact at the receptors being considered.

- E.g. dust will be considered cumulatively for a mine located adjacent to a field which is ploughed. The spatial extent for the consideration of off-site impacts will be determined individually for each impact depending on factors such as the medium of dispersal of the pollutant causing the impact.

Environmental Impact Assessment: A formal or informal procedure producing a quantitative estimate of the environmental impact resulting from an activity.

Significance: A determination of the importance of a particular impact and in doing so incorporates extent, frequency and severity. The criteria for determining this significance is described further below.

Criteria to Consider when Determining Significance:

The ranking of impacts / determination of significance is estimated using two criteria, namely **Consequence** and **Probability**.

The ***Consequence*** of an impact resulting from an aspect is expressed as a combination of:

Nature of impact: An indication of the extent of the damage (negative impacts) or benefit (positive impacts) the impact inflicts on natural, cultural, and/or social functions (environment).

Extent of impact: A spatial indication of the area impacted (i.e. how far from activity the impact is realized) or spatial extent of the importance of the potential impact (i.e if a heritage site of national importance will be impacted on site, then the extent is regarded as “national” and not “onsite”).

Duration of impact: A temporal indication of the how long the effects of the impact will persist, assuming the activity creating the impact ceases. For example, the impact of noise is short lived (impact ceases when activity ceases) whereas the impact of removing topsoil exists for a much longer period of time or the impact of destroying a heritage finding is permanent.

Frequency of the aspect occurring: An indication of how often an aspect, as a result of a particular activity, is likely to occur. Note that this does not assess how often the impact occurs as it applies only to the aspect. For example mining takes place daily while the resultant frequency of the impacts occurring will vary based on a number of factors.

The ***Probability*** of an impact resulting from an aspect is expressed as:

Probability of impact occurring: An estimated indication of the potential for an impact to occur. For example if there is a small overburden dump, what is the probability of adjacent landowners regarding the dump as a visual impact? Probability is based on the author’s experience.

Determining Significance before Controls

Using the criteria explanation above, scores are assigned to each the criteria. The scoring range has been selected to represent the scale in which varying impacts can occur. The combination of scores is then used to determine the ***Consequence*** and ***Probability***.

- Consequence is expressed as the sum of all criteria in order to get a score out of 100.
- Probability of the impact occurring is expressed as a score out varying from 1 to 10.

Multiplying the consequence score against the probability score provides for an **initial significance** ranking. The lowest potential score is 4 and the highest possible impact score is 1000.

The scoring table below provides an indication of the various scores than can be assigned to each category listed above.

Nature of the potential Impact		
Low	Impacts affect the environment in such a way that natural, cultural and / or social functions and processes are affected insignificantly.	**1**
Low-Medium	Impacts affect the environment in such a way that natural, cultural and / or social functions and processes are altered in a minor way.	**5**
Medium	Impacts affect the environment in such a way that natural, cultural and / or social functions and processes are altered.	**10**
Medium-High	Impacts affect the environment in such a way that natural, cultural and / or social functions and processes are severely altered.	**15**
High	Impacts affect the environment in such a way that natural, cultural and / or social functions and processes will be irreversibly changed.	**25**
Extent of the potential impact		
On-site	Impact occurs within a functional area.	**1**
Neighbouring	Impact occurs on neighbouring properties	**5**
Local	Impact occurs within a 10km radius of the site.	**10**
Regional	Impact occurs within a 100km radius of the site.(or environmental attribute of regional importance)	**15**
National	Impact occurs within South Africa. (or environmental attribute of national importance)	**25**
Duration of the potential impact		
Very Short-term	The impact will cease within 1 week if the activity is stopped.	**1**
Short-term	The impact will cease within 1 year if the activity is stopped.	**5**
Medium-term	The impact will cease within 5 years if the activity is stopped.	**10**
Long-term	After the operational life of the operation.	**15**
Permanent	Where mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient.	**25**
Frequency of the activity causing the potential impact		
Annually or less	Activity occurs at least once in a year or less frequently.	**1**
6 months	Activity occurs at least once in 6 months.	**5**
Monthly	Activity occurs at least weekly to once a month.	**10**
Weekly	Activity occurs on operational days.	**15**
Daily	Activity occurs daily.	**25**
Total Consequence		
Probability		
Improbable	The possibility of the impact materialising is very low either because of design or historic experience.	**1**
Low	The possibility of the impact materialising is low either because of design or historic experience.	**3**
Medium	There is a possibility that the impact will occur.	**6**
High	There is a distinct possibility that the impact will occur.	**8**
Definite	The impact will occur regardless of any prevention measures.	**10**
Total Probability		

The **Final Significance** ranking (before considering the implication of the proposed mitigation measures) of an impact will also take cognizance of:

- Impacts / Issues raised by **Interested and Affected Parties**: During the consultation process, I&AP's have identify concerns relating to impacts resulting from the proposed activities associated with the proposed mine. Impacts identified by I&AP's will be assigned additional scoring.
- **Cumulative Impacts**: Cumulative Impacts will be considered where any off-site activities (not related to the operation being evaluated) will result in the same impact at the receptors being considered.

Below is a summary of the influence of external factors on final significance scoring:

External Factor	Description	Points to add
I&AP concerns	Unresolved Impact rasied as a concern by an I&AP	100
Cumulative impact	Impact can be considered cumulatively with off site impacts	50

The final significance ranking takes cognisance of the initial scoring plus any additional score associated with allocating an external factor. At no time can the sum total of all the scores exceed 1000.

Converting the Scores to a Significant Ranking Allocation:

The significance of an impact is considered to be classified into one of the following; High, Medium-High, Medium, Low-Medium or Low. Each of the classified impacts has a scoring band into which it falls. The bands have been determined by a combination of 25 years of experience of Umhlaba employees. The definition of each classification is provided below and focuses on the need for mitigation or management.

Significance:	
Low (4 – 60)	Management measures may not be necessary, but in some instances are encouraged to ensure that the impact remains of Low significance.
Low-Medium (61 – 200)	Management measures are usually encouraged to ensure that the impacts remain of Low-Medium significance.
Medium (201 – 400)	Management measures are required to ensure, at minimum, the significance of the impact does not increase.
Medium-High (401 – 650)	Management measures are required to reduce the significance of the impact to, at least, Medium significance.
High (>651)	Impact should be avoided, or if not possible, managed to reduce the significance of the impact to, at least, Medium significance (where possible).

Degree to which impact can be mitigated

This requirement is essentially achieved by determining significance before consideration of controls and then the significance after the consideration of management controls. The difference between the before and after controls is an indication of the "degree to which the impact can be mitigated".

The ***Significance*** of an impact can be reduced / reversed through the successful implementation of appropriate controls (mitigate / manage or avoid). The Table below provides a summary of the overarching controls that can be implemented and Umhlaba's perception of the degree in which the various controls can effectively reduce the initial significance of the impact.

Type of control	**Description**	**% to be deducted**
Engineering	Isolation, re-design, guarding, containment, safety device (e.g bunding of a fuel tank or concreting workshop)	40%
Procedural & administration	Policies, Procedures & work instructions (designating speed limits / implemeting vehicle maintrnance activities etc / demarcate buffer zones)	25%
Training and education	Training & competencies (ongoing awareness training of employees)	10%
Monitoring, measurement and maintenance	Continuous monitoring, Observations, inspections & testing, implementing maitenance (reacting to feedback from monitoring campaigns)	5%

Where management measures are implemented, they are categorised into one of the above reference type of controls and the initial significant ranking is reduced by the appropriate percentage. In many cases more than one control can be applied.

For example; should a mine require a diesel tank, the risk of a potential diesel spill from that tank needs to be considered in the initial significant ranking. If the mine commits and successfully implements the following management measures:

- To bund the diesel tank.
- To train employees on how to refill vehicles and what to do in case a minor spill occurs.

The significant after controls would be reduced by 40% (for the bunding) and 10% due to the training commitment.

Degree to which an impact can be reversed:

An indication to the degree to which the impacts can be reversed at the end of the life of the mine is provided below. Three categories have been allocated:

- Not Possible: Once the impact has occurred it will be permanent and cannot be reversed.
- Potentially: With appropriate management and mitigation measures there is a potential the impact can be reduced / reversed.

- Likely: With appropriate management and mitigation measures there is a good likelihood that the impact can be reduced / reversed.

Impact	Degree to which impacts can be reversed
• Aesthetics / Visual effects	**Potentially**: While the pit and overburden dumps (left at the end of the life of the mine) will alter the visual effects of the land to be mined, through planting of trees as visual screens and re-vegetating the overburden berms the visual impact can be reduced.
• Dust / Air Quality	**Likely**: Once mining activities cease and exposed areas are rehabilitated, dust emission from the site will stop.
• Current land uses	**Not possible**: The current land use is mainly grassland. Areas demarcated for the expansion of Pit 2 and development of Pit 3 will permenantly be a pit after the end of life of mine. The current landuse will be changed through implementing mining activities.
• Fauna and Flora	**Potentially**: The expansion of the pits (over a 60 year period) will destroy the flora and habitats in the 25 hectare areas demarcated for the pits. However alternative habitats can be established upon rehabilitation of the mine at mine closure. The future water resource at the bottom of the pit after closure could support other faunal species. The side walls of the pits can be revegetated.
• Geological resource	**Not possible**: Once the geological resource is removed through mining it can not be replaced.
• Ground water	**Potentially:** Once mining ceases, the premining groundwater status will prevail. The pit will partially fill with water. There may be a lasting impact on the groundwater quality within the pit from the historical blasting activities.
• Noise / Sound levels	**Likely**: Once mining activities cease, noise associated with the mine will also cease.
• Traffic / impact on road	**Likely**: Once mining activities cease, traffic associated with the mine will also cease.
• Sites of heritage & cultural interest – graves	**Potentially:** Once mining ceases, the disturbance from mining activities on the excluded grave site will stop. Through rehabilitating the mining site, there is a potential to reduce the impact caused by mining.
• Sites of heritage & cultural interest – other heritage sites	**Not possible**: The other heritage sites located within the path of the intended expansion of pit 2 will be destroyed by mining. Once destroyed it is not possible to reverse the impact.
• Soil	**Potentially:** If topsoil is stripped ahead of the mining face and stored in a manner that preserves its state, then it can be reused either during concurrent rehabilitation or at the end of the life. This potentially allows for the initial impact to be reversed.
• Socio-economic considerations	**Likely**: Once mining activities cease, both the negative socio-economic impacts will stop and the positive socio-economic benefits will also cease.
• Surface water	**Likely**: Based on the location of surrounding surface water features, it is unlikely that the mining operation will have any impact on surface water resources in the first place. Once mining ceases, any potential impact will cease to exist.
• Topography	**Not possible**: Once the topography has been altered through the expansion and deepening of the pit, the impact is permenant.
• Vibration & fly rock from blasting	**Likely**: Once mining activities cease, blasting associated with the mine will also cease.
• Odours	**Likely**: Once mining activities cease, sanitation sytems will be removed and the potential for any odours will also cease.

Degree to which an impact may cause irreplaceable loss of resource:

Due to the nature of the proposed activity three impacts may cause an irreplaceable loss of resource, these include;

- The removal of the andesite rock (geological material) and generation of pits 2 & 3 will result in the permanent removal of the geological resource from the property.
- The heritage resources (foundations of buildings) located within the proposed footprint of Pit 2 will be destroyed (after obtaining the relevant permissions)
- Grassland vegetation identified within the final footprint of pit 2 and 3 will over time (as the pit expands) will be destroyed and lost.

i) Assessment of Each Identified Potentially Significant Impact and Risk

The full impact assessment conducted by the EAP, is attached as **Appendix A10**. This impact assessment shows the allocation of scores to each categories and an indication of whether an impact has been raised as a concern by an interested and affected party or a cumulative impact.

No impact assessment has been undertaken for emergency incidents as all aspects will result in negative impacts of **HIGH** significance. Therefore, the proposed mine should always be prepared to deal with the emergency incidents if they arise.

A distinction has been made between negative and positive impacts. Positive impacts are **not** subject to a re-evaluation.

Table 12 below summarises the intended activities to be undertaken, the impact of those activities on the baseline environment prior to implementation of management measures, the type of management measures which can be implemented and an indication of the significance assuming successful implementation of management measures.

The detailed management measures are provided in the Environmental Management Programme section of this document.

Table 12: Summary of the impacts before and after implementing controls

Phase	Activity	Aspect	Source / Cause	Potential Impact		Ranking	Mitigation Type	Re-Rank
	Description of the physical activities that will cause the impacts		*Description as to how the activity may cause the impact*	*A description of the impact that may result from the activity. This impact can either be negative (Neg) or positive (Pos) as indicated*		**Significance** (WITH**OUT** controls)	Avoid / Manage / Mitigate	**Significance** (**WITH** controls)
1. Construction	Re-establish crushing plant. Placement of mobile offices / sanitation requirements. Reconnection of electricity and water from onsite borehole	All environmental parameters	Future impacts as a result of poor re-establishment of infrastructure Lack of ability of the infrastructure to reduce impacts as and when mining commences.	Dust / Noise / Water / Visual / Ecological	Neg	Low-Medium	**Avoid** any additional ecological impacts through the placement of infrastructure on the existing disturbed footprint. **Mitigate** future impacts through incorporation of appropriate mitigation measures onto the re-established plant (such as water sprays etc).	Low
	Construction of workshop & fuel tank and bunding & weigh bridge	Water	Poor design / lack of implementing effective pollution prevention controls during construction will result in unnecessary impacts during the operational mine.	Implementation of effective pollution control measures during the construction of the infrastructure	Pos	Medium-High	**Avoid** future impacts through ensuring pollution prevention controls are incorporated into the design of all new infrastructures. Manage through designing and implementing effective storm water management controls.	N/A
		Ecological	Installation of new infrastructure.	Environmental consequences resulting from unplanned location of new infrastructure	Pos	Medium	**Avoid** any additional ecological impacts through the placement of infrastructure within the existing disturbed footprint	N/A
	Dewatering pit	Groundwater	Poor quality water contained within the pit dewatered to facilitate mining activities.	Surrounding water bodies / Non perineal stream	Neg	Medium-High	**Manage** the initial dewatering of the pit in accordance of the requirements of the water use license.	Medium
	Future traffic	Socio-economic	Lack of appropriate traffic warning signs	Potential road safety concerning	Pos	Medium	**Mitigate** future impacts through the placement of appropriate signage on the Vischgat road.	N/A
	Future blasting	Socio-economic	Future blasting having an impact on surrounding infrastructure	Potential blasting impacts	Pos	Medium	**Manage** future complaints concerning blasting through implementing an upfront survey of potentially affected infrastructure.	N/A
	Future mining of pits 2 and 3	Ecological	Expanding / development of the pits will destroy indigenous grassland habitats.	Destruction of grassland. Potential impact on wetlands Potential destruction of protected plant species	Neg	High	**Manage** through development and implementation of an ecological management plan. Undertake a follow up vegetation survey for protected species and to determine the likelihood of future activities having any impact on the identified wetlands.	Medium-High
	Future mining of the pit 2	Heritage	Expanding of pit 2 will impact on identified heritage resources	Destruction of heritage resources	Neg	Medium-High	**Manage** through implementing correct legal process to obtain a permit for destruction.	Medium-High
	Establishing access to graveyard	Heritage	Providing effective access to the graves. Ensuring the graves is demarcated.	To guarantee easy access to the grave yard	Pos	Medium	**Mitigate** through providing easy access to the graves and **manage** through development and implementation of a access protocol.	N/A
2. Planning	Planning for the stripping and stockpiling of topsoil and overburden	All environmental parameters	Planning the stripping and storage of topsoil and overburden	Environmental consequences resulting from unplanned storage of topsoil and overburden	Pos	Medium	**Avoid** impacts through planned storage of topsoil and overburden. **Manage** through ensuring overburden stockpile are not located in high sensitive areas.	N/A
	Planning for future mining	Mineral resource	Planning the utilisation of the mineral resource	Utilisation of mineral resource	Pos	Medium-High	**Manage** optimal utilisation of mineral resources.	N/A
	Planning for future activities on the mine	All environmental parameters	Planning for potential capital expenditure projects	Environmental consequences resulting from unplanned capex projects	Pos	Medium-High	**Avoid** potential future impacts through effective planning of future capex projects.	N/A

Activity		Aspect	Source / Cause	Potential Impact		Ranking	Mitigation Type	Re-Rank
3. Mining	- Stripping of vegetation & topsoil - Removal of overburden (free dig) - Materials handling and stockpiling of topsoil / overburden - Drilling and blasting of mineral resource - Loading and hauling of blasted rock to crushing plant.	Vegetation	Clearing / removal of vegetation	Loss of indigenous vegetation within the Mining Area. Potential impact on wetlands Potential destruction of protected species Potential for alien vegetation to establish	Neg	High	**Avoid** through restricting areas to be cleared to only that of the future mine and ensuring no overburden is dumped in sensitive locations. **Mitigate** through revegetation and implementation of the ecological management plan. If necessary obtain legal authorisation for destruction of protected species.	Medium-High
		Fauna	Clearing / removal of vegetation cover impacts on faunal habitats	Loss of faunal habitats (inclusive of habitat for grass owls) within the Mining Area	Neg	Medium-High	**Avoid** through restricting areas to be cleared to only that of the future mine and **Mitigate** through revegetation and implementation of the ecological management plan.	Medium
		Topsoil	Clearing / removal of topsoil or dumping on topsoil	Loss of soil structure, diminishing the potential for future use of the soil as a suitable growth medium. Erosion of topsoil dumps	Neg	Medium	**Mitigate** through correct storage of stripped and stockpiling of topsoil.	Medium
		Visual	Change in appearance due to removal of vegetation and change in relief / topography due to excavation and stockpiling of overburden	Altered visual appears may be unappealing / unattractive	Neg	Low-Medium	Manage through planting of indigenous trees.	Low
		Air quality	Dust entrainment from stripping activities, materials handling of stripped soil, overburden and blasted rock, and wind entrainment over exposed surfaces	Nuisance impact for surrounding residential receptors. Reduced photosynthetic abilities of vegetation due to dust covering leaf surfaces	Neg	Medium	**Avoid** generation of excess dust through implementation of appropriate management measures.	Low-Medium
			Exhaust emissions	Health impacts to surrounding receptors	Neg	Low-Medium	**Avoid** through maintaining all vehicles	Low-Medium
		Noise	Engine noises from vehicles and earth moving equipment. Noise from drilling operations.	Nuisance impact for surrounding land users	Neg	Medium	**Avoid** impact of noise on surrounding land users through maintenance of equipment and restriction of operational hours.	Low-Medium
		Surface water - volume	Alteration of surface water flow by changing the topography	Reduced volume of run-off entering natural drainage	Neg	Medium	**Manage** through implementation / maintenance of storm water controls.	Low-Medium
		Surface water - pollution	Exposed surfaces increase potential for elevated sediment load in storm water run-off Hydrocarbon contamination from poor storage / handling and disposal of hydrocarbons	Pollution of off-site water bodies (if dirty storm water flows into a water courses)	Neg	Medium	**Avoid & Manage** through implementation / maintenance of effective storm water management controls.	Low-Medium
		Dewatering and Ground water - drawdown	Deepening of the quarry acts as a draw down cone. If there is a need to access the quarry floor, water may be pumped from the quarry.	Deeper water table levels for surrounding groundwater users.	Neg	Medium	**Monitor** and if necessary implement mitigation measures.	Medium
		Ground water - pollution	Blasting activities increasing the level of nitrates in the water within the Quarry	Pollution of off-site water bodies (if water is discharged)	Neg	Medium	**Avoid** by ensuring no water from the pit is discharged off the property. Monitor and if necessary implement mitigation measures.	Medium
		Heritage	Mining activities taking place in close proximity to the excluded graves. Restrictive access to the graves	Disturbance on the excluded graves and limited access to the graves.	Neg	High	**Manage** through demarcation and maintenance of grave site and providing easy access to the graves.	Medium-High

Activity		Aspect	Source / Cause	Potential Impact		Ranking	Mitigation Type	Re-Rank
		Vibration / noise / fly rock / air blast	Blasting	Vibrations experienced off-site may result in structural damage to infrastructure in the Rand Water Servitude (canal & pipelines). Fly rock is a potential safety risk Air blasts can cause structural damage Noise nuisance Interruption to day to day activities of people wanting to access the graves.	Neg	Medium-High	**Avoid** through ensuring that all blasts set off are scaled appropriately depending on the proximity to other infrastructure.	Medium
4. Crushing and Screening	- Materials handling - Crushing and screening - Materials handling of aggregate - Stockpiling - Vehicle entrainment - Mobile plants	Visual	The crushing and screening plant will protrude above the surface.	Visibility of man-made structures may be unappealing / unattractive	Neg	Low-Medium	**Mitigate** through strategic planting of indigenous trees.	Low
		Air quality	Fugitive dust emissions from materials handling, crushing, screening, mobile plants, stockpiling, vehicle entrainment, and wind entrainment over stockpiles and exposed surfaces	Nuisance impact for surrounding land users Reduced photosynthetic abilities of vegetation due to dust covering leaf surfaces	Neg	Medium	**Avoid** generation of excess dust through implementation of appropriate management measures.	Low
			Exhaust emissions	Health impacts to residential / retail / industrial receptors	Neg	Low-Medium	**Avoid** through maintaining all vehicles	Low
		Noise	Noises from the crushing and screening of aggregate as well mobile plants, vehicles and earth moving equipment	Nuisance impact for surrounding land users	Neg	Medium	**Avoid** impact of noise on surrounding land users through maintenance of equipment and restriction of operational hours.	Low-Medium
		Surface water – pollution	Exposed surfaces and product stockpiles increase potential for elevated sediment load in storm water run-off. Hydrocarbon spills associated with the plants could impact on storm water quality.	Pollution of off-site water bodies (if storm water flows into water courses)	Neg	Medium	**Avoid** through implementation & maintenance of storm water management and manage through cleaning up hydrocarbon spills.	Low-Medium
		Vischgat road	Trucks entering and existing the mine	Increased traffic on the Vischgat road	Neg	Medium-High	**Manage** through maintaining appropriate traffic signs	Medium
		Socio-economic	Traffic associated with the mine on public roads	Poor perception of the public towards the mine	Neg	Medium-High	**Manage & Mitigate** by ensuring no over loading and appropriate awareness training of truck drivers.	Medium
5. Supporting Services	- Access roads (use and maintenance)	Air quality	Fugitive dust emissions from vehicle entrainment	Nuisance impact for surrounding land users Reduced photosynthetic abilities of vegetation due to dust covering leaf surfaces	Neg	Medium	**Avoid** generation of excess dust through implementation of appropriate management measures.	Low-Medium
		Access bridge	Continual use of the access bridge	Structural integrity of the Rand water board infrastructure	Neg	Medium	**Manage** and monitor the integrity of the bridge.	Low-Medium
	- Water supply (potable)	Water use	Use of potable water from the borehole onsite	Although no impacts are associated with the use of water itself, irresponsible use of water may result in strain on the resources given that South Africa is a water scares country	Neg	Low-Medium	**Avoid** through maintenance of water infrastructure and **manage** through implementation of water awareness measures.	Low-Medium
	- Water supply (process)	Water use	Use of water from the pit and any storm water catchment dams for dust suppression	Although no impacts are associated with the use of water itself, irresponsible use of water may result in strain on the resources given that South Africa is a water scares country	Neg	Medium	**Avoid** through maintenance of water infrastructure and **manage** through implementation of water awareness measures.	Low-Medium
	- Storm Water Management	Surface water - pollution	Separation of "clean" and "dirty" storm water and the containment / management of "dirty" water on-site (as per the SWMP in the WUL)	Management of storm water in a manner that minimises the potential for pollution of water resources	Pos	Low-Medium	**Avoid** through implementation and maintenance of storm water management measures.	N/A
	- Power (electricity)	Carbon emissions	Use of electricity to run the crushing plant and administration offices	(Off site) Carbon emissions as a result of the burning of coal to generate electricity	Neg	Medium	**Manage** through reducing electricity use.	Low-Medium

Activity		Aspect	Source / Cause	Potential Impact		Ranking	Mitigation Type	Re-Rank
	- Waste (sanitation)	Pollution of soil, surface and ground water	Overflow of the chemical toilets / or septic tank or blockage of the French drain may cause surface flow of raw sewage	Pollution of soils in the vicinity of the toilets and the potential pollution of storm water flowing over polluted soils	Neg	Low-Medium	**Manage** through monitoring and up keep of sanitation systems provided.	Low
	- Administration	Documentation	Management of legally required documents	Legal compliance (in terms of record keeping)	Pos	#N/A	**Manage** through evaluating and maintaining all legally required documents.	#N/A
		Handling complaints	Interested and affected parties	Poor relations between Prime Spot and interested and affected parties	Pos	#N/A	**Manage** through effective handling of complaints	#N/A
		Ongoing consultation with I&AP's	Interested and affected parties	Good relations between Prime Spot and interested and affected parties	Pos	#N/A	**Manage** through open door policy with I&AP's	#N/A
		Contractors	Activities undertaken by contractors may result in environmental impacts that require the implementation of "management actions"	The impacts will vary depending on the contractor activities	Pos	#N/A	**Avoid / Manage / Mitigate** impacts associated with contractors (dependant on what the contractor is undertaking on site)	#N/A
		Training	Training undertaken as per the Environmental Awareness Plan	Improved environmental awareness resulting in reduced impacts due to the occurrence of fewer environmental incidents / correct response to incidents	Pos	#N/A	**Avoid / Manage** the potential for impacts through implementation of environmental awareness training.	#N/A
	- Fuel (diesel for vehicles)	Pollution of soil, surface and ground water	Spillages of fuel during dispensing	Pollution of soils in the vicinity of the tank and the potential pollution of storm water flowing over polluted soils	Neg	Medium	**Manage** through monitoring and cleaning up minor spills if and when they occur.	Low-Medium
			Slow leaks from the fuel tanks (See emergency incidents for large spills / leaks)		Neg	Medium	**Avoid** through implementation and maintenance of bunding.	Low-Medium
	- Maintenance activities - Waste (workshop)	Pollution of soil, surface and ground water	Spills resulting from the storage and use of hydrocarbons, as well as leaks from old equipment	Pollution of off-site water bodies (if storm water flows into water courses) / ground water if spills remain in the soils for extended periods	Neg	Medium	**Avoid** through implementation and maintenance of effective storm water controls.	Low
	- Waste (hazardous and general)	Pollution of soil, surface and ground water	Poor storage of waste.	Pollution of soils and the potential pollution of storm water flowing over polluted soils	Neg	Medium	**Avoid & Manage & Mitigate** depending on the waste type and the storage and disposal measures implemented.	Low-Medium
6. Concurrent Rehabilitation	General							N/A
	- Alien vegetation control / removal	Alien vegetation	Control or removal of alien vegetation within the Mining Area	Reduced potential for increase in density of stands of alien vegetation	Pos	Medium	**Manage & Mitigate** through implementation of an alien vegetation removal programme	N/A
	- Vegetation of overburden stockpiles / berms	Vegetation / Ecology	Vegetating the surfaces of the overburden stockpiles / berms	Establishment of vegetation cover and faunal habitats within the Mining Area	Pos	Low-Medium	**Manage** through implementation of concurrent rehabilitation.	N/A
		Erosion of soil		Reduced potential for erosion of soils	Pos	Low-Medium		N/A
7. Decommissioning and closure	Closure of the mine	All environmental aspects and socio-economic impacts	Planned and controlled closure of the mine at the end of exploitation of viable utilisation of the available mineral resource	Environmental and social impacts	Pos	Medium-High	**Manage & Mitigate** through implementing appropriate closure	N/A
	Closure of the mine	socio-economic	Closure of the mine	Loss of jobs source of aggregate	Neg	Medium	**Manage & Mitigate** through implementation of the social and labour plan. This plan needs to be adapted / updated through out the life of mine.	Medium

	Activity	Aspect	Source / Cause	Potential Impact		Ranking	Mitigation Type	Re-Rank
8. Emergency Incidents	General							N/A
	Non conformances				Neg		**Manage**	N/A
	- Hydrocarbon spills	Pollution of soil, surface and ground water	Large scale spills of hydrocarbons resulting from a ruptured tank	Pollution of soils and potentially off-site water bodies (if storm water flows into water courses) / ground water if spills remain in the soils for extended periods	Neg		**Manage & Mitigate**	#N/A
	- Fire		Smoke emissions from a fire	Air pollution as a result of smoke emissions	Neg		**Manage & Mitigate** through fire prevention training and manage if necessary.	N/A
9. Socio-economic	- Job creation	Employment	Employment provides an income	Reduced unemployment	Pos	High	Manage through employing locally and implementing the commitments containing within the social and labour plan.	High
	- Providing aggregate for the construction industry	Raw material - construction	Raw materials facilitate the implementation of construction related projects	Providing a resource to allow for road maintenance and construction related projects to proceed	Pos	High		High

j) SUMMARY OF SPECIALIST REPORTS

The following information completed by specialist informed the impact assessment process.

Groundwater (study provided in Appendix 4):
Dewatering of the existing aggregate quarry:
"The flooded surface area of the existing quarry spans ±0.74ha and the volume of water in the pit at an estimated flooded depth of 2.5m calculates to ±18,600m3. Considering water volumes, meteorological information, perceived aquifer characteristic, and the time elapsed since the existing quarry operations stopped, the mean annual rainfall deficit (average rainfall minus evaporation) is estimated at ±7m3/day (= 0.08L/s), which at the moment appears to balance with groundwater inflow into the pit.

To dewater the quarry, the groundwater inflow volume of (±7m3/day = 0.08L/s) has to be exceeded. At a dewatering rate of 100m3/day (= 1.2L/s) – and assuming no direct rainfall – it should take between 200days and 250days to dewater the existing pit. At a dewatering rate of 200m3/day (= 1.2L/s) – and assuming no direct rainfall – it should take between 100days and 120days to dewater the existing pit (i.e. maximum 4months)."

Ongoing life of mine dewatering – contribution from rainfall:
"On an annual basis, there will always be a rainfall deficit. However, during the summer months, rainfall far exceeds evaporation during periods of rainfall. The total annual direct rainfall on Pit 1&2 will potentially increase to between 10,000m3/a (= 27m3/day = 0.3L/s) and 77,000m3/a (= 210m3/day = 2.4L/s).

Direct rainfall onto Pit 3 is estimated at 75m3/day, resulting in a total maximum volume (direct rainfall and runoff) of approximately 285m3/day for Pits 1/2/3. The water-make due to rainfall will vary on a seasonal basis. In the absence of rainfall and during times of high evaporation, much less water will have to be pumped from the pit."

Ongoing life of mine dewatering – contribution from groundwater inflow:
"Groundwater flow from the surrounding aquifers is likely to be toward the mining area, because mining will be below the natural groundwater table.

As the quarry footprint area increases and excavations go deeper below the groundwater level of the deep fractured aquifer, so will the inflow from this aquifer, starting at approximately ±7m3/day and potentially increasing to an estimated 300m3/day towards the end of life of Pit 1, 2 and 3 after 40years. The estimation does not provide for major preferential flow zones being encountered.

The total amount of water that will have to be dealt with in the long term, in terms of Pit 1, 2 and 3, without taking evaporation into consideration, therefore calculates to maximum 585m3/day (285m3/day rainfall and 300m3/day groundwater inflow). In practice, less water will have to be pumped as water may be stored in-pit for periods, from where it can evaporate."

Impact on surrounding groundwater levels:
*"The weathered aquifer(s) and deep fractured aquifer can be expected to be hydraulic connected. Dewatering of the latter through the proposed quarrying activity can therefore potentially impact on the weathered aquifer(s)' yielding potential and base-flow contributions in the long run. An influence radius of **500m** is proposed, but this will have to be verified through groundwater monitoring."*

Dewatering of existing flooded aggregate quarry and during ongoing mining:
"The recently observed in-pit nitrate concentration of 18.7mg/L marginally exceeds the "General Waste Water Limit" of 15mg/L. Cognisance should be taken of this aspect, when planning for the dewatering of the existing (flooded) aggregate quarry. Increased nitrate concentrations, due to blasting, may also impact on the in-pit water quality through during the operational phase.

Due to groundwater flow being toward the dewatering mining area, the surrounding aquifers are not expected to be impacted on in terms of groundwater quality during the operational phase. The following comments relate to the operational phase:

- *The mineral reserves (dimension stone, aggregate and stone aggregate) will be loosened by conventional drilling and blasting;*
- *Geochemically the andesite aggregate is considered as inert with insignificant potential for either acid mine drainage or metal leaching;*
- *Water from the quarry will also be used as process water (i.e. for dust suppression, etc.);*

- *The only other perceived impact on the mine water quality is the possible spillages or leaks of fuels, oils and lubricants form the excavating machinery, haul trucks and all other vehicles, as well as diesel driven pumps."*

Closure impacts
"After the cessation of mining, the dewatering cone will slowly retract from its maximum extent as the pit continues to fill with water. The quarry voids are not expected to decant to surface due to the rainfall deficit on an annual basis, the mine / regolith geometry, as well as the deep fractured aquifer's hydraulic conductivity and groundwater level.
The site infrastructures will be removed and the area rehabilitated. No post-closure impacts are foreseen.

Because groundwater movement will principally be towards the voids, it is unlikely that the surrounding aquifers will be impacted. The mine water quality might exceed drinking water quality guidelines for nitrate (as is currently the case), but this cannot be determined with a high degree of certainty."

Vegetation Assessment (See Appendix 5):
According to the vegetation assessment the following conclusions are applicable:
There are significant patches of intact grassland on site. These grassland patches have moderately high species richness and, according to the Provincial C-Plan and the National Vegetation Map, at least some of them in the southern half of the site are of high biodiversity value and important for conservation.

There are a number of listed plant species that could potentially occur in the grid in which the site is located. Habitat conditions on site are favourable for a number of them. None of these species were found on site during the field survey, but there is a possibility that one or more could potentially occur there. A follow-up survey may be required to determine this with more confidence.

Based on the fact that there are areas of unaltered natural vegetation on site, development of the site could potentially have a negative impact on biodiversity features of concern. These areas will need to be properly protected and managed to ensure that development of the site does not lead to further degradation of intact biodiversity features. Based on the mitigation hierarchy, it is recommended that adverse impacts are avoided as far as possible by use of preventative measures or that impacts are minimised or reduced to as low as practicable levels.

Heritage Assessment (See Appendix 6):
See Section iv) and **Figure 20** for details of the baseline heritage findings. Based on the specialist study the following statement of significance is applicable to the heritage resources:
- The graves (Sites 1 & 8) – high significance
- 4 homesteads (Sites 3, 5, 6, & 7) – low significance
- 1 livestock enclosure (Site 4) – low significance
- Modern house (Site 2) – none

Traffic impact assessment (See Appendix 7):
According to the traffic impact assessment the following is applicable:
- The Sidra analyses revealed that with the development traffic added, expected Levels of Service (LOS) at the R54/D1321 intersection are excellent (LOS = A) and there is no need for upgrading.
- Similarly, the Sidra analysis revealed that, with development traffic added to the peak hour in 2022, expected levels of service at the single file bridge across the Suikerbosch River are still very good (=LOS C)
- The development can from a traffic viewpoint, be approved.

Assessment of the access bridge from the D1321 onto the proposed mine (See Appendix 8)
According to the feedback provided by the Structural Engineer, the following is applicable;
- The bridge can be expected to safely carry the vehicle loads
- The concrete bridge appears to be in good condition
- The bridge bearings between precast beams and abutments appear in good condition
- There were no signs of cracks in the deck slab
- The handrailings appear in good condition
- Concrete approach slabs behind the abutments appear in good condition
- We certify that, based on the drawings and other information given, the bridge is adequate to carry the loads of trucks and other vehicles that have a mass up to and including normal road-legal extra heavy vehicles.

Blasting impact assessment (See Appendix 9)

A details blasting impact assessment has been completed for the proposed mining operation. For a full appreciation of the scope of the investigations, the findings and recommendations, the full report as provided in Appendix 9 should be reviewed. The information presented below just related to the impact assessment before and after implementing appropriate mitigation.

- The main point of concern for this operation is the graveyard located inside the mining area. In review of the evaluations made in this report it is certain that specific mitigation will be required.

Table 17: Risk assessment outcome before mitigation

No.	Impact	Significance		Spatial Scale		Temporal Scale		Probability		Significance Before Mitigation	
		Score	Magnitude	Score	Magnitude	Score	Magnitude	Score	Magnitude	Score	Magnitude
Operational Phase											
1	Ground vibration Impact on houses	2	Low	3	Local	4	Long-Term	2	Unlikely	1.20	Low
2	Ground vibration Impact on graveyards	5	Very High	3	Local	4	Long-Term	5	Going to Happen	4.00	High
2	Ground vibration Impact on canal	5	Very High	3	Local	4	Long-Term	3	Could Happen	2.40	Moderate
3	Ground vibration Impact on roads	1	Very Low	3	Local	4	Long-Term	1	Impossible	0.53	Very Low
4	Air blast Impact on houses	2	Low	3	Local	4	Long-Term	4	Very Likely	2.40	Moderate
6	Air blast Impact on roads	0	No Impact	3	Local	4	Long-Term	1	Impossible	0.47	Very Low
4	Air blast Impact on graveyards	0	No Impact	3	Local	4	Long-Term	1	Impossible	0.47	Very Low
6	Air blast Impact on canal	0	No Impact	3	Local	4	Long-Term	1	Impossible	0.47	Very Low
7	Fly Rock Impact on houses	2	Low	3	Local	4	Long-Term	2	Unlikely	1.20	Low
8	Fly Rock Impact on graveyards	5	Very High	3	Local	4	Long-Term	5	Going to Happen	4.00	High
9	Fly Rock Impact on canal	3	Moderate	3	Local	4	Long-Term	3	Could Happen	2.00	Low
9	Fly Rock Impact on roads	1	Very Low	3	Local	4	Long-Term	2	Unlikely	1.07	Low
10	Impact of Fumes - Houses	3	Moderate	3	Local	4	Long-Term	3	Could Happen	2.00	Low
Closure and Post-Closure Phase											
		0		0		0		0		0.00	Very Low

Table 18: Risk assessment outcome after mitigation

No.	Impact	Mitigation Measures	Significance		Spatial Scale		Temporal Scale		Probability		Significance after Mitigation	
			Score	Magnitude	Score	Magnitude	Score	Magnitude	Score	Magnitude	Score	Magnitude
Operational Phase		Operational Phase										
1	Ground vibration Impact on houses		2	Low	3	Local	4	Long-Term	2	Unlikely	1.20	Low
2	Ground vibration Impact on graveyards	Reduce Charge Mass/Delay over decreasing distance towards POI's of concern. Monitoring	3	Moderate	3	Local	4	Long-Term	3	Could Happen	2.00	Low
2	Ground vibration Impact on canal	Reduce Charge Mass/Delay over decreasing distance towards POI's of concern. Monitoring	2	Low	3	Local	4	Long-Term	2	Unlikely	1.20	Low
3	Ground vibration Impact on roads		1	Very Low	3	Local	4	Long-Term	1	Impossible	0.53	Very Low
4	Air blast Impact on houses		2	Low	3	Local	4	Long-Term	3	Could Happen	1.80	Low
6	Air blast Impact on roads		0	No Impact	3	Local	4	Long-Term	1	Impossible	0.47	Very Low
4	Air blast Impact on graveyards		0	No Impact	3	Local	4	Long-Term	1	Impossible	0.47	Very Low
6	Air blast Impact on canal		0	No Impact	3	Local	4	Long-Term	1	Impossible	0.47	Very Low
7	Fly Rock Impact on houses		2	Low	3	Local	4	Long-Term	2	Unlikely	1.20	Low
8	Fly Rock Impact on graveyards	Increase stemming length, controls put in place for management of stemming lengths.	3	Moderate	3	Local	4	Long-Term	3	Could Happen	2.00	Low
9	Fly Rock Impact on canal	Increase stemming length, controls put in place for management of stemming lengths.	2	Low	3	Local	4	Long-Term	2	Unlikely	1.20	Low
9	Fly Rock Impact on roads		1	Very Low	3	Local	4	Long-Term	2	Unlikely	1.07	Low
10	Impact of Fumes – Houses		3	Moderate	3	Local	4	Long-Term	3	Could Happen	2.00	Low
Closure and Post-Closure Phase		Closure and Post-Closure Phase										
			0		0		0		0		0.00	Very Low

Table 13 below provides a summary of the recommendations from the completed specialist studies.

Table 13: Summary of the recommendations from the specialist studies

LIST OF STUDIES	RECOMMENDATIONS OF SPECIALIST REPORTS	INCLUDED IN REPORT	SECTION OF REPORT WHERE INCLUDED.
Groundwater	Management measures should include: • The workshop (for maintenance activities) should be designed and constructed with the appropriate concrete flooring and storm water control structures which will flow into an oil separator • Procedures for storage, use & disposal of fuels, oils and grease or any other hazardous chemical substances; • A Standard Operating Procedure (SOP) for the Workshop / Vehicle Washing Bay and oil separator. Management procedures should include: - Inspection of facilities and records; - Spill reporting and emergency procedures for the containment and clean-up of spillages of hazardous chemical substances; - Water management strategy; - A general good practice policy; - Regular inspection, servicing (including bio-augmentation) and record-keeping the existing (or any other) French-drain; • A "Storm Water Management Plan".	X	See EMP mitigation measures.
	• Implement a water quality monitoring campaign - details are presented in Appendix 4.	X	Appendix 4
	• Within the first 5years of mining, an updated assessment of the groundwater inflow volumes and pit water balance should be performed, to effectively plan for the future. An assessment of the mine water quality is also indicated. Corrective actions should be identified to prevent the post-mining impact on the local groundwater system (groundwater levels and quality).	X	See EMP mitigation measures.
Vegetation	• An alien vegetation management plan must be developed and implemented. If necessary applicable authorisation must be obtained for alien vegetation to be left (due to its beneficial impacts) • Undertake a follow up survey for potential protected species at the correct time of year and to determine the likelihood of future activities having any impact on the identified wetlands. • Develop and implement an ecological management plan	X	See EMP mitigation measures.
Heritage	• If any archaeological deposits are uncovered during operations, activities must be halted and a university or museum notified in order to undertake an investigation.	X	See EMP mitigation measures.
	• The graveyards should be fenced off with an access gate installed. A minimum buffer zone of 50m should be maintained.	X	See EMP mitigation measures.

	Sites 3,4,5,6 and 7 will be destroyed by the future expansion of pit 2 therefore the following requirements are applicable: • Prior to further impacts, the following must be undertaken; - Survey and mapping of the sites - Phase 2 investigation of the sites - Obtain applicable permit from SAHRA for the destruction of the sites	X	See EMP mitigation measures.
Traffic	No road upgrades are required as the traffic impact of the proposed activity is negligible.	Noted	N/A
Bridge	• Cleaning and maintenance of the bridge should be implemented when in regular use. • Traffic warning signs should be erected. • Annual inspection of the bridge should be carried out by a competent person.	X	See EMP mitigation measures.
Blasting	Mitigation of ground vibration for this can be done applying the following methods: • Do blast design that considers the actual blasting and the ground vibration levels to be adhered too, • Change the initiating system to facilitate less blast holes detonating simultaneously making using of electronic initiation that allow for single hole firing. Single blast hole firing will facilitate less ground vibration but are still structures close enough to be influenced. • Do design for smaller diameter blast holes that will use fewer explosives per blast hole.	X	See EMP mitigation measures.
	The graveyard location is such that Pit 2 blasting operation at closest point to the graveyard will required single blast hole firing with slightly longer stemming lengths. This will help reduce the charge mass per blast hole and manage expected levels of ground vibrations. Blasting areas further away or on the opposite benches will assist with mitigation of the ground vibrations. Specific designs with distance between blast and the graveyard will certainly be required to ensure ground vibration is managed.	X	See EMP mitigation measures.
	A monitoring programme for recording blasting operations by a third party is recommended. The following elements should be part of such a monitoring program: • Ground vibration and air blast results • Blast Information summary • Meteorological information at time of the blast • Video Recording of the blast • Fly rock observations Possible monitoring positions include;	X	See Appendix 8

<table><tr><th>Tag</th><th>Description</th><th>Y</th><th>X</th></tr><tr><td>44</td><td>Farm Buildings/Structures</td><td>94470.70</td><td>2963028.96</td></tr><tr><td>47</td><td>Graveyard (inside Mining Area)</td><td>94702.56</td><td>2961903.67</td></tr><tr><td>48</td><td>Buildings/Structures</td><td>96020.90</td><td>2962775.77</td></tr><tr><td>55</td><td>Rand Water Board Canal</td><td>95533.62</td><td>2962488.07</td></tr><tr><td>62</td><td>Rand Water Board Canal Bridge</td><td>95690.39</td><td>2962195.65</td></tr><tr><td>71</td><td>Graveyard (inside Mining Area)</td><td>94944.93</td><td>2962291.63</td></tr></table>		
Regulatory requirements indicate specific requirements for all non-mining structures and installations within 500 m from the mining operation. There are mainly three installations identified that falls within this regulation. The Graveyard and Rand Water Board Canal are observed within the 500 m. The quarry will have to apply for the necessary authorisations as pre-scribed in the various acts.	X	See EMP mitigation measures.
The following should be considered in the design: • Blast Initiation should rather be electronic initiation • Blast hole diameters can be reconsidered to be 76 mm diameter • Stemming lengths must be at least 30 times the current blast hole diameter thus – 89mm x 30 mm = 2.7 m • Stemming material must be crushed aggregate: 10 % of blast hole diameter= - +7-12 mm	X	See EMP mitigation measures.
Calculated minimum safe distance is 237 m. This is the estimated area that must be cleared at east around a blast before firing. General evacuation used in the mining industry is at least 500 m from any blast.	X	See EMP mitigation measures.
No specific road closure of the Vischgat prescribed at this stage. The smaller farm roads in vicinity of the quarry must be closed during blasting operations.	Noted	N/A
A further consideration of blasting times is when weather conditions could influence the effects yielded by blasting operations	X	See EMP mitigation measures.
It is recommended that a standard blasting time is fixed and blasting notice boards setup at various routes around the project area that will inform the community of blasting dates and times	X	See EMP mitigation measures.
The option of photographic survey of all structures up to 1500 m from the quarry area is recommended.	X	See EMP mitigation measures.

k) ENVIRONMENTAL IMPACT STATEMENT

(i) Summary of the key findings of the environmental impact assessment

The **key findings** from the environmental impact assessment can be summarised as follows;

- The most significant impacts, ranked as **High** prior to consideration of management measures and **Medium High** after consideration of successful implementation of mitigation measures are;
  - the impact on the **graves and other heritage findings on site**. While the graves have been excluded from the mining right application area, no amount of mitigation can prevent "disturbance" occurring.
  - In addition, after completion of a vegetation assessment, it is apparent that undisturbed **grassland vegetation** will be destroyed through the expansion / development of the pits.
- The next most significant impact ranked as **Medium High** prior to consideration of management measures and **Medium** after consideration of successful implementation of mitigation measures is the potential impacts associated with **blasting activities**. With implementation of appropriate mitigation measures the potential impacts associated with blasting can be mitigated.
- The potential socio-economic impacts associated with additional traffic and use of the Vischagt road has been allocated a **Medium High** ranking prior to consideration of management measures and **Medium** ranking after consideration of successful implementation of mitigation measures.

All 4 of the above key findings have also been raised as serious concerns by interested and affected parties during the scoping and EIAr phase of this project.

During the construction phase, if mitigation measures (as proposed within this document) are effectively implemented, they can have a significant positive effect through reducing the chance of impacts associated with the operational phase of the mine. Aspects such as implementing effective storm water controls will reduce the potential for future water impacts. Due to the intent to make use of an existing disturbed footprint for the re-establishment of the crushing plant and placement of additional infrastructure, the impacts associated with construction have been limited.

The most significant negative impacts associated with construction are;

- The future expansion of Pit 2 (in a southerly direction) and development of Pit 3 will impact on indigenous grassland habitats. While the initial vegetation assessment highlighted that no protected species were identified, the survey was not undertaken at the ideal time of year. A follow up study is required and the development and implementation of an ecological management plan. Based on the outcome of the specialist study the initial ranking on vegetation / ecology is **High** prior to consideration of management measures and **Medium High** after consideration of successful implementation of mitigation measures.
- The future mining into "Pit 2" can only take place after authorisation for the destruction of a number of heritage findings (foundations of structures) has occurred. Although identified as low significant during the specialist heritage study, these foundations of the houses hold significance to the Hlapolosa family as they are associated with the family members buried on the property. It is for this reason these other heritage findings have been ranked as **Medium High** prior to consideration of management measures and still a **Medium High ranking** after consideration of successful implementation of mitigation measures.
- The implications of initial dewatering of the pit to facilitate future mining has been ranked as **Medium High** prior to consideration of management measures and a **Medium** ranking after consideration of successful implementation of mitigation measures.

During mining, ongoing mine planning should be encouraged as it is the most effective way to minimise future impacts. The most significant impacts associated with mining activities include;

- The disturbance caused to the graves located in an excluded area, yet in the middle of the mining right application area. The significance of the impact before and after mitigation has been described as a key finding above. While measures can be implemented to limit the physical impacts on the graves and to ensure access to the graves is as easy as possible for the affected family, there is no amount of mitigation that can be implemented that would prevent disturbance from a cultural heritage and spiritual point of view.
- The implication of blasting and traffic as described as key findings above.
- The implications of clearing indigenous vegetation for the expansion of the pits. The clearing of vegetation has been allocated a **High** ranking prior to consideration of management measures and **Medium High** ranking after consideration of successful implementation of mitigation measures.

As with any proposed development there are negative and positive impacts. The positive impacts associated with this proposed mine include;

- Job creation within the local area (22 people will gain direct employment
- Support of necessary suppliers to facilitate mining will indirectly be positive in terms of job creation
- Implementation of community upliftment projects through adhering to the social and labour plan
- Provision of a product (aggregate) within the region. The competitive pricing of aggregate is largely determined by distance from the market.

(ii) Final site map

See **Appendix A11** for a copy of the final site layout plan proposed. This site layout plan has not altered since the start of the application.

- The layout plan includes an indication of the excluded area which contains the graves and a buffer around the graves.
- It includes a 50m mining pillar around the entire mining right area. No extraction of resources will take place within this 50m area (however it may be used for stockpiling of topsoil and overburden).

(iii) Summary of the positive and negative impacts and risks of the proposed activity and identified alternatives

No alternatives have been identified. The positive and negative impacts listed above are applicable to the proposed activity.

I) PROPOSED IMPACT MANAGEMENT OBJECTIVES AND THE IMPACT MANAGEMENT OUTCOMES FOR INCLUSION IN THE EMPR

Table 14 below provides an indication of the the desired Management Objectives and Outcomes for the identified potential impacts associated with the proposed activities. Mitigation measure to achieve these outcomes and objectives have been included within the EMPr section of this report.

Table 14: Summary of the proposed management objectives and desired management outcomes.

Activity		Aspect	Source / Cause	Impact		Impact Management Objectives	Impact Management Outcomes
Phase	*Description of the physical activities that will cause the impacts*		*Description as to how the activity may cause the impact*	*A description of the impact that may result from the activity*		*Appendix 4(1)(d):* *The purpose of / reason for implementing Impact Management Actions*	*Appendix 4(1)(e):* *The desired state if the Impact Management Objective is successfully achieved*
1. Construction	Re-establish crushing plant. Placement of mobile offices / sanitation requirements Reconnection of electricity and water from onsite borehole	All environmental parameters	Future impacts as a result of poor re-establishment of infrastructure	Dust / Noise / Water / Visual / Ecological	Neg	To place infrastructure on existing disturbed footprint To ensure measures are implemented to minimise future impacts from the crushing plant.	No additional ecological impact from re-establishing infrastructure required to restart mining operations. Future impacts from the plant reduced identified through dust monitoring levels
	Construction of workshop & fuel tank bunding & weigh bridge	Water	Poor design / lack of implementing effective pollution prevention controls during construction will result in unnecessary impacts during the operational mine.	Implementation of effective pollution control measures.	Pos	Implement effective pollution prevention measures when construction new infrastructure.	Future pollution from potential “dirty areas, such as the workshop and temporary waste storage areas is controlled and managed.
		Ecological	Installation of new infrastructure	Environmental consequences resulting from unplanned location of new infrastructure	Pos	To place infrastructure on existing disturbed footprint	No additional ecological impact from establishing new infrastructure required to restart mining operations.
	Dewatering pit	Groundwater	Poor quality water contained within the pit dewatered to facilitate mining activities	Surrounding water bodies / Non perineal stream	Neg	Prevent pollution of any off site water bodies	No impact on offsite water bodies
	Future traffic	Socio-economic	Lack of appropriate traffic warning signs	potential road safety concerning	Pos	Legally approved traffic warning signs are erected.	Less chance of any accident on the public road through having appropriate notifications.
	Future blasting	Socio-economic	Future blasting having an impact on surrounding infrastructure	Potential blasting impacts	Pos	Have a record of the structural integrity of infrastructure that could be impacted by future blasting - prior to implementing any blasts.	Independent details of the status of infrastructure that may be impacted by future blasting activities.
	Future mining of pit 2 and 3	Ecological	Expanding / development of the pits will destroy indigenous grassland habitats.	Destruction of grassland. Potential impact on wetlands Potential destruction of protected plant species	Neg	Implement an ecological management plan Undertake follow up surveys to determine if any protected species are within the footprint demarcated for future disturbance and to determine the likelihood of future activities having any impact on the identified wetlands	Ecological impact minimised Protected species ideally not present. If they are identified and can not be avoided the mine must obtain the correct authorisation to remove.
	Future mining of the pit 2	Heritage	Expanding of the pit will impact on identified heritage resources	Destruction of heritage resources	Neg	Record heritage findings which will be destroyed through the expansion of pit 2	Have a record of the heritage findings that will be destroyed through the expansion of pit 2
	Establishing access to graveyard	Heritage	Providing effective access to the graves. Ensuring the graves are demarcated.	To guarantee easy access to the grave yard	Pos	To provide easy to use access to the graves within the middle of the mining area	Family members can access the graves with relative ease. The graves and associated buffer are demarcated with appropriate fencing.
2. Planning	Planning for the stripping and stockpiling of topsoil and overburden	All environmental parameters	Planning the stripping and storage of topsoil and overburden	Environmental consequences resulting from unplanned storage of topsoil and overburden	Pos	To store topsoil and overburden in a manner than minimises negative environmental consequences	Reduced environmental consequences as a result of correct storage of topsoil and overburden
	Planning for future mining	Mineral resource	Planning the utilisation of the mineral resource	Utilisation of mineral resource	Pos	To mine resources in a manner that minimises sterilisation of mineral resources	Optimal utilisation of mineral resources
	Planning for future activities on the mine	All environmental parameters	Planning for potential capital expenditure projects	Environmental consequences resulting from unplanned capex projects	Pos	To mine in a manner that minimises the impact on the environment	Reduce environmental consequences as a result of effective planning of future capex projects

	Activity	Aspect	Source / Cause	Impact		Impact Management Objectives	Impact Management Outcomes
3. Mining	- Stripping of vegetation & topsoil - Removal of overburden (free dig) - Materials handling and stockpiling of topsoil / overburden - Drilling and blasting of mineral resource - Loading and hauling of blasted rock to crushing plant.	Vegetation	Clearing / removal of vegetation	Loss of indigenous vegetation within the Mining Area. Potential impact on wetlands Potential destruction of protected plant species Potential for alien vegetation to establish	Neg	No clearing of vegetation outside of the areas designated for mining related activities location of protected plants (if any) known Reduce the density of alien vegetation on-site over the life of the mine	No unnecessary loss of vegetation (and faunal habitats) outside the areas designated for mining related activities Gradual reduction in the density of alien vegetation on-site. Ideally no protected plant affected by mining (which can only be determined after a follow up survey) - if unavoidable correct permit to be obtained.
		Ecology	Clearing / removal of vegetation cover impacts on faunal habitats	Loss of faunal habitats within the Mining Area (grass owl)	Neg	No unnecessary disturbance to the limited faunal species that may be present.	No poaching within the boundary of the mine.
		Topsoil	Clearing / removal / of topsoil or dumping on topsoil	Loss of soil structure, diminishing the potential for future use of the soil as a suitable growth medium. Erosion of topsoil dumps	Neg	Store topsoil in a manner in which it can be used for rehabilitation Avoid sterilisation of topsoil. Avoid the flow of storm water over exposed surfaces that results in erosion.	Topsoil remains viable for use in rehabilitation No erosion of the exposed surfaces
		Visual	Change in appearance due to removal of vegetation and change in relief / topography due to excavation and stockpiling of overburden	Altered visual appears may be unappealing / unattractive	Neg	Where possible, create a visual screen between the mine and the surrounding land users Not to cause nuisance visual impacts that result in complaints	A visual screen between the mine and surrounding land users. No complaints from the surrounding land users
		Air quality	Dust entrainment from stripping activities, materials handling of stripped soil, overburden and blasted rock, and wind entrainment over exposed surfaces	Nuisance impact for surrounding residential receptors Reduced photosynthetic abilities of vegetation due to dust covering leaf surfaces	Neg	Not to cause dust emissions that result in complaints. Minimise fugitive dust emissions so that off-site dust fall rates do not exceed the non-residential standard (as applicable)	Off-site dust fallout rates are below the non-residential standard (as applicable) On-site dust fallout rates are below the site specific target levels.
			Exhaust emissions	Health impacts to surrounding receptors	Neg	Control vehicle emissions	No visually excessive vehicle emissions
		Noise	Engine noises from vehicles and earth moving equipment. Noise from drilling operations.	Nuisance impact for surrounding land users	Neg	Not to cause nuisance noise impacts that result in complaints Sound emissions from the mining activities must not cause an increase of more than 7dB above the ambient over the boundary of the mine	No complaints from the neighbouring residential receptors.
		Surface water - volume	Alteration of surface water flow by changing the topography	Reduced volume of run-off entering natural drainage	Neg	Only contain run-off falling within the cleared area	Maximise the volume of "clean" storm water allowed to dissipate from the site.
		Surface water - pollution	Exposed surfaces increase potential for elevated sediment load in storm water run-off Hydrocarbon contamination from poor storage / handling and disposal of hydrocarbons	Pollution of off-site water bodies (if dirty storm water flows into a water courses)	Neg	Contain "dirty" water on-site	No polluted (sediment-rich) storm water enters off-site water resources
		Dewatering and Ground water - drawdown	Deepening of the quarry acts as a draw down cone. If there is a need to access the quarry floor, water may be pumped from the quarry.	Deeper water table levels for surrounding groundwater users.	Neg	No complaints from surrounding groundwater users with regards to groundwater availability	No significant impact on surrounding groundwater users
		Ground water - pollution	Blasting activities increasing the level of nitrates in the water within the Quarry	Pollution of off-site water bodies (if water is discharged)	Neg	Contain "dirty" water on-site	The quality of the water within the quarry remains within "Discharge Limits" or within the limits set within the water use license (when obtained)
		Heritage	Mining activities taking place in close proximity to the graves. Restrictive access to the graves	Disturbance on the graves and access to the graves.	Neg	Minimise the physical impacts on the graves and provide easy access to the graves. Maintain the excluded area (which incorporates the graves)	Disturbance to the graves is kept to a minimum Access to the graves is provided which does not require people to traverse the active mining areas.

Activity		Aspect	Source / Cause	Impact		Impact Management Objectives	Impact Management Outcomes
		Vibration / noise / fly rock / air blast	Blasting	Vibrations experienced off-site may result in structural damage to infrastructure in the Rand Water Servitude (canal & pipelines). Fly rock is a potential safety risk Air blasts can cause structural damage Noise nuisance Interruption to day to day activities of people wanting to access the graves.	Neg	Not to cause structural damage to on- or off-site infrastructure. To minimise disruption to daily activities of surrounding land users.	No structural damage to on- or off-site infrastructure No complaints from blasting activities.
4. Crushing and Screening	- Materials handling - Crushing and screening - Materials handling of aggregate - Stockpiling - Vehicle entrainment - Mobile plants	Visual	The crushing and screening plant will protrude above the surface.	Visibility of man-made structures may be unappealing / unattractive	Neg	Where possible, create a visual screen between the mine and the surrounding land users Not to cause nuisance visual impacts that result in complaints Implement good house keeping	A visual screen between the mine and surrounding land users No complaints from the surrounding land users Good housekeeping through out the site
		Air quality	Fugitive dust emissions from materials handling, crushing, screening, mobile plants, stockpiling, vehicle entrainment, and wind entrainment over stockpiles and exposed surfaces	Nuisance impact for surrounding land users Reduced photosynthetic abilities of vegetation due to dust covering leaf surfaces	Neg	Not to cause dust emissions that result in complaints Minimise fugitive dust emissions so that off-site dust fall rates do not exceed the non-residential standard (as applicable)	Off-site dust fallout rates are below the non-residential standard (as applicable) On-site dust fallout rates are below the site specific target
			Exhaust emissions	Health impacts to residential / retail / industrial receptors	Neg	Control vehicle emissions	No visually excessive vehicle emissions
		Noise	Noises from the crushing and screening of aggregate as well mobile plants, vehicles and earth moving equipment	Nuisance impact for surrounding land users	Neg	Not to cause nuisance noise impacts that result in complaints Sound emissions from the mining activities must not cause an increase of more than 7dB above the ambient at the boundary of the mine.	No complaints from the neighbouring residential receptors
		Surface water - pollution	Exposed surfaces and product stockpiles increase potential for elevated sediment load in storm water run-off. Hydrocarbon spills associated with the plants could impact on storm water quality.	Pollution of off-site water bodies (if storm water flows into water courses)	Neg	Contain "dirty" water on-site	No polluted (sediment-rich) storm water enters off-site water resources
		Vischgat road	Trucks entering and existing the mine	Increased traffic on the Vischgat road	Neg	Not to have complaints about mine associated trucks from local users of the road	No complaints concerning trucks associated with the mine using the Vischgat road
		Socio-economic	Traffic associated with the mine on public roads	Poor perception of the public towards the mine	Neg	No complaints with regards to vehicles entering and exiting the mine	Within its zone of influence Prime Spot will encourage good driving practices.
5. Supporting Services	- Access roads (use and maintenance)	Air quality	Fugitive dust emissions from vehicle entrainment	Nuisance impact for surrounding land users Reduced photosynthetic abilities of vegetation due to dust covering leaf surfaces	Neg	Not to cause dust emissions that result in complaints Minimise fugitive dust emissions so that off-site dust fall rates do not exceed the non-residential standard (as applicable)	Off-site dust fallout rates are below the non-residential standard (as applicable) On-site dust fallout rates are below the site specific target
		Access bridge	continual use of the access bridge	Structural integrity of the Rand water board infrastructure	Neg	Ensure that the access bridge remains structurally sound and does not result in an impact on the canal beneath the bridge.	No impact on the bridge or the adjacent rand water infrastructure from trucks traversing the bridge.
	- Water supply (potable)	Water use	Use of potable water from the borehole onsite	Although no impacts are associated with the use of water itself, irresponsible use of water may result in strain on the resources given that South Africa is a water scares country	Neg	Minimise wastage of water through leeks and / irresponsible use	Water use is within reasonable volumes
	- Water supply (process)	Water use	Use of water from the pit and any storm water catchment dams for dust suppression	Although no impacts are associated with the use of water itself, irresponsible use of water may result in strain on the resources given that South Africa is a water scares country	Neg	Minimise wastage of water through leeks and / irresponsible use	Water use is within reasonable volumes

Activity	Aspect	Source / Cause	Impact		Impact Management Objectives	Impact Management Outcomes
- Storm Water Management	Surface water - pollution	Separation of "clean" and "dirty" storm water and the containment / management of "dirty" water on-site (as per the SWMP in the WUL)	Management of storm water in a manner that minimises the potential for pollution of water resources	Pos	Manage storm water run-off from site in a manner that minimises pollution	Polluted water is contained on-site
- Power (electricity)	Carbon emissions	Use of electricity to run the processing plant and administration offices	Carbon emissions as a result of the burning of coal to generate electricity	Neg	Prevent unnecessary use of electricity	Reduced demand on the electricity supply
- Waste (sanitation)	Pollution of soil, surface and ground water	Overflow of the chemical toilets / or septic tank or blockage of the French drain may cause surface flow of raw sewage	Pollution of soils in the vicinity of the toilets and the potential pollution of storm water flowing over polluted soils	Neg	Take all reasonable steps to prevent the emission of any offensive odours" as well as ensure that septic tank / chemical toilets never overflows	Septic tank / chemical toilet does not overflow and the French drain does not become clogged
- Administration	Documentation	Management of legally required documents	Legal compliance (in terms of record keeping)	Pos	Have all necessary environmental authorisations on-site that are applicable to the activities being undertaken	Valid environmental authorisations applicable to the activities being undertaken on-site
	Handling complaints	Interested and affected parties	Poor relations between Prime Spot and interested and affected parties	Pos	Ensure all complaints are considered and handled effectively	Complainant satisfied with the action taken by the mine to rectify the cause of the complaint
	Ongoing consultation with I&AP's	Interested and affected parties	Good relations between Prime Spot and interested and affected parties	Pos	Develop and maintain a good relationship with interested and affected parties	Fostering of good relations
	Contractors	Activities undertaken by contractors may result in environmental impacts that require the implementation of "management actions"	The impacts will vary depending on the contractor activities	Pos	Identify potential environmental impacts that require "management actions"	Reduced significance of environmental impacts from contractors.
	Training	Training undertaken as per the Environmental Awareness Plan	Improved environmental awareness resulting in reduced impacts due to the occurrence of fewer environmental incidents / correct response to incidents	Pos	Make staff aware of the environmental risks associated with their jobs and how to manage the risks	Improved environmental awareness resulting in reduced impacts due to the occurrence of fewer environmental incidents / correct response to incidents
- Fuel (diesel for vehicles)	Pollution of soil, surface and ground water	Spillages of fuel during dispensing	Pollution of soils in the vicinity of the tank and the potential pollution of storm water flowing over polluted soils	Neg	Prevent fuel spillages during dispensing remaining on the soils for extended periods	Polluted soils (from spilled fuel / hydrocarbons) are removed from site
		Slow leaks from the fuel tanks (See emergency incidents for large spills / leaks)		Neg	Prevent leaks from fuel storage facilities polluting soils	Fuel / oil leaks do not pollute soils
- Maintenance activities - Waste (workshop)	Pollution of soil, surface and ground water	Spills resulting from the storage and use of hydrocarbons, as well as leaks from old equipment	Pollution of off-site water bodies (if storm water flows into water courses) / ground water if spills remain in the soils for extended periods	Neg	Store and handle hydrocarbons in a manner that prevents leakage and spillage	No pollution of soil, storm water or ground water
- Waste (hazardous and general)	Pollution of soil, surface and ground water	Poor storage of waste.	Pollution of soils and the potential pollution of storm water flowing over polluted soils	Neg	All waste is stored, treated and disposed of in an environmentally sound manner. The overall waste management G&O are: • Reduce the volume of waste generated per ton produced. • Ensure that all waste products are stored correctly, limiting the number of pollution incidents recorded. • Recycle all recyclable waste material. • Where waste cannot be recycled, dispose in a responsible manner that complies with the relevant legislation	Good housekeeping through effective waste management.

Activity		Aspect	Source / Cause	Impact		Impact Management Objectives	Impact Management Outcomes
6. Concurrent Rehabilitation	General					Reduce / Improve the visual impact of the mine and reduce the potential for pollution	Implementation of concurrent rehabilitation (when possible).
	- Alien vegetation control / removal	Alien vegetation	Control or removal of alien vegetation within the Mining Area	Reduced potential for increase in density of stands of alien vegetation	Pos	Systematically remove alien vegetation from the property in an orderly and controlled fashion	Control of density of alien vegetation
	- Vegetation of overburden stockpiles / berms	Vegetation / Ecology	Vegetating the surfaces of the overburden stockpiles / berms	Establishment of vegetation cover and faunal habitats within the Mining Area	Pos	Create a self-sustaining vegetation cover on the overburden stockpiles / berms / exposed surfaces in order to bind the soils (i.e. prevent erosion and wind entrainment of dust)	Reduced; dust generation through wind entrainment, and erosion potential of berms and dumps.
		Erosion of soil		Reduced potential for erosion of soils	Pos		
7. Decommissioning and closure	Closure of the mine	All environmental aspects and socio-economic impacts	Planned and controlled closure of the mine at the end of exploitation of viable utilisation of the available mineral resource	Environmental and social impacts	Pos	The mine's objective is to at the end of life of mining (+65 years) to develop a landform suitable for potential development and / or recreation.	Well planned closure of the mine.
	Closure of the mine	socio-economic	Closure of the mine	Loss of jobs source of aggregate	Neg	Minimise the socio-economic impact of closure	Mine closure does not result in an unacceptable socio-economic void within the area.
8. Emergency Incidents	General				Neg	Avoid emergency incidents	Facilitate a fast response to an emergency incident.
	Non conformances				Neg	Learn from non-conformances	Non-conformances are learnt from and not repeated.
	- Hydrocarbon spills	Pollution of soil, surface and ground water	Large scale spills of hydrocarbons resulting from a ruptured tank	Pollution of soils and potentially off-site water bodies (if storm water flows into water courses) / ground water if spills remain in the soils for extended periods	Neg	Minimise the extent of the spill and clean up spills promptly to limit the scale of the incident	Pollution is confined to the incident area.
	- Fire		Smoke emissions from a fire	Air pollution as a result of smoke emissions	Neg	Minimise the potential for the spread of fires	Fires that start in the plant area on-site will be contained.

m) FINAL PROPOSED ALTERNATIVES

There are **no** final alternatives to the proposed mining activities as contained in this document

n) ASPECTS FOR INCLUSION AS CONDITIONS OF AUTHORISATION

The EMPr details the management measures which are proposed to form part of the condition of the authorisation. A summary of the most significant aspects, which have already been captured within the EMPr, include;

- Prior to any mining activities been implemented, additional authorisations must be obtained. These include;
  - Water use license (*application in progress*)
  - Appropriate re-zoning from the Midvaal Municipality (*application in progress*)
- Prior to mining within 25m of any other heritage site, the mine must apply for;
  - Destruction permits from SAHRA for the additional heritage findings identified in the Heritage Assessment which will be destroyed by future expansion of pit 2.
- Need to develop a storm water management plan and then implement the appropriate storm water management structures during construction phase.
- Need to develop an alien vegetation control plan
- Need to undertake a follow up survey at the correct time of year to determine if any protected plants are located within the grassland areas demarcated for future mining.
  - If protected plants are identified, appropriate destruction permits must be obtain at minimum 3 months prior to the identified plant being affected by mining activities.
- Need to undertake a follow up survey to assess the potential impacts on the wetlands identified during the vegetation assessment.
- Need to develop an ecological management plan. This management plan should comply with GDARD "Minimum Requirements for Ecological Management Plans".
- Need to develop and implement a concurrent rehabilitation plan.
- Need to complete an access protocol for family access to the mine
- Need to complete a blasting procedure which takes cognisance of the reccomendations of the blasting specialist report.

o) DESCRIPTION OF ANY ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE

When considering the uncertainties in this assessment it is important to note that EIA/EMP process is not an exact science and impacts can only be evaluated on the information that is currently available and through past experience. The following knowledge gaps have been identified;

- A follow up vegetation assessment is required at the correct time of year to determine the presence of protected plant species.
- A follow up survey is required to determine the impact (if any) on the wetlands identified in the vegetation survey.

p) REASONED OPINION AS TO WHETHER THE PROPOSED ACTIVITY SHOULD OR SHOULD NOT BE AUTHORISED

(i) Reasons why the activity should be authorized or not

From a biophysical point of view, it is the author's opinion, that the negative impacts identified can be effectively avoided / managed / mitigate to an acceptable level. It is acknowledged that should the mine proceed a portion of indigenous grassland will be destroyed. Assuming successful mitigation of the negative impacts, through implementing the mitigation measures proposed within this document, the author would support a positive authorisation. With this, the positive impacts associated with the proposed mine (job creation / wealth / source of aggregate / social upliftment) would be realised.

While the physical impacts impacts on the graves within the middle of the mining right can be reduced, there are no management measures which can be effectively implemented that can mitigate the additional long term cultural / heritage / spiritual "disturbance" that will be caused by the proposed mining operations. In addition the other heritage finding (foundations of buildings) ranked as low significance by the Heritage specialist will need to be destroy during the expansion of Pit 2.

Mining (specifically the development of the open cast pits) will change the current and future landuse of the portion of land under application, permenantly.

(ii) Conditions that must be included in the authorisation

(1) *Specific conditions to be included into the compilation and approval of EMPr*

The following conditions should form part of the authorisation;

- The obtaining of all other environmental authorisations must be a condition.
- The implementation of the environmental management measures contained within this report must form part of the condition of the authorisation.

(2) *Rehabilitation requirements*

The rehabilitation requirements to be included in the conditions of the authorisation include;

- Develop and implement a detailed concurrent rehabilitation plan
- Develop berms along the proximity of the mining right area (outside any high sensitive areas)
- Plant indigenous trees to visually obscure the mining right activities from the D1321
- Plant indigenous trees within the buffer zone for the graves
- Implement an alien vegetation removal programme

q) PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED

The period required is for the environmental authorisation is the same as the mining right. While the mineral reserve will facilitate mining at a rate of 24 000 tons per month for up to 65 years, legally the mining right can only be granted for 30 years (after which it can be renewed). Therefore the initial period required for the environmental authorisation is 30 years after which it will be renewed.

r) UNDERTAKING

An undertaking to meet the requirements of this section is provided at the end of the EMPr Section of the Report.

s) FINANCIAL PROVISION

The mine works programme completed for the original application allocated a budget of R 500 000.00 per annum to cover the annual environmental management requirements such as;

- Cost for implementing environmental monitoring
- Cost associated with implementing effective waste management
- Cost of implementing effective water management
- Cost for the earth works associated with concurrent rehabilitation
- Cost of managing essential environmental documentation.
- Cost for implementing the commitments contained within the EMPr

The above amount remains a realistic budget for this operation.

Amount proposed to rehabilitate the mine;

- **Existing Disturbance**: Based on the existing disturbance an amount of R 1 163 000.00 is estimated to be the amount required to rehabilitate the current site.
- **End of Life Disturbance** (at present day costs): Based on the intended activities to be implemented over the proposed life of mine, a present day, end of life of mine liability has been calculated as R 8 117 000.00.

(i) Explain how the aforesaid amount was derived

The Calculations for the existing mine and future mining were based on making use of the Guideline Document for the Evaluation of the Quantum of Closure-Related Financial Provision Provided by a the DMR (2005). Details of the calculations used to determine the above mentioned values are provided in a report contained in **Appendix A 12**.

(ii) Confirm that this amount can be provided for from operating expenditure

The amount calculated above is an operating cost and is provided for as such in the mining work programme.

t) DEVIATIONS FROM THE APPROVED SCOPING REPORT AND PLAN OF STUDY

(i) Deviations from the Methodology used in Determining the Significance of Potential Environmental Impacts and Risks

Since the completion and submission of the Scoping report, Umhlaba has updated its impact assessment tool to exclude the additional factor of "legal" consideration, when determining the final significance of an activity. The additional factors of, recognising concerns raised by interested and affected parties and potential cumulative impacts have been retained.

(ii) Motivation for deviation

With new applications, every aspect of the application requires legal approval before it can commence. Through including "legal" as an additional factor, it had an impact of obscueing the significance of impacts that require specific attention.

The fact that this aspect of the impact assessment was captured as an "additional" factor (not part of the main impact ranking tool) that influence final significance, by removing it, it is the author's opinion that it has improved the quality of the impact assessment tool by ensuring that significant impacts stand out and are not masked by impacts which are not as significant.

u) OTHER INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

(i) Compliance with the provisions of sections 24(4)(a) and (b) read with section 24(3)(a) and (7) of the National Environmental Management Act (Act 107 of 1998), the EIA report must include the:-

(1) *Impact on the socio-economic conditions of any directly affected person*

A public participation process has been implemented through out the environmental authorisation application process. All issues raised thus far during the application process have been captured and addressed within the public participation section of this report.

During the initial public participation process for the Scoping report the following **concerns** were raised:

- Rand Water is extremely concerned about the potential impact on their existing canal and pipeline running to the south of the mining right area (which provides over 70% of water for Gauteng) and the potential impact on a future canal and pipeline planned. This objection resolves around the potential impacts of blasting activities on the structural integrity of rand water infrastructure (canal and pipeline) and the access bridge which is proposed to be used.
- The Hlapolosa Family Delegation **strongly object** to the application due to the impact mining will have on family graves which are within the middle of the mining right area. While these graves have been excluded from the mining right area they remain within the middle of the proposed mine.
- Potential impact on groundwater availability and groundwater quality from mining
- Impacts of additional traffic on the Vischgat road in terms of deterioration of the road, dust and safety concerns. Specific concerns about the cumulative impact of traffic and where the road is a single file road.
- Impacts associated with dust and noise
- Other impacts associated with blasting activities (fly rock)
- Fencing of the mining property
- General environmental impacts (fauna / flora / protected bird area) of mining in a rural / environmentally sensitive area.
- Socio-economic impacts such as potential impact on surrounding property values, crime, influx of people from the mine and informal housing. The overall wellbeing of the local community.

- The strain on local infrastructure and availability of electricity.
- Impact on wetlands within the area.
- Impact on the Vaal River
- Impact on agriculture and residential areas
- Health impacts (associated with air pollution)
- Dispute the granting of the preceding prospecting right
- Verbally being informed that the property in question is subject to a land claim
- Economic viability and potential market for the proposed mine.
- Need to take cognisance of local spatial development plans
- Need to implement effective concurrent rehabilitation
- Procurement and employment opportunities

As part of the consultation process the land claims commissioner was also contacted to identify if there were any claims on land covered by this application. Feedback from the landclaims commissioner is provided in **Appendix A13**.

In short while there is a valid claim lodged by Hlapolosa Nkisane Esau on 23 December 2014, the claim was lodged in terms of the Restitution of Land Rights Amendment Act, Act No 15 of 2014. The validity of this Act was challenged in the Constitutional Court and found to be invalid because of the failure of Parliament to facilitate public involvement as required by the Constitution.

The Commission on Restitution of Land Rights will therefore not be processing the above claim until it finishes claims lodged by 31 December 1998 or until Parliament passes new law providing for re-opening of lodgement of claims.

It is important to highlight that during the EIAr phase of consultation, there have been a number of interactions with the Bantu Bonke local community, which is the closest affected community to the proposed mine. During the discussion, the community have enquired about ownership in the proposed project which the applicant has been made aware off. At the time of completing this EIAr, the community neither agrees or disagree's with the application.

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

As mentioned previously, the applicant (Prime Spot Trading) has been granted a prospecting right over the property. During the prospecting right application, a Cultural Heritage Survey was undertaken over the property. The outcomes and findings of the study is presented in the Baseline Environment.

A full copy of the report has been included in **Appendix 6**. A graveyard occurs on the site however it must be noted that the graves have been excluded from the application area and will be avoided in order to preserve the intergrity of these heritage resources. While excluded it is acknowledged that without moving the graves, there is no possible management measures which can be implement to avoid additional disturbance to the graves which will result in the affected family being serverly impacted.

There are a number of other heritage findings (foundations of buildings) which are within the demarcated areas for the expansion of pit 2 and will overtime be destroyed by mining activities. Obtaining a permit for destruction of these foundations, has been captured within the EMPr.

v) Other Matters Required in Terms of Section 24(4)(a) and (b) of the Act

The author, to the best of his abilities, adhered to the requirements of S24 (4) (a) and (b) of the National Environmental Manangment Act, Act 107 of 1998 as Amended. With regards to alternatives to the site layout as described in the final Scoping Report none have been identified or considered. Motiviation for the lack of alternaitves has been provided within this document.

The main motiviation being;

1) The occurrence of the geological resource (i.e. mining can only take place where there is a viable mineral resource).
2) The infrastructure establishment is based on utilising existing disturbed areas.

PART B:
ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

This environmental management programme report has been compiled in line with the template provided by the Department of Minerals and Resources.

1. DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

a) DETAILS OF THE EAP

The requirement for the provision of the details and expertise of the EAP are already included in PART A, Section 3(a).

b) DESCRIPTION OF THE ASPECTS OF THE ACTIVITY

The requirement to describe the aspects of the activity that are covered by the draft environmental management programme is already included in PART A, Section 3(i).

c) COMPOSITE MAP

Composite maps illustrating the environmental sensitivity of the areas where mining activities will be implemented is given in **Appendix B1**. The following is applicable;

- The graves (and a buffer between 24 and 41m) in the middle of the mining right area have been excluded from the application. This area will be demarcated with appropriate fencing. Access which avoids the active mining areas will be provided for family members who wish to visit the graves.
- A 50m mine boundary pillar has been applied where by no extraction of minerals from this 50m buffer will take place. Potentially berms and dumps may be extablished within this area.
- The southern third of the area under application lies within an area which according to C Plan is a crtical bidoversity area – important for primary vegetation and bire habitats.
- There are 2 area of “ecological support areas” associated with non perineal streams which are **located off** the mining site.
- The expansion of pit 2 to a southerly direction is predominatly into high sensitive grassland habitats
- The expansion of pit 2 to a northly direction is predominantly into disturbed areas
- At full extent the southern edge of Pit 2 will be +/- 180m away from a seasonal wetland
- At full extent the northern edge of Pit 2 will be +/- 160m away from a temporary wetland
- The proposed infrastructure area is located within a disturbed area
- The location of the proposed pit 3 is +/-90% over high sensitive grassland areas
- At full extent the western edge of Pit 3 will be +/- 100m away from a temporary wetland

d) DESCRIPTION OF IMPACT MANAGEMENT OBJECTIVES INCLUDING MANAGEMENT STATEMENTS

(i) Determination of closure objectives

Future mine closure (which based on available reserves, will be over 60 years’ time) will include:

- Mine closure will comply with the legal requirements of the day when closure is implemented.
- Closer to the time of closure (10 years prior to known closure) the regional integrated development and spatial development plan will be scrutinised to identify a final closure option which compliments surrounding requirements (at the time of closure).
- Final closure option will be chosen with the input of interested and affected parties.
- At the end of the life of mine, the quarry will be made safe through sloping at least the top 2 benches to an angle of repose. Water will be allowed to accumulate in the base of the quarry.
- All infrastructures (with no future value for the landowner at the time of closure) will be demolished and removed from site.
- The site will be assessed for potential contamination. Any contamination noted will be appropriately removed.
- All disturbed surfaces will be profiled, top soiled and revegetated.
- If necessary, the material contained in the berms and dumps will be used as a medium to profile areas and to encourage revegetation. If not required the berms and dumps will be left re-vegetated.

(ii) The process for managing any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of undertaking a listed activity

During construction activities minor dewatering activities of the water contained in the existing pit will be required. The dewatering of the pit to facilitate the re-starting of mining activities will be completed in line with the water use license requirements. Water will be used for irrigation requirements.

Ongoing dewatering of the pit will provide process water required for processing purposes.

Other ecological degradation will be avoided by making use of the existing disturbed areas for the re-establishment of mining operations.

The degredation of the areas ear marked for the expansion of the pit 1 into pit 2 and the development of pit 3 is unavoidable and a consequence of mining activities.

(iii) Potential risk of Acid Mine Drainage

According to the specialist groundwater assessment, the following statement is applicable;

"Geochemically the andesite aggregate (identified to be mined by Prime Spot) is considered inert with insignificant potential for either acid mine drainage or metal leaching"

Based on the above statement, there is no risk of acid mine drainage.

(iv) Steps taken to investigate, assess, and evaluate the impact of acid mine drainage

The potential for acid mine drainage was considered by the Geohydrological specialist.

(v) Engineering or mine design solutions to be implemented to avoid or remedy acid mine drainage

N/A.

(i) Measures that will be put in place to remedy any residual or cumulative impact that may result from acid mine drainage

N/A.

(i) Volumes and rate of water use required for the operation

See Table 15 below for an indication of the rate or water use required for the proposed operation. This information was provided by the consultant who is completing the water use license application for Prime Spot.

(ii) Has a water use licence been applied for?

Yes, Galago Environmental have finalising the water use license application. The application was lodged on 10th May 2017. Proof of lodgement is available on request.

Table 15: Volumes and rate of anticipated water use

DUST SUPPRESSION (DS) WATER REQUIREMENTS													
Activity	Jan	Feb	Mrt	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Totals
Site Footprint area to be moistened (m^2)	15 000	15 000	15 000	15 000	15 000	15 000	15 000	15 000	15 000	15 000	15 000	15 000	15 000
Required water volume (m^3) per day = 1,5 * ℓ/m^2 - rainfall - runoff	23	23	23	23	23	23	23	23	23	23	23	23	
Average monthly Rainfall mm	125	74	68	56	14	8	5	10	25	72	95	119	671
Mean Monthly Runoff (25mm per annum)	5	3	3	2	1	0	0	0	1	3	4	4	25
Volume monthly rainfall m^3 per site footprint area - MAR - $EVAP_{rainfall}$ - $EVAP_{quarry}$	855	382	335	301	11	10	6	26	97	446	507	841	3 816
Average daily water m^3 available per rainfall day	59	37	34	39	4	6	6	14	24	50	39	63	43
Dust suppression Volume required (m^3) per non rainfall days	374	396	477	502	632	639	675	657	585	495	380	398	6 210
Volume required during non-rainfall days (m^3 per month) for Dust Suppression of Footprint	374	396	477	502	632	639	675	657	585	495	380	398	6 210
Volume required during rainfall days (m3 per month) for Dust suppression of footprint	0	0	0	0	54	26	16	15	0	0	0	0	112
Total abstraction from quarry	374	396	477	502	687	665	691	672	585	495	380	398	6 322
Evaporation per month (at rate of 4.4mm/day or 1600mm/a) = 4,4 x surf	950	686	647	508	191	106	66	119	264	594	865	878	5874
Evaporation per month from quarry surface - groundwater inflow	0	0	0	0	0	0	0	0	0	0	0	0	0
Storage in quarry (Rainfall - Evaporation)	422	189	165	148	5	5	3	13	48	220	250	415	1 883
* Note that the volume of 1,5 ℓ/m^2 is recommended for the area as it tends to be windy, which increases evaporation rates													
Calendar days	31	28	31	30	31	30	31	31	30	31	30	31	365
Ave Rainfall days	14,4	10,4	9,8	7,7	2,9	1,6	1	1,8	4	9	13,1	13,3	89
Ave rainfall per rainfall day	8,68	7,12	6,94	7,27	4,83	5,00	5,00	5,56	6,25	8,00	7,25	8,95	

This is only a guideline. IT IS ADVISED TO PLACE A RAIN GAUGE ON SITE and it is a function of the Site Manager to monitor the necessity for dust suppression.

IRRIGATION (Ir) WATER REQUIREMENTS													
Activity	Jan	Feb	Mrt	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Totals
Planted natural vegetation area to be irrigated (m^2)	25 000	25 000	25 000	25 000	25 000	25 000	25 000	25 000	25 000	25 000	25 000	25 000	25 000
Required water volume (m^3) per day = 5 * ℓ/m^2 - rainfall - runoff	125	38	38	38	38	38	38	38	38	38	38	38	
Average monthly Rainfall mm	125	74	68	56	14	8	5	10	25	72	95	119	671
Mean Monthly Runoff (25mm per annum)	5	3	3	2	1	0	0	0	1	3	4	4	25
Volume monthly rainfall m^3 per site footprint area - MAR - $EVAP_{rainfall}$ - $EVAP_{quarry}$	1 425	637	559	501	18	17	10	43	162	743	846	1 401	6 360
Average daily water m^3 available per rainfall day	99	61	57	65	6	10	10	24	40	83	65	105	71
Dust suppression Volume required (m^3) per non rainfall days	2 075	660	795	836	1 054	1 065	1 125	1 095	975	825	634	664	11 803
Volume required during non-rainfall days (m^3 per month) for Dust Suppression of Footprint	2 075	660	795	836	1 054	1 065	1 125	1 095	975	825	634	664	11 803
Volume required during rainfall days (m3 per month) for Dust suppression of footprint	375	0	0	0	91	43	27	25	0	0	0	0	562
Total abstraction from quarry	2 450	660	795	836	1 145	1 108	1 152	1 120	975	825	634	664	12 364
Evaporation per month (at rate of 4.4mm/day or 1600mm/a) = 4,4 x surf	1584	1144	1078	847	319	176	110	198	440	990	1441	1463	9790
Evaporation per month from quarry surface - groundwater inflow	0	0	0	0	0	0	0	0	0	0	0	0	0
Surface inflow into quarry (Rainfall - Evaporation)	422	189	165	148	5	5	3	13	48	220	250	415	1 883
* Note that the volume of 5 ℓ/m^2 is recommended for irrigation of planted natural vegetation.													
Calendar days	31	28	31	30	31	30	31	31	30	31	30	31	365
Ave Rainfall days	14,4	10,4	9,8	7,7	2,9	1,6	1	1,8	4	9	13,1	13,3	89
Ave rainfall per rainfall day	8,68	7,12	6,94	7,27	4,83	5,00	5,00	5,56	6,25	8,00	7,25	8,95	

WATER BALANCE OF QUARRY													
Activity	Jan	Feb	Mrt	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Totals
Year 1													
Surface water inflow	422	189	165	148	5	5	3	13	48	220	250	415	1 883
Groundwater inflow	100	100	100	100	100	100	100	100	100	100	100	100	1 200
Dust suppression abstraction	374	396	477	502	687	665	691	672	585	495	380	398	6 322
Irrigation abstraction	2 450	660	795	836	1 145	1 108	1 152	1 120	975	825	634	664	12 364
Total volume of quarry	16 298	15 530	14 524	13 434	11 708	10 039	8 299	6 620	5 208	4 208	3 544	2 997	

Year 2													
Surface water inflow	422	189	165	148	5	5	3	13	48	220	250	415	1 883
Groundwater inflow	100	100	100	100	100	100	100	100	100	100	100	100	1 200
Dust suppression abstraction	374	396	477	502	687	665	691	672	585	495	380	398	6 322
Total volume of quarry	3 145	3 037	2 826	2 572	1 991	1 431	842	283	-154	-329	-359	-242	

BOREHOLE ABSTRACTION VOLUMES													
Activity	Jan	Feb	Mrt	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Totals
Calendar days	31	28	31	30	31	30	31	31	30	31	30	31	365
Year 1													
WATER REQUIREMENTS: BOREHOLE 1													
Total water required for workers (m^3) per day	2,5												Total
Total water required for workers (m3) per month	77,5	70	77,5	75	77,5	75	77,5	77,5	75	77,5	75	77,5	912,5
Total water required for dust suppression per month	0	0	0	0	0	0	0	0	0	0	0	0	0,00
Total water required from borehole	77,5	70,00	77,50	75,00	77,50	75,00	77,50	77,50	75,00	77,50	75,00	77,50	912,50

Year 2													
WATER REQUIREMENTS: BOREHOLE 1													
Total water required for workers (m^3) per day	2,5												Total
Total water required for workers (m3) per month	77,5	70	77,5	75	77,5	75	77,5	77,5	75	77,5	75	77,5	912,5
Total water required for dust suppression per month	0	0	0	0	0	0	0	0	154	329	359	242	1084,35
Total water required from borehole	77,5	70,00	77,50	75,00	77,50	75,00	77,50	77,50	228,90	406,49	433,97	319,98	1996,85

(iii) Impacts to be mitigated in their respective phases

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

Table 16: Details of the proposed mitigation measures to be implemented

Activity		Aspect	Source / Cause	Impact		Impact Management Actions	Timeframe	Compliance
Phase	*Description of the physical activities that will cause the impacts*		*Description as to how the activity may cause the impact*	*A description of the impact that may result from the activity*		*Appendix 4(1)(f)(i): Actions to be implemented in order to achieve Impact Management Objectives*	*Appendix 4(1)(j): Time period for Implementation of Impact Management Actions*	*Appendix 4(1)(f)(ii): Environmental Management Standards / Practices*
1. Construction	Re-establish crushing plant. Placement of mobile offices / sanitation requirements Reconnection of electricity and water from onsite borehole	All environmental parameters	Future impacts as a result of poor re-establishment of infrastructure	Dust / Noise / Water / Visual / Ecological	Neg	Prior to implementing any physical alterations to the land ensure that all additional relevant permits and permissions are in place. These include; • Appropriate zoning from the Municipality • Water Use license from DWS All condition associated with other authorisations to be implemented. All infrastructure (both re-established and new) to be located within the existing disturbed area. The re-established crusher plant is to be fitted with; • appropriate dust suppression measures (such as water sprays / enclosing transfer points) • appropriate noise abatement equipment (such as enclosing the crushers / use of rubber screens etc). Borehole WP117 will be fitted with a pump and appropriate piping will be laid to ensure water availability at the infrastructure. Either chemical toilets or an approved French drain system to be provided for sanitation purposes.	Before construction LoM During construction During construction During construction During construction	Spatial planning and land use Management Act. NWA HRA MHSA
	Construction of workshop & fuel tank bunding & weigh bridge	Water	Poor design / lack of implementing effective pollution prevention controls during construction will result in unnecessary impacts during the operational mine.	Implementation of effective pollution control measures.	Pos	The following areas to have concreted floors and be covered; • Workshop facility • Waste disposal area • Bunded fuel tank facilities and refuelling area All of the above are to be connected to an appropriate designed oil separator system. Appropriate waste disposal facilities to be provided at the mine. This includes but not limited to; • A centralised waste disposal area which has at minimum a skip for hazardous waste, a skip for general waste and a skip for steel waste • Bins (for both general and hazardous waste) in area where waste will be generated. • Spill kit will be purchased and stored on site. If used, it will be replaced. Commission a specialist, to develop and implement a storm water management plan which aims to achieve all the requirements of GN 704.	During construction During construction During construction Before construction	NEMA NEM:WA NWA GN 704
		Ecological	Installation of new infrastructure	Environmental consequences resulting from unplanned location of new infrastructure	Pos	Ensure all infrastructure is constructed and installed on previous disturbed areas. Implement effective waste management during the construction of new infrastructure. Fence the entire mining right area to prevent any unwanted access onto the mine from surrounding cattle / game.	During construction During construction Before construction	NEM:BA NEM:WA

Activity	Aspect	Source / Cause	Impact		Impact Management Actions	Timeframe	Compliance
Dewatering pit	Groundwater	Poor quality water contained within the pit dewatered to facilitate mining activities	Surrounding water bodies / Non perineal stream	Neg	• Investigate the option of discharging the water into the Rand Water Canal - If viable (based on Rand Water approval), implement. • If not viable, then initial dewatering should be used to irrigate vegetation and trees within the mining right boundary. Implement the requirements associated with the Water Use License (WUL). Test the quality of the water in the pit (specifically for nitrates) prior to discharging to ensure that it is acceptable quality for irrigation purposes - if not acceptable for irrigation then water cannot be discharged - it will need to be used for dust suppression purposes during operation phase. Maintain a record of discharge volumes and quality.	During construction During construction Before dewatering starts During dewatering	NWA
Future traffic	Socio-economic	Lack of appropriate traffic warning signs	potential road safety concerning	Pos	With the approval and guidance of the local road traffic authority, ensure that; • Appropriate traffic warning signs are established on the Vischgat Road • At the entrance to the mine • On the mine • Capture on a plan, traffic flow requirements for the mine, ensure that notices on the mine direct traffic in the desired directions (all to ensure safety)	During construction	Local traffic authority
Future blasting	Socio-economic	Future blasting having an impact on surrounding infrastructure	Potential blasting impacts	Pos	Commission an independent person to undertake a photographic survey of all sensitive structures up to 1500m from the quarry area. (See Specialist Blasting assessment for details of the structures in **Appendix A9**) With Rand Water Board officials, appoint an independent structural engineer to report on the structural integrity of the Rand Water Board canal at specific points up to 1500m away from the quarry area. When blasting activities approach 500m away from off site infrastructure, apply for appropriate regulatory approval to undertake blasting activities within 500m of non-mining infrastructure.	During construction During construction When required	NEMA
Future mining of pit 2 and 3	Ecological	Expanding / development of the pits will destroy indigenous grassland habitats.	Destruction of grassland. Potential impact on wetlands Potential destruction of protected plant species	Neg	Undertake a follow up vegetation assessment for protected plants at the idealy time of year (See Vegetation Specialist Study in **Appendix 5**) Undertake a follow up wetland survey to determine the potential impact on the identified wetlands shown in the initial vegetation assessment. Implement any reccomendations resulting from the survey. Compile an ecological management plan (in line with GDARD guidelines) to be implemented during the operational life of the mine.	During construction During construction During construction	NEM:BA NWA
Future mining of the pit 2	Heritage	Expanding of the pit will impact on identified heritage resources	Destruction of heritage resources	Neg	Implement a phase 2 heritage investigations for the identified heritage sites referred to as sites, 3,4,5,6 & 7. (See Heritage Specialist Study in **Appendix 6**) This must include surveying and mapping of the identified heritage sites. When necessary, apply for and obtain the relevant permits from SAHRA for the destruction of the sites.	During construction During construction	HRA
Establishing access to graveyard	Heritage	Providing effective access to the graves. Ensuring the graves are demarcated.	To guarantee easy access to the grave yard	Pos	Ensure that the road identified to the graves (**Figure 5**) is in a state where by normal vehicles can use it. If necessary it must be graded. Fence the excluded areas (inclusive of the buffer zone) of the graves within the middle of the mining right area. Provide appropriate access gate. If agreed to by the affected family, plant indigenous trees within the buffer zone of the excluded graves. Develop an "*access protocol*" with input from the affected family members. Once finalised, access to the graves must be provided in line with the protocol.	During construction During construction During construction During construction	HRA

	Activity	Aspect	Source / Cause	Impact		Impact Management Actions	Timeframe	Compliance
2. Planning	Planning for the stripping and stockpiling of topsoil and overburden	All environmental parameters	Planning the stripping and storage of topsoil and overburden	Environmental consequences resulting from unplanned storage of topsoil and overburden	Pos	**Topsoil**: • Determine the volume of topsoil that needs to be stored in the Short, Medium- and Long-term. • Identify adequate / sufficient area(s) that are; - Outside future areas identified for the development of the pits - Outside high sensitive areas identified by the vegetation assessment (**App 5**) - large enough to store the known volumes of topsoil - allow adequate area around the stockpiles to implement management controls, such as storm water controls / alien vegetation removal. • Record topsoil storage areas on a plan. • Ensure topsoil is stripped and stockpiled separately to overburden. • Construct the stockpiles in a manner that will preserve the value of the topsoil ; i.e. in berms not more than 2m in height **Overburden**: • Determine the volume of overburden that needs to be stored in the Short, Medium- and Long-term. • Facilitate the sale of overburden (as fill material) where possible. • Identify adequate / sufficient area(s) for storage of overburden that are; - Outside any future mining areas - Outside high sensitive areas identified by the vegetation assessment (**App 5**) - large enough to store the known volumes of overburden - allow adequate area around the stockpiles to implement management controls, such as storm water controls / alien vegetation removal. • Record overburden storage areas on a plan • Construct the stockpiles in a manner that will facilitate vegetation of the surfaces; i.e. in lifts not more than 5m in height and acceptable angle of repose.	Life of Mine (LoM) LoM	CARA NEM:WA GN 704
	Planning for future mining	Mineral resource	Planning the utilisation of the mineral resource	Utilisation of mineral resource	Pos	Plan the manner of extraction in the Short-, Medium-, and Long-term. This information to be presented on site plans. Mine in accordance to the short term mine plan. Short and Medium term plan to support the Long Term plan. Long term mine plan to take cognisance of closure requirements for the mine. Implement scheduled planning meetings which must include discussion and evaluating of environmental compliance.	LoM Biannually	MPRDA
	Planning for future activities on the mine	All environmental parameters	Planning for potential capital expenditure projects	Environmental consequences resulting from unplanned capex projects	Pos	Any change of scope to the activities captured within this environmental impact assessment, needs to be authorised, prior to proceeding with the change of scope. Ensure that the capex authorisation process (for any future projects) includes a level of environmental planning and consideration of environmental laws.	Each capex project considered during the life of Mine	CSA - S24 NEMA - S2, S24 & S28 NWA - S19
3. Mining	- Stripping of vegetation & topsoil - Removal of overburden (free dig) - Materials handling and stockpiling of topsoil / overburden - Drilling and blasting of mineral resource - Loading and hauling of blasted rock to crushing plant.	Vegetation	Clearing / removal of vegetation	Loss of indigenous vegetation within the Mining Area. Potential impact on wetlands Potential for alien vegetation to establish	Neg	Mine in accordance with the Mine Plans Clear vegetation a maximum of 50m ahead of the mining face only. • As and when necessary apply for applicable permit for destruction of protected species (if any identified during the follow up survey) Implement reccomendations from follow up studies (vegetation & wetland) completed during the construction phase. Develop and implement an alien vegetation control programme designed to identify areas of concern, plan a systematic control programme (including follow-up controls) and manage the areas starting with those least infested. If necessary apply for permission to keep alien vegetation which is having a beneficial impact. Implement an ecological management plan (completed during construction). Plant indigenous trees in strategic locations to obscure the visual impact of the proposed mine.	Daily As required As required Within the first year LoM LoM	NEM:BA CARA
		Ecology	Clearing / removal of vegetation cover impacts on faunal habitats	Loss of faunal habitats within the Mining Area	Neg	• Inform employees of the no poaching rule • Inspect and if necessary maintain fencing around the property • Monitoring the undisturbed areas for snares and destroy if found.	Annually Biannually Weekly	None

Activity		Aspect	Source / Cause	Impact		Impact Management Actions	Timeframe	Compliance
		Topsoil	Clearing / removal / of topsoil or dumping on topsoil	Loss of soil structure, diminishing the potential for future use of the soil as a suitable growth medium. Erosion of topsoil dumps	Neg	Only clear topsoil 50m ahead of the active working face. Store topsoil in a designated stockpile area or use immediately as part of a concurrent rehabilitation project Topsoil berms to be no higher than 2m. Do not create an overburden berm on top of viable topsoil (strip topsoil prior to the placement of the berm). Ensure indigenous vegetation establishes over the dump within 1 year (If necessary vegetate the berm) Monitoring topsoil dumps for alien vegetation and erosion. If either is noted applicable remediation activities must be implemented.	LoM LoM LoM LoM Within 1 year Biannually	CARA NEM:BA
		Visual	Change in appearance due to removal of vegetation and change in relief / topography due to excavation and stockpiling of overburden	Altered visual appears may be unappealing / unattractive	Neg	Where possible plant indigenous trees along the property boundaries to obscure the visual impact of the mine. Vegetate all berms along the perimeter of the mine. Monitoring and if necessary fix erosion as and when noted on visual berms. Implement good housekeeping throughout the mining area	LoM LoM LoM Daily	None
		Air quality	Dust entrainment from stripping activities, materials handling of stripped soil, overburden and blasted rock, and wind entrainment over exposed surfaces	Nuisance impact for surrounding residential receptors Reduced photosynthetic abilities of vegetation due to dust covering leaf surfaces	Neg	Supress dust at source through one or more of the following methods: • watering haul roads in use • implementing speed control measures for haul vehicles • use of dust extraction devices (on drill rigs) • vegetating exposed surfaces Implement dust fallout monitoring in line with (GN 827) to ensure that dust levels on the boundary of the mine are acceptable. • If results consistently show dust fallout levels are below non-residential standard on the boundary of the mine then after a year this can be stopped • If stopped, monitoring must be restarted should there be a change of scope of the operation, or if valid complaints are received.	Daily during the Life of Mine For a full calendar year.	NEM:AQA GN R827 Regulation 3
			Exhaust emissions	Health impacts to surrounding receptors	Neg	Ensure that all on site vehicles are maintained in accordance to a maintenance schedule. Implement daily vehicle inspections to ensure vehicles are in good working order prior to being used. Prevent external vehicles which have excessive emissions levels, onto the site.	LoM Daily Daily	na
		Noise	Engine noises from vehicles and earth moving equipment. Noise from drilling operations.	Nuisance impact for surrounding land users	Neg	Restrict drilling and blasting within the pit to daylight hours Maintain all mobile equipment in good working order	LoM	ECA - GN R154, NEM:AQA SANS 10103
		Surface water - volume	Alteration of surface water flow by changing the topography	Reduced volume of run-off entering natural drainage	Neg	Divert clean storm water away from "dirty" areas through use of berms or channels (allowing it to flow to off-site resources) by; • Implementing the storm water management plan completed during construction.	LoM	NWA, GN R704, WUL
		Surface water - pollution	Exposed surfaces increase potential for elevated sediment load in storm water run-off Hydrocarbon contamination from poor storage / handling and disposal of hydrocarbons	Pollution of off-site water bodies (if dirty storm water flows into a water courses)	Neg	Contain "dirty" water on-site, through the implementation of an appropriate storm water management plan. Implement effective waste management within the mining area.	LoM Daily	
		Dewatering and Ground water - drawdown	Deepening of the quarry acts as a draw down cone. If there is a need to access the quarry floor, water may be pumped from the quarry.	Deeper water table levels for surrounding groundwater users.	Neg	Within the first 5 years of mining, an updated assessment of the groundwater inflow volumes and pit water balance should be performed (by a specialist) to effectively plan for the future. Use quarry water for dust suppression / process water purposes. If excess water within the quarry needs to be dewatered, the same commitments as the initial dewatering (under construction section) needs to be followed.	Within 5 years of mining. LoM	NWA

Activity		Aspect	Source / Cause	Impact		Impact Management Actions	Timeframe	Compliance
		Ground water - pollution	Blasting activities increasing the level of nitrates in the water within the Quarry	Pollution of off-site water bodies (if water is discharged)	Neg	Implement effective blasting (avoiding spills of explosives or if a large spill has occurred, it must be cleaned up) Ensure any hydrocarbon spill within the pit is cleaned up immediately. Implement a water monitoring programme as proposed in the Groundwater specialist study (**Appendix 4**). • Monitor both water quality and water quantity • Assess the results from monitoring and if necessary additional mitigation measures must be determined with input from a specialist and be implemented.	LoM Daily See Appendix 4	NWA
		Heritage	Mining activities taking place in close proximity to the graves. Restrictive access to the graves	Disturbance on the graves and access to the graves.	Neg	Maintain the fencing associated with the graves and the buffer zone. Maintain the area within the demarcated buffer zone. Ensure that closest edge of Pit 2 does not encroach within **60m** of the closest grave. Ensure that the access route to the graves is maintained throughout the life of the mine. Ensure that the access protocol developed during construction is adhered to. • Review and if necessary update Obtain destruction permits for the heritage infrastructure when necessary. Implement any conditions associated with the phase 2 heritage assessment and the permits required to destroy heritage infrastructure. 2 years prior to the start of "pit 3" identify and provide an alternative access route to the graves. Update the access protocol. Should any archaeological artefacts or skeletal material be revealed during mining activities, such activities in the area of the find should be halted and a museum or university be notified for an investigation.	LoM LoM LoM Annually 2 years before pit 3 LoM	HRA

		Vibration / noise / fly rock / air blast	Blasting	Vibrations experienced off-site may result in structural damage to infrastructure in the Rand Water Servitude (canal & pipelines).
				Fly rock is a potential safety risk
				Air blasts can cause structural damage
				Noise nuisance
				Interruption to day to day activities of people wanting to access the graves.
					Neg	Explosive to be delivered to the bench and not stored onsite
						Implement appropriate notification of surrounding land uses concerning blasting dates and times.
						Blasting to be undertaken by a competent / qualified blaster
						Detailed blasting procedure to be developed and adhered to which at minimum must take cognisance of;
						• Blast design must consider the actual blasting and ground vibration levels to be adhered too.
						  - Scale the blasting activity in close proximity to the graves and Rand Water infrastructure to minimise the possibility of a physical impact on the graves / Rand Water infrastructure (ground vibration at the Rand Water Canal must not exceed 25 mm/s / or agreed to value between the mine and Rand Water).
						  - Adhere to the maximum charge mass allowed (as contained in the blasting specialist study) when blasting in close proximity to the graves and Rand Water infrastructure.
						  - Reduce Charge Mass / Delay over decreasing distance towards both the grave yard and Rand Water infrastructure
						• Use electronic initiation which allows for single hole firing.
						• A safe evacuation zone of 500m to be applied
						• Climatic conditions must be considered when setting off a blast
						For each blast, the following third party monitoring must be recorded:
						• Ground vibration and air blast results
						• Blast information summary
						• Metrological information at the time of the blast
						• Video recording of the blast
						• Fly rock observations
						(See specialist report (Appendix A9) for an indication of the monitoring points to be used.)
						Blast monitoring information to be made available to Rand Water representative after every blast.
							Every blast
							
							Prior to a blast
							
							Every blast
							
							Before first blast.
							
							Every blast
							
							After every blast.
								Explosive Act
								MHSA

	Activity	Aspect	Source / Cause	Impact		Impact Management Actions	Timeframe	Compliance
4. Crushing and Screening	- Materials handling - Crushing and screening - Materials handling of aggregate - Stockpiling - Vehicle entrainment - Mobile plants	Visual	The crushing and screening plant will protrude above the surface.	Visibility of man-made structures may be unappealing / unattractive	Neg	Where possible plant indigenous trees along the property boundaries Vegetate all berms along the perimeter of the mine Monitoring and if necessary fix erosion as and when noted on visual berms. Implement effective waste management actions to ensure good housekeeping is maintained in and around the crushing plant.	LoM LoM LoM Daily	NEM:WA
		Air quality	Fugitive dust emissions from materials handling, crushing, screening, mobile plants, stockpiling, vehicle entrainment, and wind entrainment over stockpiles and exposed surfaces	Nuisance impact for surrounding land users Reduced photosynthetic abilities of vegetation due to dust covering leaf surfaces	Neg	Supress dust at source through one or more of the following methods: • water sprays in the plant • enclosing of selected areas within the plant • Cleaning up fines accumulating at transfer points • watering haul roads in use around the plant • Implementing speed control measures on roads commonly used by haul vehicles • Temporarily halt crushing and stockpiling activities during high winds If a mobile plant is used, it must be placed in a location that minimises dust and noise from a climatic influences	Daily during the Life of Mine	NEM:AQA GN R827 Regulation 3
			Exhaust emissions	Health impacts to residential / retail / industrial receptors	Neg	Ensure that all on site vehicles are maintained in accordance to a maintenance schedule. Implement daily vehicle inspections Prevent external vehicles which have excessive emissions levels on to the site.	LoM Daily Daily	None
		Noise	Noises from the crushing and screening of aggregate as well mobile plants, vehicles and earth moving equipment	Nuisance impact for surrounding land users	Neg	Crusher operating hours will be restricted to: • Monday to Friday: 06h00 to 18h00 • Saturday: 06h00 to 14h00 • Sunday: 06h00 to 14h00 (maintenance only) Maintain all the crusher and any mobile equipment in good working order If noise complaints are received; • Implement an environmental noise survey to determine the source of the complaint - Once the source of noise is identified, implement additional noise mitigation measures (such as cladding, enclosing or restriction of operational hours)	Daily LoM If a compliant is received	ECA - GN R154, NEM:AQA SANS 10103
		Surface water - pollution	Exposed surfaces and product stockpiles increase potential for elevated sediment load in storm water run-off. Hydrocarbon spills associated with the plants could impact on storm water quality.	Pollution of off-site water bodies (if storm water flows into water courses)	Neg	Contain "dirty" water on-site, through the implementation of an appropriate storm water management plan. Implement effective waste management (good housekeeping) within the crushing plant and stockpile area. Clean up any hydrocarbon spills noted.	LoM Daily LoM	NWA GN R704 NEM:WA
		Vischgat road	Trucks entering and exiting the mine	Increased traffic on the Vischgat road	Neg	Under normal circumstance, all vehicle traffic will only access the mine coming south along the Vischgat Road and leave the mine and only travel in a northerly direction. Only if the single file bridge over the Suikerbosch River is flooded or blocked will traffic access the site from the alternative direction along the Vischgat road. Ensure road signage on the mine is maintained	LoM In an emergency LoM	
		Socio-economic	Traffic associated with the mine on public roads	Poor perception of the public towards the mine	Neg	All vehicles with product will pass over a weigh bridge to ensure that maximum loads are not exceeded. The use of tarpaulins to cover loads will be encouraged All vehicles entering the mine will be inspected by security. • Any obvious defects will be reported and necessary operator will be informed. The same vehicle will not be allowed on the mine again until fixed. All drivers entering the mine will be subject to alcohol testing. During induction training inform all truck drivers of the need to adhere to the rules of the road. Report poor road conditions (encounted by the truck drivers) to the appropriate authorities.	Daily LoM Daily Daily Annually LoM	

	Activity	Aspect	Source / Cause	Impact		Impact Management Actions	Timeframe	Compliance
5. Supporting Services	- Access roads (use and maintenance)	Air quality	Fugitive dust emissions from vehicle entrainment	Nuisance impact for surrounding land users Reduced photosynthetic abilities of vegetation due to dust covering leaf surfaces	Neg	Supress dust at source through one or more of the following methods: • watering haul roads in use, • implementing speed control measures on roads commonly used by haul vehicles • maintain internal haul roads	Daily during the Life of Mine	NEM:AQA GN R827 Regulation 3
		Access bridge	continual use of the access bridge	Structural integrity of the Rand water board infrastructure	Neg	Loose sand and gravel to be removed from the bridge deck Commission a competent person to undertake an annual inspection of the bridge (particularly checking for longitudinal cracks in the deck slab). • Implement any identified recommendations.	Daily Annually	None
	- Water supply (potable)	Water use	Use of potable water from the borehole onsite	Although no impacts are associated with the use of water itself, irresponsible use of water may result in strain on the resources given that South Africa is a water scares country	Neg	Adhere to the allocations provided by the Water Use License Use of borehole water for potable purposes will only occur if monitoring results indicate that the water is suitable for human consumption. • If not suitable, alternative (suitable) water will be provided to employees. Any water leak identified are to be reported and rectified immediately Monitoring water use and report in the form of a water balance diagram – • large unexplained fluctuations in monthly water use to be investigated	LoM LoM LoM LoM	NWA
	- Water supply (process)	Water use	Use of water from the pit and any storm water catchment dams for dust suppression		Neg	Use water captured within the pit for processing purposes (such as dust suppression)	LoM	NWA
	- Storm Water Management	Surface water - pollution	Separation of "clean" and "dirty" storm water and the containment / management of "dirty" water on-site (as per the SWMP in the WUL)	Management of storm water in a manner that minimises the potential for pollution of water resources	Pos	Maintain storm water management structures as per the storm water management plan completed during the construction phase.	LoM	NWA GN R704
	- Power (electricity)	Carbon emissions	Use of electricity to run the processing plant and administration offices	Carbon emissions as a result of the burning of coal to generate electricity	Neg	Reduce use of electricity through one or more of the following methods: • engineering solutions within the plant • turning off lights when not in use If power supply is temperamental maintain a backup generator on site. • Ensure that the diesel supply for the generator is kept within a bunded area • Any minor hydrocarbon spills to be cleaned up immediately Monitor electricity use and investigate unexplained spikes / high usage.	LoM LoM Monthly	None
	- Waste (sanitation)	Pollution of soil, surface and ground water	Overflow of the chemical toilets / or septic tank or blockage of the French drain may cause surface flow of raw sewage	Pollution of soils in the vicinity of the toilets and the potential pollution of storm water flowing over polluted soils	Neg	Educate the staff as to what material may not be disposed in the sewage system. Monitor the level of sewage in the chemical toilets / septic tank, ensuring it is emptied before there is the potential for sewage to overflow	Annually Monthly	None
	- Administration	Documentation	Management of legally required documents	Legal compliance (in terms of record keeping)	Pos	Ensure valid copies of the following documents / authorisations are available on-site at all times (list provided below) • The registered mining right / mine works programme and SLP • A copy of the regulation 2(2) plan / sketch plan depicting the mining right area. • A copy of the approved EMP (and approval letter) • Copy of the latest Environmental Performance Audit. • Copies of all other legal authorisations (WUL, Heritage permits & rezoning) • The latest financial provision calculations • Any EIA authorisation and associated conditions of approval • Copy of water use license and application documents • Results from all environmental monitoring campaigns (blasting / water / dust) • Waste removal records • Water use records (form of a water balance diagram) • Plans & Minutes (short and long term mine plans) • Records of implementing concurrent rehabilitation & Alien vegetation removal • Records of all environmental awareness training • Complaint book • Records of consultation with interested and affected parties • Records of non-conformances • Vehicle inspection check sheets and vehicle maintenance records Ensure the validity and applicability of the authorisations is evaluated, considering activities / changes in activities being undertaken.	LoM Annually	Varies

Activity		Aspect	Source / Cause	Impact		Impact Management Actions	Timeframe	Compliance
		Handling complaints	Interested and affected parties	Poor relations between Prime Spot and interested and affected parties	Pos	All complaints received by the mine must be recorded in writing. The information recorded must include, but is not limited to: • Date of complaint. • Name and contact details of complainant. • Nature / Description of the complaint. • A description as to how the complaint will be addressed. • A proposed target date for rectifying the cause of the complaint. • Date when corrective action was implemented (if necessary). • Confirmation / Explanation of feedback provided to the complainant. • A list of any monitoring or follow-up work that is required, including target dates.	LoM	NEMA
		Ongoing consultation with I&AP's	Interested and affected parties	Good relations between Prime Spot and interested and affected parties	Pos	Maintain a proactive open door policy with all interested and affected parties. Provide the landowner, surrounding land occupiers, Hlapolosa Family, Rand Water and any other interested and affected party an opportunity to discuss the environmental performance of the mine (at least annually) and maintain a record of all communication.	LoM Annually	
		Contractors	Activities undertaken by contractors may result in environmental impacts that require the implementation of "management actions"	The impacts will vary depending on the contractor activities	Pos	Environmental compliance will form part of the contractual arrangements between contractors and Prime Spot. • All new contracts with on-site sub-contractors will stipulate the environmental commitments that must be adhered to while working on-site. • Any specific environmental measures required to mitigate any sub-contractor specific environmental impact must be included in the individual contracts. • All contractors who operate on the mine will be required to undergo environmental awareness training. • Where contractors are performing a task which requires legal authorisation, copies of the applicable authorisation must be provided prior to any commencement of work.	Prior to the undertaking of the contractor activity	NEMA (duty of care) Will be dependent on the activity
		Training	Training undertaken as per the Environmental Awareness Plan	Improved environmental awareness resulting in reduced impacts due to the occurrence of fewer environmental incidents / correct response to incidents	Pos	Undertake environmental awareness training as per the Environmental Awareness plan provided in this document.	As per the EAP	NEMA
	- Fuel (diesel for vehicles) - Hydrocarbons (both new and old oil)	Pollution of soil, surface and ground water	Spillages of fuel / oil during dispensing	Pollution of soils in the vicinity of the tank and the potential pollution of storm water flowing over polluted soils	Neg	• Fuel / oil dispensing to take place over a concreted surface (except when refuelling using a diesel bowser) • Fuel / oil spillages to be dug up and polluted soils to be either - disposed as hazardous waste or - undergo bioremediation treatment	LoM	NEMA
			Slow leaks from the fuel tanks (See emergency incidents for large spills / leaks)		Neg	Fuel storage tanks, new oil and old oil to be contained within bund facilities that have the following specifications/ properties: • Has the capacity to contain 110% of the volume stored • Constructed of impervious material • Be free of cracks • Have an outlet that is closed by a valve Monitor fuel use and investigate unexplained spikes / high usage.	LoM	NEMA
	- Maintenance activities - Waste (workshop)	Pollution of soil, surface and ground water	Spills resulting from the storage and use of hydrocarbons, as well as leaks from old equipment	Pollution of off-site water bodies (if storm water flows into water courses) / ground water if spills remain in the soils for extended periods	Neg	Ensure good housekeeping in and surrounding the workshop. All normal maintenance activities to take place within designated concreted area. Emergency maintenance outside the workshop to take place over plastic lining. Maintenance schedules to be followed for each vehicle. Daily inspection checklists to be used to ensure vehicles are maintained when hydrocarbon leaks are identified. All used oil to be collected for recycling Use of drip trays under parked vehicles (if necessary) All waste that has the potential to leak hydrocarbons must be stored on a concreted surface	Daily LoM LoM LoM LoM LoM	NEMA NEM:WA

Activity		Aspect	Source / Cause	Impact		Impact Management Actions	Timeframe	Compliance
						The mine must develop and implement a Standard Operating Procedure (SOP) for the Workshop / Vehicle Washing Bay and oil separator. Management procedures should include: • Inspection frequency of facilities and records of inspections • Spill reporting and emergency procedures for the containment and clean-up of spillages of hazardous chemical substances • Water management strategy; • Regular inspection, servicing (including bio-augmentation) and record-keeping the existing (or any other) French-drain;		
	- Waste (hazardous and general)	Pollution of soil, surface and ground water	Poor storage of waste.	Pollution of soils and the potential pollution of storm water flowing over polluted soils	Neg	General requirements for the storage of waste: • Containers must be intact and not corroded or in any other way unfit for the safe storage of waste. • Adequate measures are taken to prevent accidental spillages or leakages • Waste cannot be blown away Nuisances such as odours, visual impacts and breeding of vectors do not arise • Pollution to the environmental and harm to health are prevented General Requirements of Waste Storage Containers: • A liquid waste container must be of sufficient strength and structural integrity to ensure that it is unlikely to burst or leak in its ordinary use. • Waste that is spilled or blown by wind during opening, handling or storage must be contained. • Hazardous waste must be stored in covered containers and only open when waste is added or emptied. • Below-ground pipes connected to the container must be protected from physical damage (e.g. excessive surface loading, ground movement or disturbance). If mechanical joints have to be used, they must be readily accessible for inspection. • A hazardous waste storage container, associated piping and equipment must be of sufficient structural strength to withstand normal handling and installed on stable foundation. • The foundation of a hazardous waste storage container must be protected from, or resistant to all forms of internal and external wear, vibration, corrosion, fire, heat, vacuum and pressure which might cause the storage tank foundation to fail. Document a waste disposal system which must be communicated to all employees as part of environmental awareness training. Waste disposal records providing appropriate disposal must be maintained.	LoM LoM Monthly / annually LoM	NEM:WA
6. Concurrent Rehabilitation	General					Develop and implement a Concurrent Rehabilitation Plan which details the following: • Plan of the areas already rehabilitated/ vegetated. • Map of the areas proposed for rehabilitation/ vegetation in the near future. • Guidance regarding slope preparation / planting of indigenous vegetation • Monitoring of re-vegetated areas. • Specific “Lessons Learned” that should not be repeated.	LoM	NEMA NEM:BA
	- Alien vegetation control / removal	Alien vegetation	Control or removal of alien vegetation within the Mining Area	Reduced potential for increase in density of alien vegetation	Pos	Development and Implement an alien vegetation management plan.	LoM	NEM:BA
	- Vegetation of overburden stockpiles / berms	Vegetation / Ecology	Vegetating the surfaces of the overburden stockpiles / berms	Establishment of vegetation cover and faunal habitats within the Mining Area	Pos	Implement the ecological management plan completed during the construction activities. Vegetate the surface of the overburden stockpiles / berms / exposed surfaces with indigenous vegetation. Monitor all berms / stockpiles for signs of erosion. Any erosion noted should be fixed.	Within 1 year of being created Bi-annually Within 1 month of being noted	CARA
		Erosion of soil		Reduced potential for erosion	Pos			

	Activity	Aspect	Source / Cause	Impact		Impact Management Actions	Timeframe	Compliance
7. Decommissioning and closure	Closure of the mine	All environmental aspects and socio-economic impacts	Planned and controlled closure of the mine at the end of exploitation of viable utilisation of the available mineral resource	Environmental and social impacts	Pos	Develop a mine closure plan in line with the requirements of Appendix 4 the Financial Provision Regulations, 2015. The mine closure plan should incorporate; • Compliance with the relevant legislation of the time. • Ensure the safety and health of humans and animals are safeguarded from hazards resulting from the mining operations. • Alignment with the IDP at the time of closure. • Undertaking of a consultation process with I&AP concerning closure and Incorporation of views raised by the I&AP. • Rehabilitate the land to, as far as is practicable, a state where by it can complement surrounding land use activities at the time of closure and does not represent a source of pollution. • Re-use or recycle materials during closure, i.e. salvage material where possible. • The mine will be closed efficiently and cost effectively. • Limit the socio-economic impact result from mine closure.	By February 2019	MPRDA NEMA
	Closure of the mine	socio-economic	Closure of the mine	Loss of jobs source of aggregate	Neg	5 years prior to the planned end of the life of mine adapt the S&LP to place more emphasis on closure planning and multiskilling of the workforce. Discuss future mine closure with interested and affected parties during the appropriate stakeholder engagement processes. Ensure that the all future closure requirements are incorporated into the long term life of mine plan.	5 year prior to end of life. Annually Every 5 years	MPRDA NEMA
8. Emergency Incidents	General				Neg	Ensure that all emergency assembly points are: • Clearly labelled, • Documented, and • Communicated to all employees. • Emergency numbers to be displayed at all assembly points. Conduct emergency drills / mock exercises of environmental emergency incidents to practice and perfect response. This will minimise the safety and environment impacts of real emergencies. If this identified deficiencies in the management actions, the relevant procedures will be amended. Relevant government / Municipal departments will be contacted within 14 days of an emergency incident which has resulted in environmental impacts / pollution. Notifications will be as per the relevant legislation: i.e.: • As per Section 30 of NEMA, and • As per Section 20 of the NWA and Regulation 2(d) of GN704 for impacts on water quality.	LoM	NEMA, S30 NWA, S20
	Non conformances				Neg	Should an environmental impact occur which is outside the normal operating environmental conditions of the mine (and is not considered an environmental emergency), it can be raised as a non-conformance. Non-conformances can be raised by any employee, customer or interested and affected party. If a non-conformance is raised the mine will: • Record the non-conformance and undertake the following actions - Implement corrective action if required. - Identify the root cause of the non-conformance. - Identify and implement preventative actions to ensure that it does not re-occur. - Once all actions and investigations have been completed, it can be documented and signed off.	LoM	NEMA
	- Hydrocarbon spills	Pollution of soil, surface and ground water	Large scale spills of hydrocarbons resulting from a ruptured tank	Pollution of soils and potentially off-site water bodies (if storm water flows into water courses) / ground water if spills remain in the soils for extended periods	Neg	Should a large hydrocarbon spill occur, the mine will; • Stop the source of the spill • Contain the spill (utilising fine material on-site or material from the spill kits), • Lift all contaminated "soils", and Dispose at a licenced hazardous disposal facility or implement bioremediation of the contaminated "soils" • Report the incident to the authorities	Immediately stop source Within 24 hours of incident Within 14 days of incident	NEMA, S30 NWA, S20

	Activity	Aspect	Source / Cause	Impact		Impact Management Actions	Timeframe	Compliance
	- Fire		Smoke emissions from a fire	Air pollution as a result of smoke emissions	Neg	The potential for the spread of veld fires will be reduced by: • Cutting vegetation from around buildings • Maintaining fire breaks around the property. • Maintained fire extinguishers will be available within the plant area and in the admin offices. • Awareness training will include procedure required to alert emergency services.	Daily during the Life of Mine	Veld fire act
9. Socio-economic	- Job creation	Employment	Employment provides an income	Reduced unemployment	Pos	The goal of the mine is to exclusively employ locally (unless the required skills are not available within the local area) Employees will be subject to the various educational opportunities as captured in the social and labour plan. The implementation of this plan will be report on annually.	LoM	MPRDA
	- Providing aggregate for the construction industry	Raw material - construction	Raw materials facilitate the implementation of construction related projects	Providing a resource to allow for construction related projects to proceed	Pos	Aggregate produced will be sold locally into available market	LoM	MPRDA
	- Social upliftment	Community	Support of community initiatives	Community upliftment	Pos	Implement the community upliftment projects captured within the social and labour plan.	LoM	MPRDA

e) IMPACT MANAGEMENT OUTCOMES

Details of the impact management outcomes are provided in Table 14 above and not repeated in this section.

f) IMPACT MANAGEMENT ACTIONS

Details of the impact management actions are provided in Table 16 above and not repeated in this section.

i) FINANCIAL PROVISION[3]

(1) Determination of the amount of Financial Provision

(a) ***Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under Regulation 22(2)(d) as described in ~~2.4~~ Part A, (3)(g)(iv)(1)[4] herein.***

The objectives for future mine closure (which based on available reserves, will be over 60 years' time) will include:

- Mine closure will comply with the legal requirements of the day when closure is implemented.
- Closer to the time of closure (10 years prior to known closure) the regional integrated development and spatial development plan will be scrutinised to identify a final closure option which compliments surrounding requirements (at the time of closure).
- Final closure option will be chosen with the input of interested and affected parties.
- At the end of the life of mine, the quarry will be made safe through sloping at least the top 2 benches to an angle of repose. Water will be allowed to accumulate in the base of the quarry.
- All infrastructures (with no future value for the landowner at the time of closure) will be demolished and removed from site.
- The site will be assessed for potential contamination. Any contamination noted will be appropriately removed.
- All disturbed surfaces will be profiled, top soiled and revegetated.
- If necessary, the material contained in the berms and dumps will be used as a medium to profile areas and to encourage revegetation. If not required the berms and dumps will be left re-vegetated.

(a) ***Confirm specifically that the environmental objectives in relation to closure have been consulted with landowner and interested and affected parties***

The landowner (Tradmil Trading 10 (Pty) Ltd) supports both the application for a mining right and the proposed closure objectives contained above.

The Hlapolosa family have highlighted that if mining is authorised and the pits are developed, it will change the future landuse of the site permenantly. They have a land claim lodged and do not support the change of landuse.

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

A rehabilitation plan in line with the 2015 Financial Provison Regulations will be completed prior to February 2019 (as contained in the management measures)

---

[3] *The template provided on the DMR website does not have headings for numbers "g" and "h". Numbering has been maintained as per the template.*

[4] *The template provided on the DMR website has an error in the reference to a former section of this report. This has been crossed out and amended by underlined text.*

Commitments have been made in the document to generate a concurrent rehabilitation plan and an alien vegetation plan. These plans will focus on achieving the following:

- Develop berms and revegetate them along the proximity of the mining right area
- Plant trees to visually obscure the mining right activities from the D1321
- Plant trees within the buffer zone for the graves
- Implement an alien vegetation removal programme and replace with indigenous vegetation.

(c) *Explain why it can be confirmed that the rehabilitation plan is compatible with the closure objectives*

Due to the extended life of mine (65 years) specific closure objectives have not been captured. The rehabilitation plan prescribed above is compatible to generic closure goals such as revegetation of disturbed areas and mitigating the visual impact of the mine.

(d) *Calculate and state the quantum of the financial provision required to manage and rehabilitate the environment in accordance with the applicable guideline*

Amount proposed to rehabilitate the mine;

- **Existing Disturbance**: Based on the existing disturbance an amount of R 1 163 000.00 is estimated to be the amount required to rehabilitate the current site.
- **End of Life Disturbance** (at present day costs): Based on the intended activities to be implemented over the proposed life of mine, a present day, end of life of mine liability has been calculated as R 8 117 000.00.

Details of how the calculation has been ascertained is provided in **Appendix A12**.

(e) *Confirm that the financial provision will be provided as determined.*

The amount calculated above will be provided for, in the form of a financial guarantee.

Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including:

The need for monitoring is to ensure good environmental performance and compliance to legal requirements. In order to achieve this, Prime Spot must make use of their environmental monitoring results to ensure continual improvement in environmental management. ***All results from monitoring will be used to guide future environmental management and provide a benchmark against which to measure continual improvement in terms of environmental performance***.

Each monitoring network will be established to identify problems and measure the success or effectiveness of management measures. In order to achieve this, monitoring protocols must be developed for all monitoring networks. These monitoring protocols must provide the following information:

- Objectives of the monitoring programme.
- Location of monitoring points (GPS co-ordinates), a map illustrating the location of the sampling points relative to mine infrastructure and pollution sources. This must be accompanied by the motivation for the site selections.
- Method of monitoring.
- Frequency of monitoring – supported to reference to SANS where possible.
- List of parameters to monitor for and the reason why these parameters have been selected. i.e. linked to pollution sources at the mine.
- What guidelines and / or standards will be used as performance indicators. The reason(s) for using these standards or guidelines. This is particularly important for water sample analysis as the guidelines used as indicators will vary depending on a number of site-specific factors.
- Details concerning how the results will be presented. The presentation of the results must be in a manner that easily indicates when guidelines have been exceeded. The results must be presented in such a way that trends can be established and monitored. Historic results should be presented at the same time as presenting new results
- How the results will be used to provide guidance to the mine. An explanation as to how exceedance of standards or guidelines will be highlighted and how the probable cause for the exceedance will be identified. A commitment to presenting guidance regarding what action to be taken in the event of the appropriate standards or guidelines being exceeded. It must be noted that in the event of an exceedance of standards or guidelines and / or permit conditions, a report must be submitted to the relevant authorities in writing within 14 days. This report must include:
- Details of the incident that caused the exceedance.
- Corrective action plan to clean up / avoid recurrence.
- Time frame / schedule for implementation of corrective action.
- Where the results will be stored.

Table 17 below provides a summary of the impacts which will be subject to monitoring programmes.

Table 17: Monitoring programmes to be implemented

SOURCE ACTIVITY	IMPACTS	FUNCTIONAL REQUIREMENTS	ROLES & RESPONSIBILITIES	MONITORING & REPORTING FREQUENCY
Blasting	Ground vibration Air blast Fly rock	See monitoring requirements contained in the blasting specialist study contained in **Appendix 9** A monitoring programme for recording blasting operations by a third party is recommended.	Certified blaster Third party service provider to undertake monitoring.	Every blast. Monitoring results to be made available to Rand Water after each blast.

<table>
<tr><th>SOURCE ACTIVITY</th><th>IMPACTS</th><th>FUNCTIONAL REQUIREMENTS</th><th>ROLES & RESPONSIBILITIES</th><th>MONITORING & REPORTING FREQUENCY</th></tr>
<tr><td></td><td></td><td>The following elements should be part of such a monitoring program:
• Ground vibration and air blast results
• Blast Information summary
• Meteorological information at time of the blast
• Video Recording of the blast
• Fly rock observations

Possible monitoring positions include;
<table><tr><th>Tag</th><th>Description</th><th>Y</th><th>X</th></tr><tr><td>44</td><td>Farm Buildings/Structures</td><td>94470.70</td><td>2963028.96</td></tr><tr><td>47</td><td>Graveyard (inside Mining Area)</td><td>94702.56</td><td>2961903.67</td></tr><tr><td>48</td><td>Buildings/Structures</td><td>96020.90</td><td>2962775.77</td></tr><tr><td>55</td><td>Rand Water Board Canal</td><td>95533.62</td><td>2962488.07</td></tr><tr><td>62</td><td>Rand Water Board Canal Bridge</td><td>95690.39</td><td>2962195.65</td></tr><tr><td>71</td><td>Graveyard (inside Mining Area)</td><td>94944.93</td><td>2962291.63</td></tr></table>
These points will need to be re-defined with the initial first blast and consider the final blast design</td><td></td><td></td></tr>
<tr><td>• Mining in general</td><td>Water quantity & water quality</td><td>For detail on the reporting requirements see monitoring requirements contained in the groundwater specialist study contained in Appendix 4
The following tables provide an indication of the proposed monitoring points, the monitoring schedule and parameters to be monitored.</td><td>Third party service provider with experience in water quality monitoring</td><td>See monitoring schedule
Reporting in terms of the WUL will take place based on the conditions of the WUL.</td></tr>
</table>

<table>
<tr><th>SOURCE ACTIVITY</th><th>IMPACTS</th><th>FUNCTIONAL REQUIREMENTS</th><th>ROLES & RESPONSIBILITIES</th><th>MONITORING & REPORTING FREQUENCY</th></tr>
<tr><td></td><td></td><td>

Table 7.1 Proposed monitoring points

Monitoring System	Monitoring Point	Sampling Horizon (mbc)	Description
Groundwater	WP117	Pump intake	Existing Prime Spot water supply borehole
	WP118	Pump intake	External users' supply borehole
	WP119	Pump intake	External users' supply borehole
	WP120	Pump intake	External users' supply borehole
In-Pit water	WP121	Below surface	Existing aggregate quarry
Mine discharge water (wastewater)	To be established		At discharge point
Wastewater re-use	To be established		Dust suppression
Surface water	WP124	Below surface	Southern intermittent stream
	WP125	Below surface	Northern intermittent stream
Rainfall	To be established		Rainfall monitoring

Table 7.2 Proposed monitoring schedule

			Daily	Weekly	Monthly	Quarterly	Annually
Groundwater	Monitoring boreholes	WP117	[#]	[#]	[*] [#]	[*] [#] List 1(c) & List 2	[*] [#] List 1(c) & List 2
		WP118 WP119 WP120			[*]	[*] List 1 a & b	[*] List 2
In-Pit water		WP121			[^] List 1 a & b	[^] List 1 a & b	[^] List 2
Mine discharge water		To establish	[#]	[#]	[#] List 3	[#] List 3	[#] List 3
Mine water re-use dust suppression		To establish	[#]	[#]	[#]	[#]	[#]
Surface water		WP124 WP125			[^] List 1 a & b	[^] List 2	[^] List 2
Rainfall		To establish	[!]	[!]	[!]	[!]	[!]

[*] = Monitor water level
[^] = Monitor stage height, dam level, stream/spring flow estimation/description
[#] = Monitor metered discharge volume
[!] = Rainfall record

Table 7.3 Proposed lists of variables for analyses

List 1	List 2	List 3
a) pH (handheld instrument) Electrical Conductivity (handheld instrument)	pH, EC, TDS, T.Alk, Cl, SO_4, F, NO_3, & ICP-MS Scan	Table 6.9. Wastewater limit values for not listed (General Limit) water resources (Sections 21(f) and (h)).
b) Faecal Coliforms (per 100 ml)		

</td><td></td><td></td></tr>
<tr><td>• Mining in general</td><td>Dust fallout</td><td>Monitoring dust fallout will be implemented using samplers to trap the dust in accordance with the acceptable sampling technique recommended in GNR 827 and SANS 1929. This method is briefly described as follows:
The sampler (also known as a bucket) includes an open topped cylinder not</td><td>External service provider with experience of implementing a dust fallout monitoring</td><td>Evaluation of dust fallout rates against standards in GNR 827, presented in monthly reports.</td></tr>
</table>

SOURCE ACTIVITY	IMPACTS	FUNCTIONAL REQUIREMENTS	ROLES & RESPONSIBILITIES	MONITORING & REPORTING FREQUENCY
		less than 150 mm in diameter with a height not less than twice the diameter (The "buckets" used are as close as possible to these specifications, but are limited by the size of commercially available buckets). Buckets to be made of weatherproof plastic. The top of the bucket is located at least 2 m above ground. The sampler is to be fitted with a wind shield. The bucket is exposed for a continuous period of one calendar month, ±2 days. After exposure, the bucket must be covered with a lid on-site and sent to a reputable laboratory where the dust will be washed from the bucket. At the laboratory, the water is filtered (through a 1mm sieve) and the residue dried before the insoluble dust is weighed. The network must include a minimum of four sampling sites but must be sufficient to monitor dust fallout at representative locations around the source. The monitoring network will be established before any physical construction activities are implemented. Monitoring will be implemented for a continuous period of at least a year of the operational mine. If (and only if) the results indicate that dust levels (of the operational mine) are acceptable (less than non-residential standard on the boundary of the mine) then after a year, monitoring can be suspended. Monitoring must be re-instated if there is a change of scope to the mine or if valid complaints are received.	network	
• Mining in general	Environmental noise levels	Environmental (boundary and off site) noise monitoring will be implemented should complaints about noise levels be received. The survey will be undertaken in accordance with SANS 10103:2008 The evaluation of sound level readings will be against applicable district rating levels in SANS 10103	External service provider	Adhoc should complaints about noise be received.
• Mining in general	Use of non renewable resources	Other monitoring includes; • Monitoring fuel and oil use • Monitoring water use in the form of a water balance diagram. Where	Mine manager	All of the adjacent monitoring requirements should be assess and

SOURCE ACTIVITY	IMPACTS	FUNCTIONAL REQUIREMENTS	ROLES & RESPONSIBILITIES	MONITORING & REPORTING FREQUENCY
		necessary flow meters to be installed. • Monitoring electricity use • Monitoring waste generation • Monitoring levels in the septic tank		reported on monthly.
• Mining in general	Ecological	• Monitoring the success of the implementation of concurrent rehabilitation (planting trees / vegetating berms) • Monitoring the success of the removal of alien vegetation	Mine manager	Monitored and report on every 6 months.

l) INDICATE THE FREQUENCY OF THE SUBMISSION OF THE PERFORMANCE ASSESSMENT REPORT[5]

An independent environmental consultant will be commissioned to undertake an Environmental Performance Assessment of the EMP ***every two years*** and submit it to the DMR.

Reccomendations from the audit will be implemented by the operation.

m) ENVIRONMENTAL AWARENESS PLAN

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

Prime Spot recognises the importance of making all employees aware of the potential environmental impacts that could result from conducting their jobs and how this potential can be minimised through mitigation measures and effective training.

Environmental awareness of the employees at Prime Spot will be provided by implementing training through the following methods:

- Green area meeting (*weekly*)
- Induction courses (*annually*)
- Adhoc Environmental training

It is important to note that the environmental awareness programme is a living document and should be reviewed regularly to ensure that relevant environmental concerns are discussed and the potential impacts of such concerns are minimised.

Green Area Meetings: Green area meetings will take place on a weekly basis between the team leader / mine manager and his team. These meeting will focus on job related matters and are ideal to;

- facilitate awareness of job-specific environmental dangers and
- educate employees as to how they can live a more sustainable lifestyle outside work.

The method and medium of communication during the environmental green area meetings will be determined by the team leader facilitating the meeting. The topics discussed in each of these dedicated environmental green area meetings will be recorded in a **log book**, with all employees present signing an attendance register

Topics for Discussion: As potential environmental impacts differ in each area / unit of the mine, the focus of the environmental issues discussed with employees may differ in each area / unit. The environmental topics selected for discussion can either be:

a) General topics applicable to the entire operation.
b) Topics that can be "taken home" and implemented off-site.

Note: For ease of understanding, impacts have been highlighted in bold italics with reasons for the impacts indicated in italic text.

General Topics: There are a number of environmental impacts resulting from the mining operation that are caused by more than one activity and are therefore considered to be general impacts (entire operation impacts) that are applicable throughout the mine. These topics should be discussed at least once a year in all areas / units. General topics include:

[5] *The template provided on the DMR website does not have headings for numbers "j" and "k". Numbering has been maintained as per the template.*

- **No go areas** - Knowing and avoiding the no go areas such as the demarcated graves and buffer or the wetlands. No poaching rules and need to destroy snares if noted.
- **Heritage sites** – The sensitivity of heritage sites and the possibility of unearthing other heritage findings.
- **Traffic** - Rules of the road and considerate driving behaviour
- **Waste management** including minimisation, proper disposal and recycling. This should also make employees aware of the correct use of the sanitation system provided.
- **Emergency incidents**: Details of the procedure to follow during emergencies inclusive of practical training regarding the clean-up of major and minor hydrocarbon spills.
- **Reporting non conformances**: Informing employees of what constitutes a non conformance and how it should be reported and handled.
- **Dust and Noise** generation and there related impacts
- Potential for **water pollution** (from exposed surfaces or from hydrocarbon spills) and the related impacts. Need to implement effective storm water management.
- Reducing use of electricity / fuel / oils.
- **Alien vegetation** identification and removal, and the importance of indigenous vegetation – reduce the demand on groundwater.
- **Social impact** of the mine - – relate it to public perception and how this influences restrictions on the operation.
- The **importance of topsoil** – relate it to cultivation of crops. The difference between topsoil and overburden – serve different purposes in rehabilitation

Take-home Topics: Environmental awareness should not stop at the work place. Many of the concepts learned at work can be applied to employees' life styles at home. Topics that can be covered under "take home topics" include, but are not limited to:

- Water consumption and conservation – South Africa is a "water scarce" country.
- Energy consumption and conservation – Considering our current energy crisis.
- Waste minimisation and recycling.

Type and Frequency of Meetings

One green area meeting every month will be dedicated to discussing environmental concerns and ways of minimising the potential for pollution generation. The topics of discussion and the medium of presentation will be determined by the team leader (as described above).

The following management measures are applicable to the green area meeting:

Impact: Management & Mitigation	Timeframes
Develop training sheets for each topic to be discussed which can be used by the team leaders. These must be signed and kept as records.	During construction.
The topics discussed in each environmental dedicated green are meeting will be noted in a log book. An attendance register must be signed.	During every meeting.
The method and medium of discussion will be determined by the team leader facilitating the meeting. The intention is to be informal and practical.	

In addition, to the once a month dedicated environmental green area meetings, environmental topics will be discussed at a green area meeting if an environmental incident occurred within an area /unit during the previous week. During the meeting, the following topics will be discussed (this is not an exhaustive list):

- How and why the incident occurred.
- How the incidents was cleaned up (if applicable).
- Evaluation of the clean-up or response by staff.
- Can the clean-up or response be improved.
- What preventative measures should be implemented / what can be done to reduce the likelihood of the incident recurring.

Induction Training
All new employees and contractors will undergo an induction course when they are employed/ hired by the mine and all employees and contractors will undergo a refresher induction course once a year. Environmental awareness forms part of this induction course.

The outcome of the environmental component is to inform / remind employees of the environmental management measures that must be implemented. The following topics are to be included within the induction course:

- **Waste management** at Prime Spot – details about the waste management system and the need to separate and dispose of waste correctly. The reasons and benefits of **good housekeeping** – ease of identification of concerns and pollution minimisation.
- **Heritage findings / graves** on the site and the need to adhere to no-go areas. The potential to uncover other heritage resources during mining activities.
- **Social impact** of the mine - relate it to public perception and how this influences restrictions on the operation. This should also cover the need to adhere to the rules of the road and implement considerate driving behaviour.
- **Emergency incidents and reporting non conformances.** Provide
- **Water management,** inclusive of why there is a need to keep clean and dirty water separate and ensure that oil spills are cleaned up immediately (including the basic steps of what to so if there is a small hydrocarbon spill.
- What **dust and noise** suppression measures are available throughout the mine and why they must be implemented**.**
- Concepts of **sustainability** which must include:
  - Definition of a sustainable development - "development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs".
  - An explanation of the "Triple Bottom Line" of a sustainable development; i.e. balancing environmental, social and economic factors.
  - An example of sustainable developments. These should be selected based on the audience.
- Tips on how to live a more sustainable lifestyle such as;
  Save water by:
  - Turning off the tap when not using the water, e.g. while brushing your teeth.
  - Only watering garden or crops when necessary and not during the heat of the day (between 10am and 3pm).

  Reduce energy / electricity consumption by:
  - Using energy efficient light bulbs.
  - Not leaving lights on when not required.
  - Closing doors and covering windows, during cold weather, to keep the heat in the house and to reduce the need for space heating.

  Waste minimisation – Reduce, Reuse and Recycling.
  - Recycle where possible.
  - Buy products in recyclable packaging.

  Buy locally made / grown products (reduce impacts associated with transportation and encourage local job creation).

Adhoc training:
When possible team leaders / mining management will obtain additional environmental awareness training. This could include aspects such as;

- Introduction to environmental laws and the learning of pertinent environmental legal requirements
- How to undertake an environmental risk assessment
- The need for monitoring and how to interpret the results from monitoring campaigns.
- Heritage sites and importance of heritage resources

(2) Manner in which risks will be dealt with in order to avoid pollution or the degradation of the environment

Managing Non-Conformances:

Management & Mitigation	Timeframes
1. Non-Conformances: • Should an environmental impact occur which is outside the normal operating environmental conditions of the mine (and is not considered an environmental emergency), it must be raised as a non-conformance. • Non-conformances may be raised by any employee, customer or interested and affected party. If a non-conformance is raised the mine: – Record the non-conformance and undertake the actions described below. • For reported non-conformances, the applicable responsible person must: - Implement corrective action if required. - Identify the source of the non-conformance. - Identify and implement preventative actions to ensure that it does not re-occur. - Once all actions and investigations have been completed, it be documented and signed off. - Retain all documents pertaining to the non-conformance to be made available for inspection.	LoM

Managing Emergency Incidents:

Emergency incidents / accidents can be defined as incidents / accidents having the following criteria:

- The likelihood of these incidents / accidents occurring is considered to be very low or may never take place during the life of the mine.
- The environmental impacts associated with these incidents / accidents may be significant.
- It is essential that the mine personnel know how to respond in the event of an environmental emergency situation in order to avoid significant environmental degradation / impacts or injury to human health.

Ideally such incidents should not occur if mining personnel implement all necessary management measures. However, despite the best intentions and the best environmental management practices, it is impossible to ensure that no incidents / accidents ever occur on a mining site. Therefore, it is vital to ensure that all personnel are aware of the management measures to be undertaken in the event of an accident.

Overall Management

Although there are emergency specific management measures to be implemented (discussed separately for each identified emergency incident), there are also common management measures that must be applied throughout.

Management & Mitigation	Timeframes
• Assembly points must be: - Clearly labelled. - Documented. - Communicated to all employees.	LoM.
• Emergency numbers are to be prominently displayed.	LoM.
• Conduct emergency drills / mock exercises of emergency incidents to practice and perfect response. This will minimise the safety and environment impacts of real emergency.	Annually.
• If this identifies deficiencies in the management actions, amend relevant procedures	Within a week.
• Report any emergency incidents to the relevant government / municipal departments within 14 days of the incident.	When an incident occurs
• General environmental incidents must be reported to environmental authorities, as required in Section 30 of the NEMA.	When an incident occurs

Large Hydrocarbon Spills (spills resulting in a surface pollution spread of greater than 2m^2).

Goals and Objectives: Prevent extensive pollution as a result of a hydrocarbon spill. In the event that a spill occurs (despite management measures), immediate ***clean up*** steps should be taken as described below, followed by the ***reporting*** of the incident.

Clean up Procedures	Timeframes
Prevention Steps: • Prevent vehicles that are in a state of disrepair (leaking diesel or oil) from operating. • Ensure that the diesel bowser is maintained in a good condition and does not leak. • Train employees on fuel dispensing techniques to minimise the potential of a spills. • Implement daily vehicle checks for oil leaks.	LoM
Clean-up Steps: • The source of the spill must be stopped and the spill must be contained.	In the event of a spill.
• All contaminated material must be lifted and stored in containers that do not leak (the type of container will be determined by the volume of contaminated material to be stored).	
• Dispose of contaminated material as hazardous waste.	LoM
• Keep a record of the collection. • Retain proof of disposal (waste manifest documents) from the hazardous waste disposal company that this waste was disposed of at a suitably licensed facility.	LoM
Reporting: • Report the incident as per the requirements in Section 30 of the NEMA.	Within 14 days.

Fire

Goals and Objectives: Prevent the spread of fires.

Management & Mitigation	Timeframes
Vehicle/equipment Fires: • Fire extinguishers to be available in all vehicles and must be checked on a monthly basis.	LoM.
• Fire extinguishers to be checked by a qualified person.	Annually.
• If the fire cannot be controlled by the person who discovers the fire, it will be reported to the emergency services.	Immediately.
Training: • Selected employees who form the firefighting team will undergo fire drill training. • Records of training must be retained.	Annually.

n) SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

(Among others, confirm that the financial provision will be reviewed annually).

Prime Spot will:

- Commission an independent consultant to undertake an Environmental Performance Assessment of the EMP every **two years** as per regulation (in terms of GNR 982, Regulation 34 of the National Environmental Management Act, Act No. 107 of 1998, as amended) and submit it to the DMR.
- Commission an independent consultant to undertake a review of the financial provision calculation **annually** as per the regulation (in terms of GN 1147 of the National Environmental Management Act, Act No. 107 of 1998, as amended) and submit it to the DMR.
- Report to the DMR on compliance to the approved **social and labour plan** annually

2. UNDERTAKINGS

THE EAP HEREWITH CONFIRMS

a) The Correctness of the Information Provided in the Reports ☒
b) The Inclusion of Comments and Inputs from Stakeholders and I&APs ☒
c) The Inclusion of Inputs and Recommendations from the Specialist Reports where Relevant ☒
d) That the Information Provided by the EAP to Interested and Affected Parties and any Responses by the EAP to Comments or Inputs made by Interested and Affected Parties are Correctly Reflected herein ☒

Signature of the EAP: _____

Name of company: Umhlaba Environmental Consulting CC

Date: 27 July 2017

UNDERTAKING BY PRIME SPOT TRADING 11 (PTY) LTD

I, N.F van Tonder, hereby declare that the information regarding the proposed activities in this document is true, complete and correct and that I undertake to implement the measures as described in this Environmental Management Programme report. In addition to the implementation of the Environmental Management Programme report, I understand that this undertaking is legally binding and that failure to give effect hereto will render me liable for prosecution. I am also aware that the Regional Manager may, at any time but after consultation with me, make such changes to this programme as he/she may deem necessary.

Signed on this 27 day of July, 2017 at Randburg

Signature: _____

DMR APPROVAL

I, _____[on behalf of the Department of Mineral Resources] hereby approve the Environmental Management Programme for Prime Spot Trading 11 (Pty) Ltd – Application for a mining right and waste management license over Portion 59 (previously a ptn of ptn 1) of the Farm Vischgat 467 IR – Covering 95.7740 Hectares.

Signed on this _____ day of_____, 20_____ at _____

Signature: _____