

FINAL
EIA AND EMPR REPORT

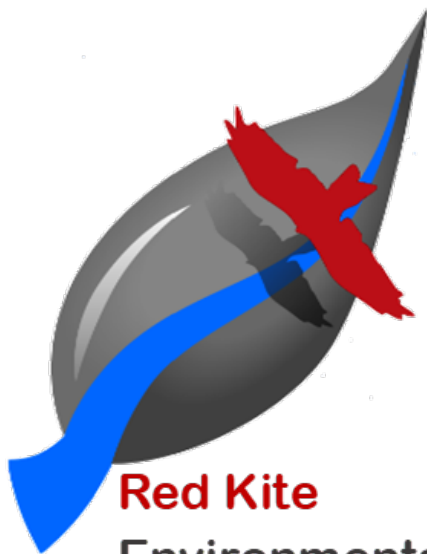
**SEFATENG CHROME MINE (PTY) LTD:
TAILINGS BACKFILLING PROJECT**

**ON THE FARM
ZWARTKOPPIES 413 KS**

LIMPOPO



JUNE 2022



Red Kite Environmental Solutions (Pty) Ltd

Tel: 079 555 2433 | Email: nicole@redkiteconsulting.co.za | PostNet Suite 0111, Private Bag X37, Lynnwood Ridge, 0040



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

FINAL

**ENVIRONMENTAL IMPACT ASSESSMENT REPORT
AND
ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT**

FOR LISTED ACTIVITIES ASSOCIATED WITH MINING RIGHT

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	Sefateng Chrome Mine (Pty) Ltd
Project	Sefateng Chrome Mine Tailings Backfilling Project
Tel No	011 591 0500
Fax No	011 591 0622
Postal Address	PO Box 98549, Sloane Park, 2152
Physical Address	25 Culross Road, Bryanston, 2191
File Reference Numbers SAMRAD	LP 10062 MR

June 2022

IMPORTANT NOTICE

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

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

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

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

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

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

Table of Contents

PART A: SCOPE OF ASSESSMENT AND ENVIRONMENTAL IMPACT ASSESSMENT REPORT

1	CONTACT PERSON AND CORRESPONDENCE ADDRESS	1
1.1	Details of EAP who prepared the report.....	1
1.2	Expertise of the EAP	1
2	DESCRIPTION OF PROPERTY	3
2.1	Locality map.....	3
3	DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY.....	5
3.1	Listed and Specified activities	5
3.2	Existing and/or Authorised Mining Operations	6
3.3	Description of the activities to be undertaken (this application).....	20
4	POLICY AND LEGISLATIVE CONTEXT	23
5	NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES	38
6	PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED.....	51
7	DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED SITE.....	52
7.1	Site Alternatives.....	52
7.2	The type of activity to be undertaken	53
7.3	Design or layout of activity	54
7.4	The technology to be used in the activity.....	54
7.5	The operational aspects of the activity	54
7.6	No Go Option	54
8	DETAILS OF THE PUBLIC PARTICIPATION PROCESS FOLLOWED.....	55
8.1	Objectives of the Public Participation	55
8.2	Identification of I&APs	55
8.3	Notification of I&APs	56
8.4	Notification of I&APs of Reports Availability.....	57
8.5	Access and Commenting Opportunity	58
8.6	Public Meetings.....	58
8.7	Regulatory Consultation.....	58
8.8	Registrations and Comments Received	59
8.9	Addressing Comments and Concerns	59
8.10	Summary of Issues Raised By I&APs From Public Participation	60
9	ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE SITES	73
9.1	Baseline Environment	73
9.2	Regional Location.....	73
9.3	Climate.....	73
9.4	Topography.....	75
9.5	Geology.....	77
9.6	Groundwater	78
9.7	Surface Water	84
9.8	Soils	87
9.9	Flora.....	93
9.10	Fauna	97
9.11	Air Quality.....	104

9.12	Noise.....	105
9.13	Archaeology and Heritage.....	106
9.14	Description of specific environmental features and infrastructure on the site.....	108
9.15	Environmental and Current Land Use Maps.....	110
10	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	111
10.1	SPECIALIST STUDIES/ASSESSMENTS.....	111
10.2	Methodology used in Determining the Significance of Environmental Impacts.....	113
10.3	THE STAGES AT WHICH THE COMPETENT AUTHORITY WILL BE CONSULTED	117
10.4	PARTICULARS OF THE PUBLIC PARTICIPATION PROCESS WITH REGARD TO THE IMPACT ASSESSMENT PROCESS 117	
11	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	118
11.1	Impacts Identified	118
12	IMPACTS AND RISKS IDENTIFIED INCLUDING THE NATURE, SIGNIFICANCE, CONSEQUENCE, EXTENT, DURATION AND PROBABILITY OF THE IMPACTS.....	123
12.1	The Possible Mitigation Measures That Could Be Applied And The Level Of Risk	124
13	SUMMARY OF SPECIALIST RECOMMENDATIONS	128
14	LIMITATIONS AND ASSUMPTIONS	130
15	ENVIRONMENTAL IMPACT STATEMENT.....	132
15.2	Final Site Map	132
15.3	Summary of the Positive and Negative Implications and Risks of the Proposed Activity and Identified Alternatives.....	132
15.4	Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr 133	
15.5	Final proposed alternatives.....	133
16	ASPECTS FOR INCLUSION AS CONDITIONS OF AUTHORISATION.....	133
17	DESCRIPTION OF ANY ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE.	134
18	REASONED OPINION AS TO WHETHER THE PROPOSED ACTIVITY SHOULD OR SHOULD NOT BE AUTHORISED	134
18.1	Reasons why the activity should be authorised or not	134
18.2	Conditions that must be included in the authorisation	134
19	PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED.....	135
20	UNDERTAKING	135
21	FINANCIAL PROVISION	136
21.1	Explain how the aforesaid amount was derived.....	137
21.2	Confirm that the financial provision will be provided as determined.....	137
22	DEVIATIONS FROM THE APPROVED SCOPING REPORT AND PLAN OF STUDY.....	137
22.1	Deviations from the methodology used in determining the significance of potential environmental impacts and risks.....	137
23	OTHER INFORMATION REQUIRED BY THE COMPETENT AUTHORITY	138
23.1	Compliance with the provisions of sections 24(4)(a) and (b) read with section 24 (3) (a) and (7) of the National	

	Environmental Management Act, 1998 (Act No. 107 of 1998) the EIA report must include the:...	138
23.2	Other matters required in terms of sections 24(4)(a) and (b) of the Act.....	138
24	DETAILS OF THE EAP.....	139
25	DESCRIPTION OF THE ASPECTS OF THE ACTIVITY.....	139
26	COMPOSITE MAP	139
27	DESCRIPTION OF IMPACT MANAGEMENT OBJECTIVES INCLUDING MANAGEMENT STATEMENTS... ..	140
27.1	Determination of Closure Objectives	140
27.2	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.....	140
28	ACID MINE DRAINAGE.....	144
28.1	Potential risk of Acid Mine Drainage	144
28.2	Steps Taken To Investigate, Assess, and Evaluate the Impact of Acid Mine Drainage.....	144
28.3	Engineering Or Mine Design Solutions To Be Implemented To Avoid Or Remedy Acid Mine Drainage.....	149
28.4	Measures That Will Be Put In Place to Remedy Any Residual or Cumulative Impact That May Result From Acid Mine Drainage.....	149
29	WATER	149
29.1	Volumes and rate of water use required for the mining, trenching or bulk sampling operation.....	149
29.2	Has a water use licence has been applied for?	149
30	IMPACTS TO BE MITIGATED IN THEIR RESPECTIVE PHASES	150
31	FINANCIAL PROVISION	154
31.1	Determination of the amount of Financial Provision	154
32	MECHANISMS FOR MONITORING COMPLIANCE WITH AND PERFORMANCE ASSESSMENT AGAINST THE ENVIRONMENTAL MANAGEMENT PROGRAMME AND REPORTING THEREON	156
32.1	Detailed Monitoring Programmes as described for NEW Activities	157
32.2	ENVIRONMENTAL MONITORING AND AUDITING.....	159
32.3	General monitoring and management	159
33	ENVIRONMENTAL AWARENESS PLAN	160
33.1	Manner in Which the Applicant Intends to Inform Employees of Any Environmental Risk Which May Result From Their Work	160
33.2	Manner In Which Risks Will Be Dealt With In Order To Avoid Pollution Or The Degradation of The Environment.....	162
34	SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY.....	164
35	UNDERTAKINGS	165
36	APPENDICES.....	166
	Appendix 1: Qualifications of EAP	166
	Appendix 2: EAP's Experience	166
	Appendix 3: Locality map	166
	Appendix 4: Site layout	166
	Appendix 5: Public Participation Report.....	166
	Appendix 6: Groundwater Study	166
	Appendix 7: Surface Water Report.....	166
	Appendix 8: Air Quality Assessment.....	166
	Appendix 9: Soil and Land Capability Assessment	166
	Appendix 10: Closure Plan.....	166
	Appendix 11: WULA Acceptance	166

List of Figures

	Page
Figure 1: Regional locality.....	3
Figure 2: Sefateng Chrome Mine: Zwartkoppies Section locality.....	4
Figure 3: Layout of activities at the Zwartkoppies Section authorised as part of the 2014 Mining Right Application.....	10
Figure 4: Layout of activities at the Zwartkoppies Section authorised as part of the 2014 Mining Right Application.....	11
Figure 5: Sefateng Chrome Mine Expansion footprint.....	15
Figure 6: Roll-over Mining Method.....	17
Figure 7: Layout of tailings backfilling project.....	21
Figure 8: Updated layout of Sefateng Chrome Mine: Zwartkoppies Section.....	22
Figure 9: Annual Windrose (Blowing from).....	75
Figure 10: Topography of the region.....	76
Figure 11: Topographical cross-sections of the greater project area.....	77
Figure 12: Regional geology and stratigraphy (Geological mapsheets 2428 and 2430).....	78
Figure 13: Hydrogeological map illustrating the typical groundwater occurrence for the study area (2326 Polokwane, 2330 Phalaborwa).....	79
Figure 14: Groundwater recharge distribution in South Africa (After Vegter, 1995).....	81
Figure 15: Regional groundwater flow direction and depth to groundwater.....	82
Figure 16: Hydrochemistry: Composite bar-chart indicating groundwater major anion cation composition.....	83
Figure 17: Water Management Areas.....	84
Figure 18: Surface Water Features applicable to the Study Area.....	85
Figure 19: Drainage Direction of the Study Area.....	86
Figure 20: Dominant soil form encountered on the study area.....	89
Figure 21: Land capability of the area.....	92
Figure 22: Distribution of vegetation types according to Mucina & Rutherford.....	93
Figure 23: CBA's and ESA's according to Desmet et al. (2013) in the study area and surrounds.....	97
Figure 24: Protected Areas.....	98
Figure 25: Important Birding Areas (IBA).....	100
Figure 26: Noise sensitive receptors.....	106
Figure 27: Aerial view of areas assessed (Numbered A – E) during October 2018 (Google Earth 2018).....	107
Figure 28: Communities surrounding Sefateng Chrome Mine.....	109
Figure 29: Current land use map of the project area.....	110

List of Tables

	Page
Table 1: Details of EAP	1
Table 2: Activities for Sefateng Chrome Mine Tailings Backfilling Project.....	5
Table 3: Summary of activities included in the approved 2014 EMPr	7
Table 4: Expansion Project Activities applied for in 2018	12
Table 5: Competent Authorities	23
Table 6: Applicable Legislation relevant to the Proposed Project	23
Table 7: Need and desirability considerations	39
Table 8: Locality of Site Notices Placed	56
Table 9: Comments from registered I&APs	60
Table 10: Temperatures.....	73
Table 11: Precipitation Data Relevant to the Properties	74
Table 12: Evaporation Data relevant to the Property.....	74
Table 13: Outline of Quaternary areas and applicable rivers and streams	85
Table 14: Quaternary Catchment Runoff Figures (WR2012)	86
Table 15: A summary of the hectares which each soil form comprise	88
Table 16: Dominant and other taxa associated with SVcb27 (Mucina & Rutherford, 2006).....	94
Table 17: Dominant and other taxa associated with SVcb28 (Mucina & Rutherford, 2006).....	95
Table 18: Mammalian species desktop study	98
Table 19: Threatened avifaunal species with a 60% or greater Probability of Occurrence (POC) within or in the vicinity of the subject property	99
Table 20: Amphibian species within the area (Minter, et al., 2004).....	100
Table 21: Reptiles captured in desktop study (Alexander & Marais, 2007) (Bates, et al., 2014)	101
Table 22: Butterfly species known to occur within the area	102
Table 23: Sensitive Landscapes within the Proposed Mining Site	108
Table 24: Impact Assessment Criteria.....	114
Table 25: Significance-Without Mitigation	115
Table 26: Significance- With Mitigation	115
Table 27: Description of assessment parameters with its respective weighting.....	116
Table 28: Anticipated Impacts associated with the Proposed Project	119
Table 29: Impact Assessment Table (complete with Ratings used to obtain Significance)	123
Table 30: Mitigation measures	124
Table 31: Summary of Key findings in terms of Impact Significance	132
Table 32: Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr	133
Table 33: Rehabilitation Quantum for the Sefateng Chrome Mine Tailings Backfilling Project	136
Table 34: Sefateng Chrome mine Classification	137
Table 35: Geochemical analysis test methodologies	144
Table 36: Leachable Concentration (LC) and Total Concentration (TC) results of sample SCT01 (1:20 dilution)	147
Table 37: Leachable Concentration (LC) and Total Concentration (TC) results of sample MM Silica Tails (1:20 dilution).....	148
Table 38: Mitigation Measures to rehabilitate the environment	150
Table 39: Mechanisms for monitoring	156
Table 40: Groundwater monitoring network.....	158

PART A: SCOPE OF ASSESSMENT AND ENVIRONMENTAL IMPACT ASSESSMENT REPORT

1 CONTACT PERSON AND CORRESPONDENCE ADDRESS

1.1 DETAILS OF EAP WHO PREPARED THE REPORT

Name of the Practitioner:	Nicole Upton
Tel No.:	079 555 2433
Postal address:	PostNet Suite 0111, Private Bag X37, Lynnwood Ridge, 0040
E-mail address:	nicole@redkiteconsulting.co.za

1.2 EXPERTISE OF THE EAP

1.2.1 Qualifications of EAP (set out in Appendix 1)

Please refer to Table 1 for a summary of the qualification and experience of the EAP. Refer to Appendix 1 and 2 for more details (CV).

1.2.2 Summary of EAP's past experience (set out in Appendix 1 and 2)

Please refer to Table 1 for a summary of the qualification and experience of the EAP. Refer to Appendix 2 for more details (experience).

Table 1: Details of EAP

Name	Nicole
Surname	Upton
Company	Red Kite Environmental Solutions (Pty) Ltd
Position	Director – Environmental Assessment Practitioner (EAP)
Location	21 Kingfisher Crescent, Willow Acres, Pretoria, 0081
Email	nicole@redkiteconsulting.co.za
Telephone Number	079 555 24334
Education	BSc Honors Animal, Plant and Environmental Sciences
Professional affiliation(s):	<ul style="list-style-type: none"> • South African Council for Natural Scientific Professions (SACNASP) <ul style="list-style-type: none"> ○ (Registration Number: 121030) • Water Institute of Southern Africa (WISA) <ul style="list-style-type: none"> ○ (Membership No: 39243) • International Association for Impact Assessments (IAIAsa) <ul style="list-style-type: none"> ○ (No. 6185)
Professional summary	Ms. Upton has a qualification in B.Sc. (Hons) Animal, Plants and Environmental Science (Appendix 1) and has 12 years of applicable experience as a project manager on a number of Environmental Impact Assessments (EIAs) and environmental authorisations for predominately industrial and mining clients in the South African market. Nicole has extensive integrated environmental management experience, including, EIAs, implementation of environmental management programmes, environmental monitoring, compliance auditing and monitoring, project management and general environmental support. Refer to Appendix 2 for further details.

Skills	<ul style="list-style-type: none">• Mine Closure financial quantum determination, mine rehabilitation.• Management and coordination of environmental compliance aspects for mining operations.• Alien Invasive Plant monitoring, control and reporting.• Water quality monitoring, measurement, reporting and data analyses including surface water, ground water, process water, sewage water and biological indicators.• Legal compliance auditing and reporting in accordance with the National Environmental Management Acts and other associated environmental related legislation (NEMA listed activities, Water Use Licensing, Waste Licensing, etc.)• Environmental impact assessments and Integrated Water Use License Applications, including rehabilitations plans and IWWMPs.• Environmental Control Officer Site inspections and associated reporting and compliance.• Specialist impact assessments for surface water and ecology.• Conceptual and operational water balances and Water Conservation and Demand Management Plans
---------------	--

2 DESCRIPTION OF PROPERTY

Farm Names:	Zwartkoppies 413 KS
Application area (Ha):	1436.41 ha
Magisterial district:	Sekhukhune District Municipality Fetakgomo Tubatse Local Municipality
Distance and direction from nearest town:	Sefateng Chrome Mine is located approximately 85 km south-east from central Polokwane, on the R37 road.
21-digit Surveyor General Code for each farm portion:	TOKS00000000041300000

The surface ownership associated with the Mining Right is listed in the table below.

Table 1: Surface ownership

Farm Name	Farm no.	Reg Div	Portion	Title deed nr	Extent (ha)	Surface owner
Zwartkoppies	413	KS	0	T40696/2001	1436.4142	Jibeng Inv (Pty) Ltd

2.1 LOCALITY MAP

Please refer to Appendix 3 for the Locality Maps for the project area.

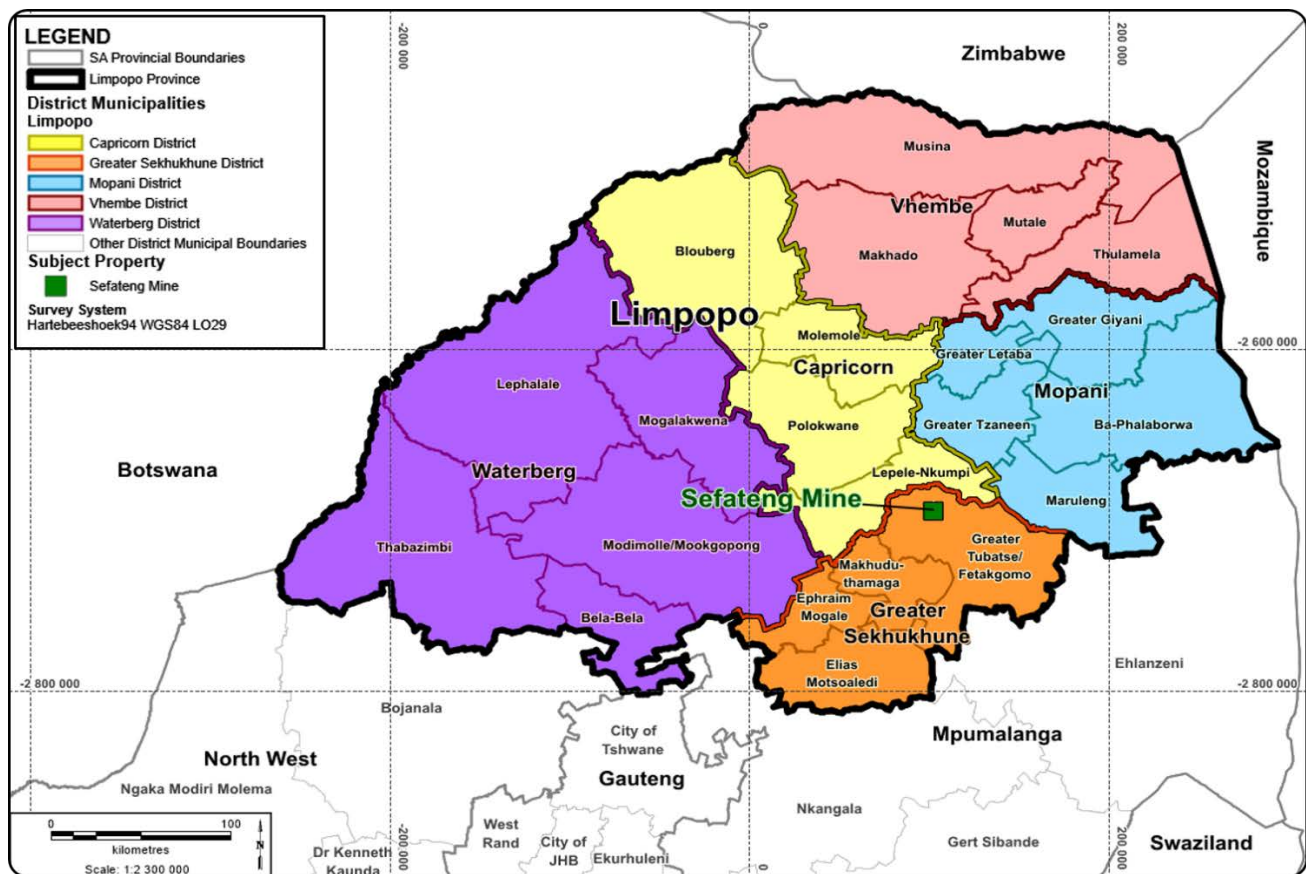


Figure 1: Regional locality

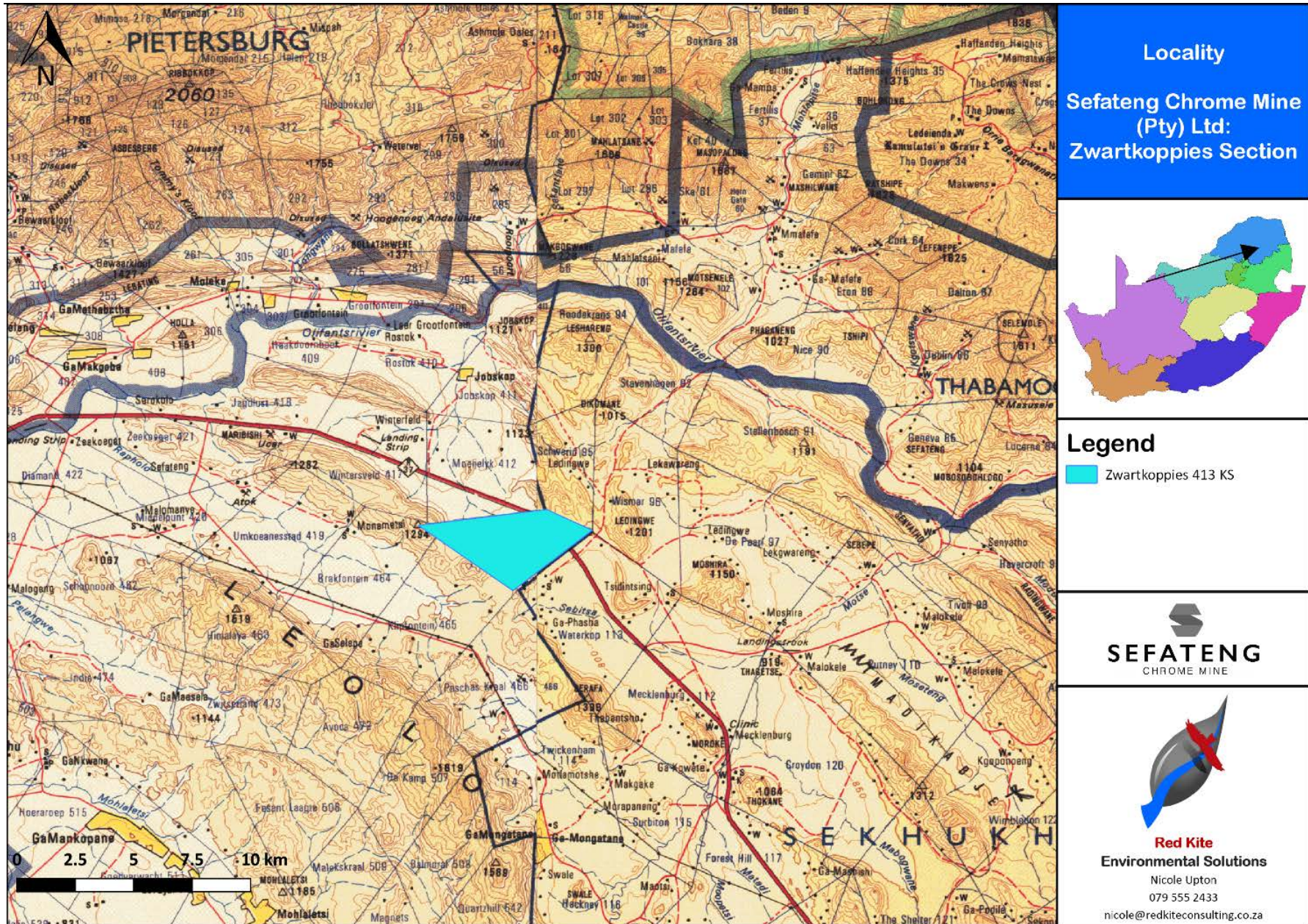


Figure 2: Sefateng Chrome Mine: Zwartkoppies Section locality

3 DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY

Provide a plan drawn to scale acceptable to the competent authority but not less than 1:10 000 that shows the location, and area (ha) of all aforesaid main and listed activities, and infrastructure to be placed onsite and attached as Appendix 4.

3.1 LISTED AND SPECIFIED ACTIVITIES

Table 2: Activities for Sefateng Chrome Mine Tailings Backfilling Project

NAME OF ACTIVITY	AERIAL EXTENT OF THE ACTIVITY	LISTED ACTIVITY	APPLICABLE LISTING NOTICE	WASTE MANAGEMENT AUTHORISATION
<p>CATEGORY B – Activity 2: The reuse or recycling of hazardous waste in excess of 1 ton per day, excluding reuse or recycling that takes place as an integral part of an internal manufacturing process within the same premises.</p> <p>CATEGORY B – Activity 11: The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a mining right, exploration right or production right in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).</p> <p>Backfilling of the opencast void with tailings as part of rehabilitation initiatives.</p>	90 ha	N/A	GN 921 Category B – Activity 2 Category B – Activity 11	X
<p>CATEGORY B – Activity 2: The reuse or recycling of hazardous waste in excess of 1 ton per day, excluding reuse or recycling that takes place as an integral part of an internal manufacturing process within the same premises.</p> <p>CATEGORY B – Activity 11: The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a mining right, exploration right or production right in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).</p> <p>Selling of tailings material for reclamation by third parties, off-site.</p>	3.5 ha	N/A	GN 921 Category B – Activity 2 Category B – Activity 11	X

3.2 EXISTING AND/OR AUTHORISED MINING OPERATIONS

Sefateng Chrome Mine (Pty) Ltd is an existing mine which holds a mining right (LP30/5/1/2/2/10062 MR) and approved EMPr over the farms Waterkop 113KT and Zwartkoppies 413KS as well as a Water Use Licence (licence no: 06/B71B/ACIGBJ/7131) for their current operations.

Sefateng Chrome Mine is situated approximately 45 km north-west of the town of Steelpoort and approximately 70 km south-east from central Polokwane, on the R37 road. The project is situated in the Fetakgomo – Tubatse Local Municipality (part of Greater Sekhukhune District Municipality) in the Limpopo Province.

Sefateng is currently mining the LG6 chromitite package via underground mining on the farm Zwartkoppies 413KS. Opencast mining has been concluded on the farms Waterkop 113KT and Zwartkoppies 413KS.

The table below summarises the activities included in the 2014 EMPr for the granted Sefateng Chrome Mine Mining Right.

Refer to the figures below for the layout of the mining and related activities included in the 2014 EMPr for the granted Sefateng Chrome Mine Mining Right.

Table 3: Summary of activities included in the approved 2014 EMPr

ACTIVITY	NEMA/NEMWA	NWA
Mining – Opencast and Underground		
<ul style="list-style-type: none"> - Open Pits: Pit A-C - Underground adits 	<p><i>GNR 545 – A15: Physical alteration of undeveloped, vacant or derelict land for residential, retail, commercial, recreational, industrial or institutional use where the total area to be transformed is 20 hectares or more.</i></p>	<p><i>S21(c)&(i) – impeding / altering of water courses</i> <i>S21(g) – dust suppression</i></p>
<ul style="list-style-type: none"> - In-pit water management - {sumps / pumping} 		<p><i>S21(a)&(j) – Dewatering of pits</i> <i>S21(g) – Disposing of waste / water containing waste</i></p>
<ul style="list-style-type: none"> - Storm water management - {river diversions / berms} 	<p><i>GN544 – A11: The construction of (i) canals; (ii) channels; (iii) bridges; (iv) dams; (v) weirs; (vi) bulk storm water outlet structures; (vii) marinas; (viii) jetties exceeding 50 square metres in size; (ix) slipways exceeding 50 square metres in size; (x) buildings exceeding 50 square metres in size; or (xi) infrastructure or structures covering 50 square metres or more, where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.</i></p>	<p><i>S21(c)&(i) – impeding / altering of water courses</i></p>
Processing plant and infrastructure areas		
<ul style="list-style-type: none"> - Access / haul roads 	<p><i>GN544 – A22: The construction of a road, outside urban areas, (i) with a reserve wider than 13.5 meters or, (ii) where no reserve exists where the road is wider than 8 metres, or (iii) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Notice 545 of 2010.</i></p>	<p><i>S21(g) – dust suppression</i></p>
<ul style="list-style-type: none"> - Stream crossings - {bridges, pipelines, roads, storm water canals/berms} 	<p><i>GN544 – A11: The construction of (i) canals; (ii) channels; (iii) bridges; (iv) dams; (v) weirs; (vi) bulk storm water outlet structures; (vii) marinas; (viii) jetties exceeding 50 square metres in size; (ix) slipways exceeding 50 square metres in size; (x) buildings exceeding 50 square metres in size; or (xi) infrastructure or structures covering 50 square metres or more, where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.</i></p>	<p><i>S21(c)&(i) – impeding / altering of water courses</i></p>
	<p><i>GN544 – A18: The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock from (i) a watercourse; (ii) the sea; (iii) the seashore; (iv) the littoral active zone, an estuary or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever distance is the greater.</i></p>	<p><i>S21(c)&(i) – impeding / altering of water courses</i></p>
<ul style="list-style-type: none"> - Infrastructure area, 	<p><i>GNR 545 – A15: Physical alteration of undeveloped,</i></p>	<p><i>S21(g) – Disposing of waste / water</i></p>

ACTIVITY	NEMA/NEMWA	NWA
workshops	<i>vacant or derelict land for residential, retail, commercial, recreational, industrial or institutional use where the total area to be transformed is 20 hectares or more.</i>	containing waste
- Plant stockpiles		S21(g) – Disposing of waste / water containing waste
- Clean water storage tanks	<i>GN546 – A2: The construction of reservoirs for bulk water supply with a capacity of more than 250 cubic metres.</i>	S21(b) – Storage of water
- PCDs - Silt traps	<i>GNR 545 – A19: The construction of a dam, where the highest part of the dam wall, as measured from the outside toe of the wall to the highest part of the wall, is 5 metres or higher or where the high-water mark of the dam covers an area of 10 hectares or more.</i>	S21(a)&(g) – Disposing of waste / water containing waste
- Bulk hydrocarbon facilities	<i>GN545 – A3: The construction of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of more than 500 cubic metres.</i>	
- Sewage plant (effluent)	<i>N/A – below threshold.</i>	S21(e) – controlled activities (irrigation with waste water) S21(g) – Disposing of waste / water containing waste
Conveyance of ROM & product (on site)		
- Haul / service roads / conveyors	<i>GNR 544 – A22: The construction of a road, outside urban areas, (i) with a reserve wider than 13.5 meters or, (ii) where no reserve exists where the road is wider than 8 metres, or (iii) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Notice 545 of 2010.</i>	S21(g) – dust suppression
- Stream crossings / culverts - {roads, conveyors}	<i>GNR 544 – A11: The construction of (i) canals; (ii) channels; (iii) bridges; (iv) dams; (v) weirs; (vi) bulk storm water outlet structures; (vii) marinas; (viii) jetties exceeding 50 square metres in size; (ix) slipways exceeding 50 square metres in size; (x) buildings exceeding 50 square metres in size; or (xi) infrastructure or structures covering 50 square metres or more, where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.</i>	S21(c)&(i) – impeding / altering of water courses
Mine residue management		
- Topsoil & overburden stockpiles - Waste rock stockpiles - Tailings (slimes) facilities	<i>GNR 545 – A15: Physical alteration of undeveloped, vacant or derelict land for residential, retail, commercial, recreational, industrial or institutional use where the total area to be transformed is 20 hectares or more.</i>	S21(g) – Disposing of waste / water containing waste
- In-pit disposal / rehabilitation		S21(g) – Disposing of waste / water containing waste

ACTIVITY	NEMA/NEMWA	NWA
- General / hazardous waste	N/A – off-site disposal	
Product transport		
- Access / haul roads	GN544 – A22: The construction of a road, outside urban areas, (i) with a reserve wider than 13.5 metres or, (ii) where no reserve exists where the road is wider than 8 metres, or (iii) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Notice 545 of 2010.	S21(g) – dust suppression
- Stream crossings - {bridges, roads}	GN544 – A11: The construction of (i) canals; (ii) channels; (iii) bridges; (iv) dams; (v) weirs; (vi) bulk storm water outlet structures; (vii) marinas; (viii) jetties exceeding 50 square metres in size; (ix) slipways exceeding 50 square metres in size; (x) buildings exceeding 50 square metres in size; or (xi) infrastructure or structures covering 50 square metres or more, where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.	S21(c)&(i) – impeding / altering of water courses
Bulk water / Bulk electricity		
- Bulk water pipeline - {stream crossings}	GN544 – A9: The construction of facilities or infrastructure exceeding 1000 metres in length for the bulk transportation of water, sewage or storm water (i) with an internal diameter of 0.36 metres or more; or (ii) with a peak throughput of 120 litres per second or more.	S21(a) – water abstraction S21(c)&(i) – impeding / altering of water courses
	GN546 – A2: The construction of reservoirs for bulk water supply with a capacity of more than 250 cubic metres.	S21(b) – Storage of water
- Power lines - {stream crossings}	N/A – 22 KV line below threshold	S21(c)&(i) – impeding / altering of water courses

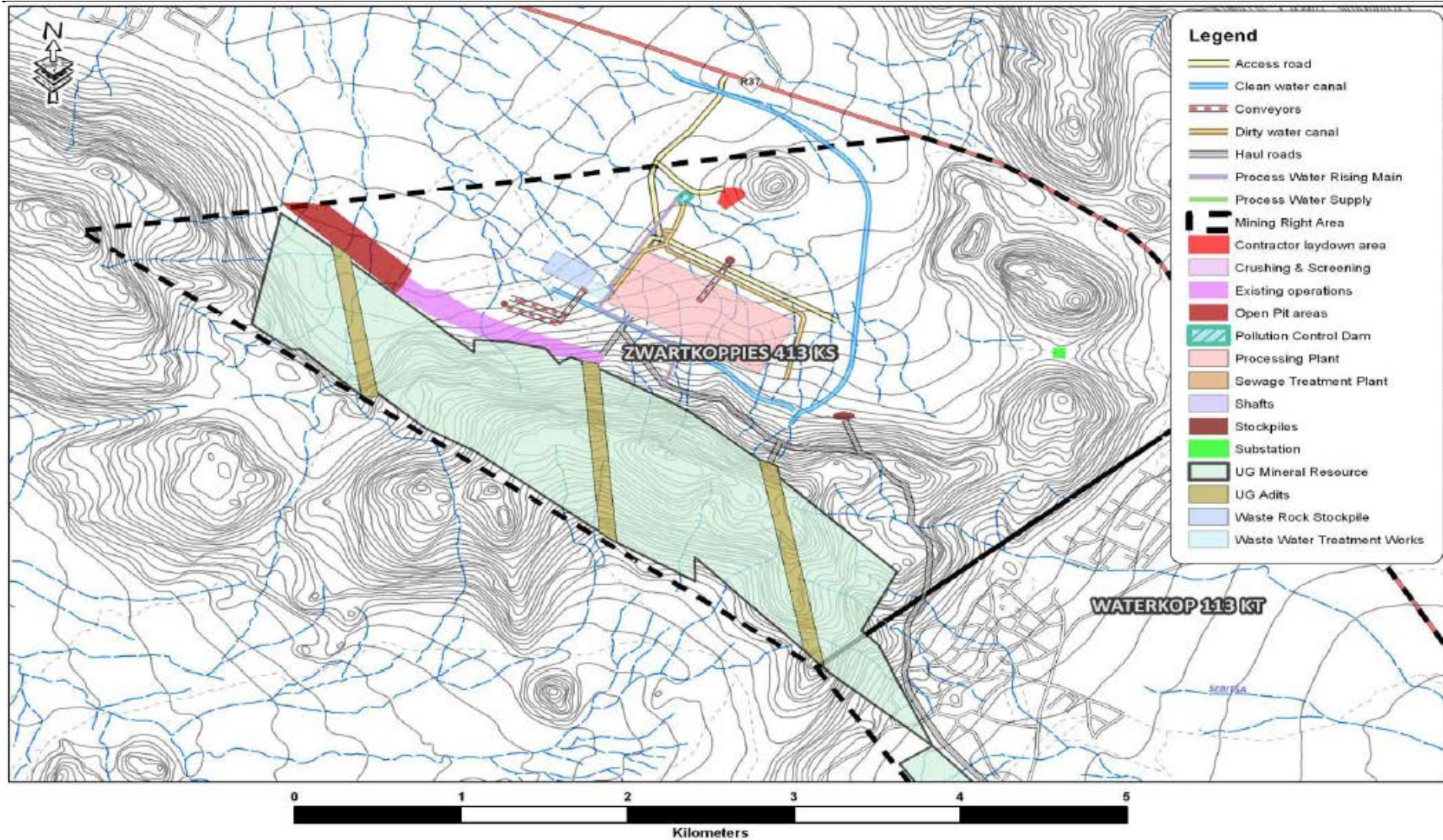


Figure 3: Layout of activities at the Zwartkoppies Section authorised as part of the 2014 Mining Right Application

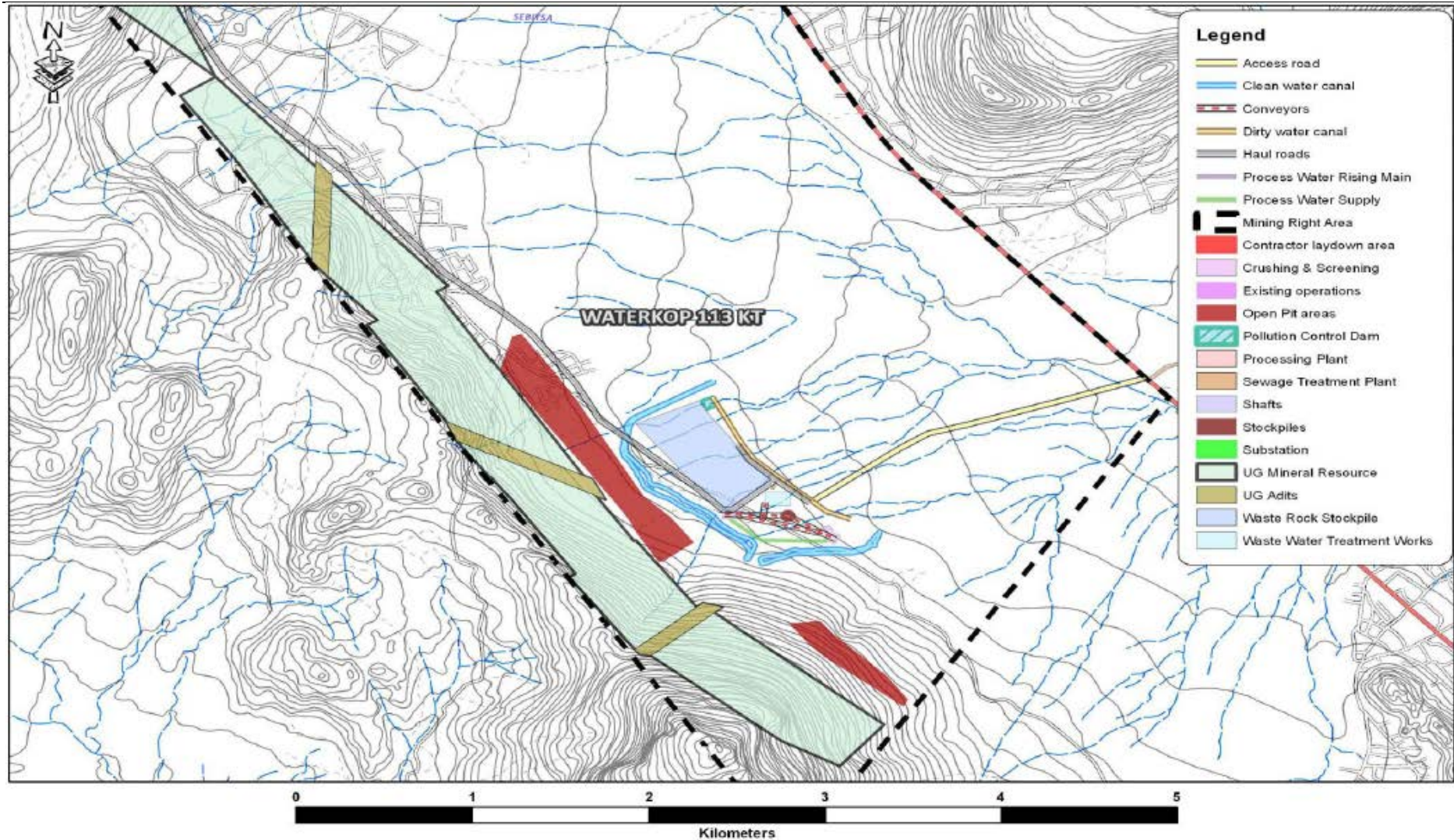


Figure 4: Layout of activities at the Zwartkoppies Section authorised as part of the 2014 Mining Right Application

Additional chromitite layers are present on the same farms, near the surface. Thus, Sefateng Chrome Mine applied in 2018 to extend the existing opencast operations on the Mining Right area in order to access further ore deposits. Other chrome seams found on this property include the LG1, LG2, LG3, LG4, LG5, MG1, MG2, MG3 and MG4. The approval of the Environmental Authorisation for the expansion activities is currently pending, with the Scoping and EIA process concluded in February 2019.

The additional opencast pits will also be mined in a typical grid by grid truck and shovel method. Initially there will be topsoil stripping and stockpiling, then subsequent drilling and blasting of rock (interburden etc.). Handling of Run of Mine (ROM) with large front-end loaders and trucks will complete the open cast mining. Waste rock will be stockpiled until such time as there is sufficient space available inside the pit for storage of the overburden material. Then waste rock will be placed in mined out areas as the face is advanced.

The mine will also establish a wash plant and associated facilities such as a tailings drying facility and dry tailings stockpile. The residue material from the wash plant is allowed to dry, where after it is stockpiled, thus no tailings dam will be constructed for the project.

Sefateng Chrome Mine is an existing operation and will therefore use existing administration offices, ROM stockpiles, workshops, access roads, etc.

The mine also proposes to construct a new pipeline to the mine feeding water from the Lebelelo supply pipeline along road R37. A powerline and service road is being constructed along the same route as the water pipeline, which will be between 15 km and 16 km in length.

The table below summarises the activities included in the 2018 Expansion Project application.

Refer to the figures below for the layout of the mining and related activities included in the 2018 Expansion Project application for Sefateng Chrome Mine Mining Right.

Table 4: Expansion Project Activities applied for in 2018

NAME OF ACTIVITY	AERIAL EXTENT OF THE ACTIVITY	LISTED ACTIVITY	APPLICABLE LISTING NOTICE	WASTE MANAGEMENT AUTHORISATION
GN325(17) Any activity including the operation of that activity which requires a mining right as contemplated in section 22 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).	255.5 ha (to be confirmed)	X	GN325(17)	N/A
Opencast mining				
Blasting	-	N/A	Not listed	N/A
Temporary topsoil storage/and removal	1 ha	N/A	Not listed	N/A
GN325(6) The development of facilities or infrastructure for any process or activity which requires a permit or license or an amended permit or license in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent.	13.5 ha	X	GN325(6)	N/A (Residue stockpiles authorised in terms of previous application)

NAME OF ACTIVITY	AERIAL EXTENT OF THE ACTIVITY	LISTED ACTIVITY	APPLICABLE LISTING NOTICE	WASTE MANAGEMENT AUTHORISATION
Waste rock stockpiling				
Hauling and Transporting	-	N/A	Not listed	N/A
Road construction	4 ha	N/A	GN327(24)	N/A
Placement of fences	15 000 m	N/A	Not listed	N/A
GN325(6) The development of facilities or infrastructure for any process or activity which requires a permit or license or an amended permit or license in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent.	255.5 ha	X	GN325(6)	N/A
Backfilling of opencast areas				
Construction of water pipeline (Approximately 16 km in length)	3.2 ha	N/A	GN327(9)	N/A
Construction of service road (Approximately 16 km in length)	6.4 ha	N/A	GN327(24)	N/A
Construction of power line (Approximately 16 km in length)	4.8 ha	N/A	GN327(11)	N/A
GN327(12) The development of— (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— (a) within a watercourse; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; — GN324(14) The development of— (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs— (a) within a watercourse; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;	As per WUL	X	GN327(12) GN324(14)	N/A
Opencast mining				
Powerline				
Pipeline				
Service road				
Storm water infrastructure				
Access and haul roads				
Waste rock dumps				

NAME OF ACTIVITY	AERIAL EXTENT OF THE ACTIVITY	LISTED ACTIVITY	APPLICABLE LISTING NOTICE	WASTE MANAGEMENT AUTHORISATION
<p>GN325(15) The clearance of an area of 20 hectares or more of indigenous vegetation.</p> <p>GN324(12) The clearance of an area of 300 square metres or more of indigenous vegetation</p> <p>Clearance of vegetation for site preparation (including all mine infrastructure e.g. opencast, access roads, stockpiles, etc.)</p>	280 ha	X	GN325(15) GN324(12)	N/A
<p>GN325(15) The clearance of an area of 20 hectares or more of indigenous vegetation.</p> <p>GN324(12) The clearance of an area of 300 square metres or more of indigenous vegetation</p> <p>Clearance of vegetation for construction of power line, water pipeline and service road</p>	14.4 ha	X	GN325(15) GN324(12)	N/A
<p>GN327(19) The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;</p> <p>Construction of pipeline, power line and service road within watercourses</p>	As per WUL	X	GN327(19)	N/A
<p>GN327(22) The decommissioning of any activity requiring –</p> <p>(i) a closure certificate in terms of section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002); or</p> <p>(ii) a prospecting right, mining right, mining permit, production right or exploration right, where the throughput of the activity has reduced by 90% or more over a period of 5 years excluding where the competent authority has in writing agreed that such reduction in throughput does not constitute closure;</p> <p>Closure or decommissioning of the opencast mining activities</p>	255.5 ha	X	GN327(22)	N/A

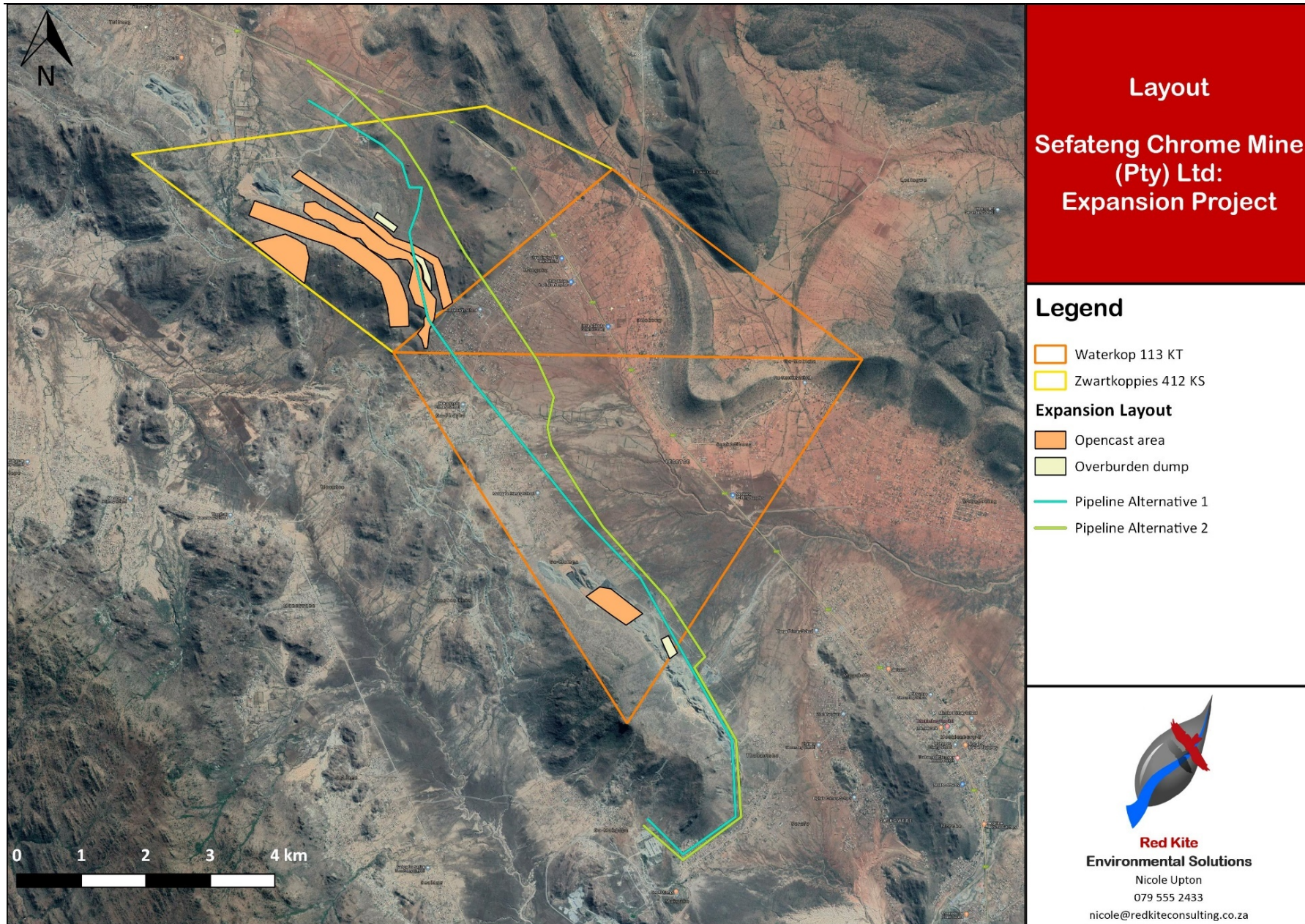


Figure 5: Sefateng Chrome Mine Expansion footprint

3.2.1 Mining Method

Sefateng is currently mining the LG6 chromitite package via underground mining on the farm Zwartkoppies 413KS. Opencast mining has been concluded on the farms Waterkop 113KT and Zwartkoppies 413KS. Additional chromitite layers are present on the same farms, near the surface. Thus, Sefateng Chrome Mine applied to extend the existing opencast operations on the Mining Right area in order to access further ore deposits. Other chrome seams found on this property include the LG1, LG2, LG3, LG4, LG5, MG1, MG2, MG3 and MG4.

Resources situated close to surface will be mined via open pit type mining up to a depth of approximately 50 m. The additional opencast pits will be mined in a typical grid by grid truck and shovel method. Initially there will be topsoil stripping and stockpiling, then subsequent drilling and blasting of rock (interburden etc.) rock face thereafter. Handling of Run of Mine (ROM) with large front-end loaders and trucks will complete the opencast mining. Waste rock and overburden will be stockpiled until such time as there is sufficient space available inside the pit for storage of waste. Then the waste rock will be placed in mined out areas as the face is advanced.

The production methods to be used are typical of open pit operations and consist of the following steps daily:

- Strip the 70 cm of top soil and stockpile for future rehabilitation work
- Strip overburden until solid rock is encountered and stockpile this for future rehabilitation
- Drill and blast the solid overburden, remove for stockpiling and at a later stage, perform back filling of the pits
- On encountering the ore seams reduce bench height and drill and blast the ore
- Load the ore into trucks using hydraulic shovels or front-end loaders
- Transport the ore to the processing plant ROM for stockpiling
- Drill and blast the internal solid overburden and remove for stockpiling

The underground mine portals have been established in the opencast highwall. Trackless room and pillar mining was selected as the most suitable underground mining method for the resource. Room and pillar is a mining method that is widely employed for the extraction of flat dipping deposits such as the one at Sefateng.

Mining extraction in the room and pillar mining method is achieved by developing a series of roadways (rooms or bords) on the seam on strike and connecting them by holings or cut-throughs to form pillars that provide support for the overlying strata. Mining extraction in this method is a function of the pillar sizes which in turn is a function of the depth from surface.

In line with available equipment sizes on the market, production requirements and geotechnical considerations, minimum and maximum mining cuts were set at 1.8 m and 3.0 metres respectively. In areas where the seam width is less than the 1.8 m, conventional mining methods will be applied whereby the stope faces will be drilled and blasted with hand held pneumatic drills and winches with scrapers will be utilised to clean the faces onto a conveyor belt system that will operate in the development strike drive with the minimum height of 1.8m.

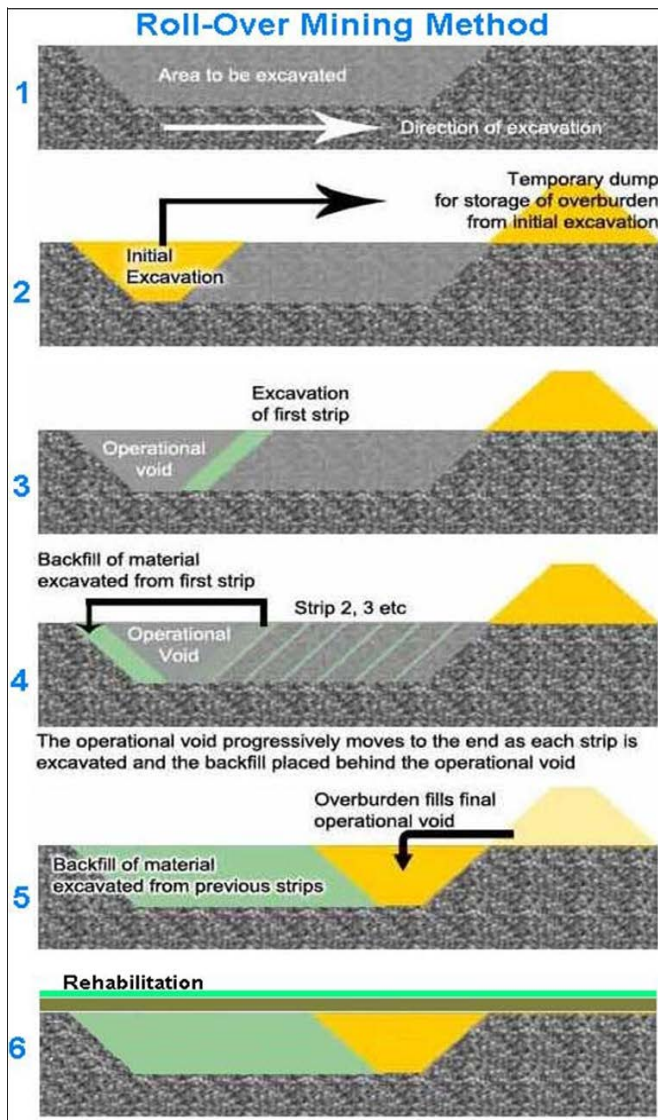


Figure 6: Roll-over Mining Method

3.2.2 Mine Infrastructure

The Sefateng Chrome Mine project is an existing operation and the current and authorised infrastructure and activities at the mine include the following:

- Opencast mining
- Underground mining
- Loading, hauling and transporting
- Access and haul roads
- Blasting
- Stockpiling of overburden, waste rock and topsoil
- Backfilling of the opencast void with waste rock and overburden
- ROM and product stockpiling
- Crushing, screening and wash plant
- Tailings drying pad and Dry tailings stockpiling facility
- Water Treatment Plant
- Return Water Dams
- Offices, workshops, stores, parking areas and change houses

- Scrap and waste storage areas
- Diesel storage facilities and refueling areas
- Septic tanks
- Fences and security offices
- Boreholes and water storage tanks
- Dust suppression
- Clean and dirty storm water channels and Pollution Control Dams
- Culverts and low water bridges
- Eskom powerline
- Lebelelo water pipeline

3.2.3 Water supply

The current mining operation uses groundwater abstracted from borehole/s on site, for which a Water Use Licence was obtained, as well as borehole water supplied by a third-party (Hall Core Water). Abstracted groundwater is used for potable water, dust suppression, process water and ablution facilities/ change houses. The water to be used at the mine will be sourced either from the borehole/s on site, groundwater inflows into the underground workings, third-party suppliers, storm water dam or a combination of the above. A geohydrological study has been undertaken to assess the groundwater regime.

- Pollution Control Dams: The current designed storm water infrastructure is sufficient for the current and proposed mining activities. One pollution control dam (PCD) has been constructed for the storage of contaminated water originating from the mining activities and plant area. Water contained within the PCD is utilised for dust suppression and plant processes, when available. The PCD was designed by an engineer as part of the Storm Water Management Plan and is lined and constructed in accordance with the requirements of NEMWA.
- Clean and Dirty Water Systems: The current designed storm water infrastructure is sufficient for the existing and proposed mining activities. Clean and dirty water systems have been constructed in order to ensure clean and contaminated water is kept separated within the mine areas. A Storm Water Management Plan was compiled as part of the Sefateng Chrome Mine Expansion Project (refer to Figure 5).
- Boreholes: No new boreholes will be required for the operation. Existing monitoring and abstraction boreholes will be used.
- Water treatment: A waste water treatment works has been constructed for the treatment of sewage, grey water and process water from the underground operations. The treated water will be reused as process water in the underground operations as well as to irrigate revegetated areas as part of the mines rehabilitation efforts.

3.2.4 Power supply

Power is supplied through both generators and through Eskom. An Eskom powerline has been constructed to the mine.

3.2.5 Roads

Existing access and haul roads service the current mining operations.

3.2.6 Offices, Ablution Facilities and Parking

Existing administration, ablution and supporting facilities will be utilised.

3.2.7 Wash plant

The chrome wash plant will consist of a crushing and screening circuit and spiral wash plant. The purpose of the primary crushing circuit is to reduce the ROM material to a process able size fraction to process further through gravity separation

spirals. The purpose of the Spiral Circuit (wash plant) is to remove impurities; mainly SiO₂ from the ROM material to produce a sellable Chemical/Foundry and Metallurgical Grade Cr₂O₃ end product.

The wash plant involves two main processes namely crushing and washing. Chrome ore from their current mining operations and the mined ROM is stockpiled close to the plant area. The purpose of the primary crushing circuit is to reduce the ROM material to a size fraction suitable for the process to then be further processed through gravity separation spirals.

Sefateng will produce mainly a chemical grade Cr₂O₃ end product as well as either a foundry grade or a metallurgical grade product. The purpose of the spiral circuit (wash plant) is to remove impurities; mainly SiO₂ from the ROM material to produce a saleable chemical/foundry and metallurgical grade Cr₂O₃ end product. Tailings (SiO₂) will be stockpiled for possible future processing for the removal of PGMs.

Wash plant infrastructure will include:

- Crushing and screening circuits for various feed material sizes
- Plant feed stockpiles
- Foundry grade shed
- Product storage pad
- Spiral circuit and bunkers
- Wet tailings pad (tailings drying pad)
- Offices, parking areas and workshop
- Diesel bay
- Pollution Control dam
- Dry tailings stockpile
- Return water dams

3.2.8 Waste management

Waste rock and overburden produced by the project is transferred to existing dumps, where after it is used for backfilling of the opencast void.

The waste generated by the operations is divided into 3 main categories and is discussed below in summary.

3.2.8.1 General Waste

The identified general waste types to be generated on site are the following:

- Scrap metal & timber
- Cans, paper, plastic and cardboard
- Inert waste
- Garden waste

3.2.8.2 Tailings

The proposed tailings facilities and wash plant was authorised through the approved EMPr (reference LP000 58 MR). Refer to Part A, Section 3.1 of this report.

The tailings produced by the wash plant will be completely dewatered and de-gritted with an incline dewatering screen or filter press situated next to the wet tailings pad, a conveyor or pipe system will discharge the dewatered tailings onto the wet tailings pad. This is done to facilitate the maximum recovery of water to be reused at the plant. Once tailings have dried sufficiently it will be transferred to the dry tailings stockpile, from where it will be either sold to third parties for reclamation (when necessary or economically viable), or transported to the opencast void for use in backfilling.

The tailings drying pad has been designed as a concrete facility and the dry tailings stockpile will be constructed with the appropriate barrier as prescribed by the Competent Authority, i.e. a Class 4 barrier type. The wash plant and tailings facilities are considered dirty areas and such all water emanating from these areas will be contained in a PCD for reuse in the wash plant processes.

As part of this application, Sefateng proposes to use tailings for use in backfilling of the opencast voids as part of the rehabilitation efforts of the mine. When economically viable the mine also proposes to sell the tailings material to third parties for further reclamation at off-site operations.

3.2.8.3 Hazardous Waste

Potential hazardous waste types that may occur on site include:

- Any tar containing waste
- Any resin containing waste
- Fluorescent light tubes
- Oil (used and clean)
- Degreaser
- Explosives
- Brake and transmission fluid
- Sewage

All the above-mentioned wastes will be handled to guidelines given by the competent authority.

3.3 DESCRIPTION OF THE ACTIVITIES TO BE UNDERTAKEN (THIS APPLICATION)

Sefateng Chrome Mine (Pty) Ltd proposes to reuse or reclaim the tailings material produced by the wash plant on site in order to minimise the residue stockpiled on site and to maximise recycling.

The tailings material is proposed to be reclaimed or reused in the following ways:

- A portion of the material will be used to backfill the opencast voids of the operation as part of the rehabilitation efforts of the mine. Backfilling with tailings will take place in voids situated on the farm Zwartkoppies 413 KS.
- When necessary or economically viable, Sefateng Chrome Mine proposes to sell tailings to third parties for further reclamation at off-site operations.

To facilitate the reuse of the tailings, whilst minimising the potential environmental impacts of the reuse of the tailings material, a preconcentrator will be installed in the wash plant. The purpose of the preconcentrator is to maximize the extraction of chrome in the wash plant process, which reduces the chrome content in the tailings material. After implementation of the preconcentrator it is expected that the tailings material produced by the wash plant will largely comprise of silica, representative of the waste rock and overburden material found on the mining area.

The tailings will be completely dewatered and de-gritted with an incline dewatering screen situated next to the wet tailings pad, a conveyor will discharge the dewatered tailings onto the wet tailings pad. Once the tailings are sufficiently dry, the tailings are either stored on the existing dry tailings stockpile or transported to the opencast void for use in backfilling.

As part of this application a Section 102 amendment of the EMPr will be applied for in terms of the MPRDA. The Section 102 amendment will entail the consolidation of previous EMPrs (refer to section 3.2 above) approved for the project as well as update to the layout of the current and / or authorised activities on the farm Zwartkoppies 413 KS, (refer to Figure 8).

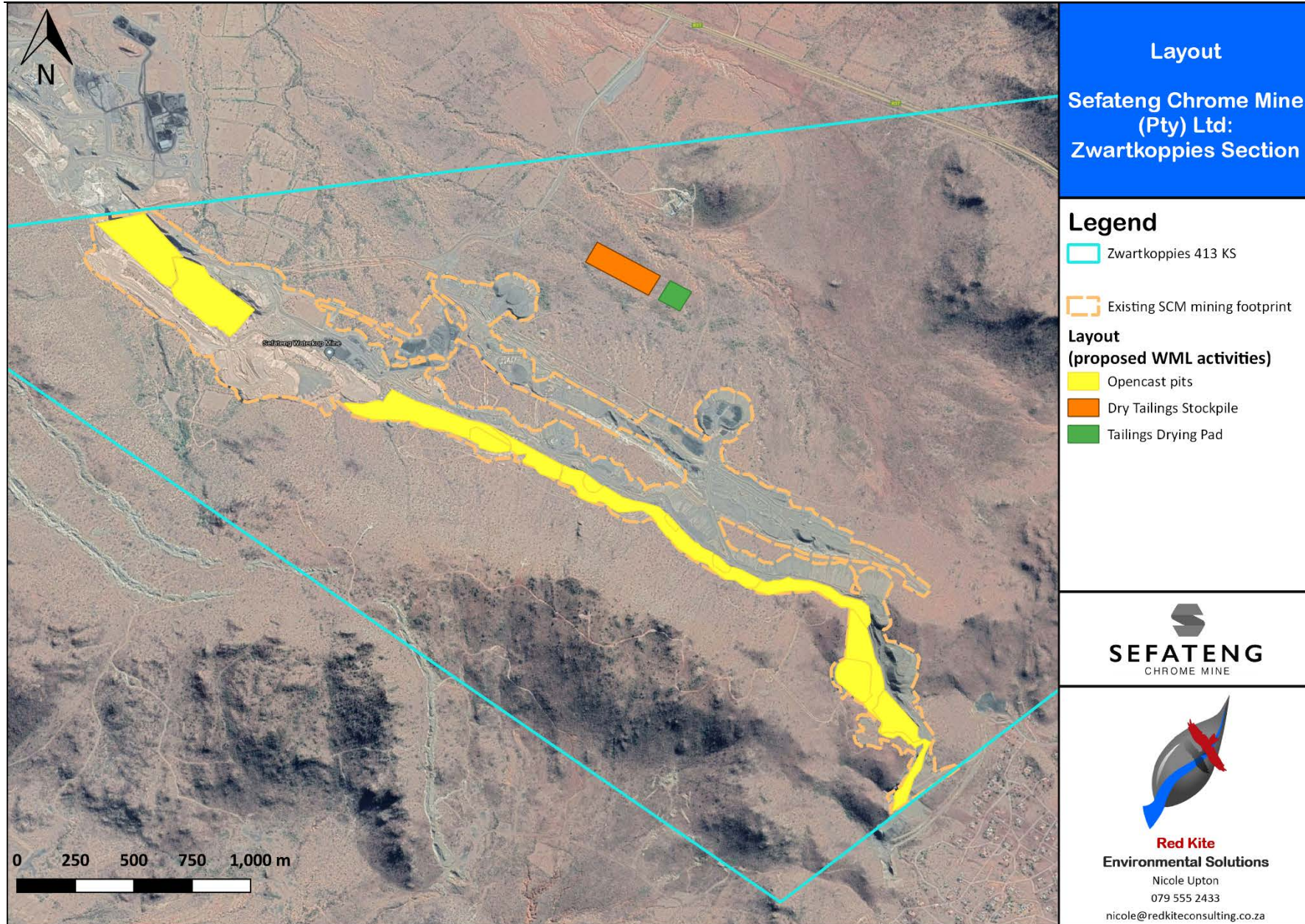


Figure 7: Layout of tailings backfilling project

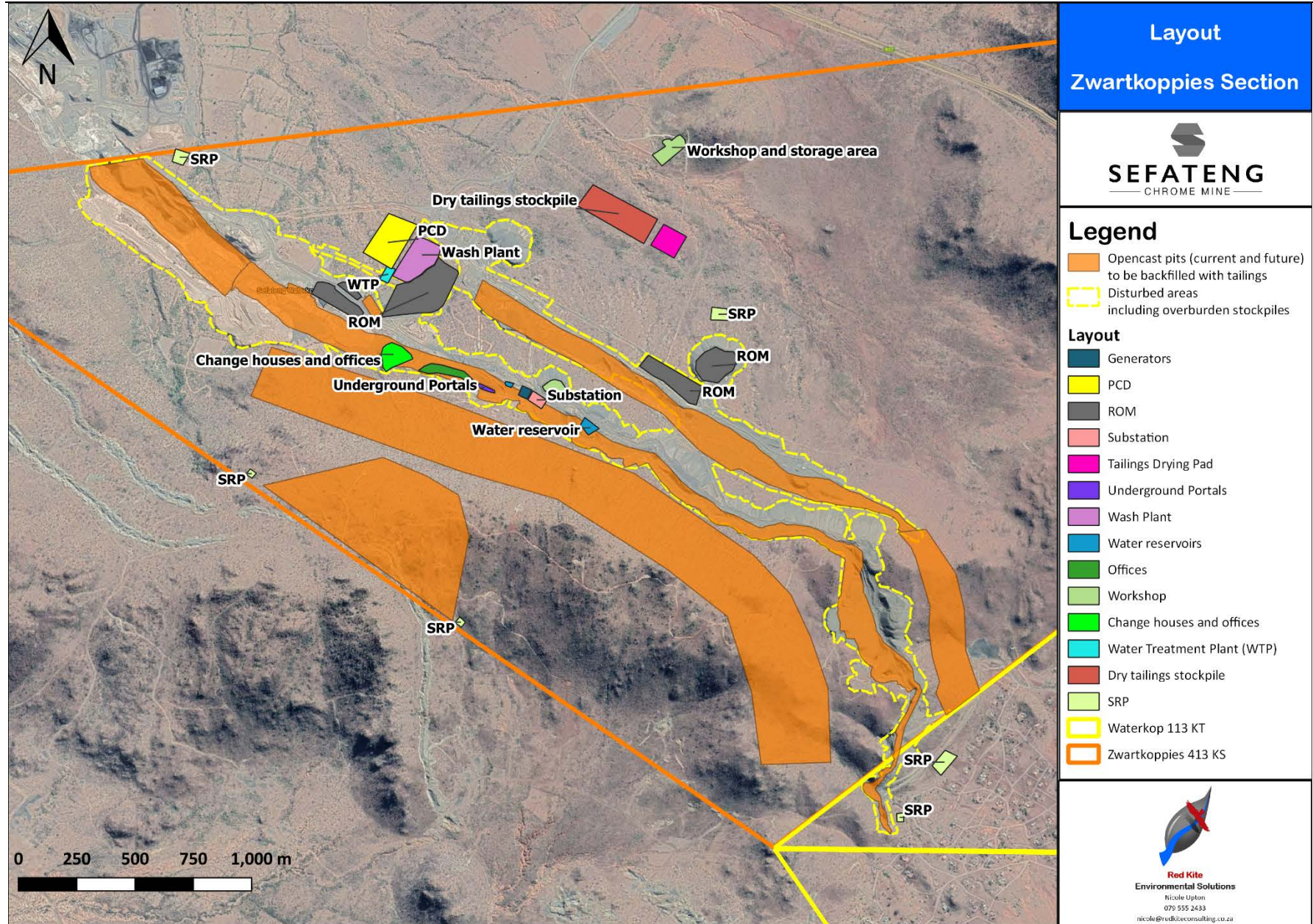


Figure 8: Updated layout of Sefateng Chrome Mine: Zwartkoppies Section

4 POLICY AND LEGISLATIVE CONTEXT

Relevant South African legislation requires various authorisations prior to the commencement of the Proposed Project. Although cognisance of all applicable legislation is being taken, the following table details the relevant environmental authorisations, which are required:

Table 5: Competent Authorities

Authorisation	Responsible Department	Relevant Act
Waste Management Licence	DMRE	NEMA
Water Use License	DWS	NWA

As part of the Scoping Phase, and to ensure all relevant South African legislation was taken into consideration, the following legislation was considered relevant as part of the overall ESIA Process to ensure legal compliance and best practice.

- The Constitution of the Republic of South Africa (No. 108 of 1996)
- Mineral and Petroleum Resources Development Act (No. 28 of 2002)
- National Environmental Management Act (No. 107 of 1998)
- National Water Act (No. 36 of 1998)
- National Environmental Management Biodiversity Act (No. 10 of 2004)
- National Environmental Management Protected Areas Act (No. 57 of 2003)
- National Environmental Management Air Quality Act (No. 39 of 2004)
- National Environmental Management Waste Act (No. 59 of 2008)
- National Heritage Resources Act (No. 25 of 1999)
- National Forests Act (No. 84 of 1998)
- Occupational Health and Safety Act (No. 85 of 1993)
- Mine Health and Safety Act (No. 29 of 1996)
- Guidelines

Table 6: Applicable Legislation relevant to the Proposed Project

Applicable legislation and guidelines use to compile the report	Application
<p>Constitution of the Republic of South Africa (No. 108 of 1996)</p> <p>Since 1994 South African legislation, including environmental legislation, has undergone a large transformation and various new laws and policies was promulgated with a strong emphasis on environmental concerns and the need for sustainable development. The Constitution of the Republic of South Africa (No. 108 of 1996) (the Constitution), the supreme law in South Africa, contains far reaching clauses relevant to the environment including the environmental right, the administrative justice clause, the access to information right as well as the liberalisation of <i>locus standi</i> rule.</p> <p>In terms of Section 24, a positive obligation is placed on the State to give effect to the environmental right. The environmental right states that:</p> <p><i>“Everyone has the right - To an environment that is not harmful to their health or well-being;</i></p>	<p>The purpose of the ESIA Process is to identify activities that may cause environmental and socio-economic damage from the associated impacts occurring as a result of the proposed project. The impacts will be assessed, evaluated and mitigation measures developed to minimise the negative impacts and promote positive impacts associated with the proposed project, thereby ensuring that the project is undertaken in a sustainable manner. This also ensures that the applicant does not contravene Section 24 of the Constitution.</p> <p>The Constitution cannot manage environmental resources as a stand-alone piece of legislation hence additional legislation has</p>

Applicable legislation and guidelines use to compile the report	Application
<p>and <i>To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:</i></p> <ul style="list-style-type: none"> • <i>Prevent pollution and ecological degradation;</i> • <i>Promote conservation; and</i> • <i>Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.”</i> 	<p>been promulgated in order to manage the various spheres of both the social and natural environment. Each promulgated Act and associated Regulations are designed to focus on various industries or components of the environment to ensure that the objectives of the Constitution are effectively implemented and upheld on an ongoing basis throughout South Africa. In terms of Section 7, a positive obligation is placed on the State to give effect to the environmental rights.</p>
<p>Minerals and Petroleum Resources Development Act (Act No. 28 of 2002) (MPRDA) [as amended] and Mineral and Petroleum Resource Development Regulations, 2004 [as amended]</p> <p>The primary aim of the MPRDA is to recognise the sovereignty of the State over all the mineral and petroleum resources in South Africa and to promote equitable access to the Country’s resources. The MPRDA has a number of objectives, including to:</p> <ul style="list-style-type: none"> • Promote equitable access to the nation’s mineral and petroleum resources to all the people of South Africa; • Substantially and meaningfully expand opportunities for historically disadvantaged persons, including women, to enter the mineral and petroleum industries and to benefit from the exploitation of the nation’s mineral and petroleum resources; • Promote economic growth and mineral and petroleum resources development in the country; • Provide for security of tenure in respect of prospecting, exploration, mining and production operations; • Give effect to Section 24 of the Constitution of South Africa by ensuring that the nation’s mineral and petroleum resources are developed in an orderly and ecologically sustainable manner while promoting justifiable social and economic development; and • Ensure that holders of mining and production rights contribute towards the socio-economic development of the areas in which they are operating. <p>The MPRDA concerns equitable access to, and sustainable development of, South Africa’s mineral and petroleum resources. The MPRDA makes provision for sustainable mining and requires:</p> <ul style="list-style-type: none"> • That every person who has applied for a mining right must conduct an EIA, determine the environmental baseline, and submit an EMPR to the DMR; • That every holder of a mining reconnaissance permit, prospecting right, mining right, mining permit or retention permit must assess and communicate the impacts of the 	<p>In accordance with Section 102 of the MPRDA, Sefateng is required to conduct an EIA and submit an EMPr for approval to the Limpopo DMRE. Red Kite Environmental Solutions has compiled the Environmental Impact Assessment and Environmental Management Programme Report in accordance with the MPRDA and NEMA.</p> <p>As part of the application a Section 102 amendment of the EMPr will be applied for in terms of the MPRDA. The Section 102 amendment will entail the consolidation of previous EMPrs (refer to section 3.2 above) approved for the project as well as update the current layout of the authorised activities associated with the Sefateng Chrome Mines operations on the farm Zwartkoppies 413 KS, to reflect the layout of current operations (refer to Figure 8).</p>

Applicable legislation and guidelines use to compile the report	Application
<p>activity on the environment;</p> <ul style="list-style-type: none"> • The need to rehabilitate the environment affected by prospecting or mining operations to its natural or predetermined state; and • That the directors of the mining company are liable for unacceptable impacts on the environment. <p>The MPRDA (2002) requires an applicant who wishes to proceed with a mining project to obtain a Mining Right, part of which requires the applicant to obtain Environmental Authorisation in terms of the NEMA (1998).</p>	
<p>National Environmental Management Act (No. 107 of 1998) (NEMA)</p> <p>The NEMA is South Africa’s overarching environmental statute concerned with integrated environmental management (IEM) and the underlying principles by which environmental management must be undertaken. Its primary objective is to provide for co-operative governance, thus binding all organs of State by establishing principles for decision making on matters affecting the environment, institutions that will promote co-operative governance, and procedures for co-ordinating environmental functions exercised by organs of State and to provide for matters connected therewith (Government Gazette, 1998).</p> <p>The NEMA provides for the Constitutional right to an environment that is not harmful to the health and well-being of South African citizens, the equitable distribution of natural resources, sustainable development, environmental protection, and the formulation of environmental management frameworks (Government Gazette, 1998). Section 2 of NEMA sets out principles for sustainable integrated environmental governance; the principles are further detailed in subsequent sections of NEMA.</p> <p>Section 24(5), 24M and 44 of the NEMA enables the Minister to publish regulations pertaining to environmental impact assessments. The current Environmental Impact Assessment Regulations, GNR.326 (EIA Regulations), were published on 7 April 2017. Sections 24(2) and 24D of the NEMA make provision for the Minister to publish listed activities that would require environmental authorisation prior to commencement of that activity. The Minister published the following three Regulations in terms of Sections 24(2) and 24D of the NEMA on 4 December 2014:</p> <ul style="list-style-type: none"> • Regulation GNR.983 of 2014 [as amended] which sets out a list of identified activities which may not commence without environmental authorisation from the competent authority and which must follow the Basic Assessment 	<p>The proposed activities being applied for as part of this application do not trigger any of the listed activities as set out in GNR 983, GNR 984 and GNR 985 [as amended] in terms of Sections 24(2) and 24D of the NEMA.</p>

Applicable legislation and guidelines use to compile the report	Application
<p>(BA) procedure as provided for in Chapter 4, Part 2 of the EIA Regulations;</p> <ul style="list-style-type: none"> Regulation GNR.984 of 2014 [as amended] which sets out a list of identified activities which may not commence without environmental authorisation from the competent authority and which must follow the scoping and EIA procedure as provided for in Chapter 4, Part 3 of the EIA Regulations; and Regulation GNR.985 of 2014 [as amended] which sets out a list of identified activities per geographical area, which may not commence without environmental authorisation from the competent authority and which must follow the BA procedure as, provided for in Chapter 4, Part 2 of the EIA Regulations. 	
<p>National Environmental Management: Waste Act (No. 59 of 2008) (NEMWA)</p> <p>The National Environmental Management Waste Act (No. 59 of 2008) (NEMWA) serves to reform the law regulating waste management in order to protect human health and the environment. This is managed by providing reasonable measures for the prevention of pollution and ecological degradation. The Act aims to secure ecologically sustainable development while promoting justifiable economic and social development. The Act provides national norms and standards for regulating the management of waste by all spheres of government, for specific waste management measures and for matters incidental thereto.</p> <p>In terms of the NEMWA, the Minister of the DEA may publish a list of waste management activities that have, or are likely to have, a detrimental effect on the environment. Furthermore, the NEMWA prohibits any person to commence, undertake or conduct a waste management activity except in accordance with the requirements or standards determined in terms of the NEMWA for that activity or where a WML has been issued in respect of that activity.</p> <p>A list of waste management activities that require a WML was published in GNR.921 of 2013 [as amended]. GNR.921 details three categories of activities: Category A activities, which require a BA process in terms of GNR.983 to be undertaken, and Category B activities, which require a scoping and EIA process in terms of GNR.984 to be undertaken, and Category C activities require compliance with relevant Norms and Standards.</p>	<p>The following activities are considered applicable to the Proposed Project, as detailed in Section 2(d)(i):</p> <ul style="list-style-type: none"> GNR.921, Category B, Activity 2 and Activity 11

Applicable legislation and guidelines use to compile the report	Application
<p>National Water Act (No. 36 of 1998) (NWA)</p> <p>The NWA provides for fundamental reformation of legislation relating to water resources and use. The preamble to the Act recognises that the ultimate aim of water resource management is to achieve sustainable use of water for the benefit of all users and that the protection of the quality of water resources is necessary to ensure sustainability of the nation’s water resources in the interests of all water users. The purpose of the Act is stated, in Section 2 as, inter alia:</p> <ul style="list-style-type: none"> • Promoting the efficient, sustainable and beneficial use of water in the public interest; • Facilitating social and economic development; • Protecting aquatic and associated ecosystems and their biological diversity; • Reducing and preventing pollution and degradation of water resources; and • Meeting international obligations. <p>The NWA presents strategies to facilitate sound management of water resources, provides for the protection of water resources, and regulates use of water by means of Catchment Management Agencies, Water User Associations, Advisory Committees and International Water Management.</p> <p>As this Act is founded on the principle that the government has overall responsibility for and authority over water resource management, including the equitable allocation and beneficial use of water in the public interest, an industry (including mines) is only entitled to use water if the use is permissible under the NWA.</p> <p>Section 21 of the NWA provides a list of water uses which require a WULA prior to commencement, unless listed in Schedule 1 (of the NWA) as an existing lawful use. Applying for a WULA triggers NEMA listed activities as contemplated in terms of GNR.984 and GNR.985 of 2014.</p> <p>Water use includes taking and storing water, activities which reduce stream flow, waste discharges and disposals, controlled activities (activities which impact detrimentally on a water resource), altering a watercourse, removing water found underground for certain purposes, and recreation. A water use must be licensed unless it is listed in Schedule 1 (of the NWA), is an existing lawful use, is permissible under a general authorisation, or if a responsible authority waives the need for a license.</p> <p>In terms of the NWA, a watercourse is defined as follows:</p> <ul style="list-style-type: none"> • A river or spring; 	<p>As required by Section 40 of the NWA, the following water uses will require a WULA in terms of Section 21 the NWA, which the Mpumalanga DWS will be responsible for granting. It is understood that no aspects of the project may commence prior to receipt of the relevant WUL:</p> <ul style="list-style-type: none"> • Section 21 (g): Backfilling of the opencast voids with tailings material <p>The WULA was submitted in November 2022 for assessment by the DWS.</p>

Applicable legislation and guidelines use to compile the report	Application
<ul style="list-style-type: none"> • A natural channel in which water flows regularly or intermittently; • A wetland, lake or dam into which the Minister may, by notice in the Gazette, declare to be a watercourse, and reference to a watercourse, which includes, where relevant, its beds and banks. <p>Furthermore, in terms of the NWA, a wetland is defined as follows: Land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.</p>	
<p>Government Notice Regulation 704 of 1999</p> <p>GNR.704 of 1999 under the NWA provides regulations on the use of water for mining and related activities aimed at the protection of water resources (requirements for clean and dirty water separation). GNR.704 requires inter alia the following:</p> <ul style="list-style-type: none"> • Separation of clean (unpolluted) water from dirty water; • Collection and confinement of the water arising within any dirty area into a dirty water system; • Design, construction, maintenance and operation of the clean water and dirty water management systems so that it is not likely for either system to spill into the other more than once in 50 years; • Design, construction, maintenance and operation of any dam that forms part of a dirty water system to have a minimum freeboard of 0.8m above full supply level, unless otherwise specified in terms of Chapter 12 of the Act; and • Design, construction, and maintenance of all water systems in such a manner as to guarantee the serviceability of such conveyances for flows up to and including those arising as a result of the maximum flood with an average period of recurrence of once in 50 years. <p>GNR.704 also stipulates that no person in control of a mine or activity may:</p> <ul style="list-style-type: none"> • Locate or place any residue deposit, dam, reservoir, together with any associated structure or any other facility within the 1:100 year flood line or within a horizontal distance of 100 m from any watercourse or estuary, borehole or well, excluding boreholes or wells drilled specifically to monitor the pollution of groundwater, or on water-logged ground, or on ground likely to become water-logged, undermined, unstable or cracked; • Place or dispose of any residue or substance which causes or is 	<p>Cognisance has also been taken with regards to Regulation 4, Regulation 6 and Regulation 7 of GNR.704.</p> <p>The tailings material to be used for backfilling of the opencast void is not expected to pose a risk in terms of pollution to water resources. Exemption from the requirements of GN704 have been applied for with the Department of Water and Sanitation as the Competent Authority.</p> <p>Adequate storm water management infrastructure has / will be implemented for the operation.</p>

Applicable legislation and guidelines use to compile the report	Application
<p>likely to cause pollution of a water resource, in the workings of any underground or opencast mine excavation, prospecting diggings, pit or any other excavation; or</p> <ul style="list-style-type: none"> Use any area or locate any sanitary convenience, fuel depots, reservoir or depots for any substance which causes or is likely to cause pollution of a water resource within the 1:50 year flood line of any watercourse or estuary. 	
<p>National Environmental Management: Air Quality Act (No. 39 of 2004)</p> <p>The National Environmental Management Air Quality Act (No. 39 of 2004) (NEMAQA) allows for national, provincial and local air quality standards to be established as well as the declaration of priority areas. In addition, the NEMAQA requires that Air Quality Management Plans (AQMP) form part of the environmental implementation plan or environmental management plans to be prepared by national departments or the Province as required by Chapter 3 of the NEMA. Furthermore, the NEMAQA requires municipalities to include an AQMP into its integrated development plan (IDP).</p> <p>The NEMAQA requires the Minister of the DEA to publish a list of activities which results in atmospheric emissions which may have a detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions, ecological conditions or cultural heritage. The NEMAQA requires that an atmospheric emissions licence (AEL) be obtained for such listed activities. Such a list of activities was published in GNR.248 of 2010.</p>	<p>No activities requiring authorisation in terms of GNR.248 of 2010 of NEMAQA will be undertaken.</p>
<p>National Environmental Management: Biodiversity Act (No. 10 of 2004)</p> <p>In line with the Convention on Biological Diversity, the National Environmental Management Biodiversity Act (No. 10 of 2004) (NEMBA) aims to legally provide for biodiversity conservation, sustainable use and equitable access and benefit sharing. The Act establishes the South African National Biodiversity Institute (SANBI). The NEMBA creates a basic legal framework for the formation of a national biodiversity strategy and action plan and the identification of biodiversity hotspots and bio-regions which will then be given legal recognition. It imposes obligations on landowners (state or private) governing alien invasive species as well as regulates the introduction of genetically modified organisms. Furthermore, the Act serves to regulate bio-prospecting, making provision for communities to share the profits of any exploitation of natural materials involving indigenous knowledge.</p>	<p>One of the objectives of this Act is to provide for the management and conservation of South Africa's biodiversity within the framework of the NEMA and to ensure the sustainable use of indigenous biological resources. In addition to regulations on Threatened, Protected, Alien and Invasive Species in South Africa, the National Biodiversity Strategies and Action Plans (NBSAP) was formulated under the National Spatial Biodiversity Assessment (NSBA) and was used to identify Terrestrial and Aquatic Priority Areas and Threatened Ecosystems for biodiversity conservation.</p> <p>Chapter 4, Part 2 (Threatened and Protected</p>

Applicable legislation and guidelines use to compile the report	Application
<p>A restricted activity is defined by the NEMBA as, inter alia: In relation to a specimen of a listed threatened or protected species:</p> <ul style="list-style-type: none"> • Hunting, catching, capturing or killing any living specimen of a listed threatened or protected species by any means, method or device whatsoever, including searching, pursuing, driving, lying in wait, luring, alluring, discharging a missile or injuring with intent to hunt, catch, capture or kill any such specimen; • Gathering, collecting or plucking any specimen of a listed threatened or protected species; • Picking parts of, or cutting, chopping off, uprooting, damaging or destroying, any specimen of a listed threatened or protected species; • Having in possession or exercising physical control over any specimen of a listed threatened or protected species; and • Conveying, moving or otherwise translocating any specimen of a listed threatened or protected species. <p>In relation to a specimen of an alien species or listed invasive species:</p> <ul style="list-style-type: none"> • Importing into the Republic, including introducing from the sea, any specimen of an alien or listed invasive species; • Having in possession or exercising physical control over any specimen of an alien or listed invasive species; • Growing, breeding or in any other way propagating any specimen of an alien or listed invasive species, or causing it to multiply; and • Conveying, moving or otherwise translocating any specimen of an alien or listed invasive species. <p>Sections 52(1)(a) and 56(1) of the NEMBA state that the Minister may publish national lists of species and ecosystems, respectively, that are threatened or are in need of protection. A list of species that are threatened or are in need of protection was published in 2013 in GNR.389, with GNR.388 detailing the regulations relating to such species. These regulations are imposed where restricted activities involve specimens of listed threatened or protected species. GNR.388 defines the requirements of permitting and the process related thereto.</p> <p>GNR.1002, published in 2011, contains the first national list of threatened terrestrial ecosystems and provides supporting information to accompany the list, including the purpose and rationale for listing ecosystems, the criteria used to identify listed ecosystems, the implications of listing ecosystems, and summary statistics and national maps of listed terrestrial ecosystems. It also includes individual maps and detailed information for each listed</p>	<p>Species Regulations) of NEMBA provides for listing of species that are threatened or in need of protection to ensure their survival in the wild, while regulating the activities, including trade, which may involve such listed threatened or protected species and activities which may have a potential impact on their long-term survival. In February 2007, this was achieved as the Minister of DEA published a list of Critically Endangered, Endangered, Vulnerable and Protected Species, according to Section 56(1) of the Act.</p> <p>The activities being applied for are restricted to areas already totally transformed by the existing mining operation. Thus, no fauna or flora occur on the project footprint.</p>

Applicable legislation and guidelines use to compile the report	Application
ecosystem.	
<p>National Environmental Management Protected Areas Act (No. 57 of 2003)</p> <p>The National Environmental Management Protected Areas Act (No. 57 of 2003) (NEMPAA) concerns the protection and conservation of ecologically viable areas representative of South Africa’s biological diversity and its natural landscapes and seascapes, and includes inter alia:</p> <ul style="list-style-type: none"> • The establishment of a national register of all national, provincial and local protected areas; • The management of those areas in accordance with national standards; and • Inter-governmental co-operation and public consultation in matters concerning protected areas. <p>The ESIA will take cognisance of the NEMPAA in order to ensure compliance with South African legislation.</p> <p>The NEMPAA defines various kinds of protected areas, namely: special nature reserves, national parks, nature reserves (including wilderness areas) and protected environments, world heritage sites, marine protected areas, specially protected forest areas, forest nature reserves and forest wilderness areas declared in terms of the National Forests Act (No. 84 of 1998), and mountain catchment areas declared in terms of the Mountain Catchment Areas Act (No. 63 of 1970).</p> <p>Part 4 of Chapter 4 of the NEMPAA (Sections 48 to 53) lists restrictions of activities that may not be conducted in a protected area (as described above). Activities that are restricted include: Prospecting and mining activities; Activities that are restricted by:</p> <ul style="list-style-type: none"> – Regulations made by the Minister; – Regulations made by the MEC, in the case of provincial and local protected areas; – By-laws of the relevant municipality, in the case of local protected areas; and • Internal rules made by the managing authority of the area; <ul style="list-style-type: none"> – Commercial and community activities where the survival of any species is negatively affected, or the integrity of an ecosystem is significantly disrupted; and – Any development or other activity that is inappropriate for the area given the purpose for which the area was declared. 	<p>Cognisance will be taken of existing and proposed protected environments.</p> <p>Potlake Nature Reserve is located approximately 5 km from the mining area.</p>

Applicable legislation and guidelines use to compile the report	Application
<p>National Heritage Resources Act (No. 25 of 1999)</p> <p>The National Heritage Resources Act (No. 25 of 1999) (NHRA) established the South African Heritage Resources Agency (SAHRA) in 1999. SAHRA is tasked with protecting heritage resources of national significance. With regard to heritage sites, sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, dolomitic land and ridges, 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. A heritage site means a place declared to be a national heritage site by SAHRA or a place declared to be a provincial heritage site by a provincial heritage resources authority.</p>	<p>In terms of Section 38(8) of the National Heritage Resources Act (Act 25 of 1999) the South African Heritage Resources Agency (SAHRA) is a commenting authority in terms of this application.</p> <p>Previous heritage studies were performed on the project area and the activities being applied for are restricted to areas already totally transformed by the existing mining operation.</p>
<p>National Forest Act (No. 84 of 1998)</p> <p>The purpose of the NFA is as follows:</p> <ul style="list-style-type: none"> • Promotion of the sustainable management and development of forests for the benefit of all; • Creation of the conditions necessary to restructure forestry in the State's forests; • Provision of special measures for the protection of certain forests and trees; • Promotion of the sustainable use of forests for environmental, economic, educational, recreational, cultural, health and spiritual purposes; • Promotion of community forestry; and • Promotion of greater participation in all aspects of forestry and the forest products industry by persons disadvantaged by unfair discrimination. <p>One of the objectives of this Act is to provide special measures for the protection of certain forests and tree species and to promote the sustainable use of forests for environmental, economic, educational, recreational, cultural, health and spiritual purposes. Section 15(1) – No protected tree may be cut, disturbed, damaged, destroyed and their products may not be possessed, collected, removed, transported, exported, donated, purchased or sold; except under license granted by the DWS/ DEA (or a delegated authority). GNR.767 of 2005 and GNR.716 of 2012 comprise lists of protected tree species under the National Forests Act (No. 84 Of 1998). The criteria used to select tree species for inclusion in the protected tree list are:</p> <ul style="list-style-type: none"> • Red List Status (rare or threatened species); • Keystone Species Value (whether species play a dominant role in an ecosystem's functioning); • Sustainability of Use (whether a species is threatened by heavy 	<p>One of the objectives of this Act is to provide special measures for the protection of certain forests and tree species and to promote the sustainable use of forests for environmental, economic, educational, recreational, cultural, health and spiritual purposes. In terms of Section 15(1) of the National Forests Act (no.84 of 1998), protected tree species may not be cut, disturbed, damaged, destroyed and their products may not be possessed, collected, removed, transported, exported, donated, purchased or sold – except under license granted by the relevant authority.</p> <p>The activities being applied for are restricted to areas already totally transformed by the existing mining operation. Thus, no trees protected in terms of the NFA occur on the project footprint.</p>

Applicable legislation and guidelines use to compile the report	Application
<p>use of its products such as timber, bark etc.);</p> <ul style="list-style-type: none"> • Cultural or Spiritual Importance (outstanding landscape value or spiritual meaning attached to certain tree species); and • Other legislation (whether a species is already adequately protected by other legislation). 	
<p>Conservation of Agricultural Resources Act (Act No. 43 of 1983) (CARA)</p> <p>The objectives of the Conservation of Agricultural Resources Act are to provide for the conservation of the natural agricultural resources of South Africa by: the maintenance of the production potential of land; the combating and prevention of erosion and weakening or destruction of the water sources; and the protection of the vegetation and the combating of weeds and invader plants.</p>	<p>The activities being applied for are restricted to areas already totally transformed by the existing mining operation.</p>
<p>Fencing Act (No. 31 of 1963)</p> <p>The aim of the Fencing Act (No. 31 of 1963) is to consolidate the laws relating to fences and the fencing of farms and other holdings. When a landowner erects a fence in a designated area, he/ she may insist that the adjacent owner contribute towards the erection or maintenance costs. In areas where contributions are not mandatory/ have not been published in the Government Gazette, a contribution can be claimed from the adjacent owner if the fence offers beneficial use for such a person. The Act also makes provision for a mechanism to deal with disputes between adjacent owners regarding a contribution towards erecting or repairing a fence.</p>	<p>Of specific importance, section 17 requires that any person erecting a boundary fence may clean any bush along the line of the fence up to 1.5 metres on each side thereof and remove any tree standing in the immediate line of the fence. However, this provision must be read in conjunction with the environmental legal provisions relevant to the protection of flora.</p>
<p>Hazardous Substances Act (No. 15 of 1979)</p> <p>The object of the Act is inter alia to 'provide for the control of substances which may cause injury or ill health to, or death of, human beings by reason of their toxic, corrosive, irritant, strongly sensitising or flammable nature or the generation of pressure thereby in certain circumstances; for the control of electronic products; for the division of such substances or products into groups in relation to the degree of danger; for the prohibition and control of such substances.'</p> <p>In terms of the Act, substances are divided into schedules, based on their relative degree of toxicity, and the Act provides for the control of importation, manufacture, sale, use, operation, application, modification, disposal and dumping of substances in each schedule.</p>	<p>Dangerous substances contained onsite during the construction, operation and closure phases of the Proposed Project will need to be management in accordance with the Act and safety data sheets (SDS) will need to accompany all dangerous goods (hydrocarbons, cleaning chemicals, paints, etc.).</p>

Applicable legislation and guidelines use to compile the report	Application
<p>Mine Health and Safety Act (No. 29 of 1996)</p> <p>The Mine Health and Safety Act (No. 29 of 1996) (MHSA) aims to protect and promote the health and safety of employees and persons that may be affected by the activities at a mine and outlines both the rights and responsibilities of an employer, as well as the obligations of employees working thereat.</p> <p>The MHSA was developed “to provide for protection of the health and safety of employees and other persons at mines”. That said the Act also provides and/ or promotes the following:</p> <ul style="list-style-type: none"> • A culture of health and safety; • The enforcement of health and safety measures; • For appropriate systems of employee, employer and State participation in health and safety matters; • The establishment of representative tripartite institutions to review legislation, promote health and enhance properly targeted research; • For effective monitoring systems and inspections, investigations and inquiries to improve health and safety; • Promotion of training and human resources development; • Regulation of employers' and employees' duties to identify hazards and eliminate, control and minimise the risk to health and safety; • Entrenchment of the right to refuse to work in dangerous conditions; • To give effect to the public international law obligations of the Republic relating to mining health and safety; and • To provide for matters connected therewith. 	<p>The following principles are considered applicable to the Proposed Project and are detailed below:</p> <ul style="list-style-type: none"> • The primary responsibility for ensuring a health and safe working environment in the mining site is placed on the mine owner. The Act sets out in detail the steps that employers must take to identify, assess records and control health and safety hazards in the mine; • The right of workers to participate in health and safety decisions, the right to receive health and safety information, the right to training and the right to withdraw from the workplace in face of danger; • The Act requires the establishment of institutions to promote a culture of health and safety and develop policy, legislation and regulations; and • The responsibility for enforcing MHSA lies with the Mine Health and Safety Inspectorate. The Inspectorate’s powers are recast and include the power to impose administrative fines upon employers who contravene the MHSA. The Act also contains innovative approaches to the investigation of accidents, diseases and other occurrences that threaten health and safety. <p>The applicant will be required to comply with all obligations contained in the MSHA.</p>
<p>Occupational Health and Safety Act (No. 85 of 1993)</p> <p>The Occupational Health and Safety Act (No. 85 of 1993) (OHSA) provides a legislative framework for the provision of reasonably healthy and safe conditions in the workplace. It also places extensive legal duties on employees and users of machinery and makes major inroads on employers' and employees' common law rights.</p> <p>OHSA contains provisions that impose general obligations with regard to health and safety. More detailed and specific obligations can be found in the regulations published in terms of OHSA. These include environmental, general safety, electrical machinery, driven</p>	<p>The OHSA is applicable and states that any person involved with construction, upgrades or developments for use at work or on any premises shall ensure as far as reasonably practicable that nothing about the manner in which it is installed, erected or constructed makes it unsafe or creates a risk to health when properly used.</p>

Applicable legislation and guidelines use to compile the report	Application
<p>machinery, electrical installation, construction, asbestos, hazardous chemicals substances and noise.</p> <p>The OHS Act addresses, amongst others:</p> <p>Safety requirements for the operation of plant machinery;</p> <p>Protection of persons other than persons at work against hazards to health and safety, arising out of, or in connection with, the activities of persons at work;</p> <p>Establishment of an advisory council for occupational health and safety; and</p> <p>Provisions for matters connected herewith.</p>	
<p>Promotion of Access to Information Act (No. 2 of 2000)</p> <p>The Promotion of Access to Information Act (No. 2 of 2000) (PAIA) recognises that everyone has a right of access to any information held by the state and by another person when that information is required to exercise or protect any right. The purpose of the Act is to promote transparency and accountability in public and private bodies and to promote a society in which people have access to information that enables them to exercise and protect their right.</p>	<p>Cognisance will be made of the PAIA.</p>
<p>Promotion of Administrative Justice Act (No. 3 of 2000)</p> <p>The purpose of the Promotion of Administrative Justice Act (No. 3 of 2000) (PAJA) is to govern the actions of the administration and to ensure good administrative practice, by laying down the minimum procedural requirements related to decision-making. As such, PAJA applies to all actions of the administrators, in particular environmental administrators.</p> <p>Section 1 of PAJA deals with procedures to be followed in the granting, suspending or revoking of permissions (licences, grants, permits). Sections 3 and 4 of PAJA deal with fair procedure, which requires the administrator to act in a fair manner when making a decision. Section 5 of PAJA governs the provision of reasons by the administrator and determines that an administrator provide reasons after a decision has been made (or whilst taking it), in order to justify the decision.</p>	<p>Cognisance will be made of the PAJA.</p>
<p>Provincial Ordinances and Municipal By-laws</p> <p>In addition to national legislation, some of South Africa's nine provinces have their own provincial biodiversity legislation, as nature conservation is a concurrent function of national and provincial government in terms of the Constitution of South Africa.</p>	<p><u>Limpopo Environmental Management Act (No. 7 of 2003):</u></p> <p>The Act aims to manage and protect the environment in the Province; to secure ecologically sustainable development and responsible use of natural resources in the Province; generally, to contribute to the progressive realisation of the fundamental</p>

Applicable legislation and guidelines use to compile the report	Application
	rights contained in Section 24 of the Constitution of the Republic of South Africa; and to give effect to international agreements effecting environmental management which are binding on the Province.
<p>Applicable Guidelines</p> <p>Relevant guidelines have been developed in order to assist in sustainable development within South Africa. The following guidelines are considered applicable to the Proposed Project.</p> <p>Integrated Environmental Management Information Guidelines series:</p> <p>This series of guidelines was published by the Department of Environmental Affairs (DEA), and refers to various environmental aspects. Applicable guidelines in the series include:</p> <ul style="list-style-type: none"> • Guidelines 5: Companion to NEMA EIA Regulations of 2010. • Guideline 7: Public Participation. • Guideline 9: Need and desirability. <p>Additional guidelines published in terms of the NEMA EIA Regulations, in particular:</p> <ul style="list-style-type: none"> • Guideline 3: General Guide to Environmental Impact Assessment Regulations, 2006. • Guideline 4: Public Participation in support of the Environmental Impact Assessment Regulations, 2006. • Guideline 5: Assessment of alternatives and impacts in support of the Environmental Impact Assessment Regulations, 2006. <p>Best Practice Guideline (BPG) series:</p> <p>The BPG series is a series of publications by the then Department of Water Affairs and Forestry (now DWS – Department of Water and Sanitation) providing best practice principles and guidelines relevant to certain aspects of water management. Best practice guidelines relevant to this project include the following:</p> <ul style="list-style-type: none"> • BPG A4: Pollution Control Dams. • BPG H1: Integrated Mine Water Management. • BPG H2: Pollution Prevention and Minimisation of Impacts. • BPG H3: Water Reuse and Reclamation. • BPG H4: Water treatment. • BPG G1: Storm Water Management. • BPG G2: Water and Salt balances. • BPG G3: Water Monitoring Systems. • BPG G4: Impact Prediction 	<p>The guidelines will be used throughout the Scoping and Environmental Impact Report process.</p>

Applicable legislation and guidelines use to compile the report	Application
<p>Principles of Sustainability</p> <p>According to the DMR (formerly known as the Department of Minerals and Energy) (Swart, 2007), the mining sector in South Africa aims to promote its vision of ‘sustainable development’ by enabling South Africans to make balanced and informed decisions regarding the extraction and utilisation of mineral resource, by measuring and assessing progress towards sustainable development objectives and by minimising negative impacts and optimising environmental management in the mining sector.</p> <p>The most widely accepted definition of sustainable development is provided in the World Commission of Environment and Development in its landmark report Our Common Future (the Brundtland Report) ‘development that meets the needs of the present without compromising the ability of future generations to meet their own needs.’ A core principle in sustainable development is the ‘precautionary principle’ which implies that where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.</p> <p>According to the Australian Centre for Sustainable Mining Practices (2011), sustainable development in the mining sector suggests that investments in mining projects should be financially profitable, technically appropriate, environmentally sound and socially responsible (i.e., balance economic, environmental and social aspects and guarantee the advantage for humanity at present and in the future).</p> <p>Businesses involved in extracting non-renewable resources should embrace the concept of sustainability into strategic decision-making processes and operations. In addition, responsible corporations can theoretically move towards sustainability by developing a range of appropriate socio-economic initiatives. Economic development, environmental impact and social responsibilities should be well managed, and productive relationships should exist between governments, industry and stakeholders.</p>	<p>It is understood that the definition of sustainability may not necessarily encompass the underlying factor that a non-renewable resource will be extracted. However, principles of sustainability should be incorporated into the applicant’s corporate philosophy, including aspects such as economy (e.g., chrome export, etc.), social (e.g., long-term job employment, skills development, implementation of the Social and Labour Plan, etc.) and environmental programmes (e.g., adequate implementation of mitigation measures, environmental offsets, etc.) in order to benefit future generations whilst meeting the needs of present citizens.</p>

5 NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES

Limpopo has rich mineral resources, making mining a critical sector of the economy of the province, contributing 25% to its GDP. Unemployment in the region is high with an estimated 49.9% of the economically active population in the Fetakgomo-Greater Tubatse Local Municipality being unemployed.

Although there are several mines in the area, the existing resources remain unexploited. Investment in this sector is important as it brings with it investment in infrastructure, results in creation of job opportunities and generates many other economic spin-offs. The lack of economic growth in the region warrants special attention and support to optimize the available opportunities. However, cognizance should be taken of the outflow of money from the mines in the Local Municipality to other regions.

Fetakgomo-Greater Tubatse Local Municipality has significant mining and manufacturing (ferrochrome smelters) sectors, but unemployment is still above the provincial average. Information from different sources suggests that the new mining developments that have already been around could reduce unemployment from 73% (expanded unemployment rate definition) in 2001 to 44% in 2010 and 23% in 2015. Further reduction in the unemployment rate will depend on effective intervention by public sector institutions to facilitate economic sector diversification through competitive cluster value-chain development. This implies upstream development in the manufacturing and trade sector to provide essential items in the mining supply chain by local entrepreneurs. It also implies side-stream development in the form of construction and Urban renewal. This approach is consistent with the Limpopo Employment Growth and Development Plan.

The economy of the Sekhukhune District is a mixture of very negative features (such as the highest unemployment rate in Limpopo) and very positive opportunities (like the enormous mining potential within the area). The region is also characterised by a high level of male absenteeism, a weak economic base, poor infrastructure, major service backlogs, dispersed human settlements and high poverty levels.

The Sefateng Chrome Mine project is a contributor to the South African Chrome industry. South Africa is the world's largest producer of ferrochrome. The country holds about 70% of the world's total chrome reserves, mostly located in the Bushveld Igneous Complex (BIC) ores, and produces 75% of the world's ferrochrome. India and Kazakhstan are other major producers.

South Africa is the leading producer of chromite ore, having produced an estimated ~50% of global chromite production in 2017. South African chromite production is primarily made up of chromite with less than 44% Cr₂O₃, with a smaller fraction of its production being made up of chromite with a Cr₂O₃ content of between 44% and 48%.

Chromite is mined primarily from the UG₂, and LG and MG chromite seams of which the UG₂ also contains significant amounts of PGE's. Thus, several platinum mines produce chromite as a by-product. There are several primary chrome mines, specifically maintained to provide chromite feed to the developing ferrochrome industry.

South African PGM reserves are one of the most significant globally, followed by the reserves of the USA.

The Sefateng Chrome Mine operations entail the following positive impacts:

- Social upliftment;
- Job Creation with area;
- Growth of economy;
- Increased health services and medical assistance;
- Contribution of infrastructure within in area; and
- Educational upliftment.

Mine tailings represent one of the two largest sources of mine waste from the minerals industries (the other being waste rock). Given the problems of declining ore grades and growing production, tailings generation is increasing exponentially across the global mining industry. Common practice is for mines to build large containment dams to store tailings during operations, which are then rehabilitated following mine closure. As recent tailings dam failures have shown, there are legitimate questions being raised about the long-term viability of leaving tailings above ground due to the risks of collapse and failure.

In-pit tailings storage can provide many advantages when compared to typical above-ground tailings storage facilities (TSFs). As regulations become more restrictive and existing mines expand into new pits, the motivation and opportunities for in-pit tailings disposal is increasing.

The approach of in-pit tailings has numerous advantages, such as inherent physical stability, low to negligible acid and metalliferous drainage (AMD) risks, as well as allowing more productive use of formerly mined land. Positive benefits include:

- No separate final waste deposit for tailings material, as the material will be used for backfilling of the opencast void as part of the rehabilitation activities.
- A smaller footprint at closure since areas already disturbed are used for the deposition of the tailings.
- Maximised reuse and recycling of waste materials through use of the tailings for backfilling.
- Maximising economical value of the tailings material through selling to third parties for reclamation off-site. This also ties in with aspects such as reduction of mining footprint and avoidance of a final tailings stockpile at the end of LoM.

Since Sefateng Chrome Mine is an existing mine with existing surface infrastructure, the site has already been transformed ecologically and in terms of other environmental aspects. The backfilling of tailings into the existing and authorised opencast pits is not foreseen to cause any additional disturbances to environmental features.

Thus, from all the information given above the current and proposed activities by Sefateng Chrome Mine, if executed according to environmental guidelines and laws should benefit the economy of SA as a whole, the people living in proximity to the mine, and all other industries dependent on mining for their income.

According to DEA (2017), Guideline on Need and Desirability, Department of Environmental Affairs, to describe the need for a development, it must be determined whether it is the right time for locating the type of land use and/or activity being proposed. To describe the desirability for a development, it must be determined, whether it is the right place for locating the type of land use and/or activity being proposed. Need and desirability can be equated to the concept of wise use of land which can be determined through asking the question: “what is the most sustainable use of land?” Considering the above, the need and desirability of an application must be addressed separately and in detail answering inter alia the questions in the table below.

Table 7: Need and desirability considerations

Securing ecological sustainable development and use of natural resources		
1.	How will this development (and its separate elements/aspects) impact on the ecological integrity of the area?	Since Sefateng Chrome Mine is an existing mine with existing surface infrastructure. The site has already been transformed ecologically within the footprint.
1.1	How were the following ecological integrity considerations taken into account? 1.1.1 Threatened Ecosystems, 1.1.2 Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in	The baseline information provided within the document described all the ecological aspects as assessed for the construction and operation of the

	<p>management and planning procedures, especially where they are subject to significant human resource usage and development pressure,</p> <p>1.1.3 Critical Biodiversity Areas (“CBAs”) and Ecological Support Areas (“ESAs”),</p> <p>1.1.4 Conservation targets,</p> <p>1.1.5 Ecological drivers of the ecosystem,</p> <p>1.1.6 Environmental Management Framework,</p> <p>1.1.7 Spatial Development Framework, and</p> <p>1.1.8 Global and international responsibilities relating to the environment (e.g. RAMSAR sites, Climate Change, etc.).</p>	<p>existing infrastructure, storage facilities, dumps and opencast areas.</p> <p>Sensitive landscapes and features have been assessed and described within the section regarding Sensitive Landscapes (Table 7).</p>
<p>1.2</p>	<p>How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity? What measures were explored to firstly avoid these negative impacts, and where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?</p>	<p>Since Sefateng Chrome Mine is an existing mine with existing surface infrastructure, the site has already been transformed ecologically within the footprints. The activities proposed for this application, i.e. backfilling of opencast voids with tailings, will not increase or modify the existing footprint of the mine. The ecological systems have been assessed and ecologically sensitive areas and species have been pointed out and mitigation and management measures have been described within the Impact Management Tables in Section B: Environmental Management Programme.</p>
<p>1.3</p>	<p>How will this development pollute and/or degrade the biophysical environment? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?</p>	<p>Since Sefateng Chrome Mine is an existing mine with existing surface infrastructure, the site has already been transformed ecologically and in terms of other environmental aspects. It is not foreseen that any other sensitive ecosystems will be adversely affected due to the new activities being applied for, i.e. backfilling of opencast voids with tailings.</p> <p>The use of tailings material for backfilling of opencast voids may have the potential to pollute the underground water system. The impacts to groundwater was determined through a comprehensive geohydrological and waste contamination study. The aforementioned study found that impacts to groundwater quality are expected to be of low to moderate significance. Management measures have been described within the Impact Management Tables in Section B: Environmental Management Programme.</p> <p>Positive benefits include:</p> <ul style="list-style-type: none"> • No separate final waste deposit for tailings material, as the material will be used for backfilling of the opencast void as part of the rehabilitation activities.

		<ul style="list-style-type: none"> • A smaller footprint at closure since areas already disturbed are used for the deposition of the tailings. • Maximising economical value of the tailings material through selling to third parties for reclamation off-site. This also ties in with aspects such as reduction of mining footprint and avoidance of a final tailings stockpile at the end of LoM. <p>No offset strategies are relevant for this operation.</p>
1.4	<p>What waste will be generated by this development? What measures were explored to firstly avoid waste, and where waste could not be avoided altogether, what measures were explored to minimise, reuse and/or recycle the waste? What measures have been explored to safely treat and/or dispose of unavoidable waste?</p>	<p>All possible impacts that may occur as a result of the activities being applied for have been mitigated and will be subjected to a monitoring framework as prescribed within the Environmental Management Programme.</p> <p>By considering the negative impact of tailings deposition this project has been specifically developed to avoid, where possible, negative environmental impacts while taking into account the need to reduce and recycle wastes produced by the operation. The following positive impacts and measures to reduce impacts are applicable to the project:</p> <ul style="list-style-type: none"> • Backfilling of the pit with tailings material provides the opportunity to reduce the footprint of mining operations, e.g. precluding the need to construct additional tailings storage facilities. • A smaller footprint at closure since areas already disturbed are used for the deposition of the tailings. • Maximising economical value of the tailings material through selling to third parties for reclamation off-site. This also ties in with aspects such as reduction of mining footprint and avoidance of a final tailings stockpile at the end of LoM.
1.5	<p>How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?</p>	<p>Since Sefateng Chrome Mine is an existing mine with existing surface infrastructure. The site footprint has already been transformed. It is not foreseen that any heritage or cultural aspects will be affected.</p> <p>Heritage and Ecological assessments have been conducted for the existing activities.</p>
1.6	<p>How will this development use and/or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the</p>	<p>Non-renewable resources relate to the ore and geology removed from the existing opencast and underground sections, which do not form part of</p>

	<p>resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?</p>	<p>the activities being applied for as part of this application. The tailings may also be considered as non-renewable resources. The project specifically considers the best available uses of these resources by implementing the best economic use, reuse and recycling through:</p> <ul style="list-style-type: none"> • Maximised reuse and recycling of waste materials through use of the tailings for backfilling. • Maximising economical value of the tailings material through selling to third parties for reclamation off-site. This also ties in with aspects such as reduction of mining footprint and avoidance of a final tailings stockpile at the end of LoM. <p>Within this document the No-Go alternative was included for assessment and the No-Go alternative is rejected, as it is not the best suited scenario for the use or storage of the tailings material produced by the wash plant.</p>
<p>1.7</p>	<p>How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and/or impact on the ecosystem jeopardise the integrity of the resource and/or system taking into account carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimise the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts?</p> <p>1.7.1. Does the proposed development exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e. de-materialised growth)? (note: sustainability requires that settlements reduce their ecological footprint by using less material and energy demands and reduce the amount of waste they generate, without compromising their quest to improve their quality of life).</p> <p>1.7.2. Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra- and intergenerational equity, and are there more important priorities for which the resources should be used (i.e. what are the opportunity costs of using these resources within the proposed development alternative?)</p> <p>1.7.3. Do the proposed location, type and scale of development promote a reduced dependency on resources?</p>	<p>Since Sefateng Chrome Mine is an existing mine with existing surface infrastructure, the site has already been transformed ecologically and in terms of other environmental aspects. It is not foreseen that any other sensitive ecosystems will be adversely affected due to the new activities being applied for, i.e. backfilling of opencast voids with tailings.</p> <p>By considering the negative impact of tailings deposition this project has been specifically developed to avoid, where possible, negative environmental impacts while taking into account the need to reduce and recycle wastes produced by the operation. The following positive impacts and measures to reduce impacts are applicable to the project:</p> <ul style="list-style-type: none"> • Backfilling of the pit with tailings material provides the opportunity to reduce the footprint of mining operations, e.g. precluding the need to construct additional tailings storage facilities. • A smaller footprint at closure since areas already disturbed are used for the deposition of the tailings. • Maximising economical value of the tailings material through selling to third parties for reclamation off-site. This also ties in with aspects such as reduction of mining footprint and avoidance of a final tailings stockpile at the end of LoM.

<p>1.8</p>	<p>How was a risk-averse and cautious approach applied in terms of ecological impacts? 1.8.1 What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)? 1.8.2 What is the level of risk associated with the limits of current knowledge? 1.8.3 Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?</p>	<p>Since Sefateng Chrome Mine is an existing mine with existing surface infrastructure, the site has already been transformed ecologically and in terms of other environmental aspects. It is not foreseen that any other sensitive ecosystems will be adversely affected due to the new activities being applied for, i.e. backfilling of opencast voids with tailings.</p> <p>Ecological aspects have been assessed as part of previous applications for existing activities, however, other indirect impacts such as incidental water pollution and thereby polluting the natural environment and ecology may occur and risk will be managed and mitigated to prevent this from happening.</p> <p>The use of tailings material for backfilling of opencast voids may have the potential to pollute the underground water system. The impacts to groundwater was determined through a comprehensive geohydrological and waste contamination study. The aforementioned study found that impacts to groundwater quality are expected to be of low to moderate significance. Management measures have been described within the Impact Management Tables in Section B: Environmental Management Programme.</p> <p>Ecological aspects were included in the Impact Assessment, which is a quantifying tool to calculate risk for environmental aspects.</p>
<p>1.9</p>	<p>How will the ecological impacts resulting from this development impact on people's environmental right in terms following. 1.9.1 Negative impacts: e.g. access to resources, opportunity costs, loss of amenity (e.g. open space), air and water quality impacts, nuisance (noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts? 1.9.2 Positive impacts: e.g. improved access to resources, improved amenity, improved air or water quality, etc. What measures were taken to enhance positive impacts?</p>	<p>Impacts such as noise, dust and other health and safety aspects were assessed within this document; however, the risk is low. Since Sefateng Chrome Mine is an existing operation with Environmental policies and Standard Operating Procedures (SOPs) in place to avert impacts of the existing operations, these should be extended to include the reuse of the tailings as well. This will ensure that negative impacts associated with the mining and related activities are not adverse and managed to the best level possible. Monitoring of impacts related to dust, noise and water (monitoring frameworks) exist and will incorporate any impacts that may be created as a result of the reuse and backfilling with tailings, which is expected to be insignificant to low due to management of impacts.</p> <p>Positive benefits include:</p>

		<ul style="list-style-type: none"> • No separate final waste deposit for tailings material, as the material will be used for backfilling of the opencast void as part of the rehabilitation activities. • A smaller footprint at closure since areas already disturbed are used for the deposition of the tailings. • Maximising economical value of the tailings material through selling to third parties for reclamation off-site. This also ties in with aspects such as reduction of mining footprint and avoidance of a final tailings stockpile at the end of LoM.
1.10	Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development’s ecological impacts will result in socio-economic impacts (e.g. on livelihoods, loss of heritage site, opportunity costs, etc.)?	<p>Ecosystem services will not be affected by the activities being applied for.</p> <p>The existing mining and associated activities has contributed to the transformation of the natural habitat on which the activities being applied for will be undertaken.</p>
1.11	Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?	Refer to all the comments made above as positive and negative aspects have been addressed.
1.12	Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the “best practicable environmental option” in terms of ecological considerations?	Alternatives have been assessed within Section 7 below. No other feasible alternatives exist and the best suited alternatives are the ones included within this application.
1.13	Describe the positive and negative cumulative ecological/biophysical impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and existing and other planned developments in the area?	<p>Cumulative impacts will be those associated with the existing mining operations within the area, such as the existing Sefateng Chrome Mine and the adjacent Moeijelijk Mine. Cumulative impacts as a result of the reuse and backfilling of the tailings will insignificant, since the activities being applied for are located on the existing footprint of the mine.</p> <p>Cumulative impacts related to groundwater pollution have been addressed in this report (refer to impact assessment tables).</p> <p>As already mentioned, through the implementation of good practice environmental management measures as well as mitigation measures, all direct and cumulative impacts which may result from the proposed development will be addressed and ensure that the environment is affected to the minimum.</p>
Promoting justifiable economic and social development”		

2.1	<p>What is the socio-economic context of the area, based on, amongst other considerations, the following considerations?</p> <p>2.1.1 The IDP (and its sector plans' vision, objectives, strategies, indicators and targets) and any other strategic plans, frameworks of policies applicable to the area,</p> <p>2.1.2 Spatial priorities and desired spatial patterns (e.g. need for integrated of segregated communities, need to upgrade informal settlements, need for densification, etc.),</p> <p>2.1.3 Spatial characteristics (e.g. existing land uses, planned land uses, cultural landscapes, etc.), and</p> <p>2.1.4 Municipal Economic Development Strategy ("LED Strategy").</p>	<p>The project is aligned with the objectives of the municipal Spatial Development Framework (SDF) and Integrated Development Plan (IDP) and will not compromise the integrity of these respective forward planning documents.</p>
2.2	<p>Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area?</p> <p>2.2.1. Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs?</p>	<p>Considering the key sectors identified in Greater Tubatse Municipality LED Strategy advocates four programmes for economic development. This comprises (1) Sector Development, (2) Economic Infrastructure Support, (3) Social Development, and (4) Institutional/Governance Reform.</p> <p>The projects that have been identified in the LED are aimed at economic development by ensuring job opportunities are created, jobs security is created, skills development takes place and that opportunities are created for SMME development.</p> <p>Mining plays an important part in the sector development of the LED strategy. The mine also contributes towards the socio-economic development of the region through social-upliftment and job creation as primary agents.</p>
2.3	<p>How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?</p>	<p>Refer to comments made above. The activities being applied for, i.e. reuse of tailings and backfilling with tailings will allow the current mining operations to continue whilst maximising the economic viability of the project and use of resources. As a result the positive effects associated with the socio-economic environment in terms of employment stability and local economic benefits will be increased.</p>
2.4	<p>Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and long-term? Will the impact be socially and economically sustainable in the short- and long-term?</p>	<p>The activities being applied for, i.e. reuse of tailings and backfilling with tailings will allow the current mining operations to continue whilst maximising the economic viability of the project and use of resources. As a result the positive effects associated with the socio-economic environment in terms of employment stability and local economic benefits will be increased.</p>

		<p>Sefateng Chrome Mine has an existing SLP which is being implemented for the project.</p>
<p>2.5</p>	<p>In terms of location, describe how the placement of the proposed development will;</p> <p>2.5.1. result in the creation of residential and employment opportunities in close proximity to or integrated with each other,</p> <p>2.5.2. reduce the need for transport of people and goods,</p> <p>2.5.3. result in access to public transport or enable non-motorised and pedestrian transport (e.g. will the development result in densification and the achievement of thresholds in terms public transport),</p> <p>2.5.4. compliment other uses in the area,</p> <p>2.5.5. be in line with the planning for the area,</p> <p>2.5.6. for urban related development, make use of underutilised land available with the urban edge,</p> <p>2.5.7. optimise the use of existing resources and infrastructure,</p> <p>2.5.8. opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g. not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement),</p> <p>2.5.9. discourage "urban sprawl" and contribute to compaction/densification,</p> <p>2.5.10. contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs,</p> <p>2.5.11. encourage environmentally sustainable land development practices and processes</p> <p>2.5.12. take into account special locational factors that might favour the specific location (e.g. the location of a strategic mineral resource, access to the port, access to rail, etc.),</p> <p>2.5.13. the investment in the settlement or area in question will generate the highest socio-economic returns (i.e. an area with high economic potential),</p> <p>2.5.14. impact on the sense of history, sense of place and heritage of the area and the socio-cultural and cultural-historic characteristics and sensitivities of the area, and</p> <p>2.5.15. in terms of the nature, scale and location of the development promote or act as a catalyst to create a more integrated settlement?</p>	<p>Sefateng Chrome Mine is an existing mine with existing surface infrastructure.</p> <p>Alternatives have been assessed within Section 7 below. Sefateng Chrome Mine is an existing mine and the best suited alternative is the one included within this application, since it will utilise all the existing surface infrastructure on the mine and will not lead to an increase of the development's footprint (leading to less additional surface impacts). This is the preferred option and location and it is favourable in terms of the existing infrastructure and services currently present within the site and local vicinity.</p> <p>The existing infrastructure will complement the activities being applied for as it will optimise the use of existing resources and infrastructure. No opportunity costs associated with spatial reconstruction priorities, bulk infrastructure developments and urban sprawl issues are expected.</p> <p>Local workers and services are utilised and will continue to be utilised to ensure local development and contribution to the correction of the historically distorted spatial patterns and optimum use of existing infrastructure etc. Investment will be in the local settlement area to generate the highest socio-economic returns.</p> <p>No impacts on the sense of history, sense of place and heritage are expected and an impact assessment on the existing project has been conducted by a Heritage specialist to confirm this. If at any stage during the development artefacts or historical aspects are uncovered, a specialist will be consulted immediately to ensure that possible heritage aspects remain conserved.</p> <p>The activities being applied for, i.e. reuse of tailings and backfilling with tailings will allow the current mining operations to continue whilst maximising the economic viability of the project and use of resources. As a result the positive effects associated with the socio-economic environment in terms of employment stability and local economic benefits will be increased.</p>

<p>2.6</p>	<p>How were a risk-averse and cautious approach applied in terms of socio-economic impacts</p> <p>2.6.1. What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?</p> <p>2.6.2. What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge?</p> <p>2.6.3. Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?</p>	<p>No updated Socio-Economic report was done or required for the compilation of this report. Socio-Economic aspects have been adequately assessed and addressed within this document and the Environmental Management Programme as mitigation measures. Updated information from the Integrated Development Plan was used to inform the Baseline assessment as well as the impact prediction. A Social and Labour Plan (SLP) has been developed for the mine.</p> <p>It is important to keep in mind that the Sefateng Chrome Mine is an existing mine and no sudden large-scale influx of workers or activities are associated or predicted for the activity applied for.</p> <p>Also refer to the comments below.</p>
<p>2.7</p>	<p>How will the socio-economic impacts resulting from this development impact on people's environmental right in terms following:</p> <p>2.7.1. Negative impacts: e.g. health (e.g. HIV-Aids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?</p> <p>2.7.2. Positive impacts. What measures were taken to enhance positive impacts?</p>	<p><u>Crime, Health and HIV</u></p> <p>Influx of foreigners and job seekers and increase in disposable income for local people may create negative social impacts such as crime, alcoholism and prostitution in and around the project area. This will usually result in moderate to high negative impacts to the surrounding communities.</p> <p>The Sefateng Chrome Mine is an existing mine which required approval for new activities as outlined in this report.</p> <p>Therefore, a large influx of new workers and foreigners is not expected as the mine has been already established. An insignificant to low negative impact is expected, with several positive impacts as well.</p> <p>The reuse and of tailings and backfilling using tailings are not expected to add to the existing negative impacts of the existing mining activities in terms of social impacts as the footprint of the mining area will not be increased. The impact will therefore be insignificant as mining and tailings disposal is currently taking place on the project footprint.</p> <p>The activities being applied for, i.e. reuse of tailings and backfilling with tailings will allow the current mining operations to continue whilst maximising the economic viability of the project and use of resources. As a result the positive effects associated with the socio-economic</p>

		<p>environment in terms of employment stability and local economic benefits will be increased.</p> <p>Sefateng Chrome Mine has an existing SLP which is being implemented for the project.</p>
2.8	<p>Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio-economic impacts will result in ecological impacts (e.g. over utilisation of natural resources, etc.)?</p>	<p>Ecosystem services are not expected to be affected by the reuse of the tailings.</p> <p>The existing mining and associated activities has contributed to the transformation of the natural habitat. However, the proposed reuse of tailings and backfilling with tailings will be on the existing authorised areas associated with Sefateng Chrome Mine. The impacts and management features are included in the EMPr.</p> <p>Assessed socio-economic aspects have already been described within previous comments and reports have been addressed in this EIA and EMPr Report.</p>
2.9	<p>What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?</p>	<p>Refer to comments made above. Sefateng Chrome Mine is an existing operation and the activities being applied for, i.e. reuse of tailings and backfilling with tailings will allow the current mining operations to continue whilst maximising the economic viability of the project and use of resources. As a result the positive effects associated with the socio-economic environment in terms of employment stability and local economic benefits will be increased.</p> <p>It is the preferred option in terms of socio-economic considerations.</p>
2.10	<p>What measures were taken to pursue environmental justice 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 (who are the beneficiaries and is the development located appropriately)? Considering the need for social equity and justice, do the alternatives identified, allow the "best practicable environmental option" to be selected, or is there a need for other alternatives to be considered?</p>	<p>There is no need for additional alternatives to be further considered as the option included within this document is the best suited and preferred option in terms of both environmental and social impacts.</p> <p>The mine has and will continue to employ local workers and source services from the local area where possible to ensure social equity and benefits to disadvantaged persons. The Sefateng Chrome Mine has an approved Social and Labour Plan, which is also adhered to and implemented in accordance with the law.</p>
2.11	<p>What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access</p>	<p>Refer to all the comments made within this section of the report as it has already been addressed. Workers sourced by Sefateng Chrome Mine are in accordance with the Social and Labour Plan. Skills development and socio-economic</p>

	thereto by categories of persons disadvantaged by unfair discrimination?	upliftment forms part of the legal obligations as approved by Sefateng Chrome Mine's Social and Labour Plan.
2.12	What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?	<p>The Sefateng Chrome Mine is an existing mine with all the required operational features and procedures as well as a SHEQ officer to ensure that all Health and Safety aspects are adhered to.</p> <p>A comprehensive environmental monitoring plan is currently implemented for the operation and a rehabilitation plan has been developed for implementation.</p>
2.13	<p>What measures were taken to:</p> <p>2.13.1. ensure the participation of all interested and affected parties,</p> <p>2.13.2. provide all people with an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation,</p> <p>2.13.3. ensure participation by vulnerable and disadvantaged persons,</p> <p>2.13.4. promote community wellbeing and empowerment through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means,</p> <p>2.13.5. ensure openness and transparency, and access to information in terms of the process,</p> <p>2.13.6. ensure that the interests, needs and values of all interested and affected parties were taken into account, and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge, and</p> <p>2.13.7. ensure that the vital role of women and youth in environmental management and development were recognised and their full participation therein were being promoted?</p>	The public participation process has been followed as prescribed and has been described in Section 8. All Interested and Affected parties have been provided a chance to register and comment on the project. All comments received during the Public Participation Phase will be included within the final documentation to be submitted to DMRE for their consideration and assessment.
2.14	Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g. a mixture of low-, middle-, and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)?	Refer to comments made above regarding the Public Participation Process.
2.15	What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected?	The Sefateng Chrome Mine is an existing mine with all the required operational features and procedures as well as a SHEQ officer to ensure that all Health and Safety aspects are adhered to.
2.16	Describe how the development will impact on job creation in terms of, amongst other aspects:	Sefateng Chrome Mine is an existing operation and the activities being applied for, i.e. reuse of

	<p>2.16.1. the number of temporary versus permanent jobs that will be created, 2.16.2. whether the labour available in the area will be able to take up the job opportunities (i.e. do the required skills match the skills available in the area), 2.16.3. the distance from where labourers will have to travel, 2.16.4. the location of jobs opportunities versus the location of impacts (i.e. equitable distribution of costs and benefits), and 2.16.5. the opportunity costs in terms of job creation (e.g. a mine might create 100 jobs, but impact on 1000 agricultural jobs, etc.).</p>	<p>tailings and backfilling with tailings will allow the current mining operations to continue whilst maximising the economic viability of the project and use of resources. As a result the positive effects associated with the socio-economic environment in terms of employment stability and local economic benefits will be increased.</p> <p>No additional jobs or changes to current employment is expected as a result to the activities being applied for.</p>
2.17	<p>What measures were taken to ensure: 2.17.1. that there were intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment, and 2.17.2. that actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures?</p>	<p>Since the Public Participation Process involves all the relevant departments, no conflicts of interests are foreseen and none were recorded during the Scoping phase of the project.</p>
2.18	<p>What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage?</p>	<p>Refer to all comments made above regarding socio-economic benefits that may result from the project as well as those already present due to the existing mining activities.</p>
2.19	<p>Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?</p>	<p>Yes. Mitigation measures as well as long term monitoring will be included in the EMPr, which will ensure that impacts remained managed and monitored (to prevent both short and long term impacts).</p> <p>Financial provision for rehabilitation of the current mining activities has been made and the rehabilitation plan as contained in the EMP should minimise any environmental legacies remaining after closure.</p>
2.20	<p>What measures were taken to ensure that 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 will be paid for by those responsible for harming the environment?</p>	<p>Financial Provisioning forms part of the DMRE EIA/EMPr requirements and is to be provided either by Financial Guarantee/ Bank Security before the operation may commence. These funds are to be used for Closure and Rehabilitation costs, to restore the natural environment. The "Polluter Pays principle" also describes the concept which will ensure that the Sefateng Chrome Mine restores and control pollution in the event that it becomes necessary.</p>
2.21	<p>Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the best</p>	<p>Alternatives have been assessed within Section 7 below. The best suited alternative is the one included within this application. This is the preferred option and location and it is favourable in terms of the existing infrastructure and services</p>

	<p>practicable environmental option in terms of socio-economic considerations?</p>	<p>currently present within the site and local vicinity (transport etc.).</p> <p>Local workers and services are utilised and will continue to be utilised to ensure local development and contribution to the correction of the historically distorted spatial patterns and optimum use of existing infrastructure etc. Investment will be in the local settlement area to generate the highest socio-economic returns.</p> <p>No impacts on the sense of history, sense of place and heritage are expected.</p>
2.22	<p>Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area?</p>	<p>Refer to comments made above, specifically those made for point 2.7. within this table.</p>

6 PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED

The operation of the wash plant and associated production of tailings will coincide with the LoM, which is currently estimated as 30 years. Therefore the Waste Management Licence is required for a period of 30 years.

7 DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED SITE

The areas for the proposed backfilling with tailings material on the farm Zwartkoppies 413 KS were selected based on availability of the remaining opencast voids. Only existing pits can be backfilled, therefore it was not practical to select any other sites. A tailings stockpile has been authorised on Sefateng Chrome Mine and alternatives for the storage of tailings would entail the extension of the authorised storage facility, the development of additional storage facilities, using tailings for the backfilling of the opencast voids or transportation of tailings material off-site for storage by third-parties.

Sefateng Chrome Mine is an existing operation and the preferred alternative for storage of additional tailings is located entirely on the current mining footprint, thus reducing the impacts on the biophysical and social environment. No extension of the mining footprint will be required for the proposed activities.

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

1. The property on which or location where it is proposed to undertake the activity
2. The type of activity to be undertaken
3. The design or layout of the activity
4. The technology to be used in the activity
5. The operational aspects of the activity
6. The option of not implementing the activity

The details of the alternatives considered are described in the sections below.

7.1 SITE ALTERNATIVES

The areas for the proposed backfilling with tailings material on the farm Zwartkoppies 413 KS were selected based on availability of the remaining opencast voids. Only existing pits can be backfilled, therefore it was not practical to select any other sites. A tailings stockpile has been authorised for the operation and alternatives for the storage of tailings would entails the extension of the authorised storage facility, the development of additional storage facilities or transportation of tailings material off-site for storage by third-parties.

Sefateng Chrome Mine is an existing operation the preferred alternative is located entirely on the current mining footprint, thus reducing the impacts on the biophysical and social environment. No extension of the mining footprint will be required for the proposed activities.

The preferred alternative for the project is the backfilling of the opencast void with tailings material. Benefits of backfilling the pits with tailings, as opposed to other alternative disposal methods, are the following:

- Worked out voids can be filled at a fraction of the costs associated with designing, constructing and operating a conventional, thickened, paste or dry stack facility.
- The tailings do not require retaining walls, thus the risks associated with embankment instability are eliminated. Thereby reducing risks to nearby communities, employees and the biophysical environment.
- No separate final waste deposit for tailings material, as the material will be used for backfilling of the opencast void as part of the rehabilitation activities.
- A smaller footprint at closure since areas already disturbed are used for the deposition of the tailings.
- Maximised reuse and recycling of waste materials through use of the tailings for backfilling.
- Little to no amendments required to existing infrastructure in order to support the proposed activities.

- The farm is currently being mined which ensures that the proposed project falls into the current sense of place and land use.
- No significant surface water bodies (i.e. perennial streams or large dams/ponds) are within close proximity to the existing opencast pits.

Alternatives related to surface deposition of tailings at either a new facility or expanding the authorised storage facility have the following attributes:

- Expansion of the authorised tailings facility will require the expansion of the operational footprint and additional clearance of vegetation and disturbance to the natural environment.
- The construction of an additional, separate tailings facility will lead to site clearance and thereby additional impacts to the biophysical environments. If the tailings facility is sited toward the south-eastern portion of the farm, away from communities, the site will be in close proximity to surface water resources. Additional haul roads and infrastructure will also be required in support of an additional, separate facility.
- Surface deposition of tailings entails high economic cost in terms maintenance of the facility, design and construction. Thereby reducing the economic viability of the mining project.

7.2 THE TYPE OF ACTIVITY TO BE UNDERTAKEN

The Sefateng Chrome Mine is an existing operation with a wash plant and tailings storage facilities to be constructed. The type of activity to be undertaken therefore relates to the method of the storage of tailings. Alternatives for the storage of tailings would entail the extension of the dry tailings storage facility, the development of additional storage facilities or transportation of tailings material off-site for storage by third-parties.

The preferred alternative for the project is the backfilling of the opencast void with tailings material. Benefits of backfilling the pits with tailings, as opposed to other alternative disposal methods, are the following:

- Worked out voids can be filled at a fraction of the costs associated with designing, constructing and operating a conventional, thickened, paste or dry stack facility.
- The tailings do not require retaining walls, thus the risks associated with embankment instability are eliminated. Thereby reducing risks to nearby communities, employees and the biophysical environment.
- No separate final waste deposit for tailings material, as the material will be used for backfilling of the opencast void as part of the rehabilitation activities.
- A smaller footprint at closure since areas already disturbed are used for the deposition of the tailings.
- Maximised reuse and recycling of waste materials through use of the tailings for backfilling.
- Little to no amendments required to existing infrastructure in order to support the proposed activities.
- The farm is currently being mined which ensures that the proposed project falls into the current sense of place and land use.
- No significant surface water bodies (i.e. perennial streams or large dams/ponds) are within close proximity to the existing opencast pits.

Alternatives related to surface deposition of tailings at either a new facility or expanding the authorised dry tailings storage facility have the following attributes:

- Expansion of the dry tailings facility will require the expansion of the operational footprint and additional clearance of vegetation and disturbance to the natural environment.
- The construction of an additional, separate tailings facility will lead to site clearance and thereby additional impacts to the biophysical environments. Additional haul roads and infrastructure will also be required in support of an additional, separate facility.
- Surface deposition of tailings entails high economic cost in terms maintenance of the facility, design and construction. Thereby reducing the economic viability of the mining project.

7.3 DESIGN OR LAYOUT OF ACTIVITY

Refer to Sections 7.1 and 7.2, above.

7.4 THE TECHNOLOGY TO BE USED IN THE ACTIVITY

The technology used will be limited to the technology currently used within the Sefateng Chrome Mine operation wash plant, which produces the tailings. The tailings produced by the wash plant will be completely dewatered and de-gritted with an incline dewatering screen or filter press situated next to the wet tailings pad, a conveyor or pipe system will discharge the dewatered tailings onto the wet tailings pad. Once tailings have dried sufficiently it will be transferred to the dry tailings stockpile, from where it will be either sold to third parties for reclamation (when necessary or economically viable), or transported to the opencast void for use in backfilling.

To facilitate the reuse of the tailings, whilst minimising the potential environmental impacts of the reuse of the tailings material, a preconcentrator will be installed at the wash plant. The purpose of the preconcentrator is to maximize the extraction of chrome in the wash plant process, which reduces the chrome content in the tailings material. After implementation of the preconcentrator it is expected that the tailings material produced by the wash plant will largely comprise of silica, representative of the waste rock and overburden material found on the mining area.

7.5 THE OPERATIONAL ASPECTS OF THE ACTIVITY

Current authorisations allow for wet tailings material produced by the wash plant to dry on slabs, prior to storage on the dry tailings stockpile. This allows for the maximum water recovery and recycling within the wash plant process. The preferred alternative is for the dry tailings material to then be transported to the opencast void for use in backfilling.

The preferred method of transportation of the tailings material to the opencast pits is either by conveyor or pipe system. The alternative which was considered for transportation of the tailings was use of front-end-loaders and trucks. The conveyor or pipe system is preferred as it reduces traffic on the mining site and thereby diesel costs, emissions and safety aspects.

7.6 NO GO OPTION

The no-go option refers to the alternative of the proposed development (reuse of tailings material) not going ahead at all. Should the project not go ahead, the storage and disposal of tailings at the Sefateng Chrome Mine operation will continue as currently authorised, through storage of the tailings on surface stockpiles and selling of tailings to third parties when economically viable or necessary. This may lead to operational and economical constraints for the operation. The operation will need to sell tailings when the capacity of the storage area is reached whether the market is optimal or not. Should no buyer be available at such a time the wash plant will be forced to shut-down, leading to economic losses for the mine as well as possible job losses for employees. Closure of the wash plant may further affect the viability of the mining operation as a whole, leading to possible closure of the mine as a whole.

8 DETAILS OF THE PUBLIC PARTICIPATION PROCESS FOLLOWED

8.1 OBJECTIVES OF THE PUBLIC PARTICIPATION

The purpose of this Public Participation Process is:

- To provide Background Information to the proposed activity;
- To provide a locality map indicating the locality of the proposed activity;
- To notify potential Interested and Affected Parties of the Environmental Process to be followed in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002);
- To notify potential Interested and Affected Parties of the Environmental Process to be followed in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended;
- To notify potential Interested and Affected Parties of the Heritage Assessment to be conducted in terms of the National Heritage Resources Act, 1999 (Act No. 25 of 1999); and
- To obtain issues and concerns from potential Interested and Affected Parties regarding the Environmental Processes to be followed and the proposed activity, which will be addressed as part of the Public Participation Process.

Public Participation is important for the following reasons:

- It provides an opportunity for Interested & Affected Parties (I&APs), Environmental Assessment Practitioners (EAPs) and the competent authority (CA) to obtain clear, accurate and understandable information about the environmental impacts of the proposed activity or implications of a decision;
- It provides I&APs with an opportunity to voice their support, concerns and questions regarding the project application or decision;
- It provides I&APs with the opportunity of suggesting ways for reducing or mitigating any negative impacts of the project and for enhancing its positive impacts;
- It enables an applicant to incorporate the needs, preferences and values of affected parties into its application;
- It provides opportunities for clearing up misunderstandings about technical issues, resolving disputes and reconciling conflicting interests;
- It is an important aspect of securing transparency and accountability in decision-making; and
- It contributes toward maintaining a healthy, vibrant democracy.

8.2 IDENTIFICATION OF I&APS

The following groups were identified as potential Interested and Affected Parties (I&APs):

- Community Representatives and Members;
- Relevant Government Departments;
- Relevant Institutional/Organisational Representatives;
- Relevant Municipal Representatives, including the relevant Ward Councillors;
- Landowners/Occupiers;
- Directly affected Surrounding Landowners/Occupiers;
- Land Claimants;
- Surrounding Mining and Related Activities (2 km radius); and
- Non-Government Organisations and Agencies.

To ensure that all potential I&APs were made aware of the project and have the opportunity to register and provide comments, the notification process was as thorough as possible. Registration will remain open throughout the Public Participation Process, so as to allow affected parties to register and submit their input throughout. For the list of registered I&APs refer to Appendix 1 of the PP Report.

8.3 NOTIFICATION OF I&APS

8.3.1 Site Notices

To inform surrounding and immediate communities, landowners, mine workers and passers-by of the proposed project, four A2 site notices (2x Sepedi and 2x English) were erected at visible and accessible locations on 28 September 2021 (refer to table below). Photographic evidence of the site notices erected is attached as Appendix 2 of the PP Report. Apart from these, five (5) A2 site notices were provided to each of the Community Representatives for Jibeng Community and Ga-Phasha Community for placement within the relevant communities where deemed necessary.

Table 8: Locality of Site Notices Placed

Site Notices	Place Name	Coordinates
1x English Site Notice 1x Sepedi Site Notice	Sefateng Chrome Mine: enroute to Zwarkoppies Entrance (first boom gate)	24°18'3.24"S 29°58'56.62"E
1x English Site Notice 1x Sepedi Site Notice	Turnoff from R37 Route towards the Sefateng Chrome Mine Zwarkoppies Mine	24°17'51.83"S 29°59'5.42"E

8.3.2 Newspaper Advertisements

To inform a broad spectrum of individuals who might want to register as I&APs, newspaper advertisements were placed in one local newspaper and one regional newspaper. For proof of advertisements placed, refer to Appendix 3 of the PP Report. Advertisements were placed in the following newspapers:

- Thursday, 30 September 2021: Page 8 of the Steelburger/Lydenburg News (Regional) in English.
- Thursday, 30 September 2021: Page 6 of the Sekhukhune Times (Local) in Sepedi.

8.3.3 Written Notifications

Identified I&APs were directly informed of the application processes by means of email, hand delivery, registered post and text messages. All notifications invited potential I&APs to a 30-day commenting period on the Draft Scoping Report and the Water Use License Application Process and encouraged potential I&APs to register as I&APs to receive further information on the process, including information on the succeeding commenting periods for the Draft Environmental Impact Assessment (EIA) and the Draft Water Use License Application (WULA) Technical Report. Proof of written notifications sent is provided in the relevant appendices as described in the sections to follow.

8.3.3.1 Hand Delivery

The local communities residing within the immediate vicinity of the study area was notified via hand delivery of Background Information Documents (BIDs), site notices and hard copies of the Draft Scoping Report to the representatives of both the Jibeng Community and the Ga-Phasha Community, for distribution within the communities on 29 September 2021. The community representatives assisted in placing hard copies of the documents at the Jibeng Community Hall and the Ga-Phasha Community Hall for public viewing. The Background Information Document (BID) has been attached to this report as Appendix 4 of the PPP Report.

Further to the above, BIDs accompanied by notification letters for the Draft Scoping Report commenting period and copies of the Draft Scoping Report were hand delivered to the Limpopo Department of Economic Development, Environment and Tourism (LEDET), the Limpopo Department of Agriculture and Rural Development (LDARD) and the Department of Mineral Resources and Energy (DMRE) on 28 September 2021, whereas copies were hand delivered to the landowner on 30 September 2021. Copies of the Draft Scoping Report were furthermore delivered by courier to the

Department of Water and Sanitation (DWS), the Sekhukhune District Municipality and the Fetakgomo Tubatse Local Municipality on 29 September 2021. Proof of notifications hand delivered are attached as Appendix 5 of the PPP Report.

8.3.3.2 Email Notifications

I&APs were notified of the proposed project by means of email on 29 September 2021. The Background Information Document (BID) was attached to the emails and all email notifications sent provided a link to an electronic copy of the Draft Scoping Report (via Dropbox). Proof of notifications and the Draft Scoping Report sent via email is attached as Appendix 6 of the PPP Report.

8.3.3.3 Text Message

Where mobile numbers were available, I&APs were notified of the proposed project by means of Text Message. Refer to Appendix 7 of the PP Report for proof of Text Message notifications sent on 29 September 2021. The Text Message notification highlighted, amongst other aspects, the following information:

- Notice of the Public Commenting Period for the Sefateng Chrome Mine Waste Management License Application (via Scoping and EIA) and Water Use License Application.
- The availability of the Draft Scoping Report for the Waste Management License Application and the Background Information Document providing detail on the Water Use License Application.
- The study area, the commenting period and where copies of the documents could be obtained.

8.3.3.4 Registered Post

Where I&APs could not be provided with the Background Information Document either electronically or by hand delivery, and postal addresses were available, the BID was sent via Registered Post on 30 September 2021. Proof of Registered Post sent is attached to this report as Appendix 8 of the PP Report.

8.4 NOTIFICATION OF I&APS OF REPORTS AVAILABILITY

8.4.1 Draft Scoping Report

Potential I&APs were informed of the availability of the Draft Scoping Report for Public Commenting between 28 September 2021 to 30 September 2021. I&APs were encouraged to submit any comments or questions on or before the relevant commenting closing date (01 November 2021). Notifications were sent by means of advertisements, site notices, hand delivery, email, text message and registered post. It was indicated that hard copies of the document listed above for Public Commenting was available at the Jibeng Community Hall and the Ga-Phasha Community Hall. Further to the hard copies distributed to the relevant Community Representatives, electronic copies were distributed by means of hand delivered flash drives and a Dropbox link to an electronic copy was furthermore provided in email notifications. All other notifications (Text Message, Site Notices and Advertisements) specified that the Dropbox link could be provided upon request from the Environmental Assessment Practitioner (EAP).

8.4.2 Draft EIA Report and Draft WULA Technical Report

I&APs were informed of the availability of the Draft EIA Report for Public Commenting via email and text message on 09 May 2022 and via hand delivery on 10, 11, 12 and 17 May 2022. I&APs were encouraged to submit any comments or questions on or before the relevant commenting closing date. All notifications indicated that hard copies of the document for Public Commenting was available at the Jibeng Community Hall and the Ga-Phasha Community Hall. Further to the above an electronic copy was made available via a Dropbox link download for easy access to the document. Proof on notifications sent for the Draft EIA Report availability is attached as Appendix 9 of the PPP Report.

8.5 ACCESS AND COMMENTING OPPORTUNITY

8.5.1 Registration and Draft Scoping Report

A 30-day commenting period has been provided for as part of the Registration and Draft Scoping phase of this Public Participation Process. This has been conducted in line with Section 41(4)(ii) of the National Water Act (NWA), 1998 (Act No. 36 of 1998) which indicates that a commenting period of no less than 60 days (first 30 days) should be provided for and in accordance with Clause 3(8) of the NEMA EIA Regulations (GN No. 326 of 07 April 2017) which indicates that any public participation process must be conducted for a period of at least 30 days. However, note that the entire process will remain transparent and allow for I&APs to register and comment throughout. The local community has been taken into consideration by distributing hard copies of the relevant documents for Public Commenting to the Representatives for the Jibeng Community and the Ga-Phasha Community. Furthermore, as mentioned earlier in this report to ensure easy access to the documents for Public Commenting, a Dropbox link to an electronic copy has also been provided.

8.5.2 Draft EIA Report and Draft WULA Technical Report

A 30-day commenting period has been provided for as part of the Draft EIA phase of this Public Participation Process. This has been conducted in line with Section 41(4)(ii) of the National Water Act (NWA), 1998 (Act No. 36 of 1998) which indicates that a commenting period of no less than 60 days (second 30 days) should be provided for and in accordance with Clause 3(8) of the NEMA EIA Regulations (GN No. 326 of 07 April 2017) which indicates that any public participation process must be conducted for a period of at least 30 days. However, note that the entire process remained transparent and allowed for I&APs to register and comment throughout. The local community was taken into consideration by distributing hard copies of the relevant documents for Public Commenting to the Representatives for the Jibeng Community and the Ga-Phasha Community. Furthermore, as mentioned earlier in this report to ensure easy access to the documents for Public Commenting, a Dropbox link to an electronic copy was also provided.

8.6 PUBLIC MEETINGS

Discussions regarding the Waste Management License and Water Use License Applications currently undertaken for the Sefateng Chrome Mine tailings backfilling project were held between Sefateng Chrome Mine and the Community Representatives for the Jibeng and Ga-Phasha Communities. On 04 February 2022, the community representatives waived the need for any Public Meetings to be held at this point. The community representatives furthermore undertook to share all information to the relevant community members, forums and/or committees to ensure that all community members have the opportunity to provide comments and questions on the project. The community representatives furthermore highlighted their support for the project. Refer to Appendix 9 of the PP Report for the Public Participation Meeting waivers.

8.7 REGULATORY CONSULTATION

8.7.1 Notification Period

All Departments and State-Owned Entities listed in the I&AP Register have been included in the Public Participation Process. However, direct consultations will be conducted with the Regulatory Authorities relevant to this Public Participation Process, where relevant.

8.7.2 Department of Water and Sanitation (DWS)

A Pre-application Consultation Meeting has been held with the Department of Water and Sanitation obtain clarification on the way forward, information requirements and submission of the documents and reports with regards to the Water Use License Application for the proposed project. The minutes of the meeting is attached as Appendix 11 of the PP Report.

8.7.3 Department of Agriculture, Land Reform & Rural Development (DALRRD)

A request for the land claim status for the Farm Zwartkoppies 413 KS was forwarded to the Department of Agriculture, Land Reform and Rural Development following which the Department provided formal responses in respect of the Land Claim Status for the property. It is important to note that the Department of Agriculture, Land Reform and Rural Development is not mandated to disclose any claimant's information to a third party as per the Protection of Personal Information Act, 2013 (Act No. 4 of 2013). Since the claimants lodge their claims against the state only the Commission on Restitution of Land Rights, not the claimants, may be included as an Interested and Affected Party. Further to the above comments were received from the DALRRD Water Use and Irrigation Directorate which specified certain conditions to be conserved or taken note of. Refer to Appendix 12 of the PPP Report for all communications with the DALRRD and for the land claim status reports.

8.7.4 Ward Councillors and Municipalities

The Ward Councillor for Ward 32 (Fetakgomo Tubatse Local Municipality) as well as numerous contacts from the Fetakgomo Tubatse Local Municipality and the Sekhukhune District Municipality were informed of the proposed project. No responses have been received to date.

8.7.4.1 Department of Forestry, Fisheries and the Environment (DFFE)

Comments were received from the DFFE Directorate: Biodiversity Conservation to indicate no objection to the proposed project. However, that all specified mitigation measures must be adhered to. Refer to Appendix 13 of the PPP Report for communications from the DFFE Directorate: Biodiversity Conservation.

8.8 REGISTRATIONS AND COMMENTS RECEIVED

Identified I&APs were encouraged to submit their registrations and comments to Red Kite Environmental Solutions (Pty) Ltd, via any of the avenues provided for, for them to receive further correspondence regarding the Sefateng Chrome Mine Tailing Backfilling project currently underway. All registrations and comments received throughout the Public Participation Process are attached as Appendix 14 of the PP Report.

8.9 ADDRESSING COMMENTS AND CONCERNS

A Comments and Response Report (C&RR) has been compiled as part of the Public Participation Process for the Sefateng Chrome Mine Tailings Backfilling Project. This document records the issues of concern, questions and suggestions contributed by stakeholders during the Environmental Authorisation Process and the Water Use License Application Process. This report also includes the responses provided by the relevant parties. The Comments and Response Report (C&RR) is attached as Appendix 15 of the PP Report. It should be noted that the Comments and Response Report is an active document which was updated throughout the process as comments and concerns were received. However, following submission of all final documents to the relevant Competent Authorities (CAs), all additional comments should be directed directly to the relevant CAs.

8.10 SUMMARY OF ISSUES RAISED BY I&APS FROM PUBLIC PARTICIPATION

For details of all communication between Red Kite and the AIPs refer to the Comments and Response Report of the PPP Report (Appendix 5 of the EIA and EMPr Report).

Refer to Appendix 1 of the PPP Report for a full list of I&APs included in the PPP. The table below contains only the I&APs who provided comments.

Table 9: Comments from registered I&APs

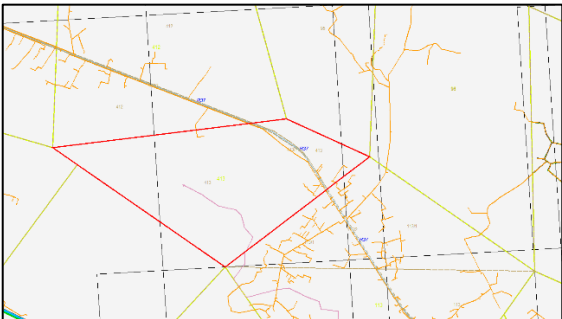
COMMENT DATE, COMMENT FORMAT, NAME OF ORGANISATION/I&AP	COMMENT (VERBATIM)	RESPONSE DATE, RESPONSE FORMAT	RESPONSE FROM EAP/APPLICANT/SPECIALIST/OTHER
Date: 2021/09/30 Format: Email Name: TP Moloto (Landowner)	Good day Kindly find attached form for your attention.	Date: 2021/10/21 Format: Email Name: Red Kite	Good day Mr. Moloto, Your comments on the proposed Sefateng Chrome Mine Tailings Backfilling Project are herewith acknowledged including your comment under item 1 which states that the area as per the existing lease agreement needs to be respected. Your comment will be forwarded to Sefateng Chrome Mine for their attention. The matter of consultation with the (1) Jibeng Community Authority, the (2) Jibeng Community Development Association NPO and the (3) Jibeng Community Trust Beneficiaries Association has been discussed with the Community Representative for Jibeng Community, Mr. Lot Moloto. As per discussions between the Stakeholder Compliance Coordinator for Sefateng Chrome Mine and Mr. Lot Moloto, it has been advised that all above-mentioned entities should be engaged with under one roof together with the other Jibeng Community Structures. We trust you find the above in order. Regards

COMMENT DATE, COMMENT FORMAT, NAME OF ORGANISATION/I&AP	COMMENT (VERBATIM)	RESPONSE DATE, RESPONSE FORMAT	RESPONSE FROM EAP/APPLICANT/SPECIALIST/OTHER
	<p>COMMENTS OR QUESTIONS:</p> <p>The following comments shall be considered:</p> <p>1. There is an existing lease agreement between Sefateng Chrome and Jibeng Investments (Pty) Ltd as from 2018 for the surface which is based on a certain area as per measurements on the diagram which should be respected.</p> <p>2. There is in existence Jibeng Community Authority consisting of four traditional leaders e.g. Moloto, Sekepe, Malatji and Moeng who shall be consulted as legal acceptors and the chairperson is Kgosi Phetisoana Fat Moloto.</p> <p>3. There is in existence Jibeng Community Development Association NPC with Mr Frans Maditela as the Chairperson of the board and there is also Jibeng Community Trust Beneficiaries Association led by Mrs Manteko Moloto who should also be consulted.</p>		
<p>Date: 2021/10/29 Format: Email and attached Registration and Comment Sheet Name: Patricia Mjadu and Edwin Mametja (DALRRD)</p>	<p>Good day</p> <p>Please receive our consolidated comments/ inputs</p> <p>Regards</p>	<p>Date: 2021/11/03 Format: Email Name: Red Kite</p>	<p>Good day Ms. Mjadu and Mr. Mametja,</p> <p>This email serves as response to your comments received via Registration and Comment Sheet on 29 October 2021. Kindly find our responses below:</p> <ul style="list-style-type: none"> It is confirmed that the Conservation of Agricultural Resources Act (CARA), 1983 (Act no 43 of 1983) will be taken into account in the Policy and Legislative Context of the Final Scoping Report.

COMMENT DATE, COMMENT FORMAT, NAME OF ORGANISATION/I&AP	COMMENT (VERBATIM)	RESPONSE DATE, RESPONSE FORMAT	RESPONSE FROM EAP/APPLICANT/SPECIALIST/OTHER
	<p>Re: Comments/ Inputs on the Draft Scoping Report, Sefateng Chrome Mine (Pty) Ltd, tailings backfilling project planned on the farm zwartkoppies 413 ks,</p> <p>The Department of Agriculture, Land Reform and Rural Development acknowledges receipt of the Draft Scoping Report for the Sefateng Chrome Mine (Pty) Ltd tailings backfilling project planned on the farm zwartkoppies 413 ks. The report was examined solely for the purpose of offering feedback and suggestions to ensure that it complied with the provisions of applicable legislative frameworks and to ensure the protection of natural resources. The applicant should consider or take note of the following:</p> <ul style="list-style-type: none"> The report does cover some of the applicable legislative frameworks which is commendable. However, there is a need to also consider other key legislation such as the Conservation of Agricultural Resources Act (CARA), 43 of 1983 which provides for the protection and conservation of natural agricultural resources which includes soils, water resources and vegetation. It is important to also note that the Mineral and Petroleum Resources Development Act, 28 of 2002 (MPRDA), was amended by the Mineral and Petroleum Resources Development Amendment Act 49 of 2008 Notice No. 437 and the Mineral and Petroleum Resources Development Regulations of 2004 Agriculture seem to be one of the activities in and around the study area, but the report did not predict the potential threats or impacts on agriculture and the proposed mitigation measures thereof; The report has listed the proposed mitigation measures to deal with surface and ground water pollution but there are no plans to deal with pollution incidents or emergencies such as spills and potential soil contamination Was there any geohydrological study to determine soil conditions in order to assess whether groundwater contamination will occur during the process <ul style="list-style-type: none"> The DWAF (now DHSWS) published a series of "Best Practice Guidelines for Water Resource Protection in the South African Mining Industry" (Government Notice 704 of 4 June 1999). The guidelines are aimed at assisting mines in addressing their water related problems. This guideline need to be considered when planning for mine water management The socio-economic impacts associated with the proposed activities are not well addressed and there is a need to elaborate further on how the activity will benefit or negatively affect the community Since the neighbourhood consists of farms, what are potential impacts from the proposed water pipeline What mechanism is in place to ensure that there is no potential seepage of contaminants into ground water which may pose risk to crops in the surrounding farms. Is there any plan to monitor risks of chrome on crops/ agricultural produce in the area (absorption by plants?) 		<ul style="list-style-type: none"> The report will furthermore be revised to include all relevant amendments to the Mineral and Petroleum Resources Development Act (MPRDA), 2002 (Act No. 28 of 2002) and its relevant regulations. It is not anticipated, at this stage, that the proposed Sefateng Tailings Backfilling Project will impact negatively on existing agriculture within the surroundings. The project entails backfilling of the existing Zwartkoppies opencast mine section as a rehabilitation strategy. The aim of rehabilitation typically entails attempts at restoring the land to pre-mining conditions as far as possible. Rehabilitation of the opencast mining section could potentially positively impact on agriculture within the study area by increasing the land available for this purpose (post-mining). However, should the Environmental Impact Assessment phase of the project reveal potential impacts to agriculture, these will be addressed and adequate mitigation measures for implementation will be proposed. Anticipated impacts to land capability identified during the Scoping Phase include a reduction in land capability due to inappropriate rehabilitation of opencast areas backfilled with tailings material. For the purpose of the Scoping Report, anticipated/potential impacts were identified from a desktop approach. Specific impacts related to pollution incidents or emergency spills and potential soil contamination associated with the Proposed Project will be assessed and quantified during the EIA Phase of the project. Furthermore, the Environmental Management Programme (EMPr) will include a section for environmental risks and incidents which includes spills and soil contamination. A Geohydrological Assessment is being conducted as part of the Environmental Impact Assessment phase of the project. All specialist reports will be made available for public viewing and commenting once applicable.

COMMENT DATE, COMMENT FORMAT, NAME OF ORGANISATION/I&AP	COMMENT (VERBATIM)	RESPONSE DATE, RESPONSE FORMAT	RESPONSE FROM EAP/APPLICANT/SPECIALIST/OTHER
			<ul style="list-style-type: none"> The Best Practice Guidelines for Water Resource Protection in the South African Mining Industry will be considered when planning for mine water management. GN707 of 1998 has been taken into account in the Scoping Report as well as the Water Use license Application for the project. As mentioned above, for the purpose of the Scoping Report, anticipated/potential impacts were identified from a desktop approach. Specific socio-economic impacts associated with the Proposed Project will be assessed and quantified during the EIA Phase of the project. Kindly note that the water pipeline construction formed part of activities applied for in a previous Scoping and EIA process. The activities being applied for as part of this application for backfilling of the opencast void with tailings material does not include the construction of a water pipeline. The Draft Scoping Report listed the pipeline activity, amongst others, in Table 4 to indicate activities applied for during 2018. The Geohydrological Assessment to be conducted will specify appropriate mitigation measures to be implemented for potential groundwater pollution. Further to this the EIA phase of the project will reveal whether impacts to crops/agricultural produce in the area should be expected upon which mitigation and monitoring measures will be specified. <p>We trust that the Department finds the above in order. Please be assured that the Draft Environmental Impact Assessment (EIA) Report will be made available to the Department for viewing and commenting purposes once applicable.</p> <p>Regards</p>
Date: 2021/11/01 Format: Email Name: Mmakolobe Mononyane (DALRRD)	Good morning Attached please receive acknowledgement letter for the above mentioned matter.	Date: 2021/11/03 Format: Email	Good day Mmakolobe, We hereby acknowledge receipt of the Land Claim Status report for the Farm Zwartkoppies 413 KS, Limpopo Province.


COMMENT DATE, COMMENT FORMAT, NAME OF ORGANISATION/I&AP	COMMENT (VERBATIM)	RESPONSE DATE, RESPONSE FORMAT	RESPONSE FROM EAP/APPLICANT/SPECIALIST/OTHER									
	<p>Sir/ Madam</p> <p>RE: PUBLIC PARTICIPATION COMMENTS PERIOD FOR SEFATENG GHROME (PTY) LTD – WASTE MANAGEMENT LICENSE APPLICATION AND WASTE USE LICENCE APPLICATION ON THE FARM ZWARTKOPPIES 413 KS.</p> <p>Your communiqué dated 29 September 2021 regarding the above-mentioned matter refers.</p> <p>We note the content of your report as attached and in terms of records of the Office of the Regional Land Claims Commissioner, (RLCC): Limpopo there are following land claims on the property:</p> <table border="1"> <thead> <tr> <th>CLAIMANTS</th> <th>REFERENCE NUMBER</th> <th>CLAIM STATUS</th> </tr> </thead> <tbody> <tr> <td>Jibeng community</td> <td>KRP 1530</td> <td>Research approved Gazetted No. 42072, under Notice No. 1357 of 2018.</td> </tr> <tr> <td>Baroka Ba Nkoana</td> <td>KRP 2550</td> <td>Research approved</td> </tr> </tbody> </table> <p>In view of the above, the Office of the RLCC: Limpopo takes note of the public participation process that is underway. You are hereby urged to consult the above-mentioned claimant communities.</p> <p>I hope you find the above to be in order</p>	CLAIMANTS	REFERENCE NUMBER	CLAIM STATUS	Jibeng community	KRP 1530	Research approved Gazetted No. 42072, under Notice No. 1357 of 2018.	Baroka Ba Nkoana	KRP 2550	Research approved	<p>Name: Red Kite</p>	<p>Please be assured that both mentioned claimant communities have been informed of the proposed project and will continue to receive all future correspondence in this regard.</p> <p>Regards</p>
CLAIMANTS	REFERENCE NUMBER	CLAIM STATUS										
Jibeng community	KRP 1530	Research approved Gazetted No. 42072, under Notice No. 1357 of 2018.										
Baroka Ba Nkoana	KRP 2550	Research approved										
<p>Date: 2022/05/09 Format: Email Name: Thomas Mavunda (Eskom)</p>	<p>Good day,</p> <p>Kindly receive our comments.</p> <p>We therefore, register as an affected party.</p> <p>Warm Regards</p> <div style="border: 1px solid black; padding: 5px;"> <p>RE: DRAFT ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR) FOR THE SEFATENG CHROME MINE (PTY) LTD: APPLICATION FOR A WASTE MANAGEMENT LICENSE BY MEANS OF A SCOPING AND ENVIRONMENTAL IMPACT ASSESSMENT REPORT PROCESS AND APPLICATION FOR A WATER USE LICENSE FOR THE PROPOSED TAILINGS BACKFILLING PROJECT PLANNED ON THE FARM ZWARTKOPPIES 413 KS</p> <p>This application affects our Eskom Distribution services. The following services are affected:</p> <ul style="list-style-type: none"> ◊ Twickenham / Sefateng 33kV power lines ◊ Middelpunt-Hooggenoeg 22kV power lines <p>Eskom Distribution has no objection in principle of the above mentioned application, on the following conditions:</p> </div>	<p>Date: 2022/06/02 Format: Email Name: Red Kite</p>	<p>Good day Thomas,</p> <p>This email serves as response to Eskom’s comments received via email on 09 May 2022 pertaining to the abovementioned subject matter.</p> <p>Kindly note that the Eskom powerlines built at the Sefateng Chrome Mine Zwarkoppies Section are self-built lines. Sefateng Chrome Mine is therefore aware of its location and the associated Eskom restrictions and requirements. Furthermore, kindly note that the section of powerline located on the Farm Zwarkoppies 413 KS has been constructed on areas previously used for opencast mining.</p> <p>The following mitigation measures have been included in the project Environmental Management Programme:</p> <ul style="list-style-type: none"> • There is a 9 m and 11 m building and tree restriction on either side of the centre line of the 22 kV and 33 kV power lines respectively, which must be adhered to. • Eskom Distribution’s services and equipment may not be tampered or interfered with. • All work within Eskom Distribution reserve area must be done in accordance with the requirements of the Occupational Health and Safety Act No.85 of 1993, as amended. 									

COMMENT DATE, COMMENT FORMAT, NAME OF ORGANISATION/I&AP	COMMENT (VERBATIM)	RESPONSE DATE, RESPONSE FORMAT	RESPONSE FROM EAP/APPLICANT/SPECIALIST/OTHER
	<p>1. There is a 9m and 11m building and tree restriction on either side of the centre line of the 22kV and 33kV power lines respectively, which must be adhered to in all future development.</p> <p>2. Eskom Distribution's services and equipments must be acknowledged at all times and may not be tampered or interfered with.</p> <p>3. All work within Eskom Distribution reserve area must be done in accordance with the requirements of the Occupational Health and Safety Act No.95 of 1993 as amended.</p> <p>4. Special attention must be given to the clearances between Eskom's conductors, structures, cables and electrical apparatus and the proposed work as stipulated by Regulation R15 of the Electrical Installations Regulations of the aforementioned Act or any other legal requirements.</p> <p>5. No construction work may be executed closer than 9 metres from any of Eskom's structures from the middle of the power line and no squatting to be allowed in the restriction area</p> <p>6. No tree shall be planted within the restriction area or be allowed to grow to a height in excess of the horizontal distance of that tree from the nearest conductor of any power line or to grow in such a manner as to endanger that line should it fall or be cut down.</p> <p>7. Natural ground level must be maintained within Eskom Distribution restriction area.</p> <p>8. Eskom Distribution shall not be liable for the death of or injury to any person or for the loss of or damage to any property whether as a result of the encroachment or of the use of the area where Eskom Distribution has its services, by the applicant, his/her agent, contractors, employees, successors in title and assigns.</p> <p>9. The applicant indemnifies Eskom against loss, claims or damages including claims pertaining to interference with Eskom Distribution services or apparatus or otherwise. The applicant's attention is drawn to section 27(3) of the Electricity Act 1987, as amended in 1994, which stipulates that the applicant can be fined and/or imprisoned as a result of damage to Eskom's apparatus.</p> <p>10. Eskom Distribution shall at all times have unobstructed access to and egress from its services.</p> <p>11. The ineffective management and handling of waste is of crucial importance. No dumping shall be allowed within Eskom Distribution restriction areas. All unwanted waste (gaseous, liquid or solids) should be disposed of at a registered waste disposal site as stipulated under Section 20 of the Environmental Conservation Act (Act 73 of 1989).</p> <p>12. Any relocation of Eskom's services, due to this development, will be for the account of the Developer. The Developer will also be responsible for granting Eskom an alternative route for the power line. Please contact Eskom Customer Contact Centre: 08000 37506 in connection with cost.</p> <p>13. The Eskom's authorised area representative for Fetakgomo Technical Service Area, Kgomo Magogudi Telephone Number: 015 230 1628 / 083 465 7482, magogudi@eskom.co.za.</p> <p>Yours sincerely</p> 		<ul style="list-style-type: none"> No construction work may be executed closer than 9 metres from any of Eskom's structures from the middle of the power line. No tree shall be planted within the restriction area or be allowed to grow to a height in excess of the horizontal distance of that tree from the nearest conductor of any power line or to grow in such a manner as to endanger that line should it fall or be cut down. <p>We trust that you find above in order.</p> <p>Regards</p>
<p>Date: 2022/05/10 Format: Email Name: Tsholofelo Shalot Sekonko (DFFE)</p>	<p>Dear Sir/Madam</p> <p>DFFE Directorate: Biodiversity Conservation hereby acknowledge receipt of the invitation to review and comment on Draft Environmental Impact Assessment (EIA) Report and Environmental Management Programme (EMPR) for the Sefateng</p>	<p>N/A</p>	<p>No response required.</p>

COMMENT DATE, COMMENT FORMAT, NAME OF ORGANISATION/I&AP	COMMENT (VERBATIM)	RESPONSE DATE, RESPONSE FORMAT	RESPONSE FROM EAP/APPLICANT/SPECIALIST/OTHER																			
	<p>Chrome Mine (Pty) Ltd: Application for a Waste Management License on the Farm Zwartkoppies 413 KS, Limpopo Province. Kindly note that the project has been allocated to [name not disclosed] and myself (both copied on this email).</p> <p>Please note: All Public Participation Process documents related to Biodiversity EIA review and any other Biodiversity EIA queries will be submitted to the Directorate: Biodiversity Conservation at Email: BCAdmin@environment.gov.za for attention of Mr Seoka Lekota</p> <p>Regards,</p>																					
<p>Date: 2022/05/12 Format: Email Name: Kenneth Maunye (DALRRD)</p>	<p>Good Morning Kindly receive the attached respond to your enquiry, and confirm receipt.</p> <p>Regards,</p> <div style="border: 1px solid black; padding: 5px;"> <p>ENQUIRIES REGARDING LAND CLAIMS IN TERMS OF THE RESTITUTION OF LAND RIGHTS ACT, 1994 (ACT NO. 22 OF 1994)</p> <p>1. Your enquiry dated the 09 May 2022 has reference and is acknowledged.</p> <p>2. Kindly take note that there are restitution land claims lodged prior 1998 on the property appearing on your letter. The land claims are as follow:</p> <table border="1"> <thead> <tr> <th>Property/ Name</th> <th>Farm</th> <th>Claimant (s)</th> <th>KRP(s)</th> <th>Claim Status</th> </tr> </thead> <tbody> <tr> <td rowspan="4">Zwartkoppies 413 KS</td> <td></td> <td>Baroka ba Nkoana Tribe</td> <td>2550</td> <td rowspan="4">Research Report Approved</td> </tr> <tr> <td></td> <td>Atok Zonal RDP</td> <td>11144</td> </tr> <tr> <td></td> <td>Magadimana Ntoeng L/Gov</td> <td>1493</td> </tr> <tr> <td></td> <td>Jibeng Community</td> <td>1530</td> </tr> </tbody> </table> <p><i>Note that the properties in question must not be disposed of or sold without the express permission from the Office of the Regional Land Claims Commissioner: Limpopo.</i></p> </div>	Property/ Name	Farm	Claimant (s)	KRP(s)	Claim Status	Zwartkoppies 413 KS		Baroka ba Nkoana Tribe	2550	Research Report Approved		Atok Zonal RDP	11144		Magadimana Ntoeng L/Gov	1493		Jibeng Community	1530	<p>Date: 2022/05/12 Format: Email Name: Red Kite</p>	<p>Dear Kenneth, The latest land claim status sent indicates 4 separate land claim entities on the Farm Zwartkoppies 413 KS, whereas the previous status received from the DALRRD indicated only two.</p> <p>Please find both copies attached.</p> <p>Based on the first letter received on 29 October 2021, we have notified Jibeng Community and Baroka Ba Nkoana of the proposed project.</p> <p>However, considering the second letter received, we now have to also notify Atok Zonal RDP and Magadimana Ntoeng L/Gov.</p> <p>Could you please clarify and assist us with contact information for the latter two mentioned entities.</p> <p>We would like to provide them with opportunity to comment on the DEIA, if applicable.</p> <p>Regards</p>
Property/ Name	Farm	Claimant (s)	KRP(s)	Claim Status																		
Zwartkoppies 413 KS		Baroka ba Nkoana Tribe	2550	Research Report Approved																		
		Atok Zonal RDP	11144																			
		Magadimana Ntoeng L/Gov	1493																			
		Jibeng Community	1530																			
<p>Date: 2022/05/18 Format: Email Name: Joharine</p>	<p>Good Morning Nicole Thank you for the info regarding the Sefateng Chrome Mine.</p>	<p>Date: 2022/05/19 Format:</p>	<p>Good day Joharine, Pertaining to the subject matter above, kindly refer to the content of</p>																			

COMMENT DATE, COMMENT FORMAT, NAME OF ORGANISATION/I&AP	COMMENT (VERBATIM)	RESPONSE DATE, RESPONSE FORMAT	RESPONSE FROM EAP/APPLICANT/SPECIALIST/OTHER
Nienaber	<p>Can you kindly explain what waste management means.</p> <p>We would also like to know if Sefateng Chrome Mine obtain a water use license, how will that effect the community. Drinking water, water for their livestock and their agricultural activities.</p> <p>Kind Greetings</p>	Email Name: Red Kite	<p>the Draft EIA/EMPR, specifically Chapter 3, which indicates the listed activities triggered (and thus applied for) in terms of the National Environmental Management Waste Act, 2008 (Act No. 59 of 2008).</p> <p>Sefateng Chrome Mine (Pty) Ltd proposes to reuse or reclaim the tailings material produced by the wash plant on site in order to minimise the residue stockpiled on site and to maximise recycling. The tailings material is proposed to be reclaimed or reused in the following ways:</p> <ul style="list-style-type: none"> • A portion of the material will be used to backfill the opencast voids of the operation as part of the rehabilitation efforts of the mine. Backfilling with tailings will take place in voids situated on the farm Zwartkoppies 413 KS. • When necessary or economically viable, Sefateng Chrome Mine proposes to sell tailings to third parties for further reclamation at off-site operations. <p>The above proposed actions require authorisation from the Regulatory Authority prior to implementation.</p> <p>You are furthermore referred to Chapter 12 of the Draft EIA/EMPR which quantifies the potential impacts which could occur from the implementation of the proposed project including potential impacts to groundwater. Further to the Draft EIA/EMPR report, kindly refer to the findings of the independent Hydrogeological Impact Assessment (Appendix 6) which provides detailed information on the groundwater environment and potential impacts thereto.</p> <p>As noted, impacts to groundwater quality is rated as Medium to High pre-mitigation, however will be lowered to a Low to Medium significance with the implementation of mitigation. Whereas impacts to groundwater as result of mine dewatering and lowering of the regional piezometric head is rated as High without mitigation, but will</p>

COMMENT DATE, COMMENT FORMAT, NAME OF ORGANISATION/I&AP	COMMENT (VERBATIM)	RESPONSE DATE, RESPONSE FORMAT	RESPONSE FROM EAP/APPLICANT/SPECIALIST/OTHER
			<p>be lowered to a Medium risk following implementation of mitigation measures.</p> <p>Trust you find the above in order.</p> <p>Regards</p>
<p>Date: 2022/05/19 Format: Email Name: Frans Madutlela (Jibeng Community Trust Beneficiaries Association)</p>	<p>As beneficiaries on a farm swartkoppies 413 ks which sefateng mine operation s currently operating, we are deeply disappointed about a treatment which we receive from sefateng mine but at the same time need our assistance but ignore us later, because sefateng mine failed to respect our culture as black people and also fail to comply with section 54 of mprda and also SLP'S commitments by failing to compensate those who sefateng operation affected their areas environmentally.</p> <p>Sefateng mine operation affected our communities environmentally because they fenced off our areas which we were used for mealie crops long time ago and currently our communities suffer for grazing field for their domestic animals and also to get some trees which culturally our traditional healers use to heal our communities etc.</p> <p>The worse part they fenced off huge areas which makes difficult for our domestic animals to get enough grazing which results our animals to fetch grazing next to R37 national road which affects motorists to be involved in an accidents like former Bafana Bafana assistance coach the late Thomas madigage.</p> <p>The worse of them all sefateng mine is reluctant to recognise a sefateng mine participatory task team which was established by our local municipality to be in charge of socio economic developments of communities including environmental problems but keep on using trustees for more than 10 years to hinder our communities to engage the mine to address their concerns which</p>		<p>Good day Mr. Madutlela,</p> <p>Pertaining to your comments received via email on 19 May 2022 as part of the Public Participation Process for the Sefateng Chrome Mine Tailings Backfilling Project, kindly find the attached response for your attention.</p> <p>We trust that you find the attached in order.</p> <p>Regards</p>

COMMENT DATE, COMMENT FORMAT, NAME OF ORGANISATION/I&AP	COMMENT (VERBATIM)	RESPONSE DATE, RESPONSE FORMAT	RESPONSE FROM EAP/APPLICANT/SPECIALIST/OTHER
	<p>affect them environmentally.</p> <p>And as host communities sefateng mine is still owes us our communities shares which is 5% for three communities which we have never ever received any cent from the mine until today but for the sake of progress we don't have a problem with the current plans for public participation but we strongly propose the following with immediate effect.</p> <ol style="list-style-type: none"> 1.sefateng mine to recognise the community task team structure which was established by municipality in 2019 which should assist our communities to address environmental problems with them than the community trustees because their main duties is to monitor community trust funds. 2. Sefateng mine to scratch and bury communication protocol which favours the mine and the the trustees only because is only applicable for black poor people affected by sefateng operation. 3. Sefateng mine to reduce a fencing area to give access for grazing of our domestic animals including the area next to the river which our domestic animals use for water and also our communities use for traditional purposes. 4. Sefateng mine to compensate those who their mealiefield affected by its operation because they have lost to earn their yearly income derived from their mealiefield areas. 5. Sefateng mine to ensure that host communities given preference for recruitment and business opportunities including the opportunity to be part of companies to backfill tailing areas <p>Hopefully the above are in order.</p> <p>Kindest regards</p>		<div style="text-align: right;">  21 June 2022 </div> <p>Red Kite Environmental Solutions (Pty) Ltd Attention: Chantel Miller By email: info@redkiteconsulting.co.za</p> <p>Dear Madam,</p> <p>RE: PUBLIC PARTICIPATION PROCESS FOR SEFATENG</p> <ol style="list-style-type: none"> 1. The above as well as your previous correspondence received on the 2nd of June 2022 refers, wherein we are advised that Mr. Frans Madutlela ("Mr. Madutlela") submitted comments to your office in terms of the legal Public Participation Process, for which Sefateng's formal response is required. 2. In terms of Mr Madutlela's comments, he has advised that Sefateng has failed to comply with the provisions of section 54 of the Mineral and Petroleum Resources Development Act No. 28 Of 2002 ("MPRDA") "by failing to compensate those who Sefateng operation affected their areas environmentally". Please be advised that Sefateng has accordingly entered into a lease agreement with Jibeng Investments (Pty) Ltd on 25 June 2016 for the lease of the area consisting of Portion 1 of the Farm Waterkop 113 KT and the Farm Zwartkoppies 413 KS. In terms of the lease agreement, Sefateng accordingly pays a monthly lease fee to Jibeng, which fee has been paid from inception of the agreement and continues on a monthly basis to date. 3. Additionally, various Compensation for Use agreements have been entered into with Communities and/or community members wherein certain considerations were or are to be paid to them for the use of land as well as Considerations paid for Servitude Areas to certain households and communities accordingly. 4. Mr. Madutlela is thus incorrect in terms of the allegations put forward by himself as Sefateng has and continues to observe its compensation obligations payable under certain circumstances in terms of Section 54 of the MPRDA and as such, there exists no factual basis to evidence his allegations. Mr. Madutlela and the Sefateng Participatory Task Team ("the Task Team") are however entitled to exercise any and all rights that they may have in terms of the MPRDA.

COMMENT DATE, COMMENT FORMAT, NAME OF ORGANISATION/I&AP	COMMENT (VERBATIM)	RESPONSE DATE, RESPONSE FORMAT	RESPONSE FROM EAP/APPLICANT/SPECIALIST/OTHER
			<p>Including section 54 thereof, however, in the absence of any processes instituted by themselves as prescribed by the MPRDA, the statements concerning any alleged losses suffered by themselves as a result of Sefateng's mining operations, are simply bald allegations with no substance.</p> <p>5. Furthermore, in terms of Mr. Madutela's comments that Sefateng "keep on using trustees for more than 10 years to hinder our communities to engage the mine to address their concerns which affect them environmentally", please be advised that Sefateng has at all times been committed to effective and consistent stakeholder engagements, by promoting open and inclusive dialogue as well as fostering mutual understanding with all stakeholders in order to create and maintain long-term constructive relationships. Sefateng's principles are thus those of transparency and a two-way communication based on good faith, which welcomes feedback from affected stakeholders on both environmental and social issues. Certain initiatives such as Sefateng's SLP community consultations (as evidenced by Annexures A to B annexed hereto) as well as Sefateng's Stakeholder Engagement Plan ("SEP") have been conducted and/or enacted to cater for community engagements as far as possible. Please see annexed hereto the said SEP marked "Annexure C".</p> <p>6. In our efforts to ensure that Sefateng's communication channels remain up to date and continue to adequately serve the engagement needs of all our stakeholders, Sefateng is however currently in the process of adopting new terms of reference which will serve as the Mine's engagement policy with its relevant stakeholders. The new terms of reference are intended to repeal the Mine's current SEP and are being drafted in consultation with the local Tubatse-Fetakgomo Municipality. In terms of the draft document, a Community Engagement Forum ("CEF") will be established and shall be constituted by representatives from the local Tubatse-Fetakgomo Municipality, the Traditional Authority, Community representatives as well as representatives of Sefateng Chrome Mine. The Traditional Authority and Community representative division shall consist of members representing the community, members representing the traditional council as well as members representing outside villages.</p> <p>6.1. The Main functions of the CEF shall include:</p> <p>6.1.1. representing the best interest of communities and the Mine;</p> <p>6.1.2. serving as a critical link between the communities around the Mine's Operations on matters that are prescribed in the CEF terms of reference;</p> <p>6.1.3. promoting effective communication and information sharing with neighbouring communities represented within the CEF;</p> <p>6.1.4. participating and providing input in determining the best channels for sharing information and communication with represented communities;</p> <p>6.1.5. receiving, formalizing, and registering complaints, requests, and issues by communities;</p> <p>6.1.6. discussing, investigating and making recommendations on the handling of complaints, requests and issues formally raised.</p> <p>6.2. Through the adoption of the new terms of reference, Sefateng seeks to enhance its reach with its local communities as well as ensure that all affected or interested parties are made aware of the Mine's continued inclination to engage with its stakeholders.</p> <p>7. The above is however not exhaustive of all the measures and communication strategies implemented by Sefateng to encourage community engagement and receipt of feedback from its stakeholders.</p> <p>8. Wherefore, specific request was made by Mr. Madutela for the recognition of the Task Team. Please note that the Task Team was in no way previously precluded from communication with the Mine through the necessary channels, however we trust that the adoption of the new terms of reference will serve as a more formal communication channel with communities and representative forums such as the Sefateng Participatory Task Team.</p> <p>9. Subsequently, in terms of our response herein, we trust that the comments raised by Mr. Madutela have accordingly been addressed in full and to the satisfaction of your office.</p> <p>10. Should you have any further queries in this regard, please feel free to advise.</p> <p>11. We trust you find the above in order.</p> <p>Kind Regards</p>

COMMENT DATE, COMMENT FORMAT, NAME OF ORGANISATION/I&AP	COMMENT (VERBATIM)	RESPONSE DATE, RESPONSE FORMAT	RESPONSE FROM EAP/APPLICANT/SPECIALIST/OTHER												
<p>Date: 2022/06/01 Format: Email Name: Mautsana Selane (DALRRD)</p>	<p>Greetings,</p> <p>Kindly receive the attached letter as per your enquiry.</p> <p>kKnd regards,</p> <div style="border: 1px solid black; padding: 5px;"> <p>RE: PUBLIC PARTICIPATION COMMENTS PERIOD FOR SEFATENG CHROME (PTY) LTD – WASTE MANAGEMENT LISENCE APPLICATION AND WASTE USE LISENCE APPLICATION ON THE FARM ZWARTKOPPIES 413 KS.</p> <p>Your communiqué dated 09 May 2022 regarding the above-mentioned matter refers.</p> <p>We note the content of your report as attached and in terms of records of the Office of the Regional Land Claims Commissioner, (RLCC): Limpopo there are the following land claims on the property:</p> <table border="1"> <thead> <tr> <th>CLAIMANTS</th> <th>REFERENCE NUMBER</th> <th>CLAIM STATUS</th> </tr> </thead> <tbody> <tr> <td>Jibeng community</td> <td>KRP 1530</td> <td> <ul style="list-style-type: none"> Research approved Gazetted No. 42072, under Notice No. 1357 of 2018. </td> </tr> <tr> <td>Baroka Ba Nkoana</td> <td>KRP 2550</td> <td> <ul style="list-style-type: none"> Research approved </td> </tr> <tr> <td>Atok Zonall RDP</td> <td>KRP 11144</td> <td> <ul style="list-style-type: none"> Research approved </td> </tr> </tbody> </table> <p>In view of the above, the Office of the RLCC: Limpopo takes note of the public participation process that is underway. You are hereby urged to consult the above-mentioned claimant communities concerning the above matter.</p> <p>I hope you find the above to be in order</p> </div>	CLAIMANTS	REFERENCE NUMBER	CLAIM STATUS	Jibeng community	KRP 1530	<ul style="list-style-type: none"> Research approved Gazetted No. 42072, under Notice No. 1357 of 2018. 	Baroka Ba Nkoana	KRP 2550	<ul style="list-style-type: none"> Research approved 	Atok Zonall RDP	KRP 11144	<ul style="list-style-type: none"> Research approved 	<p>Date: 2022/06/01 Format: Email Name: Red Kite</p>	<p>Good day Officials,</p> <p>Kindly refer to the email correspondence below to which we have not yet received response.</p> <p>We have now received a third land claim status letter for the Farm Zwartkoppies 413 KS (today) which requires us to consult with the listed land claimants.</p> <p>Based on the first letter received on 29 October 2021, we have notified Jibeng Community and Baroka Ba Nkoana of the proposed project. However, considering the second and third letters received, we now have to also notify Atok Zonal RDP and Magadimana Ntoeng L/Gov.</p> <p>Could you please clarify and assist us with contact information for the latter two mentioned entities.</p> <p>We would like to provide them with opportunity to comment on the DEIA, if applicable.</p> <p>I.t.o. of POPI we are legally entitled to contact information for persons/entities when this forms part of a legal process, such as the EIA process.</p> <p>We look forward to your response.</p> <p>Regards</p>
CLAIMANTS	REFERENCE NUMBER	CLAIM STATUS													
Jibeng community	KRP 1530	<ul style="list-style-type: none"> Research approved Gazetted No. 42072, under Notice No. 1357 of 2018. 													
Baroka Ba Nkoana	KRP 2550	<ul style="list-style-type: none"> Research approved 													
Atok Zonall RDP	KRP 11144	<ul style="list-style-type: none"> Research approved 													
<p>Date: 2022/06/10 Format: Email Name: MMatlala Rabothata (DFFE)</p>	<p>Dear Ms. Upton,</p> <p>Please receive the attached comments from Directorate :Biodiversity Conservation for your attention and implementation.</p> <p>Trust that you find all in order.</p> <p>Regards,</p>	<p>Date: 2022/06/13 Format: Email Name: Red Kite</p>	<p>Good day Ms Rabothata,</p> <p>We hereby acknowledge receipt of the Department’s comments pertaining to the subject matter above, received on 10 June 2022.</p> <p>To ensure adherence to the specified mitigation measures, the applicant will be audited on compliance thereto at a frequency to be determined by the Regulatory Authority.</p>												

COMMENT DATE, COMMENT FORMAT, NAME OF ORGANISATION/I&AP	COMMENT (VERBATIM)	RESPONSE DATE, RESPONSE FORMAT	RESPONSE FROM EAP/APPLICANT/SPECIALIST/OTHER
	<p>COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT FOR THE PROPOSED SEFATENG CHROME MINE (PTY) LTD:TAILINGS BACKFILLING PROJECT ON THE FARM ZWARTKOPPIES 413 KS, LIMPOPO PROVINCE</p> <p>The Directorate, Biodiversity Conservation reviewed and evaluated the aforementioned draft report.</p> <p>Based on the information provided in the report, Sefateng Chrome Mine is an existing operation, and the preferred alternative is located entirely on the current mining footprint, thus reducing the impacts on the biophysical and social environment. No extension of the mining footprint will be required for the proposed activities. The entirety of the proposed activities (backfilling of the existing opencast pits with tailings material) is situated on areas that have already been totally disturbed/transformed for the opencast mining. Thus, little or no impact to terrestrial biodiversity (fauna and flora) resources are expected.</p> <p>Therefore, the development may proceed provided that the mitigation measures that were provided in the report and the EMPr by the specialists are adhered to and implemented, to minimize negative impacts on the environment so that impacts remain of low insignificance.</p> <p>In conclusion please note that all Public Participation Process documents related to Biodiversity EIA review and any other Biodiversity EIA queries must be submitted to the Directorate, Biodiversity Conservation at Email: BCAdmin@environment.gov.za for attention of Mr Seoka Lekota.</p> <p>Yours faithfully</p>		Regards

9 ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE SITES

9.1 BASELINE ENVIRONMENT

This Section provides a brief description of the existing biophysical and built/ social environment within the immediate vicinity of the proposed activities. It draws on existing knowledge from previous investigations, discussions with various role-players, site visits and the project team’s knowledge. It serves to present the context against which the potential positive and negative impacts associated with the various aspects of the proposed project can be identified.

The description of the environmental attributes of the project has been sourced from existing reports undertaken as part of the 2014 and 2018 Scoping and EIA processes. It should however be noted that *this* Scoping and EIA process and the associated activities are only located on the Zwartkoppies Section of the Sefateng Chrome Mine. Additionally, *the entirety of the proposed activities (backfilling of the exiting opencast pits with tailings material) is situated on areas which have already ben totally disturbed/transformed for the opencast mining.*

9.2 REGIONAL LOCATION

Sefateng Chrome Mine is situated on the farm Zwartkoppies 413 KS and portion 1 and the remaining extent of the farm Waterkop 113 KT. The operation falls in the Limpopo Province under the jurisdiction of the Fetakgomo Tubatse Local Municipality, situated within the Sekhukhune District Municipality.

Sefateng Chrome Mine is located approximately 70 km south-east from central Polokwane, on the R37 road and 45 km north-west of Burgersfort.

9.3 CLIMATE

A typical climatic description of the study area is hot summers and cold dry winters. The climate of the study area is, however influenced by the prevailing topography being the foothills of Sekhukhune and Leolo mountain ranges that creates microclimatic effects in the form of a hotter and drier climate. The maximum temperature is recorded as 30.4°C and the minimum is 3.9°C.

9.3.1 Temperature

The study area is characterised by very hot summer months accompanied by very little rain, and relatively cold winters.

See the table below for minimum, and maximum temperatures recorded within a twelve-month period.

Table 10: Temperatures

Month	Temperature(°C)	
	Max	Min
January	30.1	17.3
February	29.7	17.4
March	28.2	16.2
April	27.4	12.1
May	24.5	8.1
June	21.7	3.9
July	21.6	4.0
August	24.0	6.9
September	27.5	11.3

Month	Temperature(°C)	
	Max	Min
October	30.4	14.6
November	30.2	16.4
December	30.1	17.4
Annual	27.1	12.2

9.3.2 Precipitation and Evaporation

The Mean Annual Precipitation (MAP) for the area is approximately 559 mm per annum, with the monthly rainfall varying between 4 mm and 102 mm. The rainy season is usually from November to March. The project area furthermore falls within the 1600-1700 mm per year evaporation isolines. The minimum evaporation is 102 mm per month and the maximum is 259 mm/month.

Table 11: Precipitation Data Relevant to the Properties

Month	Rainfall				Expected maximum in 24 hrs	
	Average	Days	Maximum		1:50 Y	1:100 Y
	mm	1mm	60 min	24 hrs		
January	95	9.8	49	61	86	97
February	84	6.8	39	114	60	66
March	70	6.8	38	62	68	77
April	20	2.6	18	80	57	64
May	8	2.2	13	36	23	28
June	4	1.3	11	27	22	24
July	4	1.3	7	11	12	13
August	8	1.7	6	13	6	6
September	19	1.8	32	38	35	30
October	59	6.3	51	66	61	69
November	102	10.1	33	65	80	90
December	86	8.4	51	79	67	75
Annual	559 total	59.1				53.25 (mean)

Table 12: Evaporation Data relevant to the Property

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Evaporation (mm)	212	174	174	139	121	102	119	167	228	259	228	217	2140

9.3.3 Wind

Dispersion comprises vertical and horizontal components of motion. The wind field largely determines the horizontal dispersion of pollution in the atmospheric boundary layer. The wind speed determines both the distance of downwind transport and the rate of dilution as a result of plume stretching. The generation of mechanical turbulence is similarly a function of the wind speed, in combination with the surface roughness. The wind direction and the variability in wind direction, determine the general path pollutants will follow, and the extent of cross-wind spreading.

Winds are mainly light to moderate and blow from the north-easterly sector except for short periods during thunderstorms or weather changes when they have a southerly component.

Wind roses comprise 16 spokes, which represents the directions from which winds blew during the period. The colours used in the wind roses reflect the different categories of wind speeds. The dotted circles provide information regarding the frequency of occurrence of wind speed and direction categories.

The value given in the center of the circle describes the frequency with which calms occurred, i.e. periods during which the wind speed was below 1m/s.

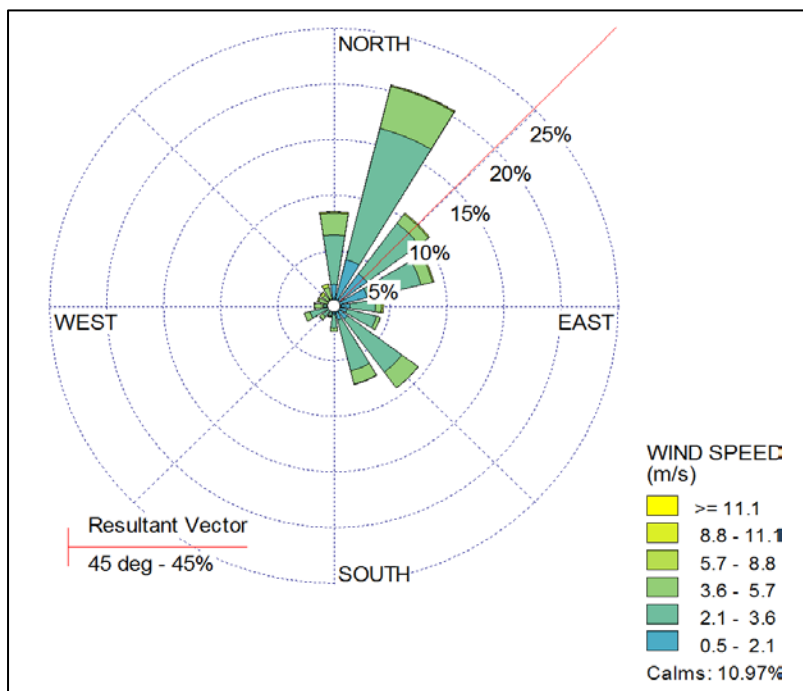


Figure 9: Annual Windrose (Blowing from)

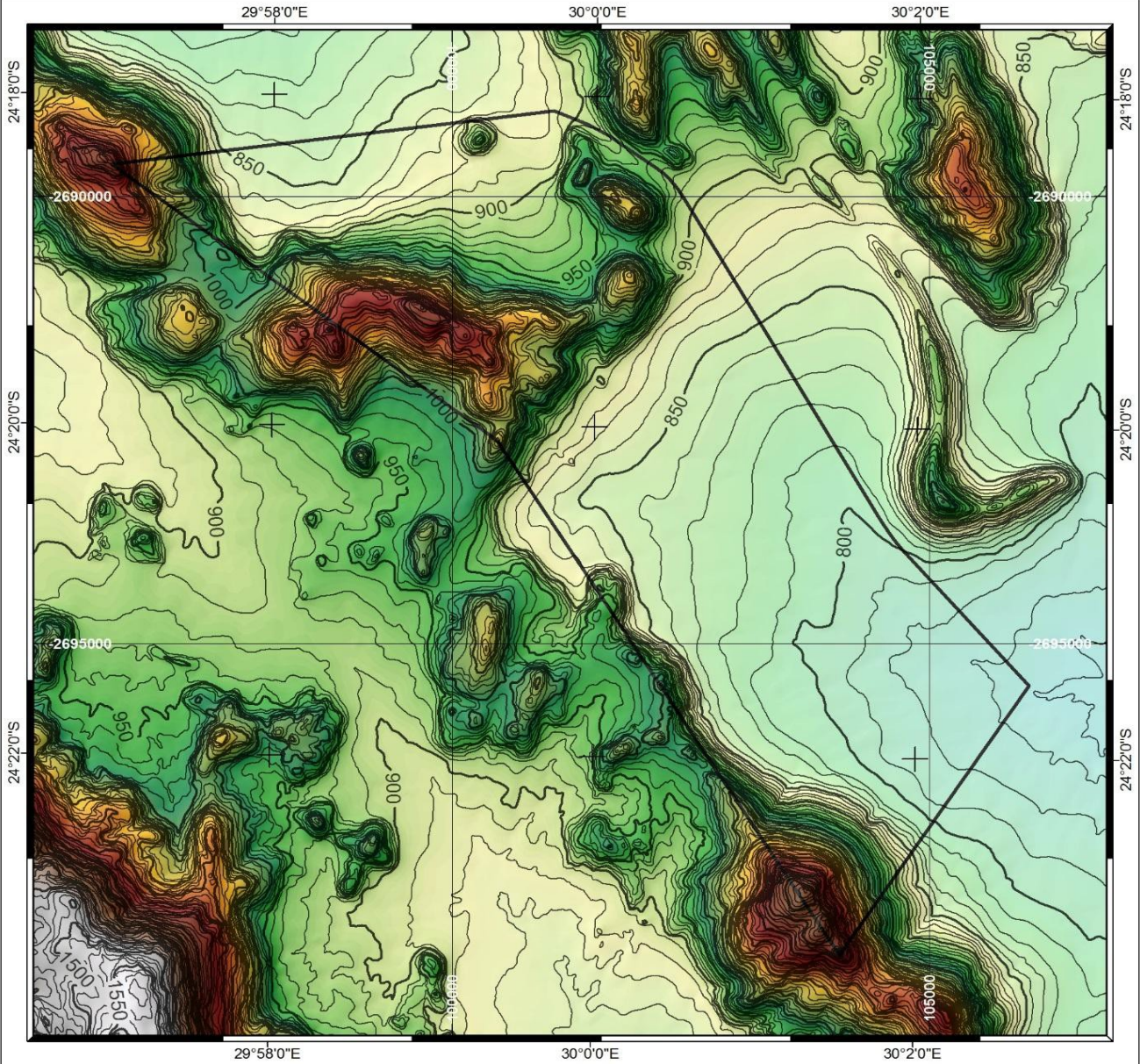
9.4 TOPOGRAPHY

The topography of the greater study area is characterised by small clusters of hills and valleys, consisting mainly of quartzite, gabbro and anorthosite formations, shaped by local drainage patterns. To the south and southeast, the landscape gradually flattens out towards the lower laying drainage system while the northern and eastern perimeters are shaped by a much more mountainous setting with a regional topographical high point recorded as > 2055.0mamsl. Locally, a Gabbro ridge, striking in a general northwest-southeast direction forms the western and southern boundary of both mining right properties. A quartzite outcrop gives rise to prominent features to the eastern boundary. The highest topographical elevation on-site is 1384.0mamsl and form a groundwater and surface water divide to the far western perimeter of the farm Zwartkoppies. The lowest topographical point, situated within an unknown, non-perennial drainage channel which is situated to the east and is recorded as 769.0mamsl. On-site gradients at Zwartkoppies are much more variable with the average slope calculated at ~15.10 and – 15.20% respectively with an elevation loss of 129.0 m over a lateral distance of 2.70 km.

Lourens G van Zyl
(Mobile) +27 (0)76 371 1151
(Website) www.terragis.co.za
(Email) lourens@terragis.co.za

SEFATENG Elevation Model

Cartography & Spatial Analysis
TERRAGIS



Projection - Transverse Mercator
Datum - Hartebeeshoek 1994
Reference Ellipsoid - WGS 1984
Central Meridian - 29

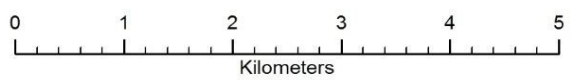


Figure 10: Topography of the region

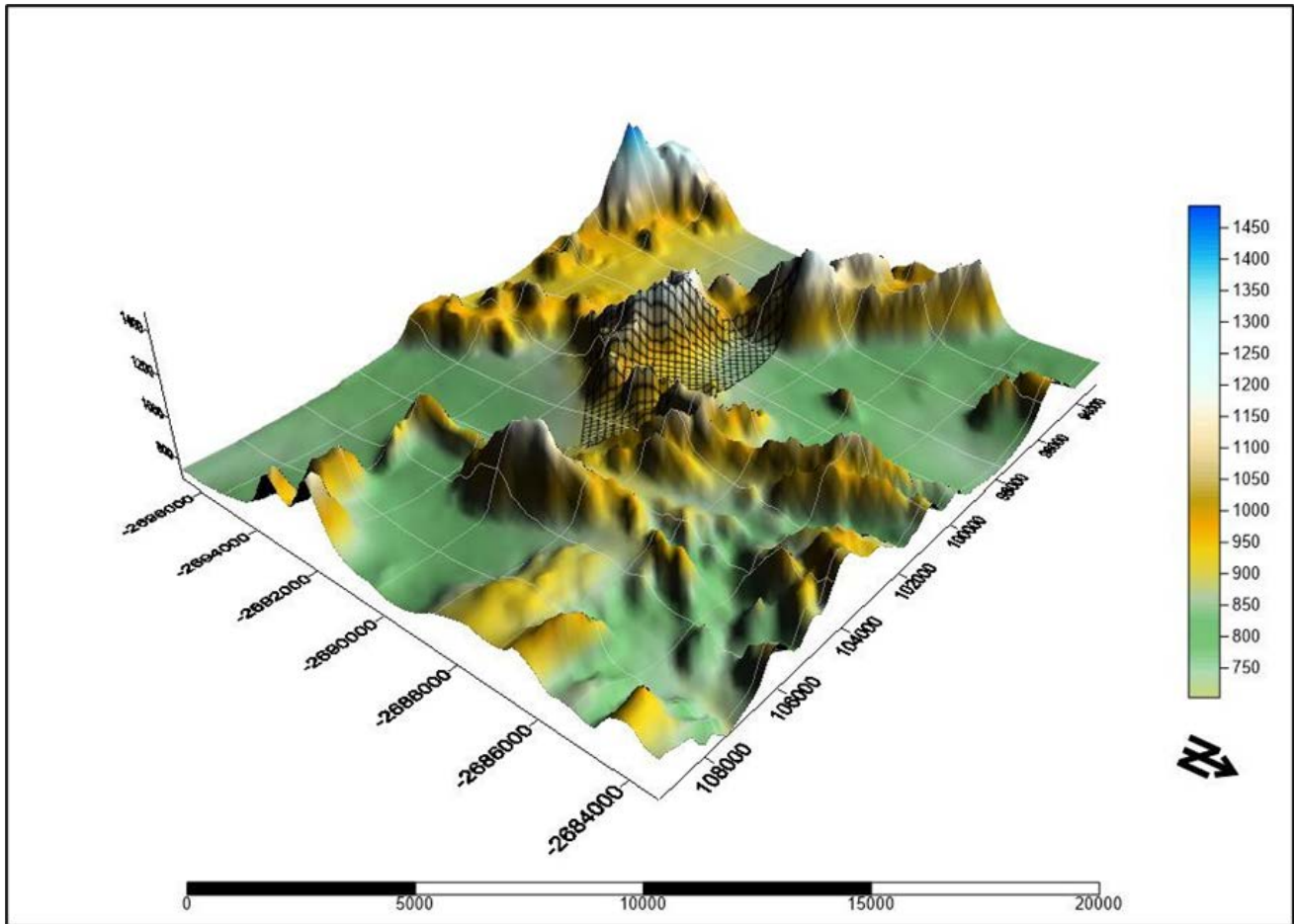


Figure 11: Topographical cross-sections of the greater project area

9.5 GEOLOGY

The study area is situated in the Eastern limb of the Bushveld Igneous Complex (BIC), which is one of the largest mafic layered igneous intrusions in the world. The mafic rocks of the Bushveld Complex constitute a maximum vertical thickness of 8 km in some places. The latter suggest three-fold subdivision mafic rocks of the Rustenburg Layered Suite, the Lebowa Granite Suite as well as the Granophyre Suite.

The limbs of the Bushveld Complex are generally tabular and emplaced slightly discordantly to the Pretoria Group of the Transvaal Supergroup. At the top of the Pretoria Group there is an unconformity separating clastic rocks from the overlying volcanic rocks of the Rooiberg Group. In the eastern limb emplacement occurred at the level of the Magaliesberg Formation north of Steelpoort, however to the south the intrusion transgressed upwards (Johnson et al, 2006).

The Rustenburg Layered Suite comprises rock types ranging from dunite, norite, gabbro, anorthosite, magnetite and diorite. The Lebowa Granite Suite consists of granites from the BIC and occupies the western and eastern limbs, meeting in the north of Pretoria and the Waterberg Plateau. The Rashoop Granophyre Suite comprises rocks acid phase rocks of the Bushveld Complex which can be classified into magmatic as well as metamorphic types (Johnson et al, 2006).

According to the 1:250 000 geological map, superficial formations comprises mainly of granite, gabbro, norite, diabase, pyroxenite, anorthosite, quartzite, shale, lava as well as quaternary deposits. The main rock types that prevail in the substrata within the proposed pit expansions comprises norite from the Rustenburg Layered Suite as well as quartzite which forms part of the Silverton formation of the Pretoria Group of Vaalian age. A large part of the Waterkop farm is

also covered by quaternary sediments. The LG6 chromitite layer to be mined trends in a general north-northwest to south-southeast direction with a southwestern dip at approximately 14 degrees in the south and approximately 19 degrees in the north (Preston & Denner, 2010).

On a regional scale, two major faults exist in close proximity to the greater study area, the Wonderkop fault strikes from north-east to south-west and the Steelpoort which runs approximately southwest-northeast through the eastern limb of the BIC. Local displacement faults are also evident and may have an impact on groundwater flow and contaminant transport.

Dolerite dykes of the Karoo and post-Karoo age also occur throughout the greater study area and will also play a major role in aquifer compartmentalisation. A swarm of dykes occur in the south-eastern parts of the farm Zwartkoppies traversing the proposed pit expansion footprint and striking in a general southwestern-north-eastern direction. The general dip of these structures is assumed as having a vertical to sub-vertical dip towards the east.

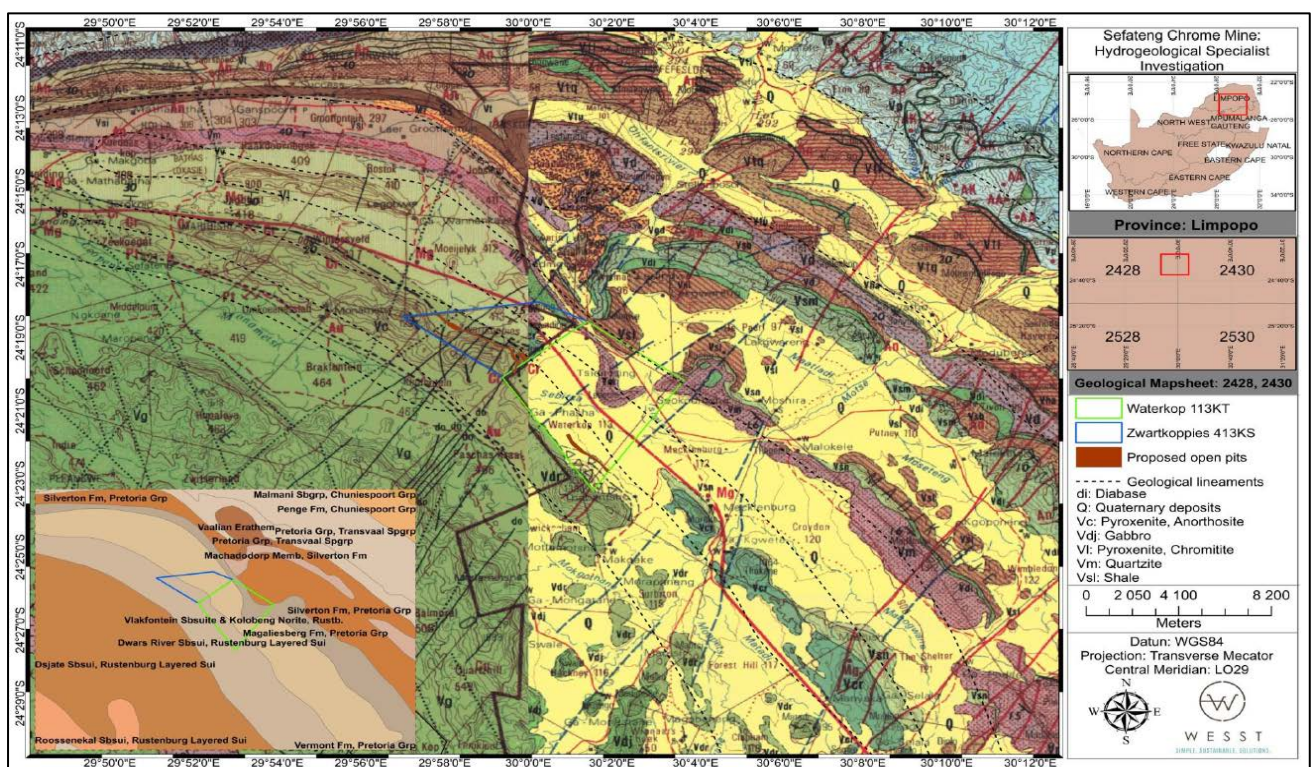


Figure 12: Regional geology and stratigraphy (Geological mapsheets 2428 and 2430)

9.6 GROUNDWATER

A Groundwater Impact Assessment was undertaken by Gradient Groundwater Consulting in 2021 for the project and is appended to this report as Appendix 6.

The following sub-sections outline the hydrogeology of the proposed study area.

9.6.1 Regional hydrogeology

According to the DWS Hydrogeological map (DWS Hydrogeological map series 2326 Polokwane and 2330 Phalaborwa) the site is characterised by an intergranular and fractured aquifer system (d3) as depicted in Figure 6-1. The greater study area is predominantly underlain by hard rock aquifers developed in secondary features associated with weathering pockets and structures i.e. fracturing, jointing and faulting. Isolated alluvial and quaternary deposits as observed in the

north-eastern may be associated with primary porosity aquifers. Groundwater resources are widespread in valleys and flat areas where weathered and fractured aquifers occur. According to the DWS borehole database, yields range from 0.5 – 2.0 l/s, while higher yielding boreholes (> 5.0 l/s) may occur along intruding dyke contact zones and other structural features i.e. fault zones. Borehole depths average 30 – 80 mbgl and water tables are generally 10 – 20 mbgl5 (Olifants ISP, DWAF 2004).

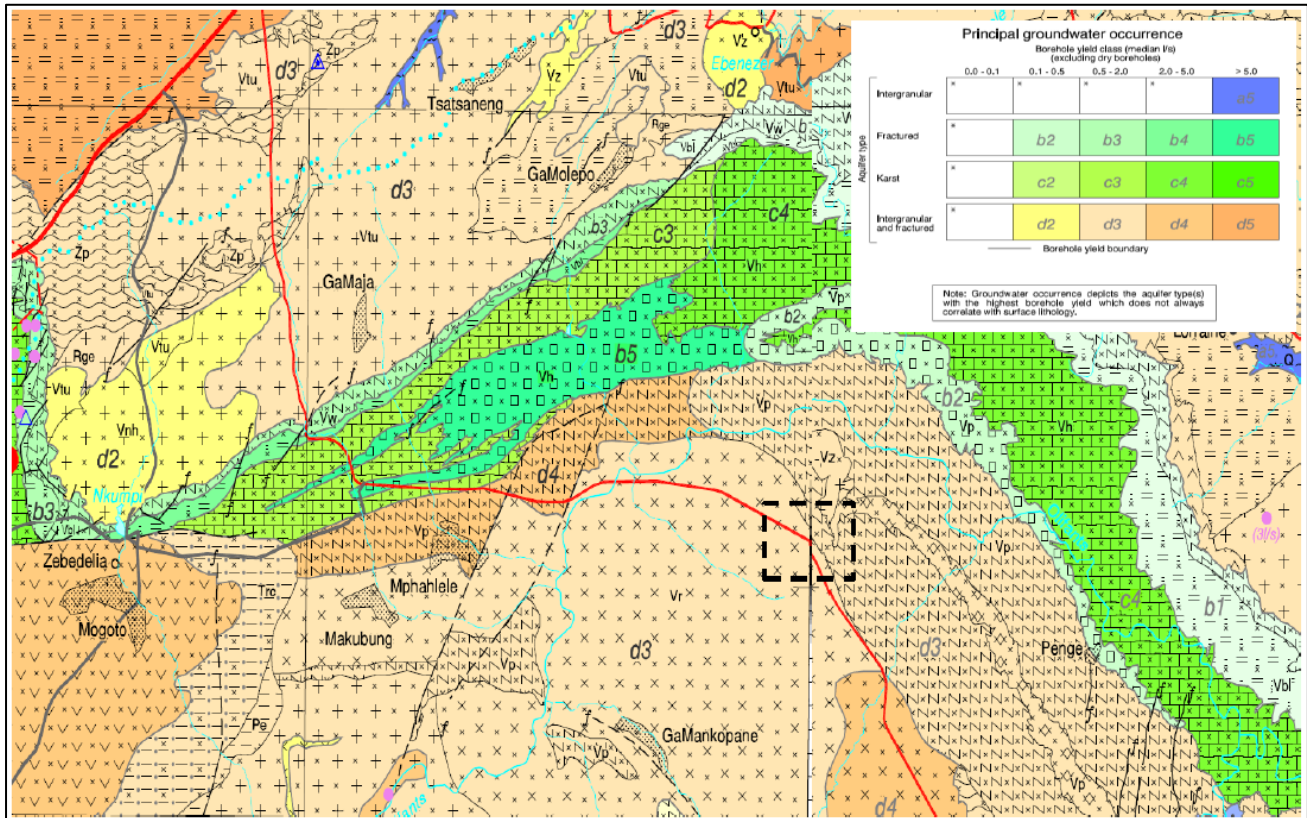


Figure 13: Hydrogeological map illustrating the typical groundwater occurrence for the study area (2326 Polokwane, 2330 Phalaborwa).

9.6.2 Local hydrostratigraphic units

For the purposes of this investigation, three main hydrostratigraphic units/aquifer systems can be inferred in the saturated zone6:

- A shallow quaternary and recent types of sediments (perched, unconfined) are characteristically a primary porosity aquifer. These aquifers are formed by the alluvial material along the riparian zone of local drainages and are limited to a zone of variable width and depth.
- A shallow, intergranular aquifer occurring in the transitional soil and weathered bedrock formations underlain by more consolidated bedrock. Groundwater flow patterns usually follow the topography, discharging as natural springs at topographic low-lying areas. Usually, this aquifer can be classified as a secondary porosity aquifer and is generally unconfined with phreatic water levels. Due to higher effective porosity (n) this aquifer is most susceptible to impacts from contaminant sources.
- A deeper, fractured aquifer where pores are well-cemented and do not allow any significant flow of water. Groundwater flow is dictated by transmissive secondary porosity structures such as bedding plane fractures, faults and contact zones fracture zones that occur in the relatively competent host rock. Shale, hornfels, gabbro, anorthosite and granite sequences are considered as fractured rock aquifers holding water in storage in both pore spaces and fractures. Groundwater yields, although more heterogeneous, can be expected to be higher than the weathered zone aquifer. This aquifer system usually displays semi-confined or confined characteristics

- with piezometric heads often significantly higher than the water-bearing fracture position.
- Weathered contact zones of dyke intrusions are commonly associated with groundwater occurrences as it creates a preferred flow-path.

9.6.3 Groundwater-surface water interaction

Groundwater and surface water interaction is an essential component of the hydrological cycle. The hyporheic zone (stream bed) is the zone of most interaction (Adams et. al.,2012). According to records documented by Van Tonder and Dennis (2003), under natural conditions there is a very limited connection between surface water and groundwater in the greater study area and regional drainages can be generally classified as effluent or losing stream systems.

9.6.4 Hydraulic parameters

The hydraulic conductivity of weathered igneous formations can range from 10^{-5} – 100. Hydraulic conductivity of fractured igneous rocks varies between 10^{-1} – 102 m/d, while conductivity values for un-fractured igneous rocks ranges between 10^{-10} – 10^{-6} m/d. Fault zones and/or geological contact zones identified may potentially have higher hydraulic properties due to apertures being large enough to support flow (Freeze and Cherry, 1979).

It is inferred that the average transmissivity for the shallow, weathered aquifer is estimated at approximately 0.8m²/d to 1.5 m²/d, depending on the saturated thickness of the aquifer.

Storativity refers to the volume of water per volume of aquifer released as a result of a change in head. For a confined aquifer, the storage coefficient is equal to the product of the specific storage and aquifer thickness. Typical storativity values for fractured rock systems is in the order of 10^{-5} – 10^{-3} (Freeze and Cherry, 1979). Storativity values of the shallow, weathered aquifer will be slightly higher i.e. 10^{-2} .

Porosity is an intrinsic value of seepage velocity and hence contamination migration. Porosity is an intrinsic value of seepage velocity and hence contamination migration. The porosity of fractured crystalline rocks ranges between 3% – 10%, while porosity of weathered formations can be as high as 15% depending on the nature and state of weathering (Freeze and Cherry, 1979).

An approximation of recharge for the study area is estimated at ~3.0% of MAP i.e. ~18.0 mm/a.

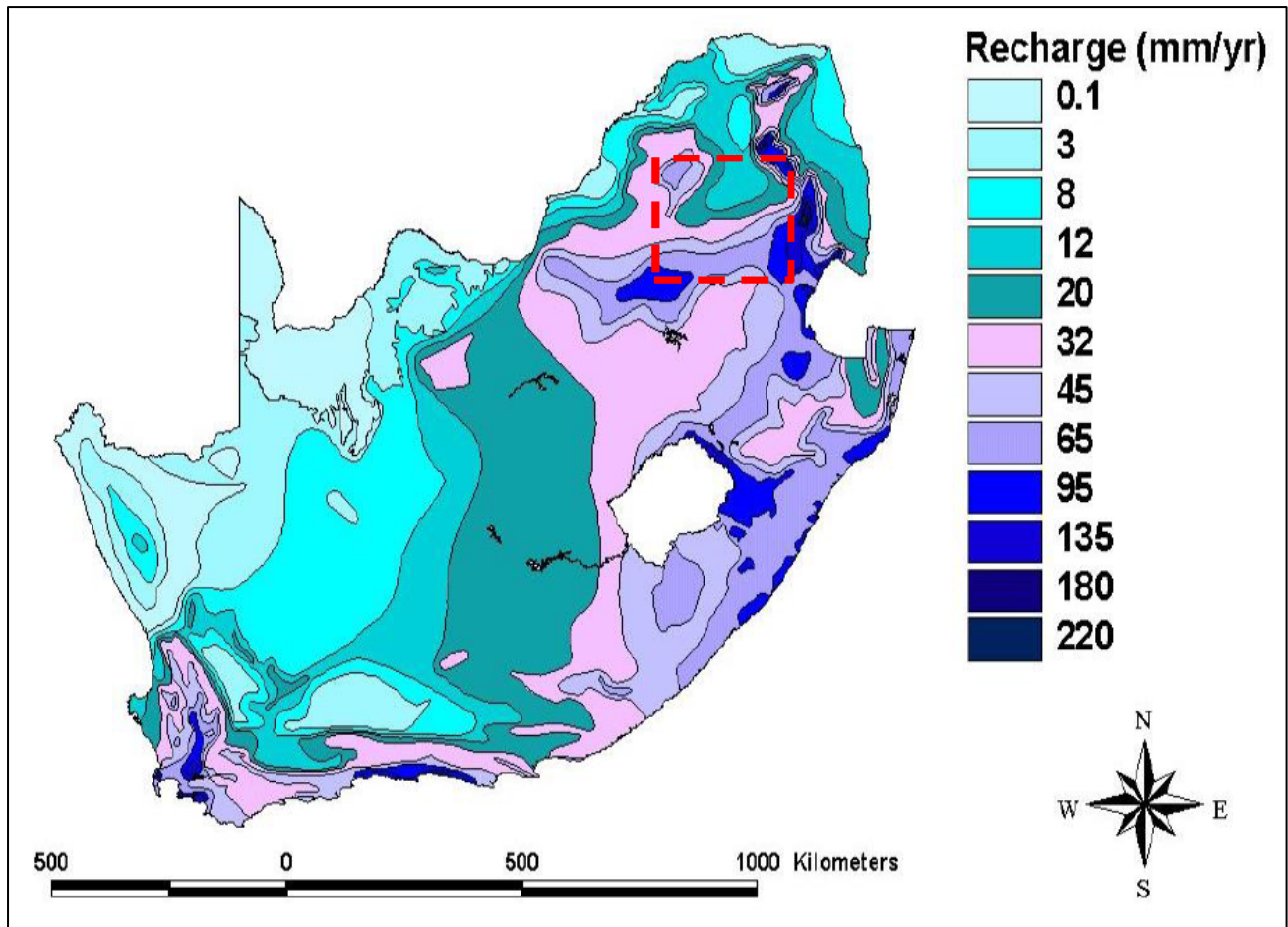


Figure 14: Groundwater recharge distribution in South Africa (After Vegter, 1995)

9.6.5 Groundwater flow evaluation

The following sub-sections outline the groundwater flow dynamics of the study area.

The unsaturated zone within the study area is in the order of ~7.0 to >55.0m with a mean thickness of approximately ~17.0m.

A distribution of borehole water levels recorded as part of the existing monitoring network were considered and used to interpolate local groundwater elevation and hydraulic head contours. The minimum water level was recorded at borehole MON BH-05 and BH16/365 (7.08mbgl), while the deepest water level measured was at borehole locality B11A/305 (55.47mbgl). The average water level is calculated at 17.56mbgl which is significantly shallower than the regional average water level of 27.20mbgl (Aquiworx, 2016).

The inferred groundwater flow direction will be in a general northern to northwestern direction towards the lower laying drainage system of the Moshashaneng and Olifants Rivers. The average groundwater gradient (i) of the shallow, weathered aquifer in the vicinity of the study area is moderate and calculated at a mean of 0.03, with a maximum of 0.075 in a south to north orientation.

The expected seepage rate from contamination originating at the waste facilities i.e. backfilled opencast zones is estimated at an average of approximately 2.80m/a, with a maximum distance of ~13.60m/a in a south-north orientation.

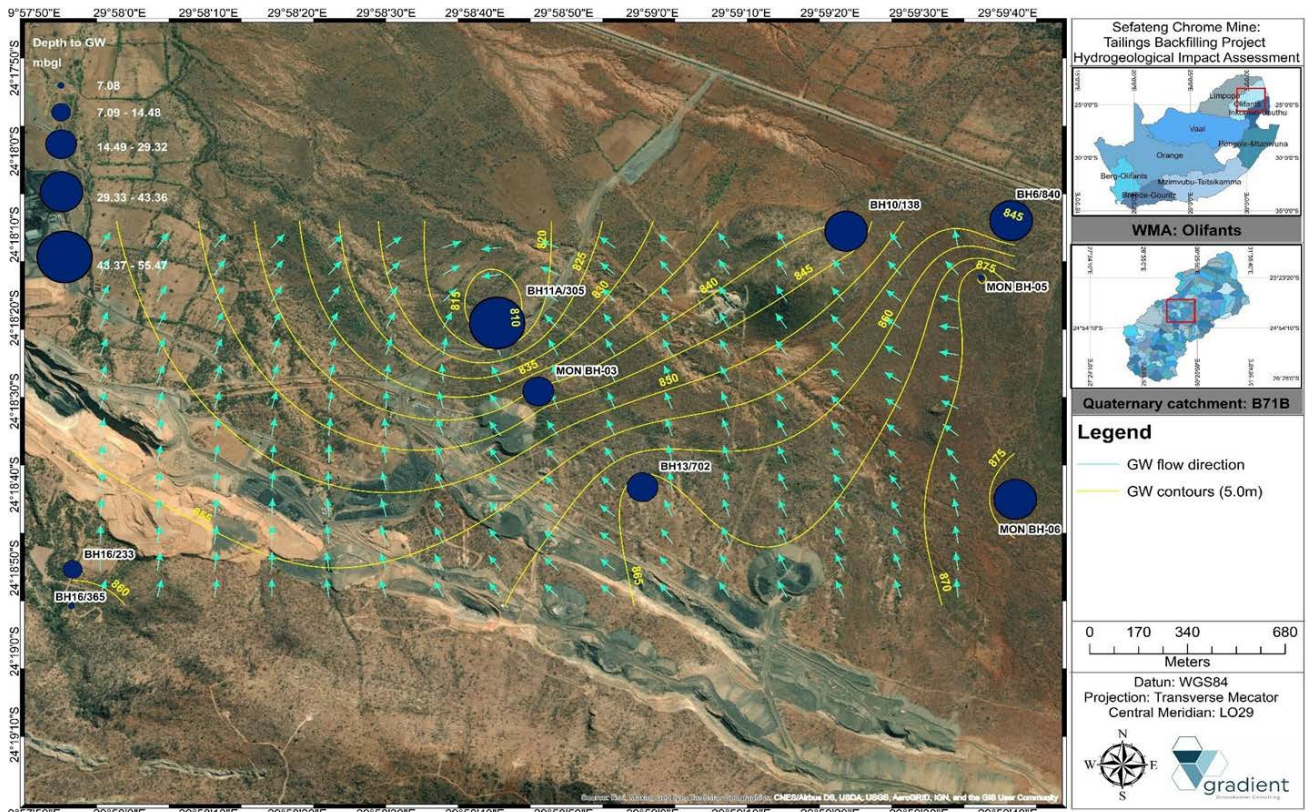


Figure 15: Regional groundwater flow direction and depth to groundwater

9.6.6 Groundwater quality

The hydrochemical analysis results suggest the overall ambient groundwater quality is good with all macro and micro determinants below the SANS 241:2015 limits. Groundwater can be described as neutral, saline and very hard. Below is a short summary of water quality per sampling locality.

- **Monitoring borehole MON BH-03** - Water quality can be described as neutral, saline and very hard:
 - pH of 7.40.
 - TDS of 683.0mg/l.
 - Total Hardness (CaCO₃/l) of 550.54mg/l.
- **Monitoring borehole MON BH-06** - Water quality can be described as neutral, saline and very hard:
 - pH of 7.60.
 - TDS of 575.0mg/l.
 - Total Hardness (CaCO₃/l) of 449.73mg/l.
- **Monitoring borehole BH16/233** - Water quality can be described as neutral, saline and very hard:
 - pH of 7.00.
 - TDS of 684.0mg/l.
 - Total Hardness (CaCO₃/l) of 510.90mg/l.
- **Water sampling locality BH11A/305** - Water quality can be described as neutral, saline and very hard:
 - pH of 7.90.
 - TDS of 582.0mg/l.
 - Total Hardness (CaCO₃/l) of 434.37mg/l.
- **Water sampling locality BH6/840** - Water quality can be described as neutral, saline and very hard:
 - pH of 7.80.
 - TDS of 753.0mg/l.
 - Total Hardness (CaCO₃/l) of 518.21mg/l.

- **Water sampling locality BH13/702** - Water quality can be described as neutral, saline and very hard:
 - pH of 7.60.
 - TDS of 577.0mg/l.
 - Total Hardness (CaCO₃/l) of 441.45mg/l

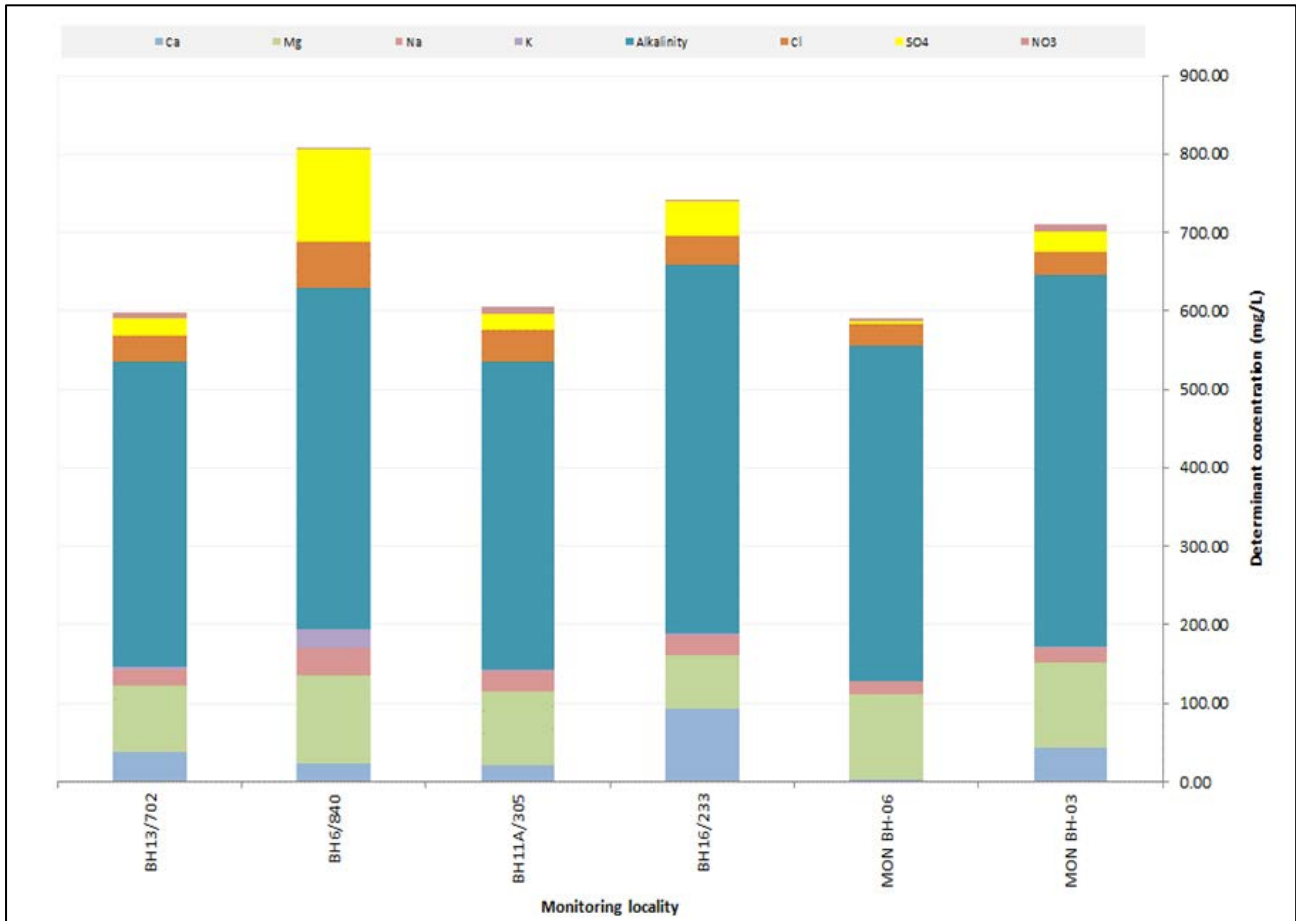


Figure 16: Hydrochemistry: Composite bar-chart indicating groundwater major anion cation composition

9.6.7 Aquifer Classification

According to the aquifer classification map of South Africa the project area is underlain by a “Minor aquifer”.

According to the aquifer vulnerability map of South Africa the project area is underlain by an aquifer system with a “Least” vulnerability rating.

According to the Aquifer susceptibility map of South Africa the project area is underlain by an aquifer system with a “Low” susceptibility rating.

According to the DRASTIC index methodology applied, the proposed activities and associated infrastructure’s risk to groundwater pollution of the aquifer system(s), is rated as “Low”.

9.7 SURFACE WATER

There are several non-perennial streams bordering the area of interest, however, this study is only concentrated on the Sebitsa River (Waterkop Operations) and the unnamed tributaries of the Moshashaneng River (Zwartkoppies Operations). Main disturbances within the non-perennial streams include erosion as well as head gully formations. Mining and subsistence agriculture are the only impactors on the aquatic environment, as there are no other activities higher in the catchment that can impact on the surface water.

The surface water study area falls within the boundaries of the Olifants Water Management Area (DWS, 2016a). The newly promulgated Olifants Water Management Area (WMA), as defined by the National Water Resources Strategy (NWRS) 2nd Edition (DWA, 2013a), comprises the original Olifants WMA, together with the Letaba River System (previously part of the Luvuvhu/Letaba WMA). A full description of the Olifants WMA boundaries is provided in GN No. 1056. Major rivers within the WMA include the Elands, Wilge, Steelpoort, Olifants and Letaba Rivers. As per the NWRS 2nd Edition, the Olifants WMA is a highly stressed WMA, fast growing in terms of population and need for improved services. There is very little opportunity for further water resource development and no realistic opportunity to import significant volumes of additional water from elsewhere.

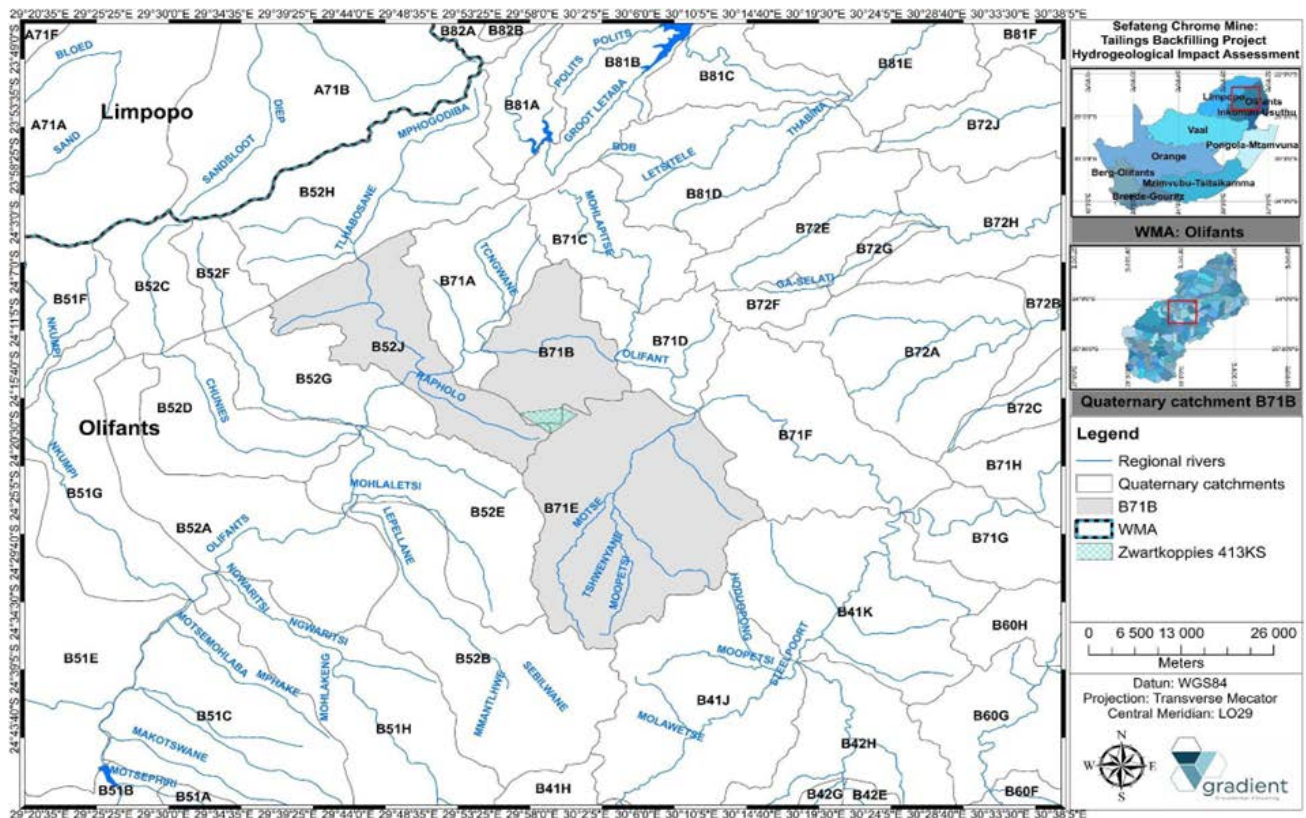


Figure 17: Water Management Areas

9.7.1 Surface Water Features

As indicated in the figure above the mining right areas fall across three Quaternary Catchments. These include the B52J, B71B and B71E Quaternary Catchments, all characterised by a network of non-perennial streams flowing into downstream drainage lines to ultimately join the Olifants River. The Farm Zwartkoppies 413 KS is located on the water divide of all three these Quaternary Catchments with the majority of the farm draining north-west into the Moshashaneng River, while a small portion of the farm is contributing south-easterly into the Sebitsa River and a very small area in the south-western corner of the farms drains south-west into the Monametsi River. The farm Waterkop 113

KT drains south-east into the Sebitsa River.

Table 13: Outline of Quaternary areas and applicable rivers and streams

Quaternary Catchment	Property	Resource Description
B71B	Zwartkoppies 413 KS	Unnamed tributaries of the Moshashaneng River which flows into the Olifants River
B71E	Waterkop 113 KT and Zwartkoppies 413 KS	Unnamed tributaries of the Sebitsa River. The Sebitsa River merge with the Tshalale River before flowing into the Motse River that drains to the Olifants River
B52J	Zwartkoppies413 KS	Unnamed tributaries of the Rapholo River which flows into the Olifants River

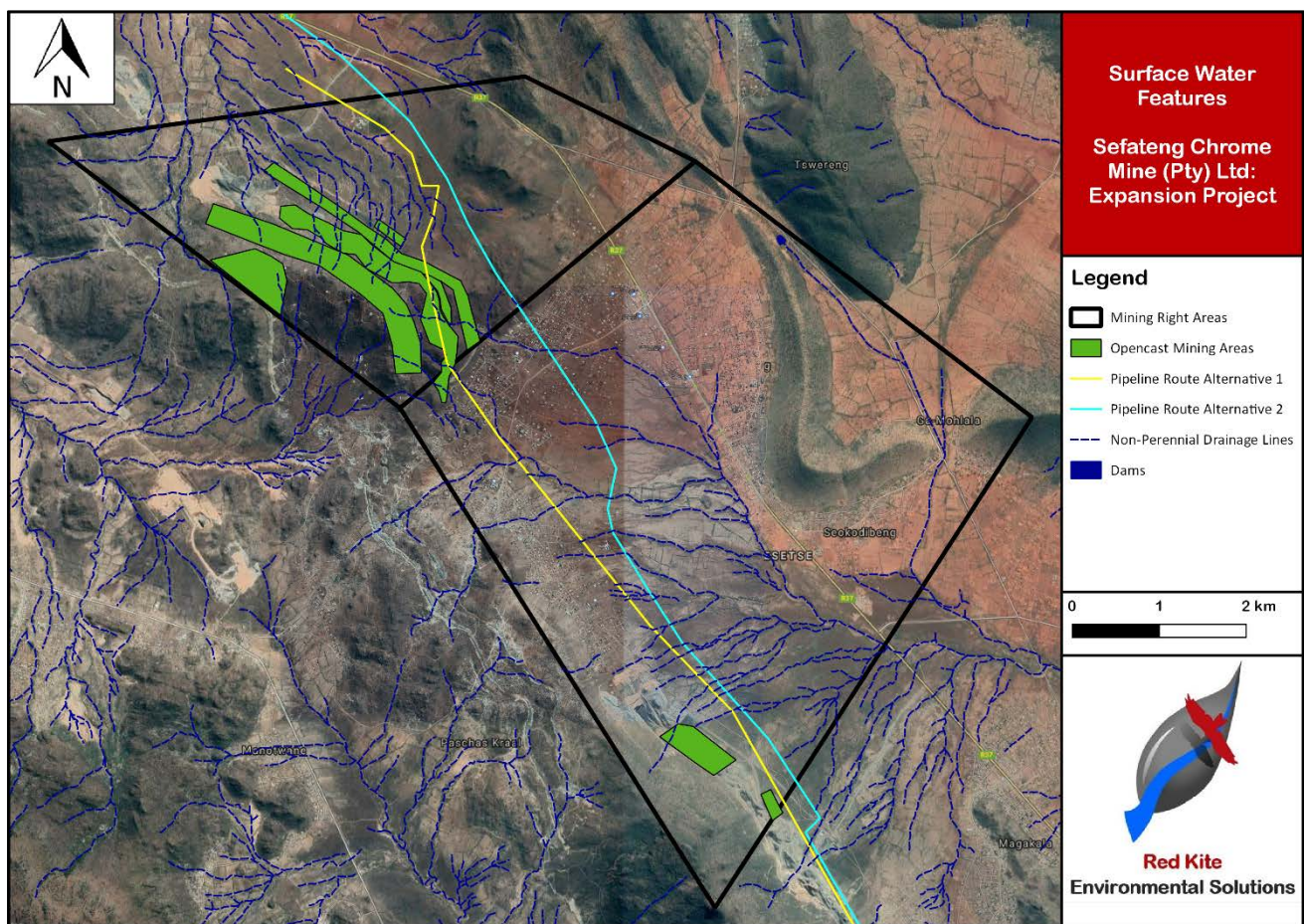


Figure 18: Surface Water Features applicable to the Study Area

9.7.2 Drainage Direction

The figure below shows the major rivers/streams and the general flow directions of the drainage systems for the Zwartkoppies and Waterkop Sections.

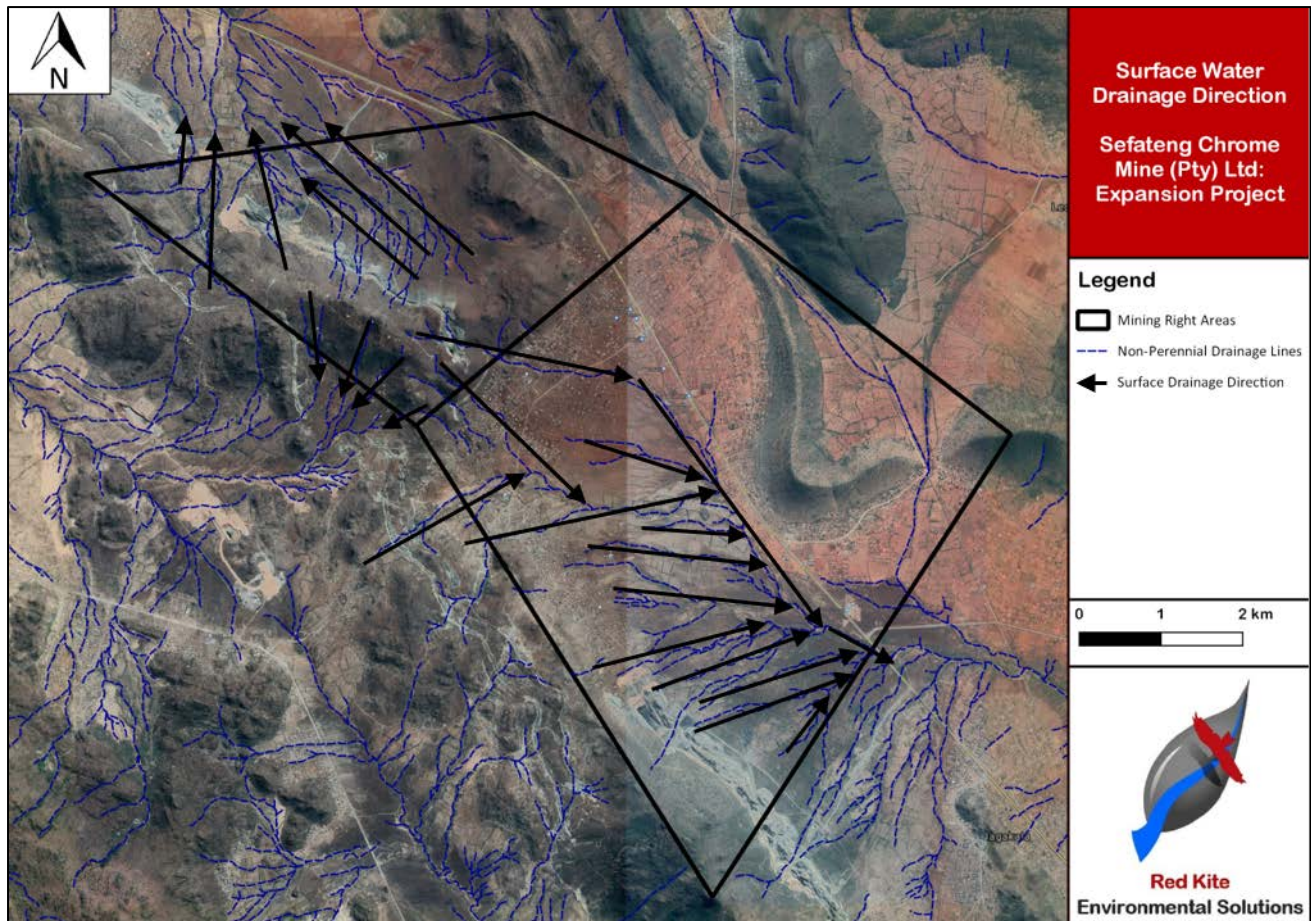


Figure 19: Drainage Direction of the Study Area

9.7.3 Mean Annual Runoff (MAR)

Natural Mean Annual Runoff (MAR) for the Olifants WMA as per the National Water Resources Strategy (NWRS) 1st Edition (DWAf, 2004) equates to 2705 million m³/a of which 481 million m³/a occurs within the Middle Olifants Sub-WMA relevant to the study area. Mean Annual Runoff for the relevant Quaternary Catchments as acquired from WR2012 is indicated in the table below.

The figures in the table below indicate a 5.3 % decrease in MAR for the B71B Quaternary Catchment and a 5.6 % decrease in MAR for the B71E Quaternary Catchment from 1920 to 2009. The B52J Quaternary Catchment have experienced a 3.6 % increase in MAR over the same period.

Table 14: Quaternary Catchment Runoff Figures (WR2012)

Quaternary Catchment	Naturalised Flow MARs			Change in MAR (%)
	1920 -1989 MAR (WR90) Net (mcm)	1920 - 2004 MAR (WR2005) Net (mcm)	1920 – 2009 MAR (WR2012) Net (mcm)	
B71B	7.3	3.57	3.38	-5.30
B71E	22.8	11.3	10.67	-5.60
B52J	7.8	7.45	7.72	+3.60

9.7.4 Surface Water Users

The surface water users in the immediate vicinity of the study area are mainly agriculture (livestock watering) with domestic uses (further downstream) not impossible due to the scarcity of potable water in the area. The aquatic environment is included by default during the reserve determination stage as a surface water user. Regionally, most of the water users are supplied from local boreholes and by the Lebalelo Water User Association which is a joint scheme with the Department of Water and Sanitation and mining houses. Water is taken from the Olifants River at its confluence with the Motse River and distributed by the Lebalelo pipe system to the mines, with additional capacity provided for village off-takes.

9.7.5 Wetlands

No wetlands were observed on the mining areas. However, each stream, including the riparian zone (approximately 100 meters from the centre of the stream) must be considered as a sensitive aquatic environment as seepage and drainage areas in close proximity to these seasonal streams qualify as hydromorphic grasslands.

9.8 SOILS

The soils of the area are influenced by both colluvial and alluvial processes. The former process comprises soil creep under the influence of gravity (soil moves along a slope from higher to lower lying areas) while the latter process comprises sediment deposition owing to the flow of water. For this reason, the soils comprise soil complexes. Ascribing soil forms to specific areas is therefore difficult. The different soil polygons indicated on the map dominate the area, but other soil forms are encountered within these polygons.

The lower lying, undulating areas comprise the following soil forms:

- The Arcadia soil form (Ar) comprises a vertic A-horizon that overlies unspecified material. The vertic A-horizon has strongly developed structure and exhibits clearly visible, regularly occurring slickensides in some part of the horizon or in the transition to an underlying layer. The horizon has a high clay content, is dominated by smectite clay minerals and possess the capacity to swell and shrink markedly in response to moisture changes. Swell-shrink potential is manifested typically by the formation of conspicuous vertical cracks in the dry state and the presence, at some depth, of slickensides (polished or grooved glide planes produced by internal movement). These soils are encountered along stream flow channels and preferential water flow channels. The Arcadia soils of the area are red in colour and this indicates that at least 15% of the Fe fraction is hematite. The soils lying in the northern section of the area marked Arcadia soil form is underlain by a non-diagnostic dorbank horizon. The dorbank horizon forms under alkaline conditions where silicon is mobilised and deposited at the lowest point of water infiltration. This is a horizon that has been cemented together and is almost impermeable to water infiltration.
- The Hutton soil form (Hu) comprises an orthic A-horizon overlying a red apedal B-horizon, underlain by unspecified material. The red apedal B-horizon has macroscopically weakly developed structure or is altogether without structure and reflects weathering under well drained, oxidised conditions. The clay fraction is dominated by non-swelling 1:1 clay minerals and the red colour of the soil is ascribed to iron oxide coatings on individual soil particles that are dominated by hematite. These soils are deeper than 150 cm.
- The Oakleaf soil form (Oa) comprises an orthic A-horizon that overlies a neocutanic B- horizon and unspecified material. The neocutanic B-horizon is characterised by colour variation due to clay movement and accumulation and an apedal or weakly developed structure. Soils of this soil form are deeper than 120 cm.
- The Valsrivier soil form (Va) comprise an orthic A-horizon that overlies a pedocutanic B- horizon and unconsolidated material without signs of wetness. The pedocutanic B-horizon comprise angular or subangular structure and exhibits clay illuviation in the form of cutans. These soils are deeper than 120 cm.
- The Brandvlei soil form (Br) comprises an orthic A-horizon which overlies a soft carbonate B- horizon. The soft

carbonate B-horizon exhibits a morphology which is dominated by calcium and/or potassium–magnesium carbonates. These carbonates can be present as a powder in which case it dominates the coloration of the horizon, nodules, honeycombed structured material or blocks. In the case of the study area the carbonates are mainly present as a powder and/or honeycombed structured material. These soils are deeper than 150 cm. When reacted with 10% HCl, the carbonate horizon bubbles.

- The Augrabies soil form (Au) comprises an orthic A-horizon which overlies a neocarbonate B- horizon and unconsolidated material. The neocarbonate horizon differs from the soft carbonate B-horizon in that the carbonates do not dominate the coloration of the soil. The horizon, however, reacts with 10 % HCl. These soils are deeper than 150 cm.
- The Clovelly soil form (Cv) comprises an orthic A-horizon that overlies a yellow brown apedal B-horizon and unspecified material. The yellow brown apedal B-horizon has macroscopically weakly developed structure or is altogether without structure and reflects weathering under well drained, oxidised conditions. The clay fraction is dominated by non-swelling 1:1 clay minerals. The yellow colour that is encountered in these soils is attributed to Al substituted goethite dominating the iron oxide fraction. These soils are deeper than 150 cm.

The higher lying, mountainous areas comprise shallow soils that mostly occur as soil-rock complexes. These areas comprise soils of the following soil forms:

- The Glenrosa soil form (Gs) comprises an orthic A-horizon overlying a lithocutanic B-horizon. The lithocutanic B-horizon is a pedologically young horizon where clay illuviation has occurred. Soil depth ranges from 10 to 50 cm.
- The Mispah soil form (Ms) comprises an orthic A-horizon that overlies hard rock. These soils range in depth from 10 to 20 cm.

The table below summarises the hectares comprised by each soil form. The area mostly comprise of i) the Brandvlei/Augrabies complex which is characterised by the presence of lime and ii) the shallow soils of the Mispah and Glenrosa soil forms which make up the soil-rock complex areas.

Table 15: A summary of the hectares which each soil form comprise

Soil form	Hectares	Percentage of total area
Arcadia	106.080685	3.3
Augrabies	1.973145	1.0
Brandvlei / Augrabies	1145.399016	36.1
Clovelly	170.91372	5.3
Hutton	124.591326	3.9
Mispah	9.844209	0.3
Mispah / Glenrosa	154.570889	4.8
Oakleaf	228.770492	7.1
Soil / Rock Complex	1180.658772	37.2
Valsrivier	45.160853	1.9
Total	3167.963107	100

None of the soils encountered on site showed hydromorphic characteristics within the top 50 cm of the soil profile. Some of the soils of the Arcadia soil form do show signs of Mn mobilisation at depths of 80 to 200 cm. The Arcadia soil form is not regarded as a wetland soil and this area is therefore not seen as a wetland from a soil perspective. This does not mean that the area is not regarded as a wetland from a botany perspective. The signs of Mn mobilisation do suggest that the area comprising of the Arcadia soil form is sporadic wet and if the area comprises wetland vegetation it should be classified as a wetland.

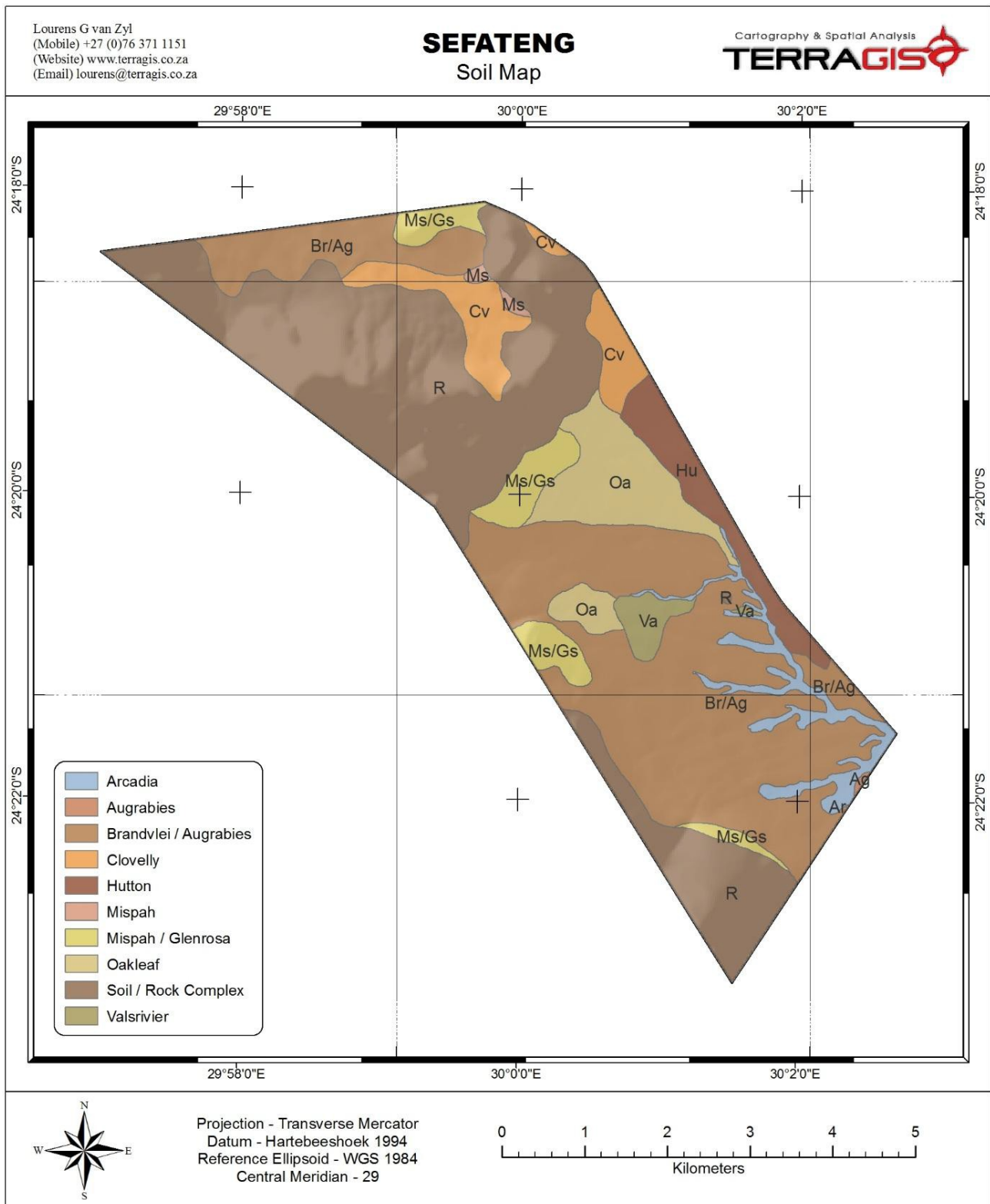


Figure 20: Dominant soil form encountered on the study area

The higher lying soils of the surveyed area are mainly discharge soils, meaning that these contribute minimally, if at all, to underground aquifers which might be located in the phreatic zone. After a rainfall event, water infiltration in the Mispah and Glenrosa soils (soil rock complexes) are low. Water rushes from the soil surface as surface runoff along a path of least resistance towards lower lying areas. These are areas where the landscape converges to form convex slopes. Erosion resulted in the formation of many of the ephemeral stream flow channels.

9.8.1 Land Capability

The area is divided into three land capability classes.

9.8.1.1 Arable (medium potential) Land Capability

Arable (medium potential) land comprises approximately 524.27 ha or 17% of the total area of which approximately 170 ha can be irrigated. The latter is situated towards the north of the study area. These soils are regarded as medium agricultural potential soil as opposed to high agricultural potential soils for the following reasons:

- The area is a low rainfall area and dry land crop production will yield moderate returns.
- The soils show a drastic increase in clay content with depth which could hamper water percolating through the soil profile and lead to a built up of salts in the profile, especially when a carefully managed irrigation schedule is not followed.
- The soils of the Oakleaf, Hutton, Valsrivier, Brandvlei and Augrabies soil form show a Ca:Na and Ca:Mg ration (on molar base) which will lead to the dispersion of clay mineral phases and the inhibition of water infiltration, especially when irrigated. Erosion will be a significant concern. The following irrigation classes apply to each soil form:
 - Oakleaf: Class 3
 - Hutton: Class 3
 - Valsrivier: Class 4
 - Brandvlei: Class 3
 - Augrabies: Class 3

These classes can be described as:

- Class 3: Low suitability with moderately severe limitations, imperfect or somewhat excessively drained soils, slow or rapid permeability or shallow soils.
- Class 4: Not suitable for irrigation under most conditions with severe limitations.

The soils that fall into the Arable land capability class are not of low agricultural potential for the following reasons:

- The soils in the lower lying areas of the site are deep, in many cases deeper than 150 cm, and show a high water holding capacity.
- These lower lying areas are relatively undulating.
- The soils do not contain many rocks or pebbles in the soil profile.
- The soils of the Clovelly soil form do not show the same chemical restrictions regarding the Ca:Na and Ca:Mg ratios as the other deep soils and can be used for irrigation purposes if the irrigation scheme is well managed. These soils fall into the FAO's irrigation class 2. This class describes soils that are suitable for irrigation with slight limitations (such as undulating topography), moderately well drained, moderately slow or moderately rapid permeability or moderate depth of soil.

Certain management practices should however be put in place before the crop production is practiced. These include:

- The construction of contour swales to combat erosion and the stabilization of already eroded areas.
- Deep ploughing or ripping of large portions of the site is not advised. Ploughing will increase the rate at which water evaporation occurs from the soil surface. When soil is ploughed, the surface area of the soil increases, thus exposing a larger volume of moist soil to the effects of evaporation. Deep ploughing and/or ripping will increase the erosion risk.
- Water harvesting techniques should be implemented.

Mulching can be used to combat evaporation from the soil surface. Rocks or other coarse material placed on the soil surface leads to a hydraulic discontinuity that lowers the evaporation rate from the soil surface. Water, evaporating from the soil matrix, will accumulate at the soil-rock/course material interface owing to this discontinuity. It must be

remembered that evaporation is a form of unsaturated flow and is therefore hindered by coarse grained material.

9.8.1.2 Arable (low potential)/Grazing Land Capability Class

Arable (low potential)/Grazing land comprises approximately 1231.13 ha or 39 % of the total area. This area comprises highly erodible soils of the Brandvlei, Augrabies and Valsrivier soil forms. These soils fall into Class 4 in terms of irrigation potential. These soils are not suitable for irrigation under most conditions with severe limitations.

9.8.1.3 Wilderness/Grazing Land Capability

Wilderness/Grazing land comprises approximately 1451.17 ha. This relates to almost 46 % of the total area. The area is classified as such owing to the following:

- Shallow soils of the Glenrosa and Mispah soil forms inhibit root growth and root development, exhibit a low water holding capacity and high surface runoff rates. Internal drainage is hampered and the slopes where these soils are found are steep. These soils are not suited for crop production, but can be used for low intensity grazing, except for the highest lying areas.
- The soils of the Arcadia soil form show swelling and shrinking characteristics which could lead to root pruning and inhibit crop yield. These soils are prone to erosion and are better left as wilderness land, although low intensity grazing can be practiced if managed carefully.

Lourens G van Zyl
 (Mobile) +27 (0)76 371 1151
 (Website) www.terragis.co.za
 (Email) lourens@terragis.co.za

SEFATENG Land Capability Map

Cartography & Spatial Analysis
TERRAGIS

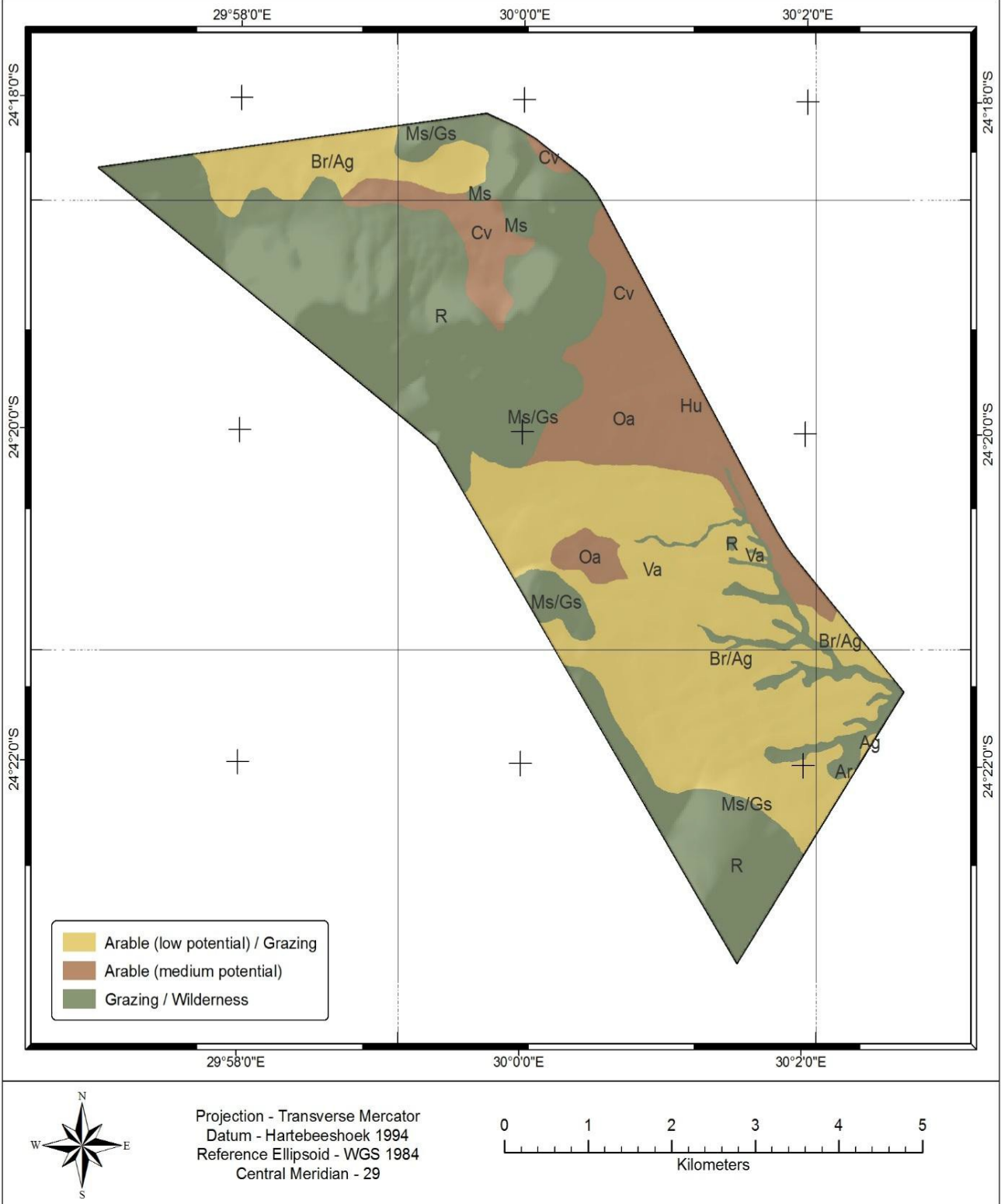


Figure 21: Land capability of the area

9.9 FLORA

Two vegetation types according to Mucina & Rutherford (2006) occur in the studied area, namely the Sekhukhune Plains Bushveld (SVcb27) and the Sekhukhune Mountain Bushveld (SVcb28). About 8 km north-east of the study area, portions of the Ohrigstad Mountain Bushveld (SVcb26) vegetation type occurs.

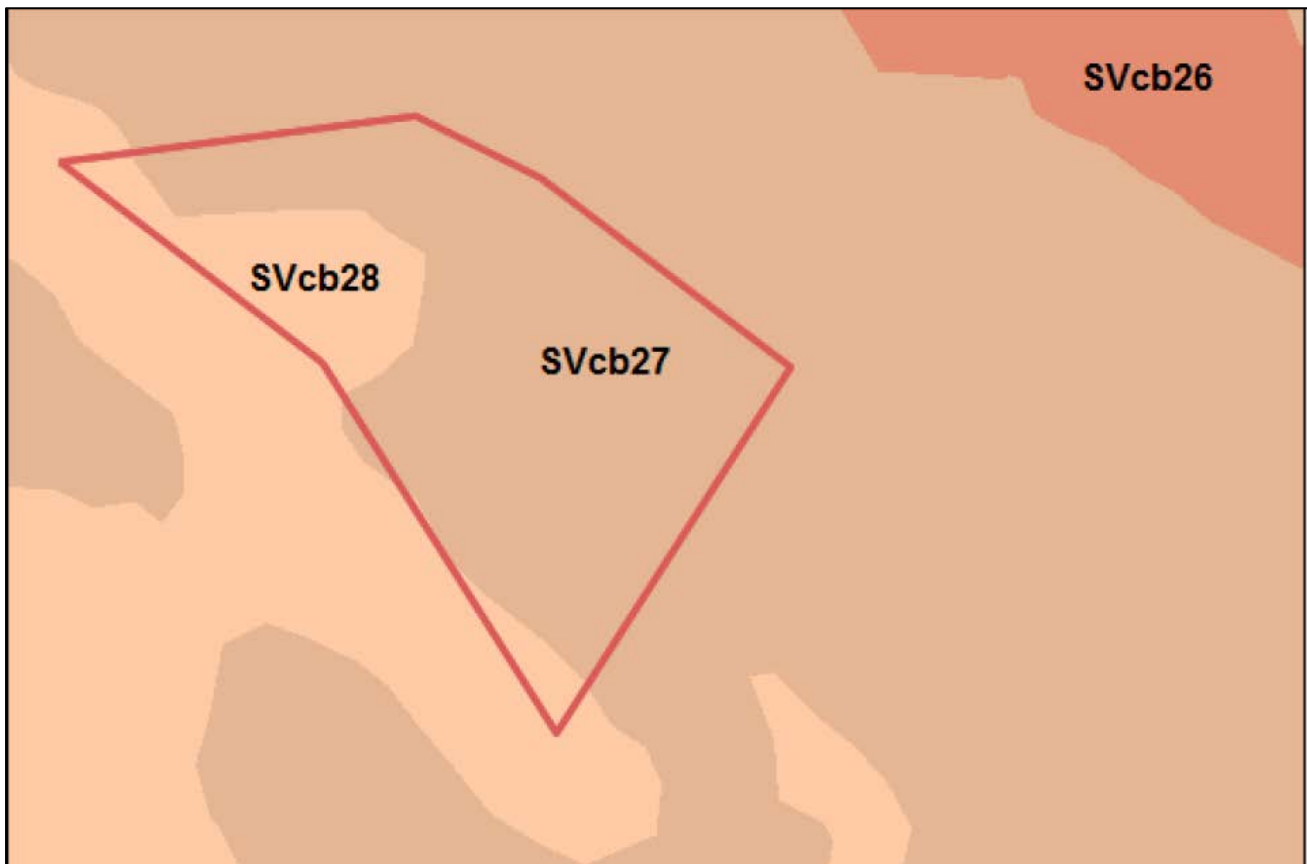


Figure 22: Distribution of vegetation types according to Mucina & Rutherford

9.9.1 Sekhukhune Plains Bushveld (SVcb27)

The distribution of the Sekhukhune Plains Bushveld (SVcb27), stretches from the lower basin of the Steelpoort River and the lowland area of Burgersfort and the in the south, through the Motse River plains to Jobskop and Legwareng (south of the Strydpoort Mountains) in the north and continuing up the basin of the Olifants River to the area around Tswaing and also up the Lepellane River and Mohlaetsi River valleys. Rainfall occurs in the hot summer months with a MAP of between 500 to 700 mm, which is highly influenced over short distances by topographical features. Winters are dry with infrequent frost.

Geologically SVcb27 is complex with mostly mafic and ultramafic intrusive rocks of the main and lower zones of the Rustenburg Layered Suite on the eastern lobe of the Bushveld Igneous Complex. The sub-suites (zones) are dominated by concentric belts of norite, gabbro, anorthosite and pyroxenite, with some localized protrusions of chromitite, serpentinised harzburgite, magnetite, shale, olivine diorite, quartzite and dolomite. Red apedal soils dominate most of the area and deep loamy Valsrivier soils characterize the plains while shallow Glenrosa soils mainly occur on the low lying, rocky hills. Patches of black, highly erodible, melanic soils are common around small mountains. Land types that mostly occur in SVcb27 are Ae, Ib, Ea and Ia.

SVcb27 forms part of the Sekhukhuneland Centre of Endemism (Van Wyk and Smith, 2001) and several endemic taxa of

this vegetation type still require formal taxonomic description (Siebert et al, 2001). According to Breebaart and Deutschländer (1997) and Siebert et al (2002a), in terms of species diversity and structure, SVcb27 related to the Sekhukhune Mountain Bushveld (SVcb28), the Polokwane Plateau Bushveld (SVcb23) and the Springbokvlakte Thornveld (SVcb15) vegetation types. The vegetation of this vegetation type is also compared to Acocks' (1988) veld type 18: Mixed Bushveld and also to the Mixed Bushveld (LR 18) described by Van Rooyen and Bredenkamp in Low and Rebelo (1996) and furthermore as *Acacia tortilis* – *Dichrostachys cinerea* Arid Northern Dry Bushveld by Siebert et al (2002b). Dominant (d) and other important taxa occurring in SVcb27 according to Mucina & Rutherford (2006) are included in the table below.

Table 16: Dominant and other taxa associated with SVcb27 (Mucina & Rutherford, 2006)

Trees and woody shrubs: [(d) = relatively dominant taxa]		
<i>Vachellia erioloba</i>	<i>Combretum imberbe</i>	<i>Myroxyylon aethiopicum</i>
<i>V. grandicornuta</i>	<i>Commiphora glandulosa</i>	<i>Philenoptera violacea</i>
<i>V. nilotica</i> (d)	<i>Dichrostachys cinerea</i>	<i>Ptaeroxylon obliquum</i>
<i>V. tortilis</i> subsp. <i>heteracantha</i> (d)	<i>Ehretia rigida</i> subsp. <i>rigida</i>	<i>Rhigozum brevispinosum</i>
<i>Senegalia mellifera</i> subsp. <i>detinens</i> (d)	<i>Grewia bicolor</i>	<i>Rhigozum obovatum</i>
<i>Albizia anthelmintica</i>	<i>Karomia speciosa</i>	<i>Schotia brachypetala</i>
<i>Balanites maughamii</i>	<i>Maerua angolensis</i>	<i>Searsia engleri</i> (d)
<i>Boscia foetida</i> ssp. <i>rehmanniana</i> (d)	<i>Maerua decumbens</i>	<i>Ziziphus mucronata</i>
<i>Cadaba termitaria</i>	<i>Markhamia zanzibarica</i>	
Herbaceous shrubs, climbers and herbs:		
<i>Becium filamentosum</i> (d)	<i>Hibiscus praeteritus</i>	<i>Pechuel-Loeschea leubnitziae</i>
<i>Blepharis integrifolia</i>	<i>Ipomoea magnusiana</i>	<i>Phyllanthus maderaspatensis</i> (d)
<i>Coccinia rehmannii</i>	<i>Jamesbrittenia atropurpurea</i>	<i>Plinthus rehmannii</i>
<i>Corchorus asplenifolius</i>	<i>Jatropha latifolia</i> var. <i>latifolia</i>	<i>Seddera suffruticosa</i> (d)
<i>Decorsea schlechteri</i>	<i>Lantana rugosa</i>	<i>Tinnea rhodesiana</i>
<i>Felicia clavipilosa</i> (d)	<i>Melhania rehmannii</i>	<i>Triaspis glaucophylla</i>
<i>Gnidia polycephala</i>	<i>Monechma divaricatum</i>	
<i>Gossypium herbaceum</i>	<i>Myrothamnus flabellifolius</i>	
Succulent trees, shrubs, climbers and herbs:		
<i>Aloe castanea</i>	<i>Euphorbia enormis</i> (d)	<i>Sarcostemma viminale</i>
<i>Aloe cryptopoda</i> (d)	<i>Euphorbia tirucalli</i> (d)	
<i>Aloe globuligemma</i>	<i>Kleinia longiflora</i> (d)	
Geophytic herbs:		
<i>Drimia altissima</i>	<i>Sansevieria pearsonii</i>	
Graminoids:		
<i>Aristida adscensionis</i>	<i>Eragrostis barbinodes</i>	<i>Stipagrostis hirtagluma</i>
<i>Aristida congesta</i>	<i>Panicum maximum</i> (d)	<i>Tragus berteronianus</i>
<i>Cenchrus ciliaris</i> (d)	<i>Paspalum distichum</i>	<i>Urochloa mosambicensis</i> (d)
<i>Enneapogon cenchroides</i> (d)	<i>Schmidtia pappophoroides</i>	
Biogeographically important taxa: (N = Northern Sourveld Endemic; CB = Central Bushveld Endemic; SK = Sekhukhuneland endemic; D = Broadly disjunct distribution)		
<i>Amphioglossa triflora</i> ^D (low shrub)	<i>Chlorophytum cyperaceum</i> ^{SK} (geophytic herb)	<i>Orthosiphon fruticosus</i> ^{CB} (low shrub)
<i>Aneilema longirrhizum</i> ^{SK} (herb)	<i>Hibiscus barnardii</i> ^{SK} (low shrub)	<i>Petalidium oblongifolium</i> ^{CB} (low shrub)
<i>Asparagus fourei</i> ^N (low shrub)	<i>Lydenburgia cassinoides</i> ^{SK} (tree)	<i>Piarranthus atosanguineus</i> ^{CB} (succulent herb)
<i>Asparagus sekhukhuniensis</i> ^{SK} (woody climber)	<i>Nuxia gracilis</i> ^D (tall shrub / small tree)	<i>Searsia batophylla</i> ^{SK} (low shrub)

The conservation status of SVcb27 is described by Mucina & Rutherford (2006) as vulnerable. The national conservation target is for 19% thereof to be conserved, however, at this stage only about 2% is statutorily conserved in the Bewaarkloof and Wolkberg Caves Nature Reserves. Approximately 25% of SVcb27 has been transformed due to mainly dry land subsistence farming as well as by mining and associated urbanization activities in the area. A high degree of degradation of natural vegetation is clearly visible and is largely attributed to unsustainable utilization and harvesting and overgrazing. Erosion is a widespread phenomenon and reaches high to very high levels of donga formation. Due to the high level of degradation a large number of alien plant species occur of which various *Agave species*, *Verbesina encelioides*, various *Opuntia species*, *Lantana camara*, *Melia azedarach*, *Nicotiana glauca*, *Caesalpinia decapetala* and *Xanthium strumarium* are the most widespread.

9.9.2 Sekhukhune Mountain Bushveld (SVcb28)

According to the Sekhukhune Mountain Bushveld (SVcb28) occurs on dry open to closed mixed micro-phyllous (small-leaved) and broad-leaved savanna in Limpopo and Mpumalanga on undulating hills and mountain sides that form concentric belts that run parallel to the north-eastern escarpment. SVcb28 is situated on high ground surrounding the vegetation of the Sekhukhune Plains Bushveld (SVcb27) and includes the steep slopes of the Leolo Mountains, the Dwarsrivier Mountains, Thaba Sekhukhune and the undulating small hills in the Steelpoort River Valley up to and alongside the Klip River flowing past Roosenekal in the south-west.

The geology of SVcb28 mainly consists of ultramafic intrusive of the lower, critical and main zones of the eastern Rustenburg Layered Suite of the Bushveld Igneous Complex. The soils are mostly shallow, rocky and clayey. Glenrosa and Mispah soils are common, with lime present in low-lying areas and rocky areas with little or no soil are common on steep slopes. Other common soil forms include moderately deep red apedal Huttons as well as highly erosive melanic soil forms Bonheim and Steendal. Land types that occur in Svcb28 mainly include Ae, Ib, Ic and Fb.

The climatic region that SVcb28 is situated in is the summer rainfall region of southern Africa with a mean annual precipitation (MAP) of between 500 and 700 mm. Day temperatures are hot in summer, especially in the valley bottoms and the mean annual potential evaporation is 2043 mm, which is more than twice the MAP. Winters are dry and cool with few occurrences of frost in low lying areas.

According to Van Wyk and Smith (2001) this mountain bushveld forms part of the Sekhukhuneland Centre of Endemism, more specifically the Steelpoort Sub-centre. This vegetation is not heavily disturbed or degraded and its vast range of habitat still harbours high plant diversity with many endemics, many of which still await formal description (Siebert et al, 2001; Mucina & Rutherford, 2006). Floristically the vegetation of SVcb28 is compared to Acocks' veld type 19: Sourish Mixed Bushveld (Acocks, 1988), also to Mixed Bushveld (LR 18) described by Van Rooyen and Bredenkamp in Low and Rebelo (1996). Siebert et al (2002b) describes three vegetation types of Sekhukhuneland that also describe the vegetation of SVcb28: *Kirkia wilmsii* – *Terminalia prunioides* Closed Mountain Bushveld; *Combretum hereroense* – *Grewia vernicosa* Open Mountain Bushveld; *Hippobromus pauciflorus* – *Rhoicissus tridentata* Rock Outcrop Vegetation. Important taxa according to Mucina & Rutherford (2006) are included in the table below.

Table 17: Dominant and other taxa associated with SVcb28 (Mucina & Rutherford, 2006)

Trees and woody shrubs: [(d) = relatively dominant taxa]		
<i>Senegalia ataxacantha</i>	<i>Croton gratissimus</i>	<i>Pappea capensis</i>
<i>S. nigrescens</i> (d)	<i>Cussonia transvaalensis</i>	<i>Pavetta zeyheri</i>
<i>S. senegal</i> var. <i>leiorachis</i> (d)	<i>Dichrostachys cinerea</i> (d)	<i>Rhoicissus tridentata</i> (d)
<i>Bolusanthus speciosus</i>	<i>Elephantorrhiza praetermissa</i> (d)	<i>Schotia latifolia</i>
<i>Boscia albitrunca</i>	<i>Euclea crispa</i> subsp. <i>crispa</i> (d)	<i>Searsia keetii</i>
<i>Brachylaena ilicifolia</i>	<i>Euclea linearis</i>	<i>Sterculia rogersii</i>
<i>Combretum apiculatum</i> (d)	<i>Grewia vernicosa</i> (d)	<i>Terminalia prunioides</i> (d)
<i>Combretum hereroense</i>	<i>Hippobromus pauciflorus</i>	<i>Vitex obovata</i> subsp. <i>wilmsii</i> (d)

<i>Commiphora africana</i>	<i>Kirkia wilmsii</i> (d)	<i>Ziziphus mucronata</i> (d)
<i>Commiphora mollis</i>	<i>Ozoroa sphaerocarpa</i>	
Herbaceous shrubs, climbers and herbs:		
<i>Asparagus intricatus</i>	<i>Cyphostemma woodii</i>	<i>Phyllanthus glaucophyllus</i>
<i>Barleria saxatilis</i>	<i>Hermannia glanduligera</i>	<i>Psiadia punctulata</i>
<i>Barleria senensis</i>	<i>Indigofera lydenburgensis</i>	<i>Rhynchosia komatiensis</i>
<i>Berkheya insignis</i> (d)	<i>Jatropha latifolia</i> var. <i>angustata</i>	<i>Senecio latifolius</i>
<i>Clematis brachiata</i> (d)	<i>Kyphocarpa angustifolia</i>	<i>Tinnea rhodesiana</i>
<i>Clerodendrum ternatum</i>	<i>Melhania prostrata</i>	<i>Triaspis glaucophylla</i>
<i>Commelina africana</i> (d)		
Succulent shrubs, climbers and herbs:		
<i>Aloe castanea</i> (d)	<i>Aloe marlothii</i> subsp. <i>marlothii</i>	<i>Sarcostemma viminale</i>
<i>Aloe cryptopoda</i> (d)	<i>Huernia stapelioides</i>	
Geophytic herbs:		
<i>Hypoxis rigidula</i>	<i>Sansevieria hyacinthoides</i>	
Graminoids:		
<i>Aristida canescens</i> (d)	<i>Enneapogon scoparius</i>	<i>Panicum maximum</i> (d)
<i>Aristida transvaalensis</i>	<i>Heteropogon contortus</i> (d)	<i>Setaria lindenbergiana</i> (d)
<i>Cymbopogon pospischilii</i>	<i>Loudetia simplex</i>	<i>Setaria sphacelata</i>
<i>Diheteropogon amplexans</i>	<i>Panicum deustum</i>	<i>Themeda triandra</i> (d)
Biogeographically important taxa: (CB = Central Bushveld Endemic; SK = Sekhukhuneland endemic; Z = Link to Zimbabwe)		
<i>Asparagus sekhukhuniensis</i> ^{SK} (woody climber)	<i>Lydenburgia cassinoides</i> ^{SK} (tree)	<i>Rhoicissus sekhukhuniensis</i> ^{SK} (woody climber)
<i>Chlorophytum cyperaceum</i> ^{SK} (geophytic herb)	<i>Petalidium oblongifolium</i> ^{CB} (low shrub)	<i>Searsia batophylla</i> ^{SK} (low shrub)
<i>Euclea sekhukhuniensis</i> ^{SK} (low shrub)	<i>Searsia sekhukhuniensis</i> ^{SK} (tall shrub)	<i>Raphionacme chimanimaniana</i> ^Z (geophytic herb)
Taxa endemic to SVcb28:		
<i>Acacia ormocarpoides</i> (tree)	<i>Euphorbia sekhukhuniensis</i> (succulent tree)	<i>Plectranthus porcatus</i> (herb/shrub)

Mucina & Rutherford (2006) notes the conservation status of SVcb28 as least threatened. The national target is 24%, but currently only 0.4% is statutorily conserved in Potlake Nature Reserve. 15% is transformed due to small scale cultivation and urbanization. Pressure by mining activities, especially along the Dwars River Sub- suite (Siebert et al, 2002c), is increasing throughout the area. Erosion is at moderate to high levels with donga formation in some places.

9.9.3 Conservation Status

No ecosystems that are listed as threatened or vulnerable, according to the National Environmental Management: Biodiversity Act (Act No. 10 of 2004) (NEMBA, 2004) was recorded on and in the close vicinity of the study area.

No specific guidelines are given for the Limpopo province in terms of habitat sensitivity mapping. The Limpopo Conservation Plan – version 2 (LCPv2) (Desmet *et al.* 2013), however, gives guidelines regarding the conservation of different land-use areas in the Limpopo Province. For this purpose, Critical Biodiversity Areas (CBA's) and Ecological Support Areas (ESA's) were identified and mapped.

with ESA 1 being in a largely natural state while ESA 2 areas are no longer intact but potentially retain significant importance from a process perspective (e.g. maintaining landscape connectivity). Other Natural Areas make up 20% of the province and just over 11% is designated as formal Protected Areas.

“Land-use guidelines are given to provide guidance on what types of land-use activities are compatible with the biodiversity management objectives of each CBA map category. These guidelines do not grant or take away existing land-use rights or the statutory requirement for permits and environmental authorizations. It is however recommended that any planned activity within the identified sensitive conservation areas, even those not requiring specified permits or authorisations, comply with the Duty of Care obligations of Section 28 of the National Environmental Management Act No 107 of 1998.”

According to the LCPv2 (Desmet *et al.* 2013) the mining rights area of Sefateng Chrome Mine (the study area) is almost equally divided into portions of CBA 2 and ESA 1 & 2 areas. Land-use guidelines indicate that mining is one of the incompatible land uses for CBA 2 and ESA 1 areas and probably also for ESA 2 areas. However, it also states that certain elements of incompatible activities could be allowed subject to detailed impact assessment to ensure that developments are designed and implemented in such a way as to maintain overall ecological functioning of these areas. The design and high-quality implementation of rehabilitation for these areas will most probably be of critical importance in such a case.

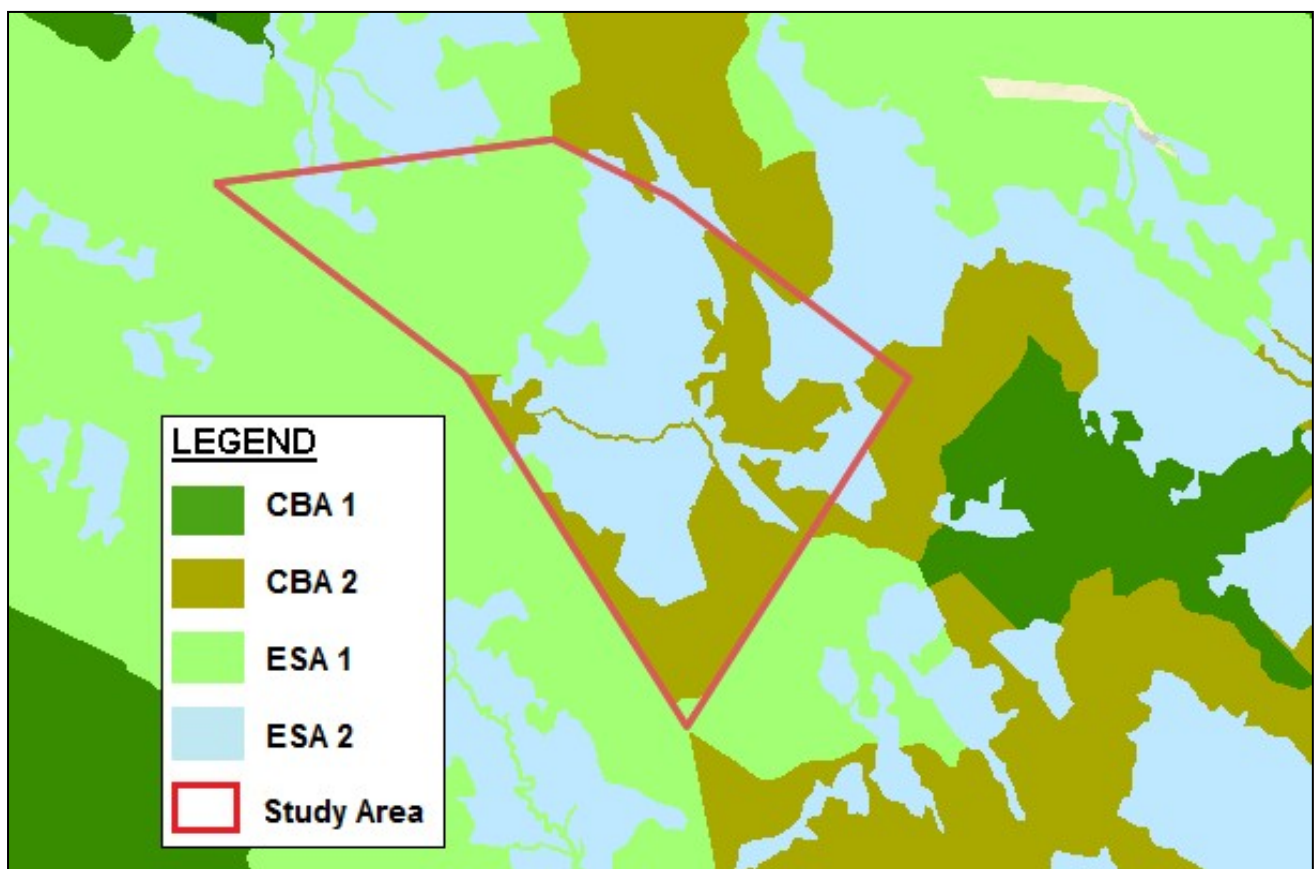


Figure 23: CBA's and ESA's according to Desmet et al. (2013) in the study area and surrounds

9.10 FAUNA

During the Desktop study, a list of potential fauna species occurring in the area were compiled and included in this section of the document for the various affected quarter degree grid cells.

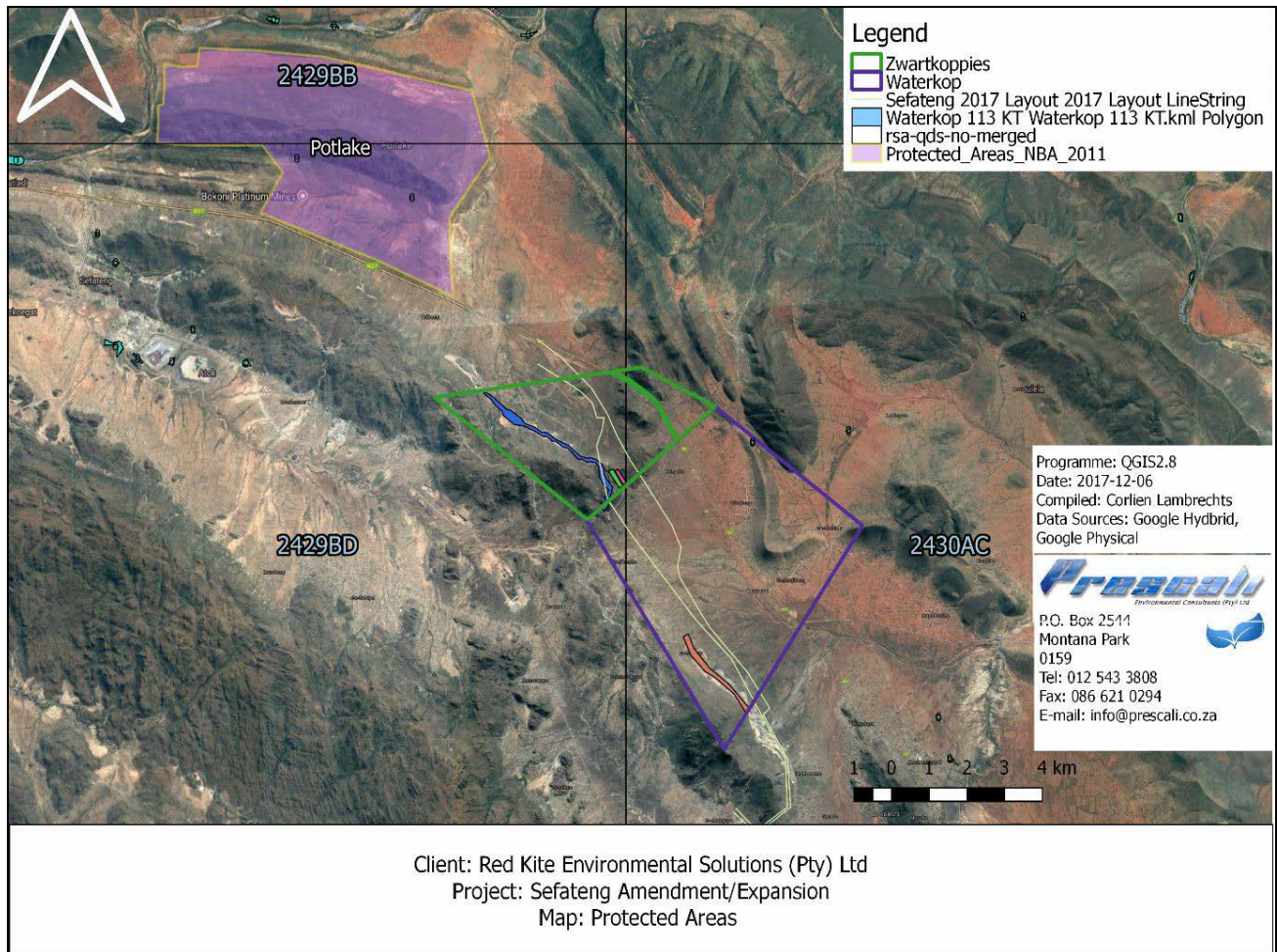


Figure 24: Protected Areas

There are several protected areas in close vicinity of the project areas. The closest protected areas are those North of the farm Waterkop 113 KT and Zwartkoppies 413 KS, which is Potlake Nature Reserve and the Wolkberg Wilderness Area. The Potlake protected area is not part of the Sefateng expansion project (Zwartkoppies and Waterkop farm) and the infrastructure amendments and expansions are closely associated with the existing mine infrastructure.

9.10.1 Mammalian species

Table 18: Mammalian species desktop study

Family	Genus	Species	Common name	Red list category	Region endemic	Probability of Occurrence
2429BD						
Bovidae	<i>Aepyceros</i>	<i>melampus</i>	Impala	Least Concern	Yes	Possibly
Bovidae	<i>Alcelaphus</i>	<i>buselaphus</i>	Hartebeest	Not listed	Yes	Not Likely
Bovidae	<i>Oreotragus</i>	<i>oreotragus</i>	Klipspringer	Least Concern	Yes	Possibly
Bovidae	<i>Sylvicapra</i>	<i>grimmia</i>	Bush Duiker	Least Concern	Yes	Possibly
Bovidae	<i>Tragelaphus</i>	<i>strepsiceros</i>	Greater Kudu	Least Concern	Yes	Not Likely
Felidae	<i>Panthera</i>	<i>pardus</i>	Leopard	Least Concern, ToPs Protected 2015	Yes	Not Likely
Giraffidae	<i>Giraffa</i>	<i>camelopardalis</i>	Nubian Giraffe	Least Concern		Not Likely
Mustelidae	<i>Mellivora</i>	<i>capensis</i>	Honey Badger	Near Threatened	Yes	Possibly
Rhinolophidae	<i>Rhinolophus</i>	<i>smithersi</i>	Smithers' Horseshoe Bat	Not listed	Yes	Possibly

Family	Genus	Species	Common name	Red list category	Region endemic	Probability of Occurrence
2430AC						
Hyaenidae	<i>Hyaena</i>	<i>brunnea</i>	Brown Hyena	Near Threaten ed	Yes	Not Likely

In the desktop study it was determined that the list provided above was recorded for the specific quarter degree squares and it does not mean that these do occur on-site. Those not expected on-site include:

- *Alcelaphus buselaphus* (Hartebeest);
- *Tragelaphus strepsiceros* (Greater Kudu);
- *Panthera pardus* (Leopard);
- *Giraffa Camelopardalis* (Nubian Giraffe); and
- *Hyaena brunnea* (Brown Hyena).

9.10.2 Avifauna

Important Birding Areas were identified and visually illustrated within the figure provided. As may be seen, the development site does not fall within an Important Biodiversity and Birding zone. The closest Important Biodiversity and Bird zone is the Wolkberg Forest Belt and this corresponds to the protected areas showing Potlake and Wolkberg.

Birds are highly mobile and they are capable of moving away from unfavourable areas and disturbed habitats. They are therefore not directly affected by localised developments unless they are directly dependent on the habitat that will be subjected to development. The rocky hills and woody mountain (rocky outcrop habitat) areas are however deemed areas of suitable habitat for a diversity of avifaunal species to thrive in.

A low possibility of occurrence that threatened RDL bird species, which occur in the Limpopo DFED 2004 report, such as the *Polemaetus bellicosus* (Martial Eagle), *Torgos tracheliotos* (Lappetfaced Vulture), *Trigonoceps occipitalis* (Whiteheaded Vulture), *Stephanoaetus coronatus* (Crowned Hawk Eagle) and the *Gyps coprotheres* (Cape Vulture) may utilise the area within or directly adjacent to the subject property for foraging purposes. It is however not deemed likely that these RDL species will utilise the subject property for habitation purposes due to the low food resources and high levels of transformation that is already present within the subject property. The woody mountain (rocky outcrop habitat) habitat areas have a higher potential to provide suitable habitat to the abovementioned avifaunal species during foraging flights.

Table 19: Threatened avifaunal species with a 60% or greater Probability of Occurrence (POC) within or in the vicinity of the subject property

Scientific Name	Common Name	Limpopo status	IUCN status	POC %
<i>Polemaetus bellicosus</i>	Martial Eagle	T	NT	66
<i>Torgos tracheliotos</i>	Lappetfaced Vulture	T	VU	68
<i>Trigonoceps occipitalis</i>	Whiteheaded Vulture	T	VU	66
<i>Stephanoaetus coronatus</i>	Crowned hawk Eagle	T	NT	64
<i>Gyps coprotheres</i>	Cape Vulture	T	VU	66

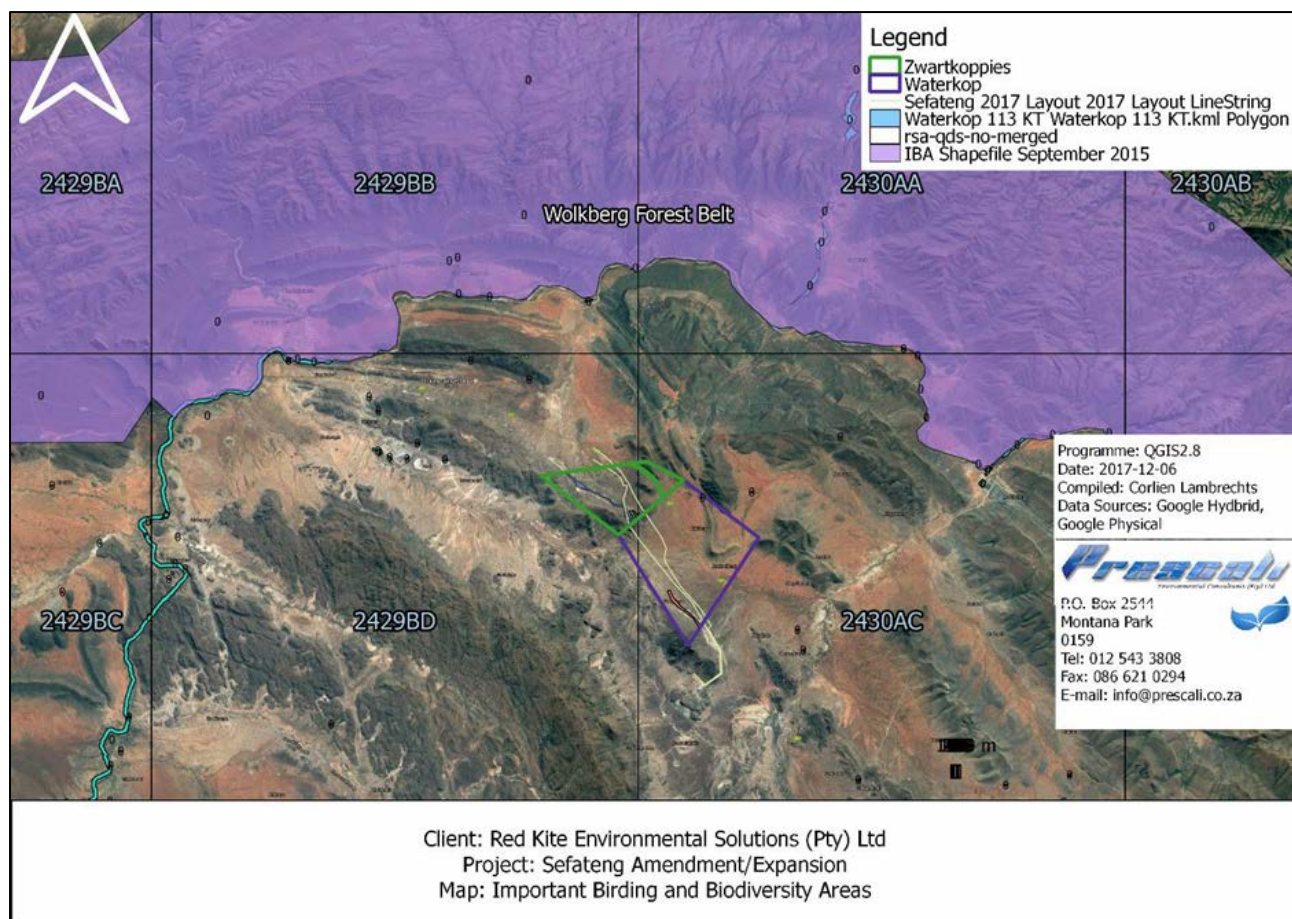


Figure 25: Important Birding Areas (IBA)

9.10.3 Amphibians

The amphibians known to occur within the area and are included in the table given below. No sites have confirmed amphibian activity during the field visit, especially no area close to the development.

Table 20: Amphibian species within the area (Minter, et al., 2004)

Family	Genus	Species	Common name	Red list category	Atlas region endemic
2429BD					
Brevicipitidae	<i>Breviceps</i>	<i>adpersus</i>	Bushveld Rain Frog	Least Concern	No
Bufonidae	<i>Sclerophrys</i>	<i>garmani</i>	Olive Toad	Least Concern	No
Bufonidae	<i>Sclerophrys</i>	<i>gutturalis</i>	Guttural Toad	Least Concern	No
Hyperoliidae	<i>Hyperolius</i>	<i>marmoratus</i>	Painted Reed Frog	Least Concern	No
Hyperoliidae	<i>Kassina</i>	<i>senegalensis</i>	Bubbling Kassina	Least Concern	No
Ptychadenidae	<i>Ptychadena</i>	<i>anchietae</i>	Plain Grass Frog	Least Concern	No
Pyxicephalidae	<i>Tomopterna</i>	<i>cryptotis</i>	Tremelo Sand Frog	Least Concern	No
Pyxicephalidae	<i>Tomopterna</i>	<i>natalensis</i>	Natal Sand Frog	Least Concern	No
2430AC					
Arthroleptidae	<i>Leptopelis</i>	<i>mossambicus</i>	Brownbacked Tree Frog	Least Concern	No
Brevicipitidae	<i>Breviceps</i>	<i>adpersus</i>	Bushveld Rain Frog	Least Concern	No
Bufonidae	<i>Poyntonophrynus</i>	<i>fenoulheti</i>	Northern Pygmy Toad	Least Concern	No
Bufonidae	<i>Schismaderma</i>	<i>carens</i>	Red Toad	Least Concern	No
Bufonidae	<i>Sclerophrys</i>	<i>garmani</i>	Olive Toad	Least Concern	No
Bufonidae	<i>Sclerophrys</i>	<i>gutturalis</i>	Guttural Toad	Least Concern	No
Bufonidae	<i>Sclerophrys</i>	<i>pusilla</i>	Flatbacked Toad	Least Concern	No

Family	Genus	Species	Common name	Red list category	Atlas region endemic
Hyperoliidae	<i>Hyperolius</i>	<i>marmoratus</i>	Painted Reed Frog	Least Concern	No
Hyperoliidae	<i>Hyperolius</i>	<i>pusillus</i>	Water Lily Frog	Least Concern	No
Hyperoliidae	<i>Kassina</i>	<i>senegalensis</i>	Bubbling Kassina	Least Concern	No
Microhylidae	<i>Phrynomantis</i>	<i>bifasciatus</i>	Banded Rubber Frog	Least Concern	No
Phrynobatrachi dae	<i>Phrynobatrachus</i>	<i>mababiensis</i>	Dwarf Puddle Frog	Least Concern	No
Pipidae	<i>Xenopus</i>	<i>laevis</i>	Common Platanna	Least Concern	No
Ptychadenidae	<i>Ptychadena</i>	<i>anchietae</i>	Plain Grass Frog	Least Concern	No
Ptychadenidae	<i>Ptychadena</i>	<i>oxyrhynchus</i>	Sharprosed Grass Frog	Least Concern	No
Ptychadenidae	<i>Ptychadena</i>	<i>porosissima</i>	Striped Grass Frog	Least Concern	No
Pyxicephalidae	<i>Amietia</i>	<i>delalandii</i>	Delalande's River Frog	Least Concern	Yes
Pyxicephalidae	<i>Pyxicephalus</i>	<i>edulis</i>	African Bull Frog	Least Concern	No
Pyxicephalidae	<i>Tomopterna</i>	<i>cryptotis</i>	Tremelo Sand Frog	Least Concern	No
Pyxicephalidae	<i>Tomopterna</i>	<i>marmorata</i>	Russetbacke d Sand Frog	Least Concern	No
Pyxicephalidae	<i>Tomopterna</i>	<i>natalensis</i>	Natal Sand Frog	Least Concern	No
Rhacophoridae	<i>Chiromantis</i>	<i>xerampelina</i>	Southern Foam Nest Frog	Least Concern	No

The following amphibian was given as an endemic species within the designated QDS:

- *Amietia delalandii* Delalande's River Frog (Least Concern).

9.10.4 Reptiles

Table 21: Reptiles captured in desktop study (Alexander & Marais, 2007) (Bates, et al., 2014)

Family	Genus	Species	Common name	Red list category (SARCA 2014)	Atlas region endemic
2429BD					
Agamidae	<i>Agama</i>	<i>Atra</i>	Southern Rock Agama	Least Concern	No
Colubridae	<i>Philothamnus</i>	<i>semivariiegatus</i>	Spotted Bush Snake	Least Concern	No
Cordylidae	<i>Platysaurus</i>	<i>orientalis fitzsimensi</i>	FitzSimons' Flat Lizard	Near Threatened	Yes
Cordylidae	<i>Platysaurus</i>	<i>orientalis</i>	Sekhukhune Flat Lizard	Least Concern	Yes
Cordylidae	<i>Smaug</i>	<i>vandami</i>	Van Dam's Girdled Lizard	Least Concern	Yes
Gekkonidae	<i>Lygodactylus</i>	<i>nigropunctatus</i>	Black-spotted Dwarf Gecko	Least Concern	Yes
Lacertidae	<i>Pedioplanis</i>	<i>lineoocellata</i>	Spotted Sand Lizard	Least Concern	No
Scincidae	<i>Trachylepis</i>	<i>margaritifera</i>	Rainbow Skink	Least Concern	No
Scincidae	<i>Trachylepis</i>	<i>varia</i>	Variable Skink	Least Concern	No
Testudinidae	<i>Psammobates</i>	<i>oculifer</i>	Serrated Tent Tortoise	Least Concern	No
2430AC					
Cordylidae	<i>Platysaurus</i>	<i>orientalis</i>	Sekhukhune Flat Lizard	Least Concern	Yes
Cordylidae	<i>Smaug</i>	<i>vandami</i>	Van Dam's Girdled Lizard	Least Concern	Yes
Gekkonidae	<i>Hemidactylus</i>	<i>mabouia</i>	Common Tropical House Gecko	Least Concern	No
Gekkonidae	<i>Homopholis</i>	<i>wahlbergii</i>	Wahlberg's Velvet Gecko	Least Concern	No
Gekkonidae	<i>Lygodactylus</i>	<i>capensis</i>	Common Dwarf Gecko	Least Concern	No
Gekkonidae	<i>Lygodactylus</i>	<i>nigropunctatus</i>	Black-spotted Dwarf Gecko	Least Concern	Yes
Gerrhosauridae	<i>Matobosaurus</i>	<i>validus</i>	Common Giant Plated Lizard	Least Concern	No
Lacertidae	<i>Heliobolus</i>	<i>lugubris</i>	Bushveld Lizard	Least Concern	No
Scincidae	<i>Mochlus</i>	<i>sundevallii</i>	Sundevall's Writhing Skink	Least Concern	No
Scincidae	<i>Trachylepis</i>	<i>capensis</i>	Cape Skink	Least Concern	No
Scincidae	<i>Trachylepis</i>	<i>margaritifera</i>	Rainbow Skink	Least Concern	No
Scincidae	<i>Trachylepis</i>	<i>varia</i>	Variable Skink	Least Concern	No
Testudinidae	<i>Kinixys</i>	<i>lobatsiana</i>	Lobatse Hinged Tortoise	Least Concern	No
Viperidae	<i>Bitis</i>	<i>arietans</i>	Puff Adder	Least Concern	No

The area has a high amount of lizard species captured in the desktop study, which is expected as the only remaining natural habitat within the immediate vicinity are the mountainous areas and small to intermediate rocky outcrops (koppies) found to the back of the Zwartkoppies, Moeijelijk and Waterkop farms.

Several endemic species are found within the region, these include:

- *Platysaurus orientalis fitzsimoni* FitzSimons' Flat Lizard (Near Threatened);
- *Platysaurus orientalis* Sekhukhune Flat Lizard (Least Concern);
- *Smaug vandami* Van Dam's Girdled Lizard (Least Concern); and
- *Lygodactylus nigropunctatus* Black-spotted Dwarf Gecko (Least Concern).

The specific QDS associated with the Sefateng development has a red listed reptile species known to occur within the relevant QDS, namely the *Platysaurus orientalis fitzsimoni* (FitzSimons' Flat Lizard), which is listed as Near Threatened (SARCA 2014).

9.10.5 Invertebrates

All species of Baboon Spiders belonging to the genera referred hereby *Ceratogyrus spp*, *Harpactira spp*, *Pterinocchilus spp* enjoy protection under LEMA These species if encountered during any stage of the development will trigger the need for intervention to protect and relocate these species. Baboon spider nests will be associated to the Koppie areas and valleys to the other side of the Koppie where the illegal mining has taken place and where the new opencast for UG1 and UG 2 is proposed.

In terms of the Threatened or Protected Species lists amendment (2015), four burrowing scorpions have been included for priority. These are:

- *Opisthophthalmus ater* Steinkopf Burrowing Scorpion (Critically endangered);
- *Opisthophthalmus fuscipes* Dark-legged Burrowing Scorpion (Critically endangered);
- *Opisthophthalmus intermedius* Cape Mountain Burrowing Scorpion (Endangered); and
- *Opisthophthalmus latro* Strandveld Burrowing Scorpion (Endangered).

The first two may occur within the Limpopo Province, but all of these species are entering the illegal pet trade and is protected by law.

The butterfly species that were recorded during the desktop assessment (Mecenero, et al., 2013) is included below:

Table 22: Butterfly species known to occur within the area

Family	Genus	Species	Common name	Red list category	Atlas region endemic
2429BD					
Eupterotidae	<i>Marmaroplegma</i>	<i>paragarda</i>		Not listed	No
Lycaenidae	<i>Actizera</i>	<i>lucida</i>	Rayed blue	Least Concern	No
Lycaenidae	<i>Aloeides</i>	<i>molomo</i>	Molomo copper	Least Concern	Yes
Lycaenidae	<i>Aloeides</i>	<i>swanepoeli</i>	Swanepoel's copper	Least Concern	Yes
Lycaenidae	<i>Eicochrysops</i>	<i>messapus</i>	Cupreous blue	Least Concern	No
Pieridae	<i>Belenois</i>	<i>aurata</i>	Brown- veined white	Least Concern	No
Pieridae	<i>Colotis</i>	<i>annae</i>	Scarlet tip	Least Concern	No
Pieridae	<i>Colotis</i>	<i>auxo</i>	Sulphur orange tip	Least Concern	No
2430AC					
Hesperiidae	<i>Parosmodes</i>	<i>morantii</i>	Morant's orange	Least Concern	No
Hesperiidae	<i>Pelopidas</i>	<i>thrax</i>	White- banded swift	Least Concern	No

Hesperiidae	<i>Spialia</i>	<i>ferax</i>	Common sandman	Least Concern	No
Lycaenidae	<i>Axiocerses</i>	<i>amanga</i>	Bush scarlet	Least Concern	No
Lycaenidae	<i>Axiocerses</i>	<i>tjoane</i>	Eastern scarlet	Least Concern	No
Lycaenidae	<i>Azanus</i>	<i>jesous</i>	Topaz babul blue	Least Concern	No
Lycaenidae	<i>Azanus</i>	<i>moriqwa</i>	Black- bordered babul blue	Least Concern	No
Lycaenidae	<i>Cigaritis</i>	<i>natalensis</i>	Natal bar	Least Concern	No
Lycaenidae	<i>Cnodontes</i>	<i>penningtoni</i>	Pennington's buff	Least Concern	No
Lycaenidae	<i>Euchrysops</i>	<i>subpallida</i>	Ashen smoky blue	Least Concern	No
Lycaenidae	<i>Lampides</i>	<i>boeticus</i>	Pea blue	Least Concern	No
Lycaenidae	<i>Leptotes</i>	<i>pirithous</i>	Common zebra blue	Least Concern	No
Lycaenidae	<i>Tuxentius</i>	<i>melaena</i>	Black pie	Least Concern (SABCA 2013)	No
Lycaenidae	<i>Virachola</i>	<i>antalus</i>	Brown playboy	Least Concern	No
Nymphalidae	<i>Acraea</i>	<i>neobule</i>	Wandering donkey acraea	Least Concern	No
Nymphalidae	<i>Bicyclus</i>	<i>anyana</i>	Squinting bush brown	Least Concern	No
Nymphalidae	<i>Charaxes</i>	<i>saturnus</i>	Foxy charaxes	Least Concern	No
Nymphalidae	<i>Danaus</i>	<i>chrysippus</i>	African monarch (subsp. alcippus)	Not listed	No
Nymphalidae	<i>Danaus</i>	<i>chrysippus</i>	African monarch, Plain tiger	Least Concern	No
Nymphalidae	<i>Dingana</i>	<i>angusta</i>	Long Tom widow	Least Concern	Yes
Nymphalidae	<i>Junonia</i>	<i>oenone</i>	Blue pansy	Least Concern	No
Nymphalidae	<i>Telchinia</i>	<i>esebria</i>	Dusky acraea	Least Concern	No
Nymphalidae	<i>Vanessa</i>	<i>cardui</i>	Painted lady	Least Concern	No
Nymphalidae	<i>Ypthima</i>	<i>impura</i>	Impure ringlet	Least Concern	No
Pieridae	<i>Belenois</i>	<i>aurata</i>	Brown- veined white	Least Concern	No
Pieridae	<i>Catopsilia</i>	<i>florella</i>	African migrant	Least Concern	No
Pieridae	<i>Colotis</i>	<i>evagore</i>	Small orange tip	Least Concern	No
Pieridae	<i>Colotis</i>	<i>vesta</i>	Veined tip	Least Concern	No

The butterfly species identified as endemic for the region is the following:

- *Aloeides molomo* Molomo copper (Least Concern) (SABCA 2013);
- *Aloeides swanepoeli* Swanepoel's copper (Least Concern) (SABCA 2013); and
- *Dingana angusta* Long Tom widow (Least Concern) (SABCA 2013).

No red listed butterflies were recorded for the region where the Sefateng farms are located and specifically the area proposed for development extensions to existing infrastructure as these areas are already disturbed.

Butterflies are sensitive to small changes in habitat and climatic differentiations will affect the success of butterflies within the area. Vast clearances or change in vegetation may be detrimental for the species that reside here. The result will be that butterflies will migrate to avoid adverse environmental conditions, but only for short distances, thus suitable habitat should remain in close range of development activities. Butterflies are important contributors to pollination and are considered important biodiversity indicators, since many species have specific relationships with plant hosts and may give an indication of intact communities within habitat types.

It is important to note that many groups of invertebrates actually have the tendency to increase their overall diversity and abundance in disturbed areas such as edges around natural areas. This is because edge environments tend to have a high density of potential food plants as well as providing niches for other species that are not frequently recorded within the sampling area itself. This is the opposite of what one would expect in disturbed situations and is only noted in invertebrate species.

Beetle Species which are awarded Protective status in terms of NEMBA, 2004 (Act No. 10 of 2004) that might occur within the area are Stag beetles and Tiger beetles. These should be protected when encountered during any stage of development. These species are easily identified due to their large mandibles and the Tiger beetle often has yellowish markings displayed on the elytron.⁷ This is not always the case and they may be uniform or even dark or luminous green depending on specific species. Tiger beetles are considered a good indicator species and have been used in ecological studies on biodiversity.

The 2015 ToPS amendment also included these Stag Beetles and Tiger Beetles within its protection priority lists.

9.11 AIR QUALITY

Refer to Appendix 8 for the Air Quality Impact Assessment undertaken in 2014.

The air quality in the region can be viewed as natural (rural). These are important to consider in terms of assessing the cumulative impact potential on air quality in the region:

- Agricultural activities;
- Informal housing heating and cooking;
- Vehicle emissions; and
- Veld fires.

A qualitative discussion on each of these source types is provided in the subsections which follow.

9.11.1 *Subsistence agriculture*

Large scale agriculture isn't practiced in the local area of the mine property but it is best to include the small scale type of agriculture which supply a family and relatives of food within the community. The airborne pollutant associated with the small scale farming is Particulate Matter (TSP, PM10, PM2.5, etc.) generated by animal husbandry, wind erosion of open tilled fields and planting.

9.11.2 *Informal house heating and cooking*

In the region of the mine, the housing associated with low-income housing with minimal electricity usage for heating during the colder winter months and for cooking. The open-fires are made from any combustible material (usually wood or coal) and is often used to cook and to heat up the house. The associated emissions from these cooking fires differentiate from the type of material used for energy and the most common airborne pollutants are. Sulphur dioxide (SO₂), Nitrogen dioxide (NO₂), Carbon monoxide (CO), Carbon dioxide (CO₂) and Particulate matter (TSP, PM10, PM2.5, etc.). During the winters cold day's inversions form over the surface of the land and cause the airborne pollutants from domestic fuel burning to be entrapped. The air movement cannot disperse the air pollutant from the region and causes the concentrations to build up. The inversion layer and domestic fuel burning takes place at the same time, which increases the severity of the situation at some locations. As the day heats up (midday) the inversion layer breaks up and the pollutants can disperse.

9.11.3 *Vehicles*

The force of the wheels of vehicles travelling on unpaved roadways causes the pulverisation of surface material. Particles are lifted and dropped from the rotating wheels, and the road surface is exposed to strong air currents in turbulent shear with the surface. The turbulent wake behind the vehicle continues to act on the road surface after the vehicle has passed. The quantity of dust emissions from unpaved roads varies linearly with the volume of traffic (USEPA, 1996). Due to the nature of both mining and agricultural activity, road networks can often be of a temporary nature, and are thus unpaved.

An unpaved road network exists in the area. Due to the volume of heavy vehicles using the roads near the site, the expected volumes of entrained dust are likely to be considerable and will need to be addressed.

Due to the high degree of transport of product from the site expected during plant operations, exhaust tailpipe emissions from vehicles including rail is a significant source of particulate emissions. Exhaust fumes contain nitrogen, oxygen, carbon monoxide, water vapour, sulphur dioxide, nitrogen oxide, volatile hydrocarbons and polyaromatic hydrocarbons (PAHs) and their derivatives, acetaldehyde, benzene and formaldehyde, carbon particles, sulphates, aldehydes, alkanes, and alkenes.

9.11.4 Veld fires

A veld fire is a large-scale natural combustion process that consumes various ages, sizes, and types of flora growing outdoors in a geographical area. Consequently, veld fires are potential sources of large amounts of air pollutants that should be considered when attempting to relate emissions to air quality. The size and intensity, even the occurrence, of veld fires depend directly on such variables as meteorological conditions, the species of vegetation involved and their moisture content, and the weight of consumable fuel per hectare (available fuel loading).

Once a fire begins, the dry combustible material is consumed first. If the energy released is large and of sufficient duration, the drying of green, live material occurs, with subsequent burning of this material as well. Under suitable environmental and fuel conditions, this process may initiate a chain reaction that results in a widespread conflagration. It has been hypothesized, but not proven, that the nature and amounts of air pollutant emissions are directly related to the intensity and direction (relative to the wind) of the veld fire and are indirectly related to the rate at which the fire spreads. The factors that affect the rate of spread are (1) weather (wind velocity, ambient temperature, relative humidity); (2) fuels (fuel type, fuel bed array, moisture content, fuel size); and (3) topography (slope and profile). However, logistical problems (such as size of the burning area) and difficulties in safely situating personnel and equipment close to the fire have prevented the collection of any reliable emissions data on actual veld fires, so that it is not possible to verify or disprove the hypothesis.

The major pollutants from veld burning are particulate matter, carbon monoxide, and volatile organics. Nitrogen oxides are emitted at rates of from 1 to 4 g/kg burned, depending on combustion temperatures. Emissions of sulphur oxides are negligible (USEPA, 1996). A study of biomass burning in the African savannah estimated that the annual flux of particulate carbon into the atmosphere is estimated to be of the order of 8 Tg C, which rivals particulate carbon emissions from anthropogenic activities in temperate regions (Cachier et al, 1995).

9.12 NOISE

The villages surrounding the proposed mining area, the various farmhouses and farm labourer residences, the schools and clinics may be defined as noise sensitive land uses in the study area.

For this study, the position of houses/dwellings on the farms was taken off 1:50 00 topographical cadastral maps and verified as far as possible from a field survey and using Google Earth. Even though the latest editions of the maps were used, some of the relevant maps are up to 17 years out of date and there may be new dwellings and/or some of the existing shown buildings may be derelict. During the field survey for the noise measurement survey, such aspects were noted where possible.

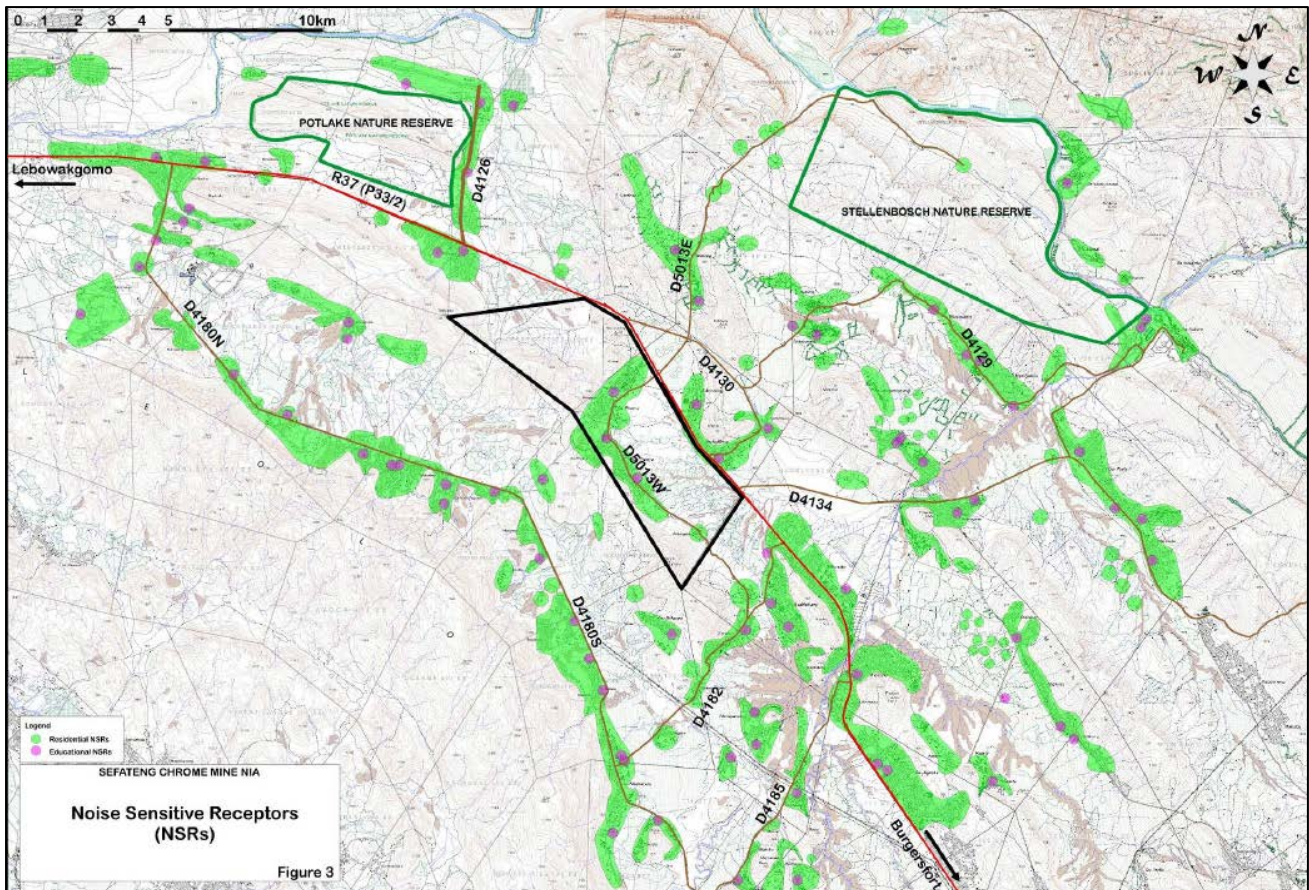


Figure 26: Noise sensitive receptors

9.13 ARCHAEOLOGY AND HERITAGE

Evidence of Stone Age material has been found in the surrounding areas during previous Heritage and Archaeological surveys by other specialists (specifically in the large donga systems in the area). These tools date to between the Early and Middle Stone Ages mainly (Pistorius 2008; Coetzee 2017).

A single Stone Age tool (MSA flake-tool) was identified in the study area during the October 2018 assessment. There might however be more of these tools (scattered and in single locations) in the areas assessed during the recent fieldwork, but this cannot be determined without a doubt.

There are a number of known Iron Age sites in the larger area geographical area, identified and recorded during previous surveys (Roodt 2002 & 2003; Pistorius 2008; Karodia 2013; Coetzee 2017). These sites were located mostly around the foothills of the mountain range and hills in the area.

No Iron Age sites, features or material were found during the October 2018 assessment of the study areas.

A large number of archaeological/historical sites are located in the Tjate Valley (a few km's south of the study area). The Tjate Valley was declared a Provincial Heritage Site in 2007. A Phase 1 Heritage Impact Assessment was undertaken by Küsel 2008) on the Provincial Heritage site, followed by an assessment of a prospecting area on the farms Djate 249 KT, Fernkloof 539 KS and Quartzhill 542 KS. The area hosts two Royal Capitals of the Ba-Pedi people – the Sekhukhune and the Sekwati capitals. There are also Iron Age sites dating from approximately AD 700, as well as potentially an ancient copper mine. The first Berlin Mission Station and school in Sekhukhune were built in the Tjate Valley. In 1879 the valley was the scene of the Sekhukhune War between the Ba-Pedi and the British. Numerous sites associated with

the battle are still visible and the battle is well documented. Rock art exists on the northern border of the declared site. There are a number of sacred sites and 26 cemeteries.

Pistorius (2008) and Coetzee (2017) recorded a number of recent historical sites (including the remains of recent dwellings and cemeteries) in the area during previous surveys. Most of the graves and grave sites found during the earlier work has been exhumed and relocated from the Sefateng Chrome Mine area already.

No historical sites or features were identified in the study area during the October 2018 assessment.

The sections of Sefateng Chrome Mine that had to be assessed for cultural heritage (archaeological and/or historical) resources are dominated by hilly/steep slopes and mountain areas. Human settlement in the past here would have been hampered by the terrain, and earlier settlement and utilization of the area (as it today) would have focused around the gentle foothills and valleys in the area. These areas will not be impacted directly by the proposed mining.

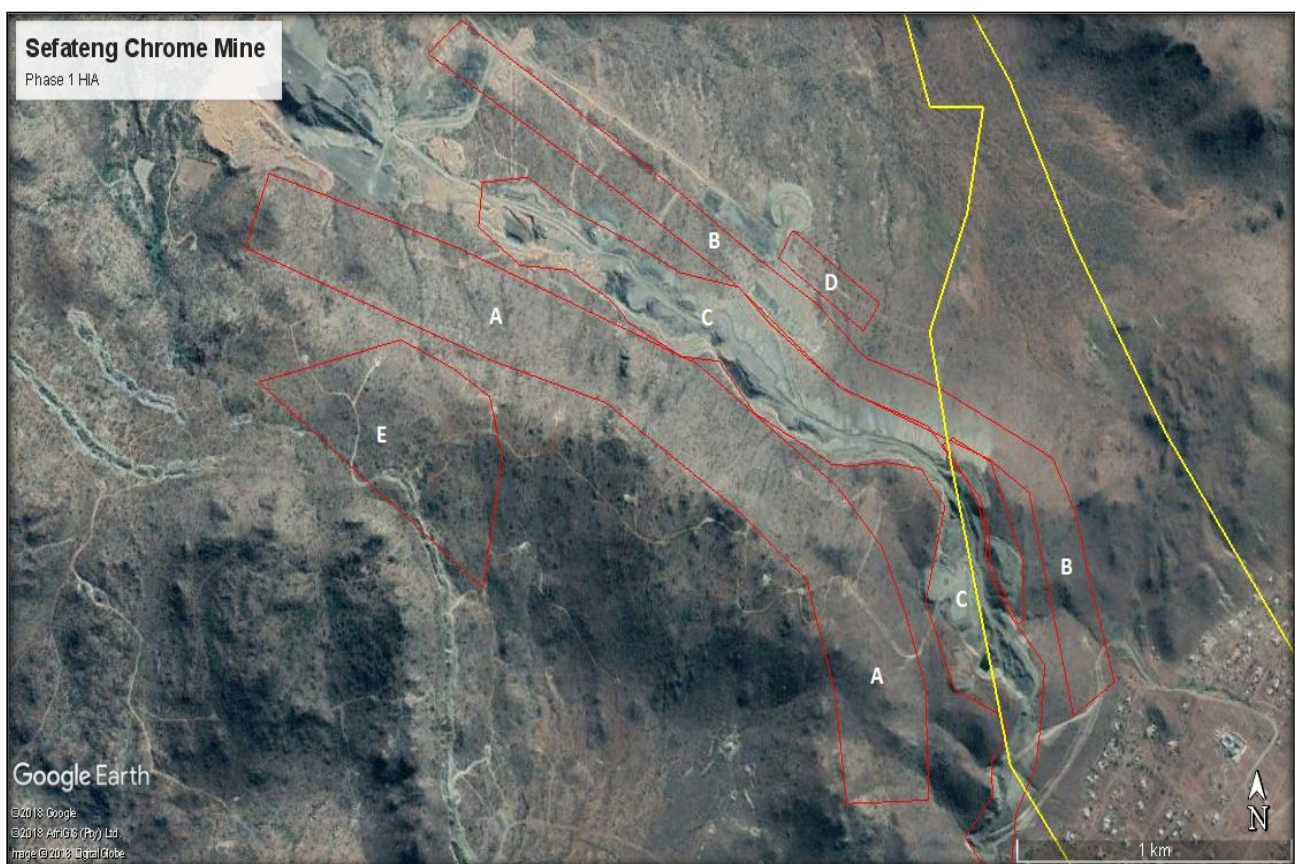


Figure 27: Aerial view of areas assessed (Numbered A – E) during October 2018 (Google Earth 2018)

9.14 DESCRIPTION OF SPECIFIC ENVIRONMENTAL FEATURES AND INFRASTRUCTURE ON THE SITE

Please note that the specific environmental features and infrastructure located across the project footprint have been described in the sections above. *It should also be noted that the entirety of the proposed activities (backfilling of the existing opencast pits with tailings material) is situated on areas which have already been totally disturbed/transformed for the opencast mining.*

9.14.1 Sensitive landscapes

The occurrence of possible sensitive landscapes at the project site is outlined in the table below.

Table 23: Sensitive Landscapes within the Proposed Mining Site

Types of sensitive landscapes	Occurrence at the Proposed Mining Site
Nature conservation or ecologically sensitive areas - indigenous plant communities (particularly rare communities and forests), wetlands, rivers, riverbanks, lakes, islands, lagoons, estuaries, reefs, inter-tidal zones, beaches and habitats of rare animal species.	<p>The proposed activities associated with the reuse of the tailings material will be situated on areas already disturbed by the existing mining activities. Thus, little or no impact to terrestrial biodiversity (fauna and flora) resources are expected.</p> <p>This area forms part of the Sekhukhune Centre of Endemism (specifically the Steelpoort Subcentre) which has a high level of biodiversity with some species that can only be found within certain areas along this Centre. Potlake Nature Reserve is located approximately 5 km from the mining area. The mining area is also located on a ridge which may be regarded as a sensitive area due to the diversity of faunal and floral species often found in this type of habitat.</p>
Sensitive physical environments - such as unstable soils and geo-technically unstable areas.	None
Important natural resources - river systems, groundwater systems, high potential agricultural land.	<p>The site has medium to low agricultural potential.</p> <p>The site is located on a minor aquifer system.</p> <p>The watercourses on site are non-perennial and only contain water during rain events.</p>
Sites of special scientific interest	None
Sites of social significance - including sites of archaeological, historic, cultural, spiritual or religious importance and burial sites.	The proposed activities associated with the reuse of the tailings material will be situated on areas already disturbed by the existing mining activities. Thus, no impacts to heritage resources are expected.
Sites of outstanding natural beauty, panoramic views and scenic drives	Due the current mining on site as well as other mining sites within the area, there are no sites of this value.
Green belts or public open space in municipal areas	Not applicable.

9.14.2 Rural Settlements

Rural settlements are settlements that are similar in nature to the tribal settlements with regard to the residential densities and functions, but they are not located on tribal land. Therefore, these settlements do not have the same advantages that settlements located on tribal land and administered by the Tribal Councils have. In contrast, they have a

lack of security of tenure and they lack basic municipal services.

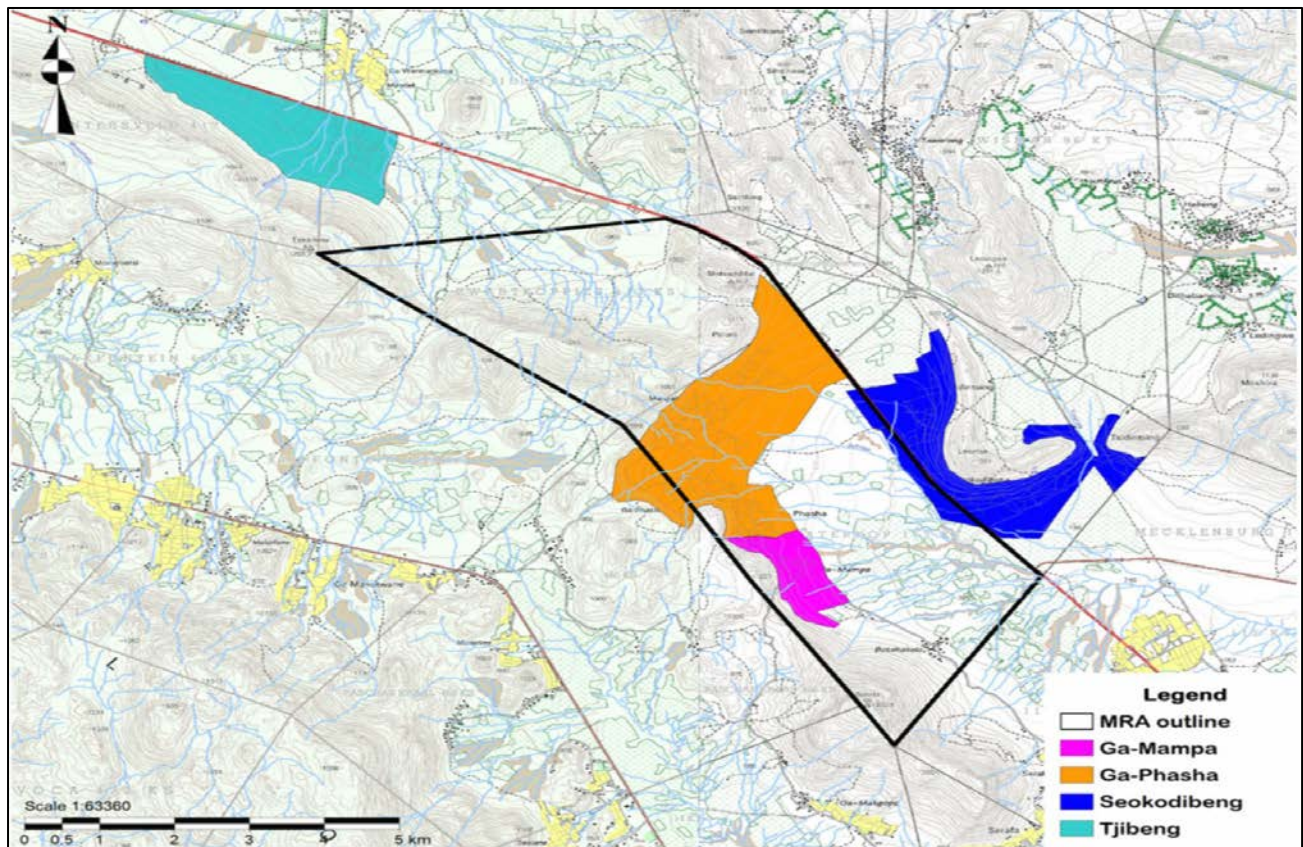


Figure 28: Communities surrounding Sefateng Chrome Mine

9.14.3 Informal Settlements

The other type of settlement within the district and local municipal areas is informal settlements. The locations of these settlements mainly correspond to the mining/semi urban areas and are therefore located along the edges of the mining/urban belts. These settlements largely contain households seeking employment at the mines/urban areas. The informal settlements are characterised by a lack of security of tenure and a lack of basic municipal services. This type of settlement is likely to encroach on the Sefateng Chrome Mining project area due to job seekers.

9.14.4 Business

Big businesses are absent from the affected Villages. Smaller businesses are normally found scattered through the residential areas and are informal in character – such as shops, public phones, taverns/bars, and day-care centers. Lack of business and employment has caused people to migrate to the bigger towns such as, Polokwane.

9.14.5 Water Supply and Sanitation

Both potable and service water will be needed for the operations throughout the life of mine. Potable water will be extracted from a borehole located on site. The water to be used at the mine will be sourced either from the local borehole on site, the Lebelelo pipeline, groundwater inflows into the opencast and underground workings, storm water dams or a combination of the above. Water management facilities for the control of storm water and for pollution prevention such as water supply dams, pollution control dams, clean and dirty storm water controls have been designed to meet the requirements of relevant legislation. Recycling dirty/process water will be a priority.

A Water Treatment Plant has been constructed for the operations. The WTP treats grey and sewage water emanating from the change houses and ablution facilities of the operation.

Some of the toilet facilities use septic tanks, which are emptied by an appointed contractor to a licenced facility.

9.14.6 Infrastructure, Electricity and Communication

The layout and infrastructure of the existing and authorised Sefateng Chrome Mine mining operation is depicted in Figure 8. No additional infrastructure is proposed as part of this application.

9.14.7 Access Roads

Existing access and haul roads service the current mining operations. No additional roads will need to be constructed for the activities being applied for.

9.15 ENVIRONMENTAL AND CURRENT LAND USE MAPS

The current land use map is depicted below. Also refer to Figure 2, Figure 3, Figure 14, Figure 17, Figure 19, Figure 23 as well as Appendix 3 and 4 for more descriptive detail on land use in the project area.

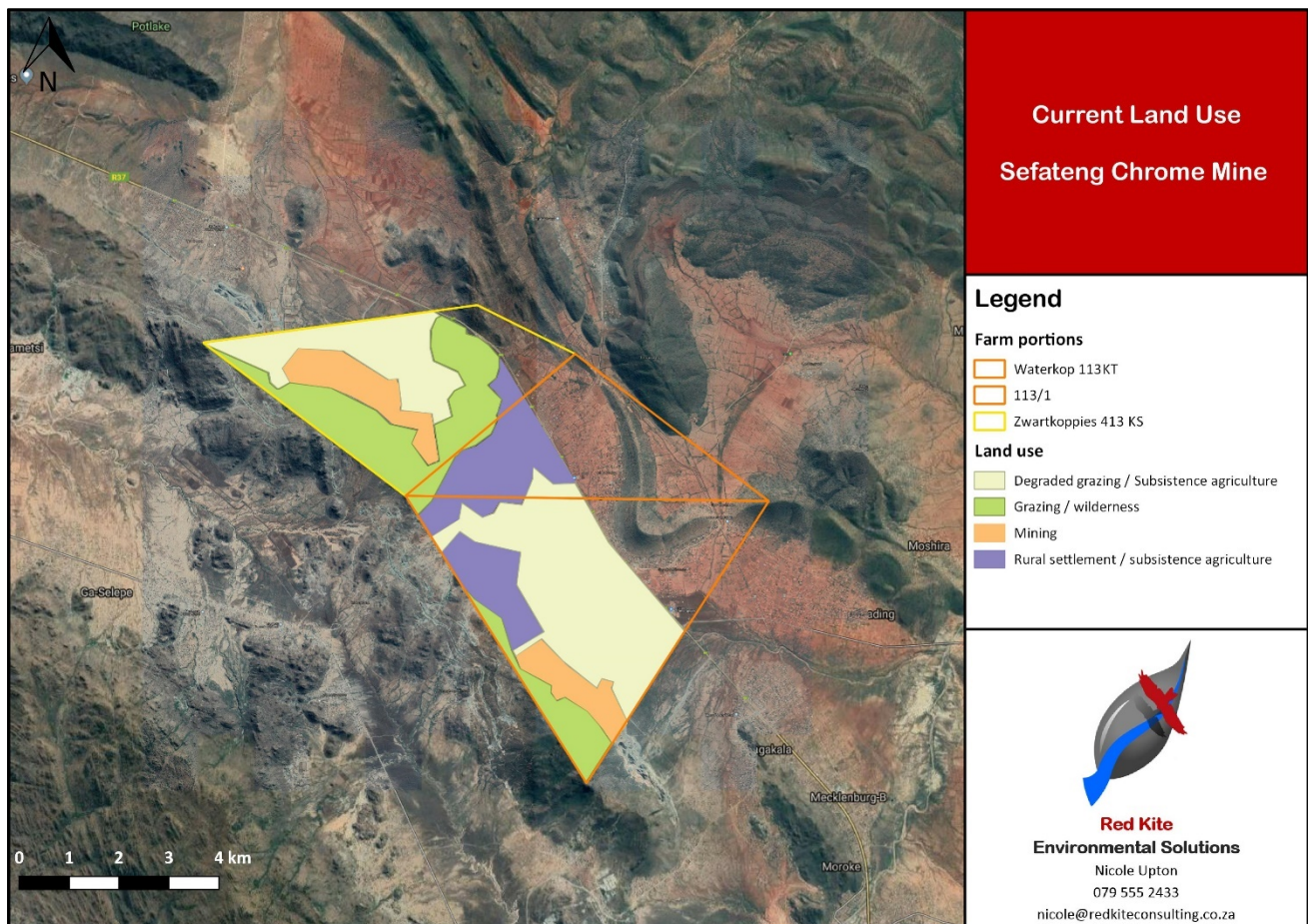


Figure 29: Current land use map of the project area

10 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

During the Impact Assessment Phase of the EIA, issues identified during scoping are assessed by environmental specialists. The outcome of the assessments are presented in the draft EIA, which together with an Environmental Management Programme (EMPr), was made available for interested and affected parties to comment on.

The Scoping and EIA Process has been designed to meet the requirements of both the Mineral and Petroleum Resource Development Act (Act 28 of 2002) and National Environmental Management Act (Act 107 of 1998). The authorisation process includes:

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

The EMPr Report includes a description of the proposed project, a list of identified environmental and social aspects that will potentially be impacted upon by the proposed mining project, and impact assessment for these aspects, and environment management programme for the mitigation and management of the identified impacts.

10.1 SPECIALIST STUDIES/ASSESSMENTS

The impacts considered of sufficient importance as to warrant mitigation measures and management during the construction and operational phases of the project will be assessed by specialists of the relevant field. The potential impacts and key issues which must be thoroughly investigated during the EIA include the following:

- Groundwater / Geohydrological.

The Air Quality Assessment (2014), Soil and Land Capability Assessment (2014) and Surface Water Assessment (2014) performed for previous applications for the Sefateng Chrome Mine are still considered relevant to the project as the processing plant and related activities were assessed. Furthermore, from previous projects in the area for similar activities, the impacts to air quality, soil and land capability and surface water is expected to be less significant and are

known. Therefore, these studies have been used for the determination of impacts and associated mitigation measures in the EIA and EMPr Report.

Specialist Study	Specialist
Groundwater	Gradient Groundwater Consulting (2021)
Surface Water Assessment	Existing study undertaken by WSM Leshika Consulting (2014)
Air quality	Existing study undertaken by Royal HaskoningDHV (2014)
Soil and Land Capability	Existing Study undertaken by Rossouw Associates (2014)

Each specialist report as mentioned above has been used for the identification of the impacts and recommended mitigation measures.

The specialists provided an outline of the approach used in the study. Assumptions and sources of information were also clearly identified. The knowledge of local people were incorporated in the studies, were applicable.

All specialist studies were undertaken as per relevant guidelines and legislative requirements, at the time of compilation. The specialists employed the following basic methodology:

- Site visits;
- Sampling, where necessary;
- Desktop studies;
- Assessment of baseline data;
- Assessment of impacts;
- Development of appropriate mitigation measure; and
- Documentation of the findings in the form of reports.

The sections below describe the methodology implemented for the specialist studies, where applicable.

10.1.1 Description of the Affected Environment

A description of the affected environment must be provided. The focus of this description must be relevant to the specialist’s field of expertise. The specialist must provide an indication of the sensitivity of the affected environment. Sensitivity, in this context, refers to the “ability” of an affected environment to tolerate disturbance, for example, if disturbance of the natural habitat results in the permanent loss of its biodiversity. The affected environment could be categorised as having a “low tolerance” to disturbance and is, therefore, termed a highly sensitive habitat. If, on the other hand, a habitat is able to withstand significant disturbance without a marked impact on its biodiversity, the affected environment could be categorised as having a high tolerance to disturbance (i.e. “low sensitivity” habitat).

10.1.2 Legal requirements

As per the requirements, the specialist should identify and list the relevant South African legislation and permit requirements pertaining to the development proposals. He/she should provide reference to the procedures required to obtain permits and describe whether the development proposals contravene the applicable legislation.

10.1.3 Impact Identification and Assessment

The specialist must make a clear statement, identifying the environmental impacts of the construction, operation and management of the proposed development. As far as possible, the specialist must quantify the suite of potential environmental impacts identified in the study and assess the significance of the impacts according to the criteria set out below. Each impact will be assessed and rated. The assessment of the data must, where possible, be based on accepted

scientific techniques, failing which the specialist is to make judgements based on his/her professional expertise and experience.

The impact assessment will provide an evaluation of the significance of each of the three phases of the project i.e. design / construction, operational phases and closure/post closure.

10.1.4 Mitigation Measures

Mitigation measures should be recommended in order to enhance benefits and minimise negative impacts and they should address the following as discussed.

Mitigation Objectives: What level of mitigation must be aimed at?

For each identified impact, the specialist must provide mitigation objectives (tolerance limits) which would result in a measurable reduction in impact. Where limited knowledge or expertise exists on such tolerance limits, the specialist must make an “educated guess” based on his/her professional experience.

Recommended Mitigation Measures

For each impact the specialist must recommend practical mitigation actions which can measurably affect the significance rating. The specialist must also identify management actions, which could enhance the condition of the environment. Where no mitigation is considered feasible, this must be stated and reasons provided.

Effectiveness of Mitigation Measures

The specialist must provide quantifiable standards (performance criteria) for reviewing or tracking the effectiveness of the proposed mitigation actions, where possible

10.1.5 Recommended Monitoring and Evaluation Program

The specialist is required to recommend an appropriate monitoring and review programme, which can track the efficacy of the mitigation objectives. Each environmental impact is to be assessed before and after mitigation measures have been implemented. The management objectives, design standards etc., which, if achieved, can eliminate, minimise or enhance potential impacts or benefits must, wherever possible, be expressed as measurable targets. National standards or criteria are examples, which can be stated as mitigation objectives.

Once the above objectives have been stated, feasible management actions, which can be applied as mitigation, must be provided. A duplicate column on the impact assessment tables described above should indicate how the application of the proposed mitigation or management actions has reduced the impact. If the proposed mitigation is to be of any consequence, it should result in a measurable reduction in impacts (or, where relevant, a measurable benefit).

10.2 METHODOLOGY USED IN DETERMINING THE SIGNIFICANCE OF ENVIRONMENTAL IMPACTS

The criteria for the description and assessment of environmental impacts were drawn from the EIA National Environmental Management Act (Act No. 107 of 1998): EIA Regulations (2014) and as amended from time to time.

The level of detail as depicted in the EIA Guidelines was fine-tuned by assigning specific values to each impact. In order to establish a coherent framework within which all impacts could be objectively assessed, it was necessary to establish a rating system, which was applied consistently to all the criteria. For such purposes each aspect was assigned a value, ranging from one (1) to five (5), depending on its definition. This assessment is a relative evaluation within the context of all the activities and the other impacts within the framework of the project.

An explanation of the impact assessment criteria is defined below.

Table 24: Impact Assessment Criteria

EXTENT	
Classification of the physical and spatial scale of the impact	
Footprint	The impacted area extends only as far as the activity, such as footprint occurring within the total site area.
Site	The impact could affect the whole, or a significant portion of the site.
Regional	The impact could affect the area including the neighbouring farms, the transport routes and the adjoining towns.
National	The impact could have an effect that expands throughout the country (South Africa).
International	Where the impact has international ramifications that extend beyond the boundaries of South Africa.
DURATION	
The lifetime of the impact that is measured in relation to the lifetime of the proposed development.	
Short term	The impact will either disappear with mitigation or will be mitigated through a natural process in a period shorter than that of the construction phase.
Short to Medium term	The impact will be relevant through to the end of a construction phase (1.5 years).
Medium term	The impact will last up to the end of the development phases, where after it will be entirely negated.
Long term	The impact will continue or last for the entire operational lifetime i.e. exceed 30 years of the development, but will be mitigated by direct human action or by natural processes thereafter.
Permanent	This is the only class of impact, which will be non-transitory. Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient.
INTENSITY	
The intensity of the impact is considered by examining whether the impact is destructive or benign, whether it destroys the impacted environment, alters its functioning, or slightly alters the environment itself. The intensity is rated as	
Low	The impact alters the affected environment in such a way that the natural processes or functions are not affected.
Medium	The affected environment is altered, but functions and processes continue, albeit in a modified way.
High	Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.
PROBABILITY	
This describes the likelihood of the impacts actually occurring. The impact may occur for any length of time during the life cycle of the activity, and not at any given time. The classes are rated as follows:	
Improbable	The possibility of the impact occurring is none, due either to the circumstances, design or experience. The chance of this impact occurring is zero (0 %).
Possible	The possibility of the impact occurring is very low, due either to the circumstances, design or experience. The chances of this impact occurring is defined as 25 %.
Likely	There is a possibility that the impact will occur to the extent that provisions must therefore be made. The chances of this impact occurring is defined as 50 %.
Highly Likely	It is most likely that the impacts will occur at some stage of the development. Plans must be drawn up before carrying out the activity. The chances of this impact occurring is defined as 75 %.
Definite	The impact will take place regardless of any prevention plans, and only mitigation actions or contingency plans to contain the effect can be relied on. The chance of this impact occurring is defined as 100 %.

The status of the impacts and degree of confidence with respect to the assessment of the significance must be stated as follows:

- **Status of the impact:** A description as to whether the impact would be positive (a benefit), negative (a cost), or neutral.
- **Degree of confidence in predictions:** The degree of confidence in the predictions, based on the availability of information and specialist knowledge.

Other aspects to take into consideration in the specialist studies are:

- Impacts should be described both before and after the proposed mitigation and management measures have been implemented.
- All impacts should be evaluated for the full-lifecycle of the proposed development, including construction, operation and decommissioning.
- The impact evaluation should take into consideration the cumulative effects associated with this and other facilities which are either developed or in the process of being developed in the region.
- The specialist studies must attempt to quantify the magnitude of potential impacts (direct and cumulative effects) and outline the rationale used. Where appropriate, national standards are to be used as a measure of the level of impact.

10.2.1 Mitigation

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

10.2.2 Determination of Significance-Without Mitigation

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

Table 25: Significance-Without Mitigation

NO SIGNIFICANCE	The impact is not substantial and does not require any mitigation action.
LOW	The impact is of little importance, but may require limited mitigation.
MEDIUM	The impact is of importance and is therefore considered to have a negative impact. Mitigation is required to reduce the negative impacts to acceptable levels.
HIGH	The impact is of major importance. Failure to mitigate, with the objective of reducing the impact to acceptable levels, could render the entire development option or entire project proposal unacceptable. Mitigation is therefore essential.

10.2.3 Determination of Significance- With Mitigation

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

Table 26: Significance- With Mitigation

NO SIGNIFICANCE	The impact will be mitigated to the point where it is regarded as insubstantial.
LOW	The impact will be mitigated to the point where it is of limited importance.
LOW TO MEDIUM	The impact is of importance, however, through the implementation of the correct mitigation measures such potential impacts can be reduced to acceptable levels.
MEDIUM	Notwithstanding the successful implementation of the mitigation measures, to reduce the

	negative impacts to acceptable levels, the negative impact will remain of significance. However, taken within the overall context of the project, the persistent impact does not constitute a fatal flaw.
MEDIUM TO HIGH	The impact is of major importance but through the implementation of the correct mitigation measures, the negative impacts will be reduced to acceptable levels.
HIGH	The impact is of major importance. Mitigation of the impact is not possible on a cost-effective basis. The impact is regarded as high importance and taken within the overall context of the project, is regarded as a fatal flaw. An impact regarded as high significance, after mitigation could render the entire development option or entire project proposal unacceptable.

10.2.4 Assessment Weighting

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

10.2.5 Ranking, Weighting and Scaling

For each impact under scrutiny, a scaled weighting factor is attached to each respective impact (refer Table 12). The purpose of assigning weights serves to highlight those aspects considered the most critical to the various stakeholders and ensure that each specialist’s element of bias is taken into account. The weighting factor also provides a means whereby the impact assessor can successfully deal with the complexities that exist between the different impacts and associated aspect criteria.

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

Table 27: Description of assessment parameters with its respective weighting

EXTENT		DURATION		INTENSITY		PROBABILITY		WEIGHTING FACTOR (WF)		SIGNIFICANCE RATING (SR)	
Footprint	1	Short term	1	Low	1	Improbable	1	Low	1	Low	0-19
Site	2	Short to Medium	2			Possible	2	Low to Medium	2	Low to Medium	20-39
Regional	3	Medium term	3	Medium	3	Likely	3	Medium	3	Medium	40-59
National	4	Long term	4			Highly Likely	4	Medium to High	4	Medium to High	60-79
International	5	Permanent	5	High	5	Definite	5	High	5	High	80-100
MITIGATION EFFICIENCY (ME)						SIGNIFICANCE FOLLOWING MITIGATION (SFM)					
High		0.2		Low		0 - 19					
Medium to High		0.4		Low to Medium		20 - 39					
Medium		0.6		Medium		40 - 59					
Low to Medium		0.8		Medium to High		60 - 79					
Low		1.0		High		80 - 100					

10.2.6 Identifying the Potential Impacts Without Mitigation Measures (WOM)

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

Equation 1:

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

10.2.7 Identifying the Potential Impacts With Mitigation Measures (WM)

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

10.2.8 Mitigation Efficiency (ME)

The most effective means of deriving a quantitative value of mitigated impacts is to assign each significance rating value (WOM) a mitigation efficiency (ME) rating (refer to Table 12). The allocation of such a rating is a measure of the efficiency and effectiveness, as identified through professional experience and empirical evidence of how effectively the proposed mitigation measures will manage the impact.

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

Equation 2:

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

10.2.9 Significance Following Mitigation (SFM)

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

10.3 THE STAGES AT WHICH THE COMPETENT AUTHORITY WILL BE CONSULTED

Refer to Section 8 for the details of the PPP followed.

10.4 PARTICULARS OF THE PUBLIC PARTICIPATION PROCESS WITH REGARD TO THE IMPACT ASSESSMENT PROCESS

All Registered I&APs were kept informed and given the opportunity to provide input into every phase of the Scoping and EIA process. All registered Interested and Affected Parties, stakeholders and government departments were provided the opportunity to read and comment on environmental impact assessment reports, including all specialist reports and the draft EMPr.

Comments and responses have been incorporated into the following documents involved in the EIA process:

- Scoping Report
- Specialist Reports
- EIA and EMPr Report

All the comments and responses from I&AP's have been received, and incorporated into the final document. The issues and comments have been addressed and mitigation measures set/updated for each issue.

Refer to Section 8 for the details of the PPP followed.

11 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

11.1 IMPACTS IDENTIFIED

The Proposed Project may cause impacts to the immediate, surrounding and regional cultural, biophysical and socio-economic environment. Specific cultural, environmental and socio-economic impacts are anticipated to occur at different phases of the project during the life of mine. These phases include:

- Construction
 - No significant impact are expected to be associated with the construction phase, as most of the necessary infrastructure is existing on site.
- Operation
 - Including transportation of dry tailings material to opencast pit and backfilling of the pits with tailings material.
- Decommissioning
 - Including scaling down of activities ahead of temporary or permanent closure, implementation of rehabilitation programme, monitoring and maintenance for prescribed period after cessation of operations.
- Closure
 - Including completion of rehabilitation goals, application for closure, transfer of liability to the State and agreed post-closure monitoring and maintenance.

The impacts associated with each of these phases will be specific to the mineral commodity, cultural, environmental and socio-economic context, spatial and temporal aspects of the operation and stated rehabilitation goals. For the purpose of this report, anticipated/ potential impacts have been identified, through specialist studies. Specific cultural, environmental and socio-economic impacts associated with the Proposed Project have been assessed and quantified during the EIA Phase of the project. The methodology that was used is detailed in Section 10 of this report.

The following cultural, environmental and socio-economic impacts associated with the Proposed Project have been assessed in this document. The impacts only relate to the reuse of the tailings for backfilling and associated activities during the operation, decommissioning and post-closure phases. Note that many aspects are not relevant in term of potential impacts as the proposed project relating to this application is entirely situated on areas already disturbed by current mining activities.

- Geohydrology;
- Surface water;
- Air quality; and
- Mine closure.

Anticipated impacts associated with the Proposed Project are included in the table below. Additional concerns raised by the public during the public participation process have been considered by the EAP during the EIR Phase (refer to Table 9).

Table 28: Anticipated Impacts associated with the Proposed Project

Environment	Anticipated Impact (excluding mitigation)
Geohydrology (groundwater)	<ul style="list-style-type: none"> • Impacts on groundwater qualities and plume migration; and • Impacts on surface water qualities due to poor quality groundwater seeping into the surface water in the form of baseflow contribution.
Surface water	<ul style="list-style-type: none"> • Increased risk of surface water pollution as result of poor water quality within the opencast sections. Overflow could occur during storm events. • Seepage and runoff from stockpile areas are moderately contaminated and could impact on surface water quality. • Contaminated surface water run-off from leachate and final landform created by backfilling with tailings material.
Air quality	Loading, transporting and storage of tailings: <ul style="list-style-type: none"> • Fugitive dust (containing TSP, as well as PM10 and PM2.5) occurs as a result of the aforementioned processes. • Tailings stockpiles are prone to dust generation as a result of the erosion forces related to wind velocity.
Land capability	Reduction in land capability due to inappropriate rehabilitation of opencast areas backfilled with tailings material.

Mine tailings represent one of the two largest sources of mine waste from the minerals industries (the other being waste rock). Given the problems of declining ore grades and growing production, tailings generation is increasing exponentially across the global mining industry. Common practice is for mines to build large containment dams to store tailings during operations, which are then rehabilitated following mine closure. As recent tailings dam failures have shown, there are legitimate questions being raised about the long-term viability of leaving tailings above ground due to the risks of collapse and failure.

In-pit tailings storage can provide many advantages when compared to typical above-ground tailings storage facilities (TSFs). As regulations become more restrictive and existing mines expand into new pits, the motivation and opportunities for in-pit tailings disposal is increasing.

The approach of in-pit tailings has numerous advantages, such as inherent physical stability, low to negligible acid and metalliferous drainage (AMD) risks, as well as allowing more productive use of formerly mined land.

The areas for the proposed backfilling with tailings material on the farm Zwartkoppies 413 KS were selected based on availability of the remaining opencast voids. Only existing pits can be backfilled, therefore it was not practical to select any other sites. A tailings stockpile has been authorised for Sefateng Chrome Mine's Zwartkoppies Section and alternatives for the storage of tailings would entail the extension of the authorised storage facility, the development of additional storage facilities or transportation of tailings material off-site for storage by third-parties.

Sefateng Chrome Mine is an existing operation and the preferred alternative is located entirely on the current mining footprint, thus reducing the impacts on the biophysical and social environment. No extension of the mining footprint will be required for the proposed activities.

Alternatives related to surface deposition of tailings at either a new facility or expanding the authorised storage facility have the following attributes:

- Expansion of the authorised tailings facility will require the expansion of the operational footprint and additional clearance of vegetation and disturbance to the natural environment.
- The construction of an additional, separate tailings facility will lead to site clearance and thereby additional impacts to the biophysical environments.

- Surface deposition of tailings entails high economic cost in terms maintenance of the facility, design and construction. Thereby reducing the economic viability of the mining project.

The preferred alternative for the project is the backfilling of the opencast void with tailings material. Benefits of backfilling the pits with tailings, as opposed to other alternative disposal methods, are the following:

- Worked out voids can be filled at a fraction of the costs associated with designing, constructing and operating a conventional, thickened, paste or dry stack facility.
- The tailings do not require retaining walls, thus the risks associated with embankment instability are eliminated. Thereby reducing risks to nearby communities, employees and the biophysical environment.
- No separate final waste deposit for tailings material, as the material will be used for backfilling of the opencast void as part of the rehabilitation activities.
- A smaller footprint at closure since areas already disturbed are used for the deposition of the tailings.
- Maximised reuse and recycling of waste materials through use of the tailings for backfilling.
- Little to no amendments required to existing infrastructure in order to support the proposed activities.
- The farm is currently being mined which ensures that the proposed project falls into the current sense of place and land use.
- No significant surface water bodies (i.e. perennial streams or large dams/ponds) are within close proximity to the existing opencast pits.

11.1.1 Ecological Impacts

The proposed activities associated with the reuse of the tailings material will be situated on areas already disturbed by the existing mining activities. Thus, little or no impact to terrestrial biodiversity (fauna and flora) resources are expected.

The following Terrestrial Ecology Assessment have been undertaken for the Sefateng Chrome Mine and have adequately assessed the nature and extent of impacts based related to both the existing and proposed activities associated with the Sefateng Chrome Mine:

- Scientific Aquatic Services (2014). Faunal, Floral and Wetland Assessment as Part of the Environmental Assessment and Authorisation Process for the Proposed Sefateng Chrome Mine, Limpopo Province.
- Prescali Environmental Consultants (2018). Sefateng Chrome Mine (Pty) Ltd Fauna Terrestrial Biodiversity Assessment for the proposed mining expansion on the farms Waterkop 113 KT And Zwartkoppies 413 KS, Limpopo Province.
- Environment Research Consulting (2018). Vegetation Diversity Assessment for Sefateng Chrome Mine: proposed extension of opencast operations and construction of a new pipeline, powerline and associated service road on the farms Waterkop 113KT and Zwartkoppies 413KS, Fetakgomo Local Municipality, Limpopo Province.

11.1.2 Impacts on Heritage

The proposed activities associated with the reuse of the tailings material will be situated on areas already disturbed by the existing mining activities. Thus, no impacts to heritage resources are expected.

11.1.3 Impact on Air Quality

In order to transport tailings to the opencast pit a number of activities are conducted simultaneously, including the transportation of machinery to opencast, as well as materials and workforce. There will be fumes from diesel trucks transporting tailings to the opencast pit. Fugitive dust (containing TSP, as well as PM10 and PM2.5) may occur as a result of dumping of tailings during high wind conditions. Tailings storage facilities are prone to dust generation as a result of the erosion forces related to wind velocity.

It is reasonably expected that, if the dry TSF material is stored in the void / out-mined pit, the height above ground level of the dry tailings stockpile will be limited thereby also reducing its exposure to the climactic conditions that would normally spread dust particles further away.

It is anticipated that the removal of tailings, by placing the tailings into the opencast pit areas, will reduce dust fallout as these pits are protected from wind erosion. The removal of tailings is seen as a mitigation measure to decrease air emissions of the site. No increase in traffic is expected as the haul trucks that are utilised to deliver the ROM to the plant will also be utilised to move the tailings to the pits.

It is recommended that all mitigation measures as suggested by both the air quality baseline assessment (Eco Elementum, 2015) and the EIA and EMPr (2015 and 2020) be strictly adhered to at all times. If and when the TSF material is moved to the pit, it is recommended that the mitigation measures of the construction phase be re-implemented whilst the rest of the site is managed in accordance with the mitigation (and preventative) measures of the operational phase.

11.1.4 Impact on Noise

Sefateng Chrome Mine is an existing operation the preferred alternative is located entirely on the current mining footprint. No significant additional impact to noise sensitive receptors is expected from the tailings backfilling activities.

11.1.5 Impact on Surface Water

There is one expected impact on the surface water within the site due to the backfilling of the opencast void with tailings material, which is the possible deterioration of water quality: Poor quality leachate may emanate from backfilled opencast pits which will have a negative impact on groundwater and surface water quality. Increased risk of surface water pollution as result of poor water quality within the opencast sections. Overflow could occur during storm events.

11.1.6 Impact on Groundwater

11.1.6.1 Construction phase: Associated activities and impacts

As Sefateng Chrome Mine is an existing and operational mine, construction-phase infrastructure is already established and utilised, and as such, this phase is not relevant to this investigation.

11.1.6.2 Operational phase: Associated activities and impacts

The main impacts associated with operational phase activities include the following: Surface and groundwater deterioration and siltation due to contaminated stormwater run-off.

11.1.6.3 Post-operational phase: Associated activities and impacts

Post closure phase impacts resulting from seepage and leachate from backfilled pits and other related waste facilities on down-gradient receptors are rated as medium to high negative without the implementation of remedial measures and medium to low negative with implementation of mitigation measures. The main impacts associated with mine post-operational phase activities include the following: Poor quality leachate and decant may emanate from backfilled opencast pits which will have a negative impact on groundwater and surface water quality.

11.1.7 Impact on Soil and Land Capability

The expected impact to Soil and Land Capability may take place during the closure and decommissioning phase due to reduction in land capability due to ineffectual rehabilitation of opencast areas backfilled with tailings material. No impact to Soil and land capability aspects are expected during the operational phase as the activity is the backfilling of existing opencast voids with tailings material.

11.1.8 Cumulative Impacts

A cumulative impact may result from an additive impact i.e. where it adds to the impact which is caused by other similar impacts or an interactive impact i.e. where a cumulative impact is caused by different impacts that combine to form a new kind of impact. Interactive impacts may either be countervailing (net adverse cumulative impact is less than the sum of the individual impacts) or synergistic (net adverse cumulative impact is greater than the sum of the individual impacts).

The assessment of cumulative impacts on a study area is complex; especially if many of the impacts occur on a much wider scale than the site being assessed and evaluated. It is often difficult to determine at which point the accumulation of many small impacts reaches the point of an undesired or unintended cumulative impact that should be avoided or mitigated. There are often factors which are uncertain when potential cumulative impacts are identified.

The anticipated impacts resulting from the Sefateng Chrome Mine Tailings Backfilling Project could potentially result in cumulative effects in the following areas:

- Impacts on groundwater qualities due to mine residue storage.
- Impacts on surface water qualities due to poor quality groundwater seeping into the surface water in the form of baseflow contribution.
- Increased risk of surface water pollution as result of poor water quality within the opencast sections. Overflow could occur during storm events.
- Reduction in land capability due to inappropriate rehabilitation.

Regarding surface water environment, the assessment of cumulative impacts from adjacent mines with the implementation of appropriate management measures to ensure sensitive downstream water users are not detrimentally impacted was recommended as a general management feature to prevent surface water cumulative impacts.

12 IMPACTS AND RISKS IDENTIFIED INCLUDING THE NATURE, SIGNIFICANCE, CONSEQUENCE, EXTENT, DURATION AND PROBABILITY OF THE IMPACTS

Table 29: Impact Assessment Table (complete with Ratings used to obtain Significance)

Aspect	Activity	Phase	Impact	Extent	Duration	Intensity	Probability	Weighting Factor	SR WOM	ME	SR WM
Air Quality	Hauling, transportation and backfilling of tailings	Operational	Fugitive dust (containing TSP, as well as PM10 and PM2.5)	2	4	3	4	3	39 LOW to MEDIUM	0.6	23 LOW to MEDIUM
Air Quality	Rehabilitation (spreading of soil, revegetation & profiling/contouring)	Closure and decommissioning	Profiling of backfilled opencast pits and waste rock dump to enhance vegetation cover and reduce wind erosion from such surfaces post mining.	1	2	1	4	2	16 LOW	0.4	6 LOW
Surface Water	Backfilling of opencast pit with tailings	Operational	Impacts on surface quality due to poor quality seepage from the pollution source areas	1	5	1	2	3	27 LOW to MEDIUM	0.6	16 LOW
Groundwater	Backfilling of opencast pit with tailings	Operational	Impacts on groundwater quality due to poor quality seepage from the mining area	3	4	4	4	4	60 MEDIUM to HIGH	0.6	36 LOW to MEDIUM
Groundwater	Backfilling of opencast pit with tailings	Decommissioning	Impacts on groundwater quality due to poor quality seepage from the mining area	3	4	4	4	4	60 MEDIUM to HIGH	0.6	36 LOW to MEDIUM
Surface Water	Backfilling of opencast pit with tailings	Decommissioning	Impacts on surface quality due to poor quality seepage from the pollution source areas	1	5	1	2	3	27 LOW to MEDIUM	0.4	11 LOW
Soil and land capability	Backfilling of opencast pit with tailings	Decommissioning	Reduction in land capability due to inappropriate rehabilitation of the opencast areas.	2	5	3	3	4	39 LOW to MEDIUM	0.4	16 LOW

12.1 THE POSSIBLE MITIGATION MEASURES THAT COULD BE APPLIED AND THE LEVEL OF RISK

Table 30: Mitigation measures

Aspect	Activity	Phase	Impact	SR WOM	Mitigation measures	SR WM
Air Quality	Hauling, transportation and backfilling of tailings	Operational	Fugitive dust (containing TSP, as well as PM10 and PM2.5)	39 LOW to MEDIUM	<p>Low or in-pit dumping of tailings during high wind conditions;</p> <p>Dust suppression to be implemented on haul roads.</p> <p>All activities onsite will comply with the requirements of the National Environmental Management Air Quality Act (No. 39 of 2004).</p> <p>Limit the speed of vehicles on unpaved roads to 40 km per hour.</p> <p>Vehicles carrying any loose aggregates or materials should be covered with tarpaulins or sheets, where necessary.</p>	23 LOW to MEDIUM
Air Quality	Rehabilitation (spreading of soil, revegetation & profiling/contouring)	Closure and decommissioning	Profiling of backfilled opencast pits and waste rock dump to enhance vegetation cover and reduce wind erosion from such surfaces post mining.	16 LOW	<p>Revegetation of exposed areas for long-term dust and water erosion control should be implemented. Plants with roots that bind the soil, and vegetation cover should be used that breaks the impact of falling raindrops, thus preventing wind and water erosion.</p> <p>Plants used for revegetation should be indigenous to the area, hardy, fast-growing, nitrogen-fixing, provide high plant cover, be adapted to growing on exposed and disturbed soil (pioneer plants) and should easily be propagated by seed or cuttings.</p> <p>Spreading of soil must be performed on less windy days.</p> <p>Leaving the surface of the soil in a coarse condition reduces wind erosion and ultimately reduces the dust levels.</p>	6 LOW

Aspect	Activity	Phase	Impact	SR WOM	Mitigation measures	SR WM
					<p>Additional mitigation measures include keeping the soil moist using sprays or water tanks, using wind breaks.</p> <p>Dust suppression of roads being used during rehabilitation should be enforced.</p> <p>It is recommended that the rehabilitation by vegetating should begin during the operational phase already as the objective is to minimise the erosion.</p>	
Surface Water	Backfilling of opencast pit with tailings	Operational	Impacts on surface quality due to poor quality seepage from the pollution source areas	27 LOW to MEDIUM	<p>Storm water runoff generated at the opencast pit should be directed to and contained within the appropriately lined Pollution Control Dams.</p> <p>Appropriate management measures should be implemented to drain any seepage to the PCDs.</p> <p>Dirty water should be re-used wherever practical.</p> <p>A comprehensive surface and groundwater monitoring programme will be implemented.</p>	16 LOW
Groundwater	Backfilling of opencast pit with tailings	Operational	Impacts on groundwater quality due to poor quality seepage from the mining area	60 MEDIUM to HIGH	<p>Development and implementation of an integrated groundwater monitoring program evaluating water quality will serve as early warning mechanism to implement mitigation measures such as seepage capturing boreholes down-gradient of the waste facilities in order to constrain the contamination plume migration as well as manage the groundwater cone of depression.</p> <p>Based on the water quality results, the monitoring network should be refined and updated every three to five years based on hydrochemical results obtained to ensure optimisation and adequacy of the proposed localities.</p> <p>The existing groundwater flow model should be recalibrated with time-series monitoring data on</p>	36 LOW to MEDIUM

Aspect	Activity	Phase	Impact	SR WOM	Mitigation measures	SR WM
					an annual basis in order to be applied as water management tool. Scenario predictions and model simulations should be conducted and interpreted by an external and independent specialist. Develop a stormwater management plan in accordance with GN704 in order to separate dirty/contact water from clean water circuits. All water retention structures, process water dams; storm water dams, retention ponds etc. should be constructed to have adequate freeboard to be able to contain water from 1:50 year rain events.	
Groundwater	Backfilling of opencast pit with tailings	Decommissioning	Impacts on groundwater quality due to poor quality seepage from the mining area	60 MEDIUM to HIGH	Monitoring of surface water and groundwater in accordance with the implemented protocol should be continued throughout the post operational phase. Ensure that rehabilitation of backfilled opencast and mine waste facility footprints areas is properly conducted and in accordance with best practice guidelines as well as approved mine closure and rehabilitation plans. Rehabilitation should allow for free draining of runoff in order to prevent any surface water ponding.	36 LOW to MEDIUM
Surface Water	Backfilling of opencast pit with tailings	Decommissioning	Impacts on surface quality due to poor quality seepage from the pollution source areas	27 LOW to MEDIUM	Acidic leachate and decant to be contained in bunded areas and directed to an appropriately lined PCD. Appropriate rehabilitation should be implemented in accordance with the Rehabilitation Plan.	10.8 LOW
Soil and land capability	Backfilling of opencast pit with tailings	Decommissioning	Reduction in land capability due to inappropriate rehabilitation of the opencast areas.	39 LOW to MEDIUM	All disturbed areas should be rehabilitated as soon as possible during the life of mine in accordance with design specifications to reduce soil erosion. Dirty and clean water will be separated by implementing clean and dirty water systems/ structures prior to construction to prevent	16 LOW

Aspect	Activity	Phase	Impact	SR WOM	Mitigation measures	SR WM
					<p>pollution of clean water runoff or the existing dirty and clean water systems will be maintained. The clean and dirty water systems and structures will be properly designed (according to GNR.704 of the National Water Act (No. 59 of 1998)) to prevent contamination of clean water sources and the erosion and scouring of the infrastructure. All waste management and waste disposal activities are to be undertaken in accordance with the National Environmental Management: Waste Act (No. 59 of 2008).</p> <p>Once the site has been fully decommissioned, there should be limited water quality impacts, provided that the site is properly rehabilitated. To limit erosion, it should be ensured that the soils maintain their pre-development characteristics as far as is practicable to ensure infiltration and vegetation rooting. The vegetation health should be returned to the baseline health where practically feasible.</p>	

13 SUMMARY OF SPECIALIST RECOMMENDATIONS

List Of Studies Undertaken	Recommendations Of Specialist Reports	Specialist Recommendations That Have Been Included In The EIA Report	Reference To Applicable Section Of Report Where Specialist Recommendations Have Been Included.
Surface water Assessment (Appendix 7)	<p>All mitigation and monitoring measures that were provided within this report should be implemented and included in the relevant management plans. If all mitigation is adhered to, the combined impact could be rated as low.</p> <p>The Surface Water Assessment was NOT updated for this application, the 2014 assessment information was used for this application and is sufficient.</p>	X	Table 28 and Table 29.
Groundwater (Appendix 6)	<p>The following recommendations are proposed following this investigation:</p> <ol style="list-style-type: none"> 1. It is recommended that mitigation and management measures as set out in this report should be implemented as far as practically possible. 2. It is also recommended that the revised monitoring program as set out in this report should be implemented and adhered to. It is imperative that monitoring be conducted to serve as an early warning and detection system. 3. Furthermore, it is recommended that additional monitoring boreholes be established down-gradient of the proposed backfilling footprints in order to evaluate the mass load contribution to environmental receptors. 4. Drilling localities should be determined by means of a geophysical survey in order to target lineaments and weathered zones acting as preferred groundwater flow pathways and contaminant transport mechanisms. 5. Monitoring results should be evaluated and reviewed on a bi-annual basis by a registered hydrogeologist for interpretation and trend analysis and submitted to the Regional Head: Department of Human Settlements, Water and Sanitation. 6. Groundwater flow modelling assumptions should be verified and confirmed. The calibrated groundwater flow model should be updated on a bi-annual basis as newly gathered monitoring results become available in order to be applied as groundwater management tool for future scenario predictions. <p>Alternative remediation options i.e. implementation of scavenger/ seepage capturing boreholes</p>	X	Table 28 and Table 29.

List Of Studies Undertaken	Recommendations Of Specialist Reports	Specialist Recommendations That Have Been Included In The EIA Report	Reference To Applicable Section Of Report Where Specialist Recommendations Have Been Included.
	down- gradient of backfilled opencasts should be explored as management and post-closure strategies. Furthermore, alternative remedial options to reduce rainfall recharge and effective infiltration, which will lead to an increase in leachate volumes, should also form part of the mine closure and rehabilitation strategy.		
Air Quality (Appendix 8)	<p>All mitigation and monitoring measures that were provided within this report should be implemented and included in the relevant management plans. If all mitigation is adhered to, the combined impact could be rated as low.</p> <p>The Air Quality Assessment was NOT updated for this application, the 2014 assessment information was used for this application and is sufficient.</p>	X	Table 28 and Table 29.
Soil and Land Capability (Appendix 9)	<p>All mitigation and monitoring measures that were provided within this report should be implemented and included in the relevant management plans. If all mitigation is adhered to, the combined impact could be rated as low.</p> <p>The Soil and Land Capability Assessment was NOT updated for this application, the 2014 assessment information was used for this application and is sufficient.</p>	X	Table 28 and Table 29.

14 LIMITATIONS AND ASSUMPTIONS

Assumptions and limitations applicable to specific to the assessment process and mitigation measures proposed in specific specialist studies include the following:

14.1.1.1 Hydrogeological Assessment

Data limitations were addressed by following a conservative approach and assumptions include the following:

- The scale of the investigation was set at 1:50 000 resolutions in terms of topographic and spatial data, a lower resolution of 1:250 000 scale for geological data and a 1: 500 000 scale resolution for hydrogeological information.
- The Digital Elevation Model (DEM) data was interpolated with a USGS grid spacing of 25.0m intervals.
- Rainfall data and other climatic data was sourced from the WR2012 database.
- Water management and catchment-based information was sourced from the GRDM and Aquiworx databases.
- The concept of representative elementary volumes (REV) has been applied i.e. a scale has been assumed so that heterogeneity within a system becomes negligible and thus can then be treated as a homogeneous system. The accuracy and scale of the assessment will result in deviations at point e.g. individual boreholes.
- No site characterisation boreholes were drilled as part of this investigation and aquifer parameters as well as hydrostratigraphic units were assumed based on similar environments and studies conducted.
- The investigation relied on data collected as a snapshot of field surveys and existing monitoring data. Further trends should be verified by continued monitoring as set out in the monitoring program.
- Stratigraphical units, as delineated from surface geology within the model domain, are assumed to occur throughout the entire thickness of the model and were incorporated as such.
- The geological structures (fault zones and dyke contact zones) were modelled as permeable linear zones.
- The model basement i.e. bottoms impermeable layer as assumed to be un-fractured and more competent BIC.
- Model calibration was achieved by assigning a ratio of 1:1 for Hydraulic Conductivity (K) in x and y directions, with a ratio of 1:10 in the z direction i.e. anisotropic aquifer (except for alluvial deposits which were assigned at a 1:1 ratio)
- Perennial rivers within the model domain have been treated as gaining type streams. As such groundwater is lost from the system via baseflow to local drainages.
- Groundwater divides have been assumed to align with surface water divides and it is assumed that groundwater cannot flow across this type of boundaries.
- The numerical groundwater flow model was developed considering site specific information. It should be stated that influences from neighbouring mining developments were not taken into consideration as part of this investigation.
- Prior to development, the system is in equilibrium and therefore in steady state.
- Where data was absent or insufficient, values were assumed based on literature studies and referenced accordingly.

14.1.1.2 Surface water Assessment

No assumptions or limitations are included in the Surface Water Assessment Report.

The Surface Water Assessment (2014) performed for previous applications for the Sefateng Chrome Mine is still considered relevant to the project as tailings stockpiling was specifically assessed. Furthermore, from previous projects in the area for similar activities, the impacts to surface water is expected to be less significant and are known. Therefore, this study has been used for the determination of impacts and associated mitigation measures in the EIA and EMP Report.

14.1.1.3 Air Quality

No assumptions or limitations are included in the Air Quality Assessment Report.

The Air Quality Assessment (2014) performed for previous applications for the Sefateng Chrome Mine is still considered relevant to the project as tailings stockpiling and infilling of worked out areas with tailings material was specifically assessed. Furthermore, from previous projects in the area for similar activities, the impacts to air quality is expected to be less significant and are known. Therefore, this study has been used for the determination of impacts and associated mitigation measures in the EIA and EMPr Report.

14.1.1.4 Soil and Land Capability Assessment

No assumptions or limitations are included in the Soil and Land Capability Report.

The Soil and Land Capability Assessment (2014) performed for previous applications for the Sefateng Chrome Mine is still considered relevant to the project. Impacts to soil and land capability aspects are only expected during the closure and decommissioning phase due to ineffective rehabilitation of the backfilled opencast areas. Therefore, this study has been used for the determination of impacts and associated mitigation measures in the EIA and EMPr Report.

15 ENVIRONMENTAL IMPACT STATEMENT

15.1.1 Summary of the Key Findings of the Environmental Impact Assessment

The findings of the specialist studies undertaken for this EIA process provide an assessment of both the benefits and potential negative impacts anticipated as a result of the proposed and existing project. The findings conclude that, provided that the recommended mitigation and management measures are implemented, there are no environmental fatal flaws that should prevent the proposed project from proceeding.

For a summary giving only the Significance obtained, refer below.

Table 31: Summary of Key findings in terms of Impact Significance

Aspects Affected	Potential Impact	Significance Without Mitigation	Mitigation Efficiency		Significance With Mitigation
Air Quality	Fugitive dust (containing TSP, as well as PM10 and PM2.5)	39 LOW to MEDIUM	Medium	0.6	23 LOW to MEDIUM
Air Quality	Profiling of backfilled opencast pits and waste rock dump to enhance vegetation cover and reduce wind erosion from such surfaces post mining.	16 LOW	Medium to High	0.4	6 LOW
Surface Water	Impacts on surface quality due to poor quality seepage from the pollution source areas (operational phase)	27 LOW to MEDIUM	Medium	0.6	16 LOW
Groundwater	Impacts on groundwater quality due to poor quality seepage from the mining area (operational phase)	60 MEDIUM to HIGH	Medium	0.6	36 LOW to MEDIUM
Groundwater	Impacts on groundwater quality due to poor quality seepage from the mining area (decommissioning and closure phase)	60 MEDIUM to HIGH	Medium	0.6	36 LOW to MEDIUM
Surface Water	Impacts on surface quality due to poor quality seepage from the pollution source areas (decommissioning and closure phase)	27 LOW to MEDIUM	Medium to High	0.4	11 LOW
Soil and Land Capability	Reduction in land capability due to inappropriate rehabilitation of the opencast areas.	39 LOW to MEDIUM	Medium to High	0.4	16 LOW

15.2 FINAL SITE MAP

Please refer to Appendix 4 and Figure 7.

15.3 SUMMARY OF THE POSITIVE AND NEGATIVE IMPLICATIONS AND RISKS OF THE PROPOSED ACTIVITY AND IDENTIFIED ALTERNATIVES

Refer to Section 11 and Table 31.

15.4 PROPOSED IMPACT MANAGEMENT OBJECTIVES AND THE IMPACT MANAGEMENT OUTCOMES FOR INCLUSION IN THE EMPr

Specialist recommendations which could be included as conditions have been discussed in Table 30 and Section 13. Specialist management measures as well as the significance of the impacts prior and post mitigation are provided in Table 30 and contained in the respective studies.

Table 32: Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr

Aspects Affected	Potential Impact	Management Objectives	Management Outcome
Air Quality	Fugitive dust (containing TSP, as well as PM10 and PM2.5)	To limit public exposure to unacceptable health risks.	Reduction of fugitive dust.
Surface Water	Impacts on surface quality due to poor quality seepage from the pollution source areas	To prevent discharges of contaminated water to the environment and to prevent pollution of water resources in the vicinity of the project	Compliance with legislation. Prevent impacts on surface water quality.
Groundwater	Impacts on groundwater quality due to poor quality seepage from the mining area	To prevent unacceptable negative impacts on surrounding groundwater users. To limit the impact of infiltration of potentially contaminated leachate to the underlying aquifers..	Identification of impacts on groundwater quality.
Land Capability	Reduction in land capability due to inappropriate rehabilitation of the opencast areas.	To ensure that backfilled opencast areas are rehabilitated to an acceptable state as per the final land use determined.	Successful rehabilitation through vegetation establishment.

15.5 FINAL PROPOSED ALTERNATIVES

Refer to Section 7.

16 ASPECTS FOR INCLUSION AS CONDITIONS OF AUTHORISATION

Refer to Table 30 for conditions which could possibly be included in the Environmental Authorisation. The mitigation measures as specified within the EMPr are to be included in the Environmental Authorisation.

Once mining has ceased the area must be rehabilitated and a closure certificate must be applied for in terms of Section 43 (3) of the MPRDA.

A groundwater monitoring programme, as described in the EMPr, must be established and implemented.

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

Please refer to Section 14 for a description of the “Limitations and Assumptions”.

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

18.1 REASONS WHY THE ACTIVITY SHOULD BE AUTHORISED OR NOT

Mining and its associated impacts have already commenced on the proposed project site and the area has been disturbed by adjacent mining activities, the nearby local community, agricultural activities and intensive grazing practices. Taking the aforementioned into account as well as the relatively low nature of the potential impacts, as discussed throughout this document, it is clear that the proposed activities will be the most suitable future land use for the site in terms of environmental and economic cost-benefit.

Please refer to Section 14.7 for the impact statements. The findings of the specialist studies undertaken within this EIA/EMP provide an assessment of both the benefits and potential negative impacts anticipated as a result of the proposed project. The findings conclude that, provided that the recommended mitigation and management measures are implemented, there are no environmental fatal flaws that post the provided mitigation, should prevent the proposed project from proceeding.

18.2 CONDITIONS THAT MUST BE INCLUDED IN THE AUTHORISATION

18.2.1 *Specific Conditions to Be Included Into the Compilation and Approval of EMP*

Refer to Section 16 and 12.1.

18.2.1.1 *Rehabilitation Requirements*

For the mining operations, the following closure objectives and goals are proposed:

- To rehabilitate all disturbed land to a state that is suitable for its post closure use;
- To ensure that affected areas are safe and secure for both human and animal activities;
- The physical and chemical stability of the remaining structures should be such that risk to the environment through naturally occurring forces is eliminated;
- To rehabilitate all disturbed land to a state where limited or preferably no post closure management is required;
- To rehabilitate all disturbed land to a state that facilitates compliance with current environmental quality objectives (air and water quality);
- To limit the impact on personnel whose positions may become redundant on decommissioning of the mine;
- Removal of unneeded surface infrastructures, e.g. roads, offices, plant infrastructure, explosive storage areas etc. as indicated in the construction phase;
- Rehabilitation and reshaping of stockpiles, overburden, waste rock dump
- Rehabilitation of Pollution Control Dams;
- Rehabilitation of opencast area with overburden and tailings material;
- Reshaping of topography to desired closure land use;
- Re-vegetation of rehabilitated areas; and
- Monitoring of rehabilitation objectives.

19 PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED

The operation of the wash plant and associated production of tailings will coincide with the LoM, which is currently estimated as 30 years. Therefore the Waste Management Licence is required for a period of 30 years.

20 UNDERTAKING

The signed undertaking is included in Section 28 of Part B.

21 FINANCIAL PROVISION

Table 33: Rehabilitation Quantum for the Sefateng Chrome Mine Tailings Backfilling Project

No.	Description	Unit	Quantity	Master rate	Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m ³	Included in annual provision (2022)	R17.85	R 0.00
2(A)	Demolition of steel buildings and structures	m ²	Included in annual provision (2022)	R248.64	R 0.00
2(B)	Demolition of reinforced concrete buildings and structures	m ²	Included in annual provision (2022)	R366.41	R 0.00
3	Rehabilitation of access roads	m ²	Included in annual provision (2022)	R44.49	R 0.00
4(A)	Demolition and rehabilitation of electrified railway lines	m	N/A	R431.84	R 0.00
4(B)	Demolition and rehabilitation of non-electrified railway lines	m	N/A	R235.55	R 0.00
5	Demolition of housing and/or administration facilities	m ²	N/A	R497.27	R 0.00
6	Opencast rehabilitation including final voids and ramps	ha	Included in annual provision (2022)	R253,084.82	R 0.00
7	Sealing of shafts, adits and inclines	m ³	Included in annual provision (2022)	R133.48	R 0.00
8(A)	Rehabilitation of overburden and spoils	ha	N/A	R173,783.16	R 0.00
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic salt-producing waste)	ha	N/A	R216,443.79	R 0.00
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)	ha	N/A	R628,655.36	R 0.00
9	Rehabilitation of subsidied areas	ha	Included in annual provision (2022)	R145,517.23	R 0.00
10	General surface rehabilitation	ha	Included in annual provision (2022)	R137,665.58	R 0.00
11	River diversions	ha	Included in annual provision (2022)	R137,665.58	R 0.00
12	Fencing	m	Included in annual provision (2022)	R157.03	R 0.00
13	Water management	ha	10.00	R52,344.33	R 143,946.90
14	2 to 3 years of maintenance and after care	ha	Included in annual provision (2022)	R18,320.51	R 0.00
15 (A)	Surface and groundwater monitoring (3 years)	Sum	3.00	R170,000.00	R 561,000.00
15 (B)	Biodiversity monitoring (2 years)	Sum	Included in annual provision (2022)	R75,000.00	R 0.00
	Subtotal 1 - Sum of items 1-15				R 704,946.90
1	Preliminary and General	12.0%	if Subtotal 1 < 100 000 000		R 84,593.63
2	Contingency	10%	of Subtotal 1		R 70,494.69
	Subtotal 2 (Subtotal 1 plus sum of management and contingency)				R 860,035.22
	Subtotal 2 = VAT @ 15%				R 129,005.28
	GRAND TOTAL (Subtotal 2 plus VAT)				R 989,040.50

21.1 EXPLAIN HOW THE AFORESAID AMOUNT WAS DERIVED

The methodology used is the method prescribed in the guideline document “Guideline document for the evaluation of the quantum of closure-related financial provision provided by a mine” (Department of Minerals and Energy, 2005).

The deadline for compliance with the Financial Provisioning Regulations, as set out in GNR 1147, has been extended to 19 June 2021. As Sefateng Chrome Mine’s Mining Right application was launched in 2014, we submit that it is appropriate to calculate the financial provisioning following the regulations outlined in regulations 53 and 54 of the MPRDA Regulations.

The DMRE Guideline format makes use of a set template for which defined rates and multiplication factors are used. The multiplication and weighting factors which ultimately define the rate to be used are determined by amongst others the topography, the classification of the mine according to mineral mined, the risk class of the mine and its proximity to built-up or urban areas.

The DMRE rates were published in 2004 and, due to inflation, are thus no longer accurate. As per the DMR’s “Guideline Document for the Evaluation of the Quantum of Closure-related Financial Provision Provided by a Mine”, the Master Rates for the DMR spreadsheet have been updated based on annual CPI rates published by StatsSA (http://www.statssa.gov.za/?page_id=1854&PPN=P0141&SCH=7563) for the period 2005 to 2022.

The DMR Guideline Document for the Evaluation of the Quantum of Closure Related Financial Provision Provided by a Mine (DME, 2005), classifies a mine according to a number of factors which allows one to determine the appropriate weighting factors to be used during the quantum calculation. The following factors are considered:

1. The mineral mined;
2. The risk class of the mine;
3. Environmental sensitivity of the mining area;
4. Type of mining operation; and
5. Geographic location.

Once the risk class (Class A, B or C) and the sensitivity of the area where the mine is located (Low, Medium or High) had been determined using the appropriate tables the unit rates for the applicable closure components were identified.

Table 34: Sefateng Chrome mine Classification

Risk Class	Sensitivity	Terrain	Proximity to Urban Area
C	Low	Flat	Urban:

21.2 CONFIRM THAT THE FINANCIAL PROVISION WILL BE PROVIDED AS DETERMINED

The applicant will provide the financial provision upon the DMRE’s request.

22 DEVIATIONS FROM THE APPROVED SCOPING REPORT AND PLAN OF STUDY

There are no deviations from the Scoping Report and Plan of Study.

22.1 DEVIATIONS FROM THE METHODOLOGY USED IN DETERMINING THE SIGNIFICANCE OF POTENTIAL ENVIRONMENTAL IMPACTS AND RISKS.

No deviations were made to the methodology used in determining the significance of potential environmental impacts.

23 OTHER INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

No additional request related to additional information has been received from the Competent Authority to date.

It should be noted that the letter accepting the final Scoping Report received from the DMRE lists various specialist studies required to be undertaken which are not considered relevant to the proposed activities. The EAP raised this issue with the DMRE official assigned to the application and it was confirmed that not all specialist studies listed in the acceptance letter need to be undertaken, only those the EAP deems relevant.

23.1 COMPLIANCE WITH THE PROVISIONS OF SECTIONS 24(4)(A) AND (B) READ WITH SECTION 24 (3) (A) AND (7) OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998) THE EIA REPORT MUST INCLUDE THE:

23.1.1 Impact on the Socio-Economic Conditions of Any Directly Affected Person

Sefateng Chrome Mine is an existing operation and the preferred alternative is located entirely on the current mining footprint. No significant additional impact to socio-economic conditions is expected from the tailings backfilling activities.

23.1.2 Impact on Any National Estate Referred To In Section 3(2) of the National Heritage Resources Act

Sefateng Chrome Mine is an existing operation and the preferred alternative is located entirely on the current mining footprint. No impact to Archaeological / Heritage Resources are expected.

23.2 OTHER MATTERS REQUIRED IN TERMS OF SECTIONS 24(4)(A) AND (B) OF THE ACT.

Refer to Section 7.

PART B ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

24 DETAILS OF THE EAP

The information can be found in Section 1.1. Also refer to Appendix 1 and Appendix 2.

25 DESCRIPTION OF THE ASPECTS OF THE ACTIVITY

Refer to Part A Section 3 for a description of the activities.

26 COMPOSITE MAP

Refer to Appendix 4.

27 DESCRIPTION OF IMPACT MANAGEMENT OBJECTIVES INCLUDING MANAGEMENT STATEMENTS

27.1 DETERMINATION OF CLOSURE OBJECTIVES

The closure objectives have been developed against the background of the mine location in the Sekhukhune region of Limpopo, particularly that the region is disturbed by mining activities and land available for non-mining has become more limited. The objectives (see below) are therefore designed largely to manage residual risks and provide land that can be utilised after rehabilitation.

For the mining operations, the following closure objectives and goals are proposed:

- Adhere to all statutory and other legal requirements.
- To develop landforms supporting stable and functioning ecosystems that are aesthetically acceptable on closure and will gradually sustain the desired land-uses post closure.
- Ensure safety & health of all stakeholders during closure and post closure and that communities using the site after closure are not exposed to unacceptable risks.
- Ensure that closure supports productive uses considering pre-mining conditions and are in agreement with commitments to stakeholders.
- Promote bio-diversity and biological sustainability to the maximum extent practicable.
- Utilise closure strategies that promote a self-sustaining condition with little or no need for ongoing care and maintenance.
- To achieve agreed quality targets set by the Catchment Management Authority (CMA) and the Department of Water and Sanitation (DWS) as far as practical relative to impacts and reasonability to achieve.
- The physical and chemical stability of the remaining structures should be such that risk to the environment through naturally occurring forces is eliminated.
- To rehabilitate all disturbed land to a state that facilitates compliance with current environmental quality objectives (air and water quality).
- To limit the impact on personnel whose positions may become redundant on decommissioning of the mine.

27.2 THE PROCESS FOR MANAGING ANY ENVIRONMENTAL DAMAGE, POLLUTION, PUMPING AND TREATMENT OF EXTRANEIOUS WATER OR ECOLOGICAL DEGRADATION AS A RESULT OF UNDERTAKING A LISTED ACTIVITY

Refer to **Impacts to** be Mitigated in their respective phases

Table 38 for the proposed mitigation measures.

Any activity that results in damage or pollution to the environment will be rated and signed a value to determine the risk. An environmental emergency is defined as an unplanned situation or event resulting in potential pollution of the environment. A pollution incident means an incident or set of circumstances during or as a consequence of which there is or is likely to be a leak, spill or other escape or deposit of a substance, as a result of which pollution has occurred, is occurring or is likely to occur.

27.2.1 Roles and Responsibilities

All employees and its contractors working for the mine are responsible for reporting any accident/emergency to their

supervisor immediately, and if required notifying the emergency response teams. Personnel must be nominated as response team members and must receive appropriate training to manage emergencies. All other personnel must be made aware of potential emergencies and trained in emergency response. Management must be aware of their responsibilities in case of emergency.

27.2.2 Response to Environmental Emergencies

27.2.2.1 Emergency Plan

An emergency plan must be developed for each potential environmental emergency situation. The emergency plan must give information on:

- Description of the emergency;
- Reference to relevant material safety data sheets;
- Responsibilities for management of emergencies;
- Contact telephone numbers (on-site and off-site);
- Equipment required (including locations); and
- Site plan where applicable.

27.2.2.2 Classification of Emergencies

The following incidents will be classified as an emergency:

- Natural Disasters;
- Strikes, protest or unrest;
- Health and disease outbreaks;
- Serious incident or fatality; and
- High potential risk incidents (fatality, serious environmental pollution).

27.2.2.3 Reporting Emergencies

Sefateng Chrome Mine will establish procedures to identify the potential for, and response to, incidents and emergency situations and for preventing and mitigating the illness, injury or environmental hazard that may be associated with them. Sefateng Chrome Mine will review its emergency preparedness and response plans and procedures, in particular, after the occurrence of incidents or emergency situations. The mine shall also periodically test such procedures where and when practicable.

In the event of a serious incident or fatality occurring it is of the utmost importance to not only ensure the Health and Safety of every person involved but also to ensure that certain evidence is protected and gathered for use by the Sefateng Chrome Mine, with the aim of the prevention of a similar incident/accident occurring in the future.

A “No Blame Fixing” approach to incident investigation will be implemented and it must be stressed that the gathering of information must be seen as preventative action and not as blame fixing. In light of the above, and in addition to the emergency procedure that is relevant to the specific area where the incident/accident occurred, and in relation to the notifying of person and first aid treatment/safety of any person involved, the following steps must be taken immediately after an incident/accident classified above has occurred.

In the event of a reportable/major environmental incident that could lead to danger to the public or the environment (death or sustaining impact on the environment) the appointee of that specific section, in consultation with SHEQ Manager, is responsible for communicating with and drafting an external report (in terms of Section 30 of National Environmental Management Act, 1998 (Act No. 108 of 1998) and Sections 19 and 20 of the National Water Act, 1998 (Act No. 36 of 1998) to the national and provincial department and the municipality containing the:

- Nature of the incident;
- Substances and quantities and accurate effect on persons and environment;

- Initial measures to minimise impacts;
- Causes of the incident;
- Accordance measures;
- When an environmental incident occurs, the following should be adhered to:
 - Report incident as per Incident Reporting Flow Diagram;
 - Measures to clean up any spillage/pollution must be taken as per Emergency Procedure.
 - It is important to ensure that no secondary pollution is caused by incorrect handling of an environmental incident, e.g. incorrect disposal of absorbent material use to clean up a spill; and
- For high potential risk incident (HPRI) / reportable environmental incidents, the SHEQ Manager will conduct a closeout investigation prior to closure of the incident. This will be done one month after all actions has been completed to verify the effectiveness of the actions.

27.2.2.4 Formalise Policies

Objectives

To formalise and sign off on company policies.

Actions

- Compile Health and Safety Policy; and
- Compile Environmental Policy.

The notification process has six main steps in managing an emergency, from the identification of the situation to final close off. These are as follows:

- Find and identify;
- Ensure human safety;
- Reporting;
- Containment and clean-up;
- Corrective action; and
- Monitoring.

27.2.2.5 Environmental Emergency Incidents

The SHEQ Manager must, within 14 days of the incident, report information on the incident to enable initial evaluation to the following

- Director-General of DEA / LEDET;
- Provincial Head of Department (DMR);
- Provincial Head of Department (DWS); and
- Local Municipality.

The report must include:

- Nature of the incident;
- Substance involved and an estimation of quantity released and their possible acute effects on persons and the environment;
- Initial measures taken to minimise impacts;
- Cause of incident, whether direct or indirect; and
- Measures taken to avoid recurrence of such incident.

27.2.2.6 Water Pollution Emergency Incident

Water Pollution Emergency Incident is any accident /incident in which a substance pollutes or has the potential to pollute a water resource or a substance that has or is likely to have a detrimental effect on a water resource.

The responsible person who was in control of the substance involved in the incident at the time or responsible for the section the incident occurred will immediately inform the superior of the area where the incident occurred.

The information with regard to the incident is communicated to the Business Manager, SHEQ Manager and Security Personnel immediately by the superior of the area. The SHEQ Manager and the General Manager must, as soon as reasonably practicable after obtaining the knowledge of the incident, (i.e. within 14 days) report to:

- DWS (Regional Manager); and
- The Catchment Management Agency.
- The SHEQ Manager and crisis management team must:
 - Take all reasonable measures to contain and minimise the effects of the incident;
 - Undertake clean-up procedures;
 - Remedy the effects of the incidents; and
 - Sample the water together with the responsible person of the area.

27.2.2.7 Environmental Impact Register

All non-conformances pertaining to safety, health, environmental, quality of project activities and employees shall be documented as identified by the relevant documented procedures. Sefateng Chrome Mine will make provision for recording and reviewing the nature and extent of any non-conformance that may be encountered during the Project Execution phase.

The Project Steering Committee in conjunction with the identifier shall decide on the impact of poor performance and the actions that would be necessary to prevent further deterioration or occurrence.

27.2.2.8 Records

Records must be kept of all environmental emergencies and non-conformances.

28 ACID MINE DRAINAGE

28.1 POTENTIAL RISK OF ACID MINE DRAINAGE

The tailings material analysed was found to be non-acid forming.

28.2 STEPS TAKEN TO INVESTIGATE, ASSESS, AND EVALUATE THE IMPACT OF ACID MINE DRAINAGE

Refer to Section 9 of the Groundwater Study for the Geochemical Characterisation undertaken for the project.

The primary objective of this geochemical assessment is to determine the chemical nature and character of the proposed tailings backfill material, evaluate its risk potential towards the receiving environment as well as indicate the long-term potential for Acid Rock Drainage (ARD) occurring. Geochemical characterisation in the form of Acid Base Accounting (ABA), Net-Acid Generation (NAG), Sulphur speciation as well as static leach tests was performed on gathered samples. Geochemical test methodologies applied are summarised in the table below.

Table 35: Geochemical analysis test methodologies

Test procedure	Objectives	Methodology
X-Ray diffraction (XRD)	Minor to dominant minerals present in rocks.	PANalytical Aeris diffractometer
X-Ray fluorescence (XRF)	Major oxides and trace elements present in rocks.	ASTM D4326-13
Acid-base accounting (ABA) test	Determine the balance between the acid production and acid consumption properties of a mine waste material.	ASTM D3987
Sulphur Speciation	To determine the sulphide content of samples analysed.	ASTM E1915-11.
Nett Acid Generation (NAG Tests)	To indicate the net potential for ARD after oxidation with hydrogen peroxide.	ASTM E1915-13.
Distilled water leach: Australian Standard Leaching, ICP-OES/MS	To determine chemicals of concern that may potentially leach from sample.	Based on ASTM D3987-12 with additional ICP-OES/MS and IC analysis.

28.2.1 Sampling

The proposed tailings backfill material were sampled at various localities and a composite sample (SCT01) were submitted for geochemical testing and analysis. Historical geochemical data of a silica tailings sample (MM Silica tails) analysed for the neighbouring Moeijelijk Mine were also evaluated and included for reference and comparison purposes.

28.2.2 Mineralogy and total element analysis

The mineralogy and total element analysis of the samples was determined through X-Ray diffraction (XRD) and X-Ray fluorescence (XRF) as discussed below.

28.2.2.1 XRD Analysis

The following is noted:

- i. The major mineral in the Sefateng tailings sample analysed (SCT01) is enstatite ($\text{Mg}_2\text{Si}_2\text{O}_6$), a pyroxene, as well as chromite ($\text{Fe}^{2+}\text{Cr}_2\text{O}_4$) and plagioclase. Vermiculite and magnetite is also observed while biotite and talc occurs in trace amounts.
- ii. The major mineral in the MM Silica tailings sample analysed is enstatite ($\text{Mg}_2\text{Si}_2\text{O}_6$), a pyroxene, as well as dolomite (CaMgCO_3) and chromite ($\text{Fe}^{2+}\text{Cr}_2\text{O}_4$). Muscovite, vermiculite and biotite is also present.
- iii. It should be noted that the dolomite present may contribute to the buffer capacity of the proposed backfill material.

28.2.2.2 XRF Analysis

The element specific concentrations were obtained from the XRF analyses as summarised in Table 9-5. Also referenced in Table 9-5 are the Alloway Crustal Abundance (ACU) concentrations of the particular elements. The latter provides an indication of the average abundance of an element in the earth's crust (Alloway *et al*, 1995). By calculating the ratio of the trace element concentrations to the average composition of the earth's crust (Crustal Abundances) an indication can be obtained whether the concentration of a particular element is raised above the average for the earth or enriched above the average due to some process. The comparison to the average Crustal Abundance is geochemically accepted as a means of highlighting elements, which may possibly be enriched in the various lithologies¹⁰. The following is noted:

- iv. Silicon, expressed as silica (SiO_2), is dominant in terms of the major elements both samples, followed by chromium (III) oxide (Cr_2O_3) for the MM Silica tails sample and iron (III) oxide (Fe_2O_3) for sample SCT01. Iron (III) oxide (Fe_2O_3) as well as magnesium oxide (MgO) are also dominant in both samples.
- v. The majority of samples analysed is slightly lower than the published ACU values with slightly elevated concentration for the following elements: iron (III) oxide (Fe_2O_3) as well as magnesium oxide (MgO).

28.2.3 Acid rock drainage

Acid rock drainage (ARD) (or acid mine drainage, AMD) is considered the most significant environmental issue related to mine waste management. As ARD has the potential to impact significantly on surface and groundwater quality, it is necessary to quantify the potential that waste material may have to generate ARD as part of the geochemical characterisation process.

28.2.3.1 Acid Base Accounting

The following is a summary of the potential risk of relevant samples analysed to cause ARD.

- **Sample SCT01:** The proposed tailings backfill material sample analysed record a very low sulphide content of 0.005% (total sulphur 0.011%) with a high positive NNP value of +29.90. The NPR ratio of 135.91 suggest that the material consist of adequate buffering capacity and does not have any potential to generate acid. The NAG pH is 7.30 with the NAG value 0.01 \approx 0 (at pH 4.50) imply that the material is non-acid forming.
- **Sample MM Silica tails:** The MM Silica tailings sample analysed did not record any sulphide content (total sulphur 0.013) while a high positive NNP value of +12.09 is noted. The NPR ratio of 40.0 suggest that the material consist of adequate buffering capacity and does not have any potential to generate acid. The NAG pH is 5.18 with the NAG value 0 (at pH 4.50) imply that the material is non-acid forming.

28.2.4 Static leach test: Toxicity characteristic leaching procedure

A toxicity characteristic leaching procedure (TCLP) leach test was performed on composite samples of sulphide containing waste material to identify water soluble chemicals that could potentially be leached from the waste material.

The leachate sample suggested a slightly acidic pH of 4.01 with elevated elements detected in the water leach include total chromium, manganese (Mn), Nickel (Ni) as well lead (Pb). The remaining trace element concentrations detected were generally below detection limit.

28.2.5 Waste assessment

All waste material collected were submitted for analyses in order to assess the waste type and class.

- **Sample SCT01:** The following elements fall above the prescribed thresholds in terms of the LC values: Mn (>LCT0), Ni (>LCT0) and Pb (>LCT0) while the following elements fall above the prescribed thresholds in terms of the TC values: Cu (>TCT0) and Sb (>TCT0). The sample analysed suggest that $LCT0 < LC \leq LCT1$; and $TC \leq TCT1$ and thus the material can be classed as a Type 3 waste (low hazardous waste) and should be managed accordingly.
- **Sample MM Silica tails:** None of the leachable or total elements fall above the prescribed LCT and TCT thresholds. The sample analysed suggest that $LC \leq LCT0$; and $TC \leq TCT0$, thus the material can be classed as a Type 4 waste (near inert wastes).

Table 36: Leachable Concentration (LC) and Total Concentration (TC) results of sample SCT01 (1:20 dilution)

Elements	TC (mg/kg)	LC (mg/l)	TCT0 (mg/kg)	LCT0 (mg/l)	TCT1 (mg/kg)	LCT1 (mg/l)	TCT1 (mg/kg)	LCT2 (mg/l)	TCT2 (mg/kg)	LCT3 (mg/l)	
Metal ions											
As	<3.20	<0.001	5.80	0.01	500.00	0.50	500.00	1.00	2000.00	4.00	
B	<32.0	0.028	150.00	0.50	15000.00	25.00	15000.00	50.00	60000.00	200.00	
Ba	48.960	0.319	62.50	0.70	6250.00	35.00	6250.00	70.00	25000.00	280.00	
Cd	<3.20	<0.001	7.50	0.003	260.00	0.15	260.00	0.30	1040.00	1.20	
Co	11.230	0.086	50.00	0.50	5000.00	25.00	5000.00	50.00	20000.00	200.00	
Cr(Total)	4043.000	0.084	46000.00	0.10	800000.00	5.00	800000.00	10.00	n.a	40.00	
Cr(VI)	<2.0	<0.05	6.50	0.05	500.00	2.50	500.00	5.00	2000.00	20.00	
Cu	26.800	0.042	16.00	2.00	19500.00	100.00	19500.00	200.00	78000.00	800.00	
Hg	<0.80	<0.001	0.93	0.006	160.00	0.30	160.00	0.60	640.00	2.40	
Mn	256.40	3.34	1000.00	0.50	2500.00	25.00	2500.00	50.00	100000.00	200.00	
Mo	<6.40	<0.025	40.00	0.07	1000.00	3.50	1000.00	7.00	4000.00	28.00	
Ni	73.30	0.282	91.00	0.07	10600.00	3.50	10600.00	7.00	42400.00	28.00	
Pb	6.240	0.016	20.00	0.01	1900.00	0.50	1900.00	1.00	7600.00	4.00	
Sb	24.950	<0.001	10.00	0.02	75.00	1.00	75.00	2.00	300.00	8.00	
Se	6.400	<0.001	10.00	0.01	50.00	0.50	50.00	1.00	200.00	4.00	
V	30.78	<0.025	150.00	0.20	2680.00	10.00	2680.00	20.00	10720.00	80.00	
Zn	<3.20	0.072	240.00	5.00	160000.00	250.00	160000.00	500.00	640000.00	2000.00	
Inorganic ions											
pH		4.01									
TDS		988.00		1000.00		12500.00		25000.00		100000.00	
Chloride		<20.0		300.00		15000.00		30000.00		120000.00	
Sulphate as SO ₄		<20.0		250.00		12500.00		25000.00		100000.00	
NO ₃ as N		10.04		11.00		550.00		1100.00		4400.00	
Fluoride	9.33	<0.50	100.00	1.50	10000.00	75.00	10000.00	150.00	40000.00	600.00	
Cyanide	<1.55	<0.07	14.00	0.07	10500.00	3.50	10500.00	7.00	42000.00	28.00	
LC ≤ LCT0 and TC ≤ TCT0: Type 4 wastes											
LCT0 < LC ≤ LCT1 and TC ≤ TCT1: Type 3 Wastes											
LCT1 < LC ≤ LCT2 and TC ≤ TCT1: Type 2 Wastes											

Table 37: Leachable Concentration (LC) and Total Concentration (TC) results of sample MM Silica Tails (1:20 dilution)

Elements	TC (mg/kg)	LC (mg/l)	TCT0 (mg/kg)	LCT0 (mg/l)	TCT1 (mg/kg)	LCT1 (mg/l)	TCT1 (mg/kg)	LCT2 (mg/l)	TCT2 (mg/kg)	LCT3 (mg/l)	
Metal ions											
As	<0.058	<0.01	5.80	0.01	500.00	0.50	500.00	1.00	2000.00	4.00	
B	<1.50	<0.50	150.00	0.50	15000.00	25.00	15000.00	50.00	60000.00	200.00	
Ba	<0.625	<0.70	62.50	0.70	6250.00	35.00	6250.00	70.00	25000.00	280.00	
Cd	<0.075	<0.003	7.50	0.003	260.00	0.15	260.00	0.30	1040.00	1.20	
Co	<0.50	<0.40	50.00	0.50	5000.00	25.00	5000.00	50.00	20000.00	200.00	
Cr(Total)	<10.0	<0.10	46000.00	0.10	800000.00	5.00	800000.00	10.00	n.a	40.00	
Cr(VI)	<5.0	<0.02	6.50	0.05	500.00	2.50	500.00	5.00	2000.00	20.00	
Cu	<0.160	<1.00	16.00	2.00	19500.00	100.00	19500.00	200.00	78000.00	800.00	
Hg	<0.009	<0.006	0.93	0.006	160.00	0.30	160.00	0.60	640.00	2.40	
Mn	<10.0	<0.50	1000.00	0.50	2500.00	25.00	2500.00	50.00	10000.00	200.00	
Mo	<0.10	<0.07	40.00	0.07	1000.00	3.50	1000.00	7.00	4000.00	28.00	
Ni	<0.50	<0.07	91.00	0.07	10600.00	3.50	10600.00	7.00	42400.00	28.00	
Pb	<0.20	<0.01	20.00	0.01	1900.00	0.50	1900.00	1.00	7600.00	4.00	
Sb	<0.10	<0.02	10.00	0.02	75.00	1.00	75.00	2.00	300.00	8.00	
Se	<0.10	<0.01	10.00	0.01	50.00	0.50	50.00	1.00	200.00	4.00	
V	<1.00	<0.20	150.00	0.20	2680.00	10.00	2680.00	20.00	10720.00	80.00	
Zn	<2.20	<2.00	240.00	5.00	160000.00	250.00	160000.00	500.00	640000.00	2000.00	
Inorganic ions											
pH		8.79									
TDS		<100.0		1000.00		12500.00		25000.00		100000.00	
Chloride		<50.0		300.00		15000.00		30000.00		120000.00	
Sulphate as SO ₄		<50.0		250.00		12500.00		25000.00		100000.00	
NO ₃ as N		<10.0		11.00		550.00		1100.00		4400.00	
Fluoride		<1.00	100.00	1.50	10000.00	75.00	10000.00	150.00	40000.00	600.00	
Cyanide	<0.10	<0.05	14.00	0.07	10500.00	3.50	10500.00	7.00	42000.00	28.00	
LC ≤ LCT0 and TC ≤ TCT0: Type 4 wastes											
LCT0 < LC ≤ LCT1 and TC ≤ TCT1: Type 3 Wastes											
LCT1 < LC ≤ LCT2 and TC ≤ TCT1: Type 2 Wastes											
LCT2 < LC ≤ LCT3 or TCT1 < TC ≤ TCT2: Type 1 Wastes											
LC > LCT3 or TC > TCT2: Type 0 Wastes											

28.3 ENGINEERING OR MINE DESIGN SOLUTIONS TO BE IMPLEMENTED TO AVOID OR REMEDY ACID MINE DRAINAGE

The tailings material analysed was found to be non-acid forming. Therefore, AMD is not anticipated.

28.4 MEASURES THAT WILL BE PUT IN PLACE TO REMEDY ANY RESIDUAL OR CUMULATIVE IMPACT THAT MAY RESULT FROM ACID MINE DRAINAGE

Acid mine drainage is not anticipated, however in the unlikely event that AMD occurs in the future, the responsibility will be with Sefateng Chrome Mine to implement management measures and these will include:

- The construction and operation of a water treatment plant to treat the effected water; and
- Sealing of or resealing of leachate sources.

The groundwater monitoring programme, as described in the EMPr, was recommended by the groundwater specialist and should be implemented.

29 WATER

29.1 VOLUMES AND RATE OF WATER USE REQUIRED FOR THE MINING, TRENCHING OR BULK SAMPLING OPERATION

The backfilling of the opencast voids with tailings material does not require additional water.

29.2 HAS A WATER USE LICENCE HAS BEEN APPLIED FOR?

A Water Use Licence Application was submitted to the Department of Water and Sanitation in November 2021. Refer to Appendix 11 for the DWS acceptance letter for the WULA submitted.

30 IMPACTS TO BE MITIGATED IN THEIR RESPECTIVE PHASES

Table 38: Mitigation Measures to rehabilitate the environment

Aspect	Activity	Impact	Phase	Mitigation measures	Time Period For Implementation
Air Quality	Hauling, transportation and backfilling of tailings	Fugitive dust (containing TSP, as well as PM10 and PM2.5)	Operational	<ul style="list-style-type: none"> • Low or in-pit dumping of tailings during high wind conditions. • Dust suppression to be implemented on haul roads. • All activities onsite will comply with the requirements of the National Environmental Management Air Quality Act (No. 39 of 2004). • Limit the speed of vehicles on unpaved roads to 40 km per hour. • To reduce the amount of dust being blown from the load bin in the haul roads, the material being transported can be watered or the back of the vehicles can be covered with tarpaulin covers. 	At commencement of backfilling with tailings and throughout duration of the activity.
Air Quality	Rehabilitation (spreading of soil, revegetation & profiling/contouring)	Profiling of backfilled opencast pits and waste rock dump to enhance vegetation cover and reduce wind erosion from such surfaces post mining.	Closure and decommissioning	<ul style="list-style-type: none"> • Revegetation of exposed areas for long-term dust and water erosion control should be implemented. • Plants with roots that bind the soil, and vegetation cover should be used that breaks the impact of falling raindrops, thus preventing wind and water erosion. • Plants used for revegetation should be indigenous to the area, hardy, fast-growing, be adapted to growing on exposed and disturbed soil (pioneer plants) and should easily be propagated by seed or cuttings. • Spreading of soil must be performed on less windy days. • Dust emitted during bulldozing activity can be reduced by increasing soil dampness by watering the material being removed thus increasing the moisture content. • Leaving the surface of the soil in a coarse condition reduces wind erosion and ultimately reduces the dust levels. • Dust suppression of roads being used during rehabilitation should be enforced. • All disturbed areas should be rehabilitated as soon as possible during the life of mine in accordance with design specifications. This includes shaping, topsoiling and revegetation. 	During decommissioning phase or as soon as rehabilitation commences.

Aspect	Activity	Impact	Phase	Mitigation measures	Time Period For Implementation
				<ul style="list-style-type: none"> Rehabilitation as per the Closure and Rehabilitation Plan must be implemented. 	
Surface Water	Backfilling of opencast pit with tailings	Impacts on surface quality due to poor quality seepage from the pollution source areas	Operational	<ul style="list-style-type: none"> Storm water runoff generated at the opencast pit should be directed to and contained within the appropriately lined Pollution Control Dams. Appropriate management measures should be implemented to drain any seepage to the PCDs. Dirty water should be re-used wherever practical. A comprehensive surface and groundwater monitoring programme must be implemented. 	At commencement of backfilling with tailings and throughout duration of the activity.
Groundwater	Backfilling of opencast pit with tailings	Impacts on groundwater quality due to poor quality seepage from the mining area	Operational	<ul style="list-style-type: none"> Development and implementation of an integrated groundwater monitoring program evaluating water quality will serve as early warning mechanism to implement mitigation measures such as seepage capturing boreholes down-gradient of the waste facilities in order to constrain the contamination plume migration as well as manage the groundwater cone of depression. Based on the water quality results, the monitoring network should be refined and updated every three to five years based on hydrochemical results obtained to ensure optimisation and adequacy of the proposed localities. The existing groundwater flow model should be recalibrated with time-series monitoring data on an annual basis in order to be applied as water management tool. Scenario predictions and model simulations should be conducted and interpreted by an external and independent specialist. Develop a stormwater management plan in accordance with GN704 in order to separate dirty/contact water from clean water circuits. All water retention structures, process water dams; storm water dams, retention ponds etc. should be constructed to have adequate freeboard to be able to contain water from 1:50 year rain events. 	At commencement of backfilling with tailings and throughout duration of the activity.

Aspect	Activity	Impact	Phase	Mitigation measures	Time Period For Implementation
Groundwater	Backfilling of opencast pit with tailings	Impacts on groundwater quality due to poor quality seepage from the mining area	Decommissioning	<ul style="list-style-type: none"> Monitoring of surface water and groundwater in accordance with the implemented protocol should be continued throughout the post operational phase. Ensure that rehabilitation of backfilled opencast and mine waste facility footprints areas is properly conducted and in accordance with best practice guidelines as well as approved mine closure and rehabilitation plans. Rehabilitation should allow for free draining of runoff in order to prevent any surface water ponding. The Progressive Rehabilitation Plan should indicate when areas should reach their final level and how they will be progressively restored, by means of final cover or capping, top soiling and vegetating. The type of vegetation envisaged should also be described. Rehabilitation, where possible, should run concurrently with the mining programme as planned. Implement as many closure measures during the operational phase, while conducting appropriate monitoring programmes to demonstrate actual performance of the various management actions during the life of mine. 	During decommissioning phase or as soon as rehabilitation commences.
Surface Water	Backfilling of opencast pit with tailings	Impacts on surface quality due to poor quality seepage from the pollution source areas	Decommissioning	<ul style="list-style-type: none"> Although it has been determined that AMD is unlikely to form, should any acidic leachate and decant form it must be contained in bunded areas and directed to an appropriately lined PCD. Appropriate rehabilitation should be implemented in accordance with the Rehabilitation Plan. 	
Soil and land capability	Backfilling of opencast pit with tailings	Reduction in land capability due to inappropriate rehabilitation of the opencast areas.	Decommissioning	<ul style="list-style-type: none"> Backfilling with tailings material will only be undertaken in existing opencast pits. No additional soil disturbance should take place. All disturbed areas should be rehabilitated as soon as possible during the life of mine in accordance with design specifications to reduce soil erosion. This includes shaping, topsoiling and revegetation. The formation of erosion channels must be monitored and must be repaired required. Replace topsoil to achieve required pre-mining land capability. 	During decommissioning phase or as soon as feasible.

Aspect	Activity	Impact	Phase	Mitigation measures	Time Period For Implementation
				<ul style="list-style-type: none"> The encroachment of alien and invasive species should be prevented and existing populations of invasive species should be eradicated. Rehabilitation as per the Closure and Rehabilitation Plan must be implemented. To limit erosion, it should be ensured that the soils maintain their pre-development characteristics as far as is practicable to ensure infiltration and vegetation rooting. The vegetation health should be returned to the baseline health where practically feasible. ECO to conduct monitoring of rehabilitated areas to assess performance of the rehabilitation approach employed. Rehabilitated areas should be monitored annually to identify occurrence of surface erosion, vegetation die back, and the emergence of alien/exotic vegetation. In the event that non-performance is identified, the ECO will implement a plan for corrective action, and will seek the advice of rehabilitation ecologists as required. 	
Powerlines	Backfilling of opencast pit with tailings	Damage or interference with powerlines	Operational	<ul style="list-style-type: none"> There is a 9 m and 11 m building and tree restriction on either side of the centre line of the 22 kV and 33 kV power lines respectively, which must be adhered to. Eskom Distribution's services and equipment may not be tampered or interfered with. All work within Eskom Distribution reserve area must be done in accordance with the requirements of the Occupational Health and Safety Act No.85 of 1993 as amended. No construction work may be executed closer than 9 metres from any of Eskom's structures from the middle of the power line. No tree shall be planted within the restriction area or be allowed to grow to a height in excess of the horizontal distance of that tree from the nearest conductor of any power line or to grow in such a manner as to endanger that line should it fall or be cut down. 	

31 FINANCIAL PROVISION

31.1 DETERMINATION OF THE AMOUNT OF FINANCIAL PROVISION

31.1.1 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 herein

The preliminary objectives have been developed against the background of the mine location in the Sekhukhune region of Limpopo, particularly that the region is disturbed by mining activities and land available for non mining has become more limited. The objectives (see below) are therefore designed largely to manage residual risks and provide land that can be utilised after rehabilitation.

For the mining operations, the following closure objectives and goals are proposed:

- Adhere to all statutory and other legal requirements.
- To develop landforms supporting stable and functioning ecosystems that are aesthetically acceptable on closure and will gradually sustain the desired land-uses post closure.
- Ensure safety and health of all stakeholders during closure and post closure and that communities using the site after closure are not exposed to unacceptable risks.
- Ensure that closure supports productive uses considering pre-mining conditions and are in agreement with commitments to stakeholders.
- Promote biodiversity and biological sustainability to the maximum extent practicable.
- Utilise closure strategies that promote a self-sustaining condition with little or no need for ongoing care and maintenance.
- To achieve agreed quality targets set by the Catchment Management Authority (CMA) and the Department of Water and Sanitation (DWS) as far as practical relative to impacts and reasonability to achieve.
- The physical and chemical stability of the remaining structures should be such that risk to the environment through naturally occurring forces is eliminated.
- To rehabilitate all disturbed land to a state that facilitates compliance with current environmental quality objectives (air and water quality).

Refer to Appendix 10 for the Closure and Rehabilitation Plan.

31.1.2 Confirm specifically that the environmental objectives in relation to closure have been consulted with landowner and interested and affected parties

The environmental objective in relation to closure have been made available to all registered I&APs for comment. All comments received have been included in the final EIA and EMPr Report.

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

The compilation of the Rehabilitation and Closure Plan, as per the requirements of Government Notice R1147, has been undertaken by Elemental Sustainability (Pty) Ltd and included as Appendix 10 of the EIA and EMPr Report.

31.1.4 Explain why it can be confirmed that the rehabilitation plan is compatible with the closure objectives

The rehabilitation plan has been compiled in accordance with the objectives and goals and is deemed to be satisfactory according to the Mine and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) as amended and GNR 1147 of the National Environmental Management Act, 1988 (Act No. 107 of 1998).

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

Refer to Section 21 for the calculated rehabilitation quantum.

31.1.6 Confirm that the financial provision will be provided as determined

The applicant will provide the financial provision upon the DMRE's request.

32 MECHANISMS FOR MONITORING COMPLIANCE WITH AND PERFORMANCE ASSESSMENT AGAINST THE ENVIRONMENTAL MANAGEMENT PROGRAMME AND REPORTING THEREON

Table 39: Mechanisms for monitoring

Aspects Affected	Impacts requiring monitoring	Time Period for Implementation	Functional Requirements for Monitoring	Responsible Persons	Monitoring and Reporting Frequency
Land Capability	Loss of post mining land use capability	Throughout LoM	The encroachment of alien and invasive species should be prevented and existing populations of invasive species should be eradicated.	SHEQ	Annually
		Throughout LoM	Annual vegetation and fauna (terrestrial ecology) monitoring. (The existing terrestrial ecology monitoring programme for the operations should continue to be implemented as is considered suitable for monitoring of the proposed project activities)	SHEQ	Annually once rehabilitation commences
Surface water	Deterioration in surface water quality	Throughout LoM	Surface water monitoring at waste water containment facilities, i.e. PCD. (Due to the ephemeral nature of drainage lines in the vicinity of the mining operation, no surface water samples can reliably be collected in these drainage lines)	SHEQ	Quarterly
Groundwater	Deterioration of groundwater quality	Throughout LoM and 5 years post-closure	Monitor at recommended boreholes for water quality	SHEQ	Quarterly
			The numerical groundwater model should be updated annually during operation of the mine.	SHEQ	Annually
Air Quality	Emissions from site activities	Throughout LoM	Conduct air quality monitoring (dust fallout)	SHEQ	Monthly

32.1 DETAILED MONITORING PROGRAMMES AS DESCRIBED FOR NEW ACTIVITIES

The monitoring in this section is specific to the potential impacts associated with the proposed backfilling of the opencast pits with tailings material and is supplementary to the monitoring currently being implemented by the operation, as described in the existing and approved EMPr for the overall mining operation.

32.1.1 Surface Water Monitoring Program

Due to the ephemeral nature of drainage lines in the vicinity of the mining operation, no surface water samples can reliably be collected in these drainage lines.

As no flowing water has been available for sampling on site since issuance of the Mine's first Water Use License in 2015, it is suggested that, if and when a storm event occurs, a grab sample be taken for analyses. Due to the lack of surface water on site, a monthly/quarterly/annual monitoring plan is not feasible. In the event that a grab sample is possible, it should be analysed for the following parameters:

- pH
- Electrical Conductivity as EC
- Suspended solids as SS
- Total Dissolved Solids as TDS
- Sulphate as SO₄
- Nitrate as NO₃
- Sodium as Na
- Chloride as Cl
- Chromium (III) as Cr³⁺
- Hexavalent chromium as Cr⁶⁺
- Calcium as Ca
- Potassium as K
- Magnesium as Mg
- Total hardness as CaCO₃
- Total alkalinity
- Fluoride as F
- Aluminium as Al
- Iron as Fe
- Manganese as Mn

In addition, monitoring of the water quality in the pollution control dam/s must continue to be conducted on a quarterly (October, January, April, July) basis and include the variables as specified above. The water quality is representative of:

- Seepage/run off from the mining areas.
- Seepage from waste rock dumps and backfilled areas.
- Seepage and run-off from tailings storage facilities.

Once the mine moves towards decommissioning and closure, the monitoring programme will have to be updated and upgraded to cover the monitoring needs related to the specific closure objectives.

32.1.2 Groundwater Monitoring Programme

It should be noted that the Sefateng Chrome Zwartkoppies operation does have an existing monitoring protocol and network in place. The table below summarises the proposed updated and revised monitoring network and program along with relevant information.

Groundwater monitoring boreholes should be analysed for the following chemical constituents:

- i. **Physical and aesthetic determinants:** pH, Electrical Conductivity (EC), Total Dissolved Solids (TDS) and Total Hardness.
- ii. **Macro determinants:** Total Alkalinity (MAIk), Sulphate (SO₄), Nitrate (NO₃), Chloride (Cl), Fluoride (F), Calcium (Ca), Magnesium (Mg), Potassium (K) and Sodium (Na).
- iii. **Micro determinants:** Aluminium (Al), Iron (Fe), Manganese (Mn), Cadmium (Cd), Total Chromium (Cr), Chromium (VI), Arsenic (As), Copper (Cu), Nickel (Ni), Lead (Pb), Cobalt (Co) and Zinc (Zn).

Groundwater monitoring i.e. quality analysis should be conducted on a quarterly basis.

Table 40: Groundwater monitoring network

Monitoring borehole	Latitude	Longitude	Locality description
Zwartkoppies existing monitoring boreholes			
BH16/233	-24.313930	29.965190	Existing monitoring borehole locality
BH11A/305	-24.305720	29.978470	Existing monitoring borehole locality
MON BH-03	-24.308000	29.979760	Existing monitoring borehole locality
BH13/702	-24.311190	29.983020	Existing monitoring borehole locality
BH6/840	-24.302310	29.994550	Existing monitoring borehole locality
MON BH-06	-24.311600	29.994680	Existing monitoring borehole locality
BH10/138	-24.302660	29.989390	Existing monitoring borehole locality
BH16/365	-24.315149	29.965158	Existing monitoring borehole locality
MON BH-05	-24.304200	29.993610	Existing monitoring borehole locality
Additional monitoring boreholes			
MON-BH07	-24.305300	29.964740	Newly proposed monitoring borehole down-gradient of backfilled opencasts
MON-BH08	-24.316400	29.985920	Newly proposed monitoring borehole down-gradient of backfilled opencasts
MON-BH09	-24.318900	29.991830	Newly proposed monitoring borehole down-gradient of backfilled opencasts
BH04-BH10	-24.325100	29.996350	Newly proposed monitoring borehole down-gradient of backfilled opencasts
BH05-BH11	-24.309000	29.970220	Newly proposed monitoring borehole down-gradient of backfilled opencasts

32.1.3 Air Quality Monitoring Program

On the 7th of December 2012 the minister of Water and Environmental affairs published the new National Dust Control Regulations. This document now enforces the monitoring of dust fallout from activities that is suspected of contributing significantly to dust fallout in its region. The regulation provides a set standard for dust fallout to comply to, enforces that a baseline should be established to projects that would give rise to increased dust fallout, specifications for dust fallout monitoring and the format of reports if the activity should exceed the thresholds.

Site layout for sampling points must be carried out according to the eight main compass directions; the site layout and equipment placement must be done in accordance with the ASTM standard, D 1739 – 2010, thereafter relevant sampling reference numbers will be allocated to the receptors accordingly. At each gravimetric dust fallout gauge/receptor point there is a stand built according to specification containing the dust sample collection bucket. Samples will be collected after a 1 month running period (+30 day's exposure). After sample collection, the samples are taken to a SANAS accredited laboratory as required. A visual site investigation is done where after correlations are drawn and findings are identified and reported on.

Dust buckets of a standard size and shape are prepared and set up at locations related to the eight main compass points on the borders of the property so that dust can settle in them for periods of 30+/-2 days. The dust buckets are then sealed and replaced with new empty ones and send away to the SANAS accredited laboratory for analysis. The masses of the water-soluble and -insoluble components of the material collected are then determined and results are reported as

mg/m²/day. This methodology is described according to South African National Standards 1929:2004 and the American Society for Testing and Materials (ASTM) Designation: D 1739-98 (2010). The results for this method of testing are obtained by gravimetric weighing.

32.2 ENVIRONMENTAL MONITORING AND AUDITING

Department of Environmental Affairs (DEAT, 2004) defines environmental auditing as “a process whereby an organisation’s environmental performance is tested against its environmental policies and objectives.” Monitoring and auditing is an essential environmental management tool which is used to assess, evaluate and manage environmental and sustainability issues:

In order to ensure that the objectives of sustainable development and integrated environmental management are met and in order to obtain data which can inform continuous improvement of environmental practices at the site (adaptive management), monitoring and reporting will be an essential component of the operations.

Monitoring and management actions associated with the project are contained in the section above.

An annual external audit should be conducted in terms of Regulations 34 and 54A of the EIA Regulations of 2014 [as amended]. In terms of Appendix 7 of the Environmental Impact Assessment Regulations, 2014 as promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) [as amended] the objectives of an audit report should include:

- a) *report on—*
 - i. *the level of compliance with the conditions of the environmental authorisation and the EMPr; and*
 - ii. *the extent to which the avoidance, management and mitigation measures provided for in the EMPr, achieve the objectives and outcomes of the EMPr;*
- b) *identify and assess any new impacts and risks as a result of undertaking the activity;*
- c) *evaluate the effectiveness of the EMPr;*
- d) *identify shortcomings in the EMPr; and*
- e) *identify the need for any changes to the avoidance, management and mitigation measures provided for in the EMPr.*

32.3 GENERAL MONITORING AND MANAGEMENT

The appointment of a suitably qualified Environmental Control Officer (ECO) is essential to the successful implementation of this project, although this role can be fulfilled by the SHE Representative. The ECO will be responsible for the implementation of the EMPr, applicable environmental legislation and any stipulations/conditions set by the relevant competent authorities (including but not limited to the DMRE and DWS). The Environmental officer will conduct formal monthly site inspections, the findings of which must be documented in a monthly report.

32.3.1 Indicate the Frequency of the Submission of the Performance Assessment Report

As per NEMA EIA Regulations, a performance assessment/audit will be conducted by an external consultant throughout the life of mine at intervals stipulated in the EA. It is recommended to complete these audits annually. This is conducted to assess the adequacy and compliance to the EMP and the relevant legislation. As per NEMA, any amendments to the EMPr that may be required due to the performance assessment findings will be completed if necessary.

The Financial Provision must be reviewed on an annual basis, and submitted to the DMRE.

In addition to the NEMA requirements, the IWUL will be audited as per conditions.

33 ENVIRONMENTAL AWARENESS PLAN

33.1 MANNER IN WHICH THE APPLICANT INTENDS TO INFORM EMPLOYEES OF ANY ENVIRONMENTAL RISK WHICH MAY RESULT FROM THEIR WORK

Environmental awareness training is critical for two primary reasons:

- a) The workforce must understand how they can play a role in achieving the objectives specified in the EMPr; and
- b) The workforce must understand their obligations in terms of the implementation of the EMPr and adherence to environmental-legislative requirements.

Sefateng Chrome Mine will develop procedures for environmental awareness. This procedure will define the process for identifying and planning environmental training and awareness. It will pertain to all employees and contractors whose work may create a significant impact upon the environment. Personnel performing the tasks, which can cause significant environmental impacts shall be competent on the basis of appropriate education, training and/or experience.

Training records are maintained to identify the level of instruction needed by personnel whose jobs may create a significant impact on the environment.

Environmental awareness will be part of the induction programme that is compulsory to all new, part-time and transferred employees, as well as onsite contractors.

Three basic categories of training are required. The first is induction training, the second is environmental awareness training and the third is technical training. All people entering the site are required to complete the induction training.

33.1.1 Objectives

The objectives of the Environmental Awareness Plan are as follows:

- Competence, training and awareness:
 - The organisation shall ensure that any person(s) performing tasks for it or on its behalf that have the potential to cause a significant environmental impact(s) identified by the organisation is (are) competent on the basis of appropriate education, training or experience, and shall retain associated records.
 - The organisation shall identify training needs associated with its environmental aspects and its environmental management system. It shall provide training or take other action to meet these needs, and shall retain associated records.
 - The organisation shall establish, implement and maintain a procedure(s) to make persons working for it or on its behalf aware of:
 - The importance of conformity with the environmental policy and procedures and with the requirements of the environmental management system;
 - The significant environmental aspects and related actual or potential impacts associated with their work, and the environmental benefits of improved personal performance;
 - Their roles and responsibilities in achieving conformity with the requirements of the environmental management system, and
 - The potential consequences of departure from specified procedures.

Sefateng Chrome Mine is committed to identifying training needs and ensuring that all personnel whose work may create a significant impact upon the environment receive appropriate training.

33.1.2 Identification of training needs

An employee's job description will be used to identify the activities that the individual undertakes. Impacts and environmental aspects as described in the EMPr are specific to each activity, and will be used in the identification of the environmental risks associated with each job description.

The following training will be required: -

- General Environmental Awareness Training;
- Awareness of environmental legislation that the mine subscribes to;
- Awareness of significant environmental aspects associated with their work activities;
- Awareness of environmentally related operational procedures that need to be followed when conducting work activities;
- Awareness of the potential consequences of not following environmentally related operational procedures.

33.1.3 Training methods

Training methods should be developed to suit the requirements of Sefateng Chrome Mine. Training could take the form of:

- Environmental awareness training as part of the induction training.
- A job specific training program for the operational areas based on the significant environmental aspects and associated impacts as specified in the EMPr. Training topics could include: -
 - No development zones;
 - Protected trees;
 - Waste prevention and control;
 - Waste sorting and handling;
 - Resource consumption;
 - Storing and handling of petroleum hydrocarbons;
 - Storing and handling of chemicals;
 - Rehabilitation/Housekeeping; and
 - Spills prevention/clean up.
- Training on environmental legislation; and

The following training programs should be considered:

- *Induction Training* – Sefateng Chrome Mine will ensure that an Induction Training Programme is introduced when recruitment starts. Every employee will be offered Induction Training on his/her commencement of employment. This training will be used to acquaint the new employee with the Company, its rules and regulations and the new job. No employee will commence his/her normal duties/employment without being offered Induction Training. This training will be conducted by both the Training and Development department and the relevant Heads of Department.
- *On-The-Job Training* - All employees will be offered On-the-job Training. The mentorship plan and internship plan as will be used for the purpose of guiding new and current employees and facilitating their On-the-job training. On-the-job training will be used to facilitate the acquiring of knowledge and skills by new employees. Employees on Supervisory level and their managers will be used to facilitate On-the-job training, such training will be evaluated, documented and recorded for reference purposes.
- *Internal Training* - Training programs will be developed to address internal training needs. The experienced personnel will be used to facilitate this process. Such personnel will be appointed specifically for Training of employees on Life Skills. ABET and venous training e.g., Mobile equipment drivers' training Health and Safety Training, First Aid Training etc. Although such training is referred to as Internal Training, external accredited training providers will be acquired to facilitate the training.

- *External Training* – Nuco Chrome will engage external training providers in order to provide employees with training relevant to their jobs and any other training necessary in terms of the Skills Development Strategy of and that of the Mining Qualifications Authority. Such external Training will include amongst others Problem Solving Skills, Leadership Skills, Life Skills and Management Development Skills. The external training will also be aligned with the National Skills Strategy of the Department of Labour.

33.1.4 Training Record

Training records must be kept of the training undertaken by each individual.

33.2 MANNER IN WHICH RISKS WILL BE DEALT WITH IN ORDER TO AVOID POLLUTION OR THE DEGRADATION OF THE ENVIRONMENT

Refer to Table 59 for the recommended mitigation measures to limit environmental impacts.

33.2.1 Objectives

The following requirements are relevant:

- The organisation shall establish, implement and maintain a procedure(s) to identify potential emergency situations and potential accidents that can have an impact(s) on the environment and how it will respond to them.
- The organisation shall respond to actual emergency situations and accidents and prevent or mitigate associated adverse environmental impacts.
- The organisation shall periodically review and, where necessary, revise its emergency preparedness and response procedures, in particular, after the occurrence of accidents or emergency situations.
- The organisation shall also periodically test such procedures where practicable.

33.2.2 Identification of Environmental Risks

Environmental risks must be identified and procedures must be set in place by Sefateng Chrome Mine to deal with potential environmental risks, which could include:

- Environmental emergency situations;
- Potential accidents that can have an impact on the environment; and
- General environmental ignorance that could lead to unnecessary pollution or disturbance to the environment.

Potential environmental risks identified on the Sefateng Chrome Mine include:

- Petrochemical/chemical spillages;
- Hazardous material spillages;
- Uncontrolled emissions to the atmosphere;
- Fires;
- Tailings residue stockpiles (wet or dry) failures;
- Untreated effluent spillages;
- Explosions and natural disasters;
- Disturbance of sensitive ecological environments;
- Disturbance to heritage and cultural resources;
- Uncontrolled erosion; and
- Dissatisfaction of local communities / outrage of communities.

33.2.3 Incident response steps

- 1) Incidents are to be reported to a supervisor and ECO immediately.
- 2) The responsible person or, where the incident occurred in the course of that person's employment, his or her employer, must, as soon as reasonably practicable after knowledge of the incident –
 - a) take all reasonable measures to contain and minimise the effects of the incident, including its effects on the environment and any risks posed by the incident to the health, safety and property of persons. Risk classification is determined for the incident.
 - b) undertake clean-up procedures;
 - c) remedy the effects of the incident;
 - d) assess the immediate and long-term effects of the incident on the environment and public health.
- 3) Incident Register is completed, including actions taken to remediate impacts.
- 4) Incidents with a risk of medium and above must be reported to the responsible authority within 24 hours and action plan compiled with 14 days.

33.2.3.1 Incident Reporting

The responsible person or, where the incident occurred in the course of that person's employment, his or her employer must forthwith after knowledge of the incident, report through the most effective means reasonably available –

- a. the nature of the incident;
- b. the substances involved and an estimation of the quantity released and their possible acute effect on persons and the environment and data needed to assess these effects;
- c. any risks posed by the incident to public health, safety and property;
- d. the toxicity of substances or by-products released by the incident; and
- e. any steps that should be taken in order to avoid or minimise the effects of the incident on public health and the environment
- f. causes of the incident, whether direct or indirect, including equipment, technology, system, or management failure; and
- g. measures taken and to be taken to avoid a recurrence of such incident.

Should the incident pose a threat to public health, safety and property or have a risk rating of medium or higher the incident report must be submitted to -

- a. the Director-General;
- b. the South African Police Services and the relevant fire prevention service;
- c. the relevant provincial head of department or municipality; and
- d. all persons whose health may be affected by the incident.

33.2.3.2 Risk Classification

1. Risk Calculation

Exposure X Probability X Result (Consequence) = Risk Rating

2. Risk Reduction

Exposure X Probability X Result (Consequence after mitigation steps are implemented) = Risk Rating after Mitigation

3. Risk Level

400 <	=	Very High risk, discontinuation considered immediate correction required
200 to 400	=	High risk, immediate correction required
70 to 200	=	Medium / Substantial risk, mitigation required
20 to 70 =		Low / Possible risk, mitigate when required
>20	=	Tolerable risk, report to Supervisor when complete

Probability Of Event Occurring	Risk	Exposure To Event	Risk
Almost Certain	10	Yearly	0.5
Has happened	6	Quarterly	1
Possible	3	Monthly	2
Heard of	1	Weekly	3
Unlikely	0.5	Daily	6
		Continuous	10
Result (Consequence)			Risk Rating
Catastrophic Environmental Impact Irreversible / regional degradation of the biophysical environment, biodiversity compromised on regional scale, formal complaints with clear expectations of corrective actions, impact on immediate and remote neighbours			100
Major Environmental Impact. Irreversible and localised degradation of the biophysical environment, biodiversity compromised on local scale, formal complaints with clear expectations of corrective actions, impact on immediate neighbours (level 3)			40
Very Serious Environmental Impact Irreversible and localised degradation of the biophysical environment, biodiversity compromised on local scale, formal complaints with clear expectations of corrective actions, impact on immediate neighbours (level 2)			15
Serious Environmental Impact Reversible and localised degradation of the biophysical environment, biodiversity not compromised, low-level complaints, no perceived expectations of corrective action(level 1)			7
Self-reversible impact within life of business. No reasonable cause for external complaints			3
Minor environmental incident. Very low impact on biophysical environment, No reasonable cause for external complaints			1

33.2.3.3 Follow-up

Within 24 hours of an incident occurring, regardless of size or impact, the supervisor will conduct a follow-up investigation. The investigation will attempt to determine the cause of the incident and any procedural modifications needed to prevent the spill from recurring. Information gathered during the follow-up investigation will be used in preparing the written report described above.

34 SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

The Financial Provision will be updated yearly as part of the annual liability assessment required by the MPRDA and the NEMA, once operations commence.

35 UNDERTAKINGS

The EAP,Red Kite Environmental Solutions (Pty) Ltd....., herewith confirms

- a) The correctness of the information provided in the reports;
- b) The inclusion of comments and inputs from stakeholders and I&APs;
- c) The inclusion of inputs and recommendations from the specialist reports where relevant; and
- d) The acceptability of the project in relation to the finding of the assessment and level of mitigation proposed;

Signed at Pretoria on this 22nd day of June 2022



Signature of EAP

Designation: Environmental Assessment Practitioner (Director of Red Kite Environmental Solutions)

COMMITMENT/UNDERTAKING BY THE APPLICANT

I,, the undersigned and duly authorised thereto by Sefateng Chrome mine, undertake to adhere to the requirements and to the conditions as set out in the EMPR submitted to the Director: Mineral Development and approved on

Signed at.....on this..... day

Signature of applicant

Designation

- END -

36 APPENDICES

APPENDIX 1: QUALIFICATIONS OF EAP

APPENDIX 2: EAP'S EXPERIENCE

APPENDIX 3: LOCALITY MAP

APPENDIX 4: SITE LAYOUT

APPENDIX 5: PUBLIC PARTICIPATION REPORT

APPENDIX 6: GROUNDWATER STUDY

APPENDIX 7: SURFACE WATER REPORT

APPENDIX 8: AIR QUALITY ASSESSMENT

APPENDIX 9: SOIL AND LAND CAPABILITY ASSESSMENT

APPENDIX 10: CLOSURE PLAN

APPENDIX 11: WULA ACCEPTANCE