IMERYS REFRACTORY MINERALS SOUTH AFRICA (PTY) LTD – KLIPPLAATDRIFT PROSPECTING

Annual Rehabilitation Plan and Annual Financial Provision

Based on Appendix 3 (Minimum Content of An Annual Rehabilitation Plan) of the Regulations Pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production Operations, 2015 9(GN 1147) (as amended) i.t.o. the National Environmental Management Act No 107 of 1998 (as amended).

DMR ref: 30/5/1/1/3/2/1/3120 PR

Location: Portions 10, 11, 12, 13, 14, 15 of the farm Klipplaatdrift 399KT and portion 3 of the farm Vlakfontein 520KT, Mashishing Local Municipality, Limpopo

July 2018

BECS Environmental (Pty) Ltd
In association with BECS Services (Pty) Ltd

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MINIMUM CONTENT OF AN ANNUAL REHABILITATION PLAN

The annual rehabilitation plan will form a component of the environmental management programme to be submitted in terms of section 24N of the Act and the Environmental Impact Assessment Regulations, 2014 and will be subject to the same requirements of the environmental management programme with regards opportunities for stakeholder review and comment as well as auditing.

Objective of the annual rehabilitation plan

The objective of the annual rehabilitation plan is to:

a. review concurrent rehabilitation and remediation activities already implemented;
b. establish rehabilitation and remediation goals and outcomes for the forthcoming 12 months, which contribute to the gradual achievement of the post-mining land use, closure vision and objectives identified in the holder's final rehabilitation, decommissioning and mine closure plan;
c. establish a plan, schedule and budget for rehabilitation for the forthcoming 12 months;
d. identify and address shortcomings experienced in the preceding 12 months of rehabilitation; and
e. Evaluate and update the cost of rehabilitation for the 12-month period and for closure, for purposes of supplementing the financial provision guarantee or another financial provision instrument.

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ABBREVIATIONS

DWS	Department of Water and Sanitation
EAP	Environmental assessment practitioner
EMP	Environmental Management Programme
GN 1147	Regulations Pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production, GN 1147 of 2015 i.t.o. the National Environmental Management Act No 107 of 1998 (as amended)
MAR	Mean annual runoff
MHSA	Mine Health and Safety Act, 1996 (Act No. 29 of 1996)
MPRDA	Minerals and Petroleum Resources Development Act (Act 28 of 2002 as amended)
MPRDR	Minerals and Petroleum Resources Development Regulations, GN 527 of 2004 (as amended) i.t.o. the Minerals and Petroleum Resources Development Act No 28 of 2002
MWP	Mine works programme

NEMA	National Environmental Management Act No 107 of 1998 (as amended)

DISCLAIMER

The views expressed in this annual rehabilitation report are based on the information supplied to BECS Environmental by Imerys Refractory Minerals. BECS has ensured all due care in reviewing the supplied information. BECS has compared key supplied data with predictable values, the accuracy of the results and conclusions from the review are entirely reliant on the accuracy and completeness of the supplied data. BECS does not accept responsibility for any errors or omissions in the supplied information and does not accept any consequential liability arising from commercial decisions or actions resulting from them. Opinions presented in this report apply to the site conditions and features as they existed at the time of BECS investigations, and those reasonably probable. These opinions do not necessarily apply to conditions and features that may arise after the date of this report, about which BECS had no prior knowledge nor had the opportunity to evaluate.

EXECUTIVE SUMMARY

Imerys Refractory Minerals South Africa (Pty) Ltd has a prospecting right for prospecting andalusite on Portions 10, 11, 12, 13, 14, 15 of the farm Klipplaatdrift 399KT and portion 3 of the farm Vlakfontein 520KT, Mashishing Local Municipality, Limpopo.

Prospecting only included drilling of holes. No access roads were constructed. No drilling holes could be located on site during the performance assessment. No roads except farm roads were constructed.

Information regarding the background to the mine was taken from various documents including the approved Environmental Management Programme (EMP). A site visit was held on 28 February 2018 to gather any additional information.

Requirements of the annual rehabilitation plan

The annual rehabilitation plan will be relevant for a period of 1 year, after which the plan will be updated by the holder of the right to reflect progress relating to rehabilitation and remediation activities in the preceding 12 months and to establish a plan, schedule and budget for the forthcoming 12 months. The annual rehabilitation plan must contain information that defines concurrent rehabilitation and remediation activities for the forthcoming 12 months and how these relate to the operations' closure vision, as detailed in the final rehabilitation, decommissioning and mine closure plan, must indicate what closure objectives and criteria are being achieved through the implementation of the plan, must be measurable and auditable and must include the following contents as seen in Table 1.

Table 1: Contents of an annual rehabilitation plan in terms of Appendix 4 of the Regulations Pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production, (GN 1147) of 2015 i.t.o. the National Environmental Management Act No 107 of 1998 (as amended) (NEMA)

Appendix nr	Description	Section in this report
3(a)(i)	details of the person or persons that prepared the plan	1.2
3(a)(ii)	details of the professional registrations and experience of the person or persons;	1.2
3(a)(iii)	details of the timeframes of implementation of the current, and review of the previous rehabilitation activities;	4.6
3(b)	the pertinent environmental and project context relating directly to the planned annual rehabilitation and remediation activity;	3
3(c)	results of monitoring of risks identified in the final rehabilitation, decommissioning and mine closure plan with a view to informing rehabilitation and remediation activities;	4.2
3(d)	an identification of shortcomings experienced in the preceding 12 months;	4.3
3(e)	details of the planned annual rehabilitation and remediation activities or measures for the forthcoming 12 months, including those which will address the shortcomings contemplated in (d) above or which were identified from monitoring in the preceding 12 months, and including	4.4
3(e)(i)	if no areas are available for annual rehabilitation and remediation concurrent with mining, an indication to that effect and motivation why no annual rehabilitation or remediation can be undertaken;	4.4.1
3(e)(ii)	where areas are available for annual rehabilitation and remediation concurrent with mining, annual rehabilitation and remediation activities related to previous disturbance or expected planned impacts and disturbance, as per the mine works programme (MWP), in the period under consideration, which should be tabulated and must indicate, but not necessarily be limited to	4.4.2
3(e)(ii)(aa)	nature or type of activity and associated infrastructure;	4.4.2.1
3(e)(ii)(bb)	planned remaining life of the activity under consideration;	4.4.2.1
3(e)(ii)(cc)	area already disturbed or planned to be disturbed in the period of review;	4.4.2.1
3(e)(ii)(dd)	percentage of the already disturbed or planned to be disturbed area available for concurrent rehabilitation and remediation activities;	4.4.2.1
3(e)(ii)(ee)	percentage of the already disturbed or planned to be disturbed area available as per (dd) and on which concurrent rehabilitation and remediation can be undertaken;	4.4.2.1
3(e)(ii)(ff)	notes to indicate why total available or planned to be available area differs from area already disturbed or planned to be disturbed;	4.4.2.1
3(e)(ii)(gg)	notes to indicate why concurrent rehabilitation will not be undertaken on the full available or planned to be available area;	4.4.2.1
3(e)(ii)(hh)	details of rehabilitation activity planned on this area for the period of review;	4.4.2.1
3(e)(ii)(ii)	the pertinent closure objectives and performance targets that will be addressed in the forthcoming year, which objectives and targets are aligned to the final rehabilitation, decommissioning and mine closure plan;	4.4.2.1
3(e)(ii)(jj)	description of the relevant closure design criteria adopted in the annual rehabilitation and remediation activities and the expected final land use once all rehabilitation and remediation activities are complete for the activity or aspect; and	4.4.2.1
3e(iii)	a site plan indicating at least the total area disturbed, area available for rehabilitation and remediation and the area to be rehabilitated or remediated per aspect or activity;	4.4.3

Appendix nr	Description	Section in this report
3(f)	a review of the previous year's annual rehabilitation and remediation activities, indicating a comparison between activities planned in the previous year's annual rehabilitation and remediation plan and actual rehabilitation and remediation implemented, which should be tabulated and as a minimum contain:	4.5
3(f)(aa)	area planned to be rehabilitated and remediated during the plan under review;	4.5
3(f)(bb)	actual area rehabilitation or remediated; and	4.5
3(f)(cc)	if the variance between planned and actual exceeds 15%, motivation indicating reasons for the inability to rehabilitate or remediate the full area; and	4.5
3(g)	costing, including;	6
3(g)(i)	an explanation of the closure cost and methodology,	6.1
3(g)(ii)	auditable calculations of costs per activity or infrastructure,	6.2
3(g)(iii)	cost assumptions; and	6.4
3(g)(iv)	monitoring and maintenance costs likely to be incurred both during the period of the annual rehabilitation plan and those that will extend past the period of the final rehabilitation, decommissioning and mine closure plan, on condition that the monitoring and maintenance costs included in previous annual rehabilitation plans must be accumulated into subsequent versions of the annual rehabilitation plan until such time as the monitoring and maintenance obligation is discharged	6.3

Attached as **Addendum 1** is the Environmental Risk Assessment Report in line with the requirements of the Minerals and Petroleum Resources Development Act (Act 28 of 2002 as amended) (MPRDA) as stipulated in regulation 60 of the Minerals and Petroleum Resources Development Regulations, GN 527 of 2004 (as amended) i.t.o. the Minerals and Petroleum Resources Development Act No 28 of 2002 (MPRDR); regulations 6(c), 11(1)(c) & 12(3) & Appendix 5 of the Regulations Pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production, GN 1147 of 2015 i.t.o. NEMA.

Attached as **Addendum 2** to this report is the EMP Performance Assessment, 2018, as stipulated in regulation 55(9) of the MPRDR. See Section 6 for the Annual Updated Financial Provision report is as stipulated in regulation 6 of the Regulations Pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production, GN 1147 of 2015 i.t.o. NEMA.

No transfer of environmental liabilities and responsibilities will take place, Imerys will rehabilitate the mine.

The total financial provision costs for the year 2018 is R47 334.02.

SECTION 1: INTRODUCTION

1.1 Details of applicant

Refer to Table 2 below for a description of the applicant.

Table 2: Description of the applicant

Project applicant	Imerys Refractory Minerals South Africa (Pty) Ltd – Klipplaatdrift Prospecting
Contact person	Hendrik Jones
Designation	Operational Director
Telephone number	+27 12 643 5940
E-mail address	Hendrik.Jones@imerys.com

1.2 Details of Environmental assessment practitioner

This section includes (a) details of the person or persons that prepared the plan and (b) details of the professional registrations and experience of the person or persons.

Refer to Table 3 below for a description of the environmental assessment practitioner (EAP).

Table 3: Description of the environmental assessment practitioner

Name of company	BECS Environmental
Postal address	PO Box 72960, Lynnwood Ridge, 0040
Telephone number	012 361 9970
Cell phone number	072 191 6074
Facsimile number	012 361 0645
E-mail address	salome@becsenv.co.za
Name of responsible EAP	Salome Beeslaar
Expertise of EAP	B.Sc Environmental Science (UP), B.Sc Honours Geography (UP), M.Sc Geography (UP), Professional Scientist (Environmental Science) , member of the International Associated of Impact Assessments South Africa.
Name of second responsible EAP	Deshree Pillay
Expertise of EAP	B. Sc Environmental Science (UP), B. Sc Honours Geography & Environmental Science (UP)

I, Salome Beeslaar (8310190032081), hereby declare that I have no conflict of interest related to the work of this report. Specially, I declare that I have no business, personal, or financial interests in the property and/or mining right being assessed in this report and that I have no personal or financial connections to the relevant property owners or mine. I declare that the opinions expressed in this report are my own and a true reflection of my professional expertise and that there are no circumstances that may compromise my objectivity in performing such work.

_____

Salome Beeslaar
MSc – Geography, SACNASP (400385/14), IAIAsa (5853)
July 2018

1.3 Background on locality

Imerys Refractory Minerals South Africa (Pty) Ltd has a prospecting right for prospecting andalusite on Portions 10, 11, 12, 13, 14, 15 of the farm Klipplaatdrift 399KT and portion 3 of the farm Vlakfontein 520KT, Mashishing Local Municipality, Limpopo. The original prospecting right included Portions 10, 11,12 13, 14, 15 and the remaining extent of the Farm Klipplaatdrift 399 KT. The prospecting right commenced on the 16th November 2006 and was in place for a period of five years. The prospecting right thus expired on the 15th November 2011. On the 27th of January 2004, a prospecting permit was granted for portion 3 of the farm Vlakfontein 520KT which expired on the 26th January 2005. The prospecting right has not been renewed since expiry

The mine is located within the Olifants River Catchment in the B4 and B6 secondary catchment areas. The site falls within three quaternary catchment areas. To the south-west is the B42G quaternary catchment area, to the north-west is the B42H quaternary catchment area and to the east is the B60F quaternary catchment area. The approximate co-ordinates of the mine are 30º 28’ 12” S 24º 52’ 12” E. The mine is situated approximately 10km west of the R36 tarred road that links Mashishing and Ohrigstad. The closest railway station is at Schalksrus situated approximately 15km north-east of the mine. The station is equipped with handling facilities. Refer to Figure 1 for a locality map.

1.4 Description of the property

There is currently no mining infrastructure on the site except for a small farm dam on portion 14 of the farm Klipplaatdrift and farm roads. Prospecting activities only involved the drilling of boreholes and therefore no access roads were constructed, only, dirt roads from farming activities traversing the site.

The adjacent, existing mine operation is the Krugerspost Andalusite Mine, and has been operating for over 35 years. Klipplaatdrift is the northern extension of the ore-body.

1.5 Land ownership of adjacent land and servitudes

Imerys is the owner of portions 10,11,12,13 & 15 of the farm Klipplaatdrift 399 KT and portion 3 of the farm Vlakfontein 520 KT. Mapoko Mabekane is the owner of portion 14 of the farm Klipplaatdrift 399 KT.

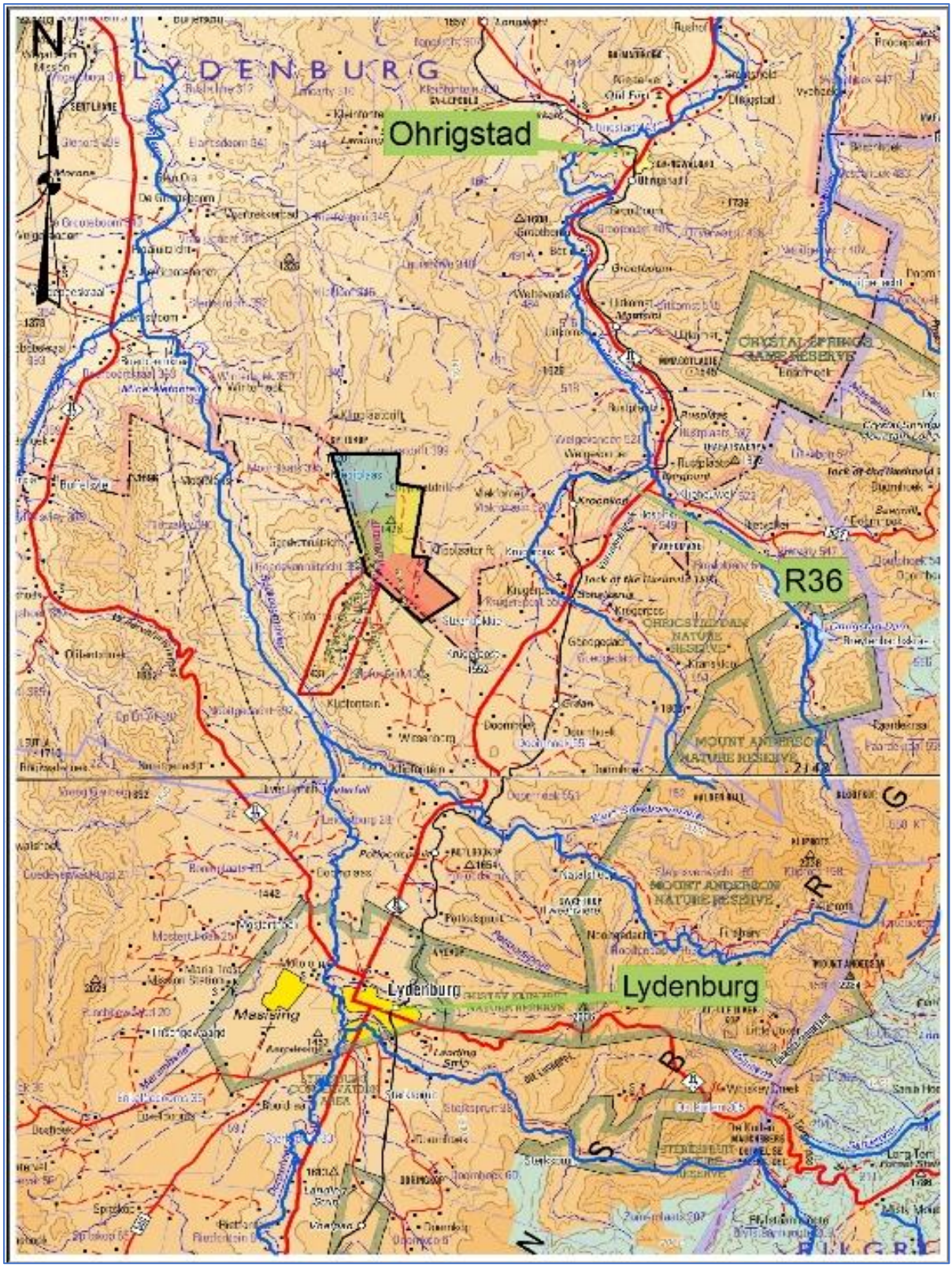


Figure 1: Locality Map of Klipplaatdrift

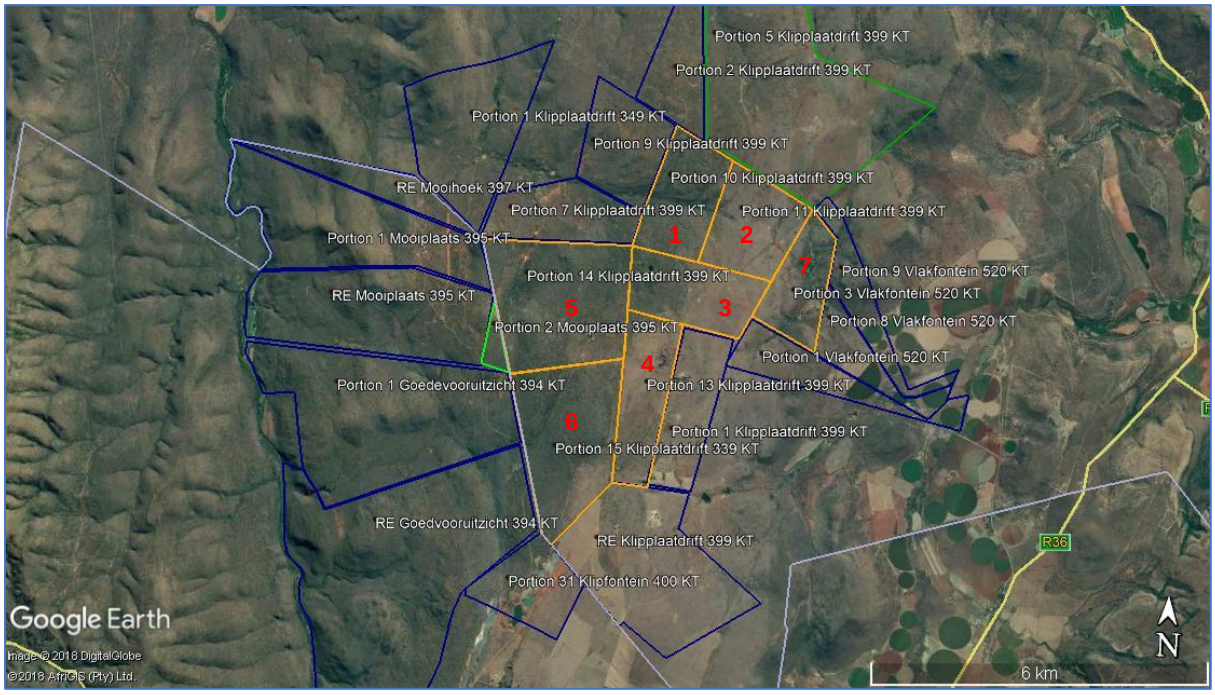


Figure 2: Google earth image of all landowners

Table 4: Landowners

Number	Physical address	Adjacent Landowner	Institution	Land Use
1.	Ptn 10 of Klipplaatdrift 399 KT	Hendrik Jones	Imerys	Prospecting
2.	Ptn 11 of Klipplaatdrift 399 KT	Hendrik Jones	Imerys	Prospecting
3.	Ptn 12 of Klipplaatdrift 399 KT	Hendrik Jones	Imerys	Prospecting
4.	Ptn 13 of Klipplaatdrift 399 KT	Hendrik Jones	Imerys	Prospecting
5.	Ptn 14 Klipplaatdrift 399 KT	Mapoko Mabelane	Mabelane Communal Prop Association	Vacant land
6.	Ptn 15 Klipplaatdrift 399 KT	Hendrik Jones	Imerys	Prospecting
7.	Ptn 3 Vlakfontein 520 KT	Hendrik Jones	Imerys	Mining

There is a power line servitude occurring across the mining area.

SECTION 2: LEGISLATION AND GUIDELINES APPLICABLE

Table 5: Legislation and interpretation of these requirements for the closure design principles

Legislation	Requirements	Interpretation of these requirements for the closure design principles
Regulation 56 of MPRDR	In accordance with applicable legislative requirements for mine closure, the holder of a mining right must ensure that - a) the closure of a mining operation incorporates a process which must start at the commencement of the operation and continue throughout the life of the operation; b) risks pertaining to environmental impacts must be quantified and managed proactively, which includes the gathering of relevant information throughout the life of a mining operation; c) the safety and health requirements in terms of the Mine Health and Safety Act, 1996 (Act No. 29 of 1996) (MHSA) are complied with; d) residual and possible latent environmental impacts are identified and quantified; e) the land is rehabilitated, as far as is practicable, to its natural state, or to a predetermined and agreed standard or land use which conforms with the concept of sustainable development; and f) mining operations are closed efficiently and cost effectively.	The EMP of 2005 describes the environment on site and the potential impacts during prospecting. Final rehabilitation of the mine states that all infrastructure, equipment, plant, temporary housing and other items used during the mining period will be removed from the site. Waste material of any description, including receptacles, scrap, rubble and tyres, will be removed entirely from the mining area and disposed of at a recognised landfill facility. It will not be permitted to be buried or burned on the site. Final rehabilitation shall be completed within a period specified by the regional Manager. Due to the prospecting only including the drilling of boreholes and the construction of a farm dam, the final rehabilitation will not include much EMP commitments. The environmental scoping report includes all information pertaining to risks, residual and possible latent risks. Closure of the mine will incorporate any necessary safety and health requirements in terms of the MHSA. The residual and possible latent environmental impacts are identified and quantified in this Closure Plan. The end land use is discussed in Section 4.1 of this Annual Rehabilitation Plan. There were no specialist studies carried out during prospecting. The specialist studies that cover the environment for the mining right can be used for the mine as the physical landscape is the same.
Regulation 61 of MPRDR	Closure objectives form part of the draft environmental management programme and must - a) identify the key objectives for mine closure to guide the project design, development and management of environmental impacts;	The pertinent closure objectives and performance targets that will be addressed in the forthcoming year, which objectives and targets are aligned to the final rehabilitation, decommissioning and mine closure plan can be found in section 4.4.2.1 in this report. This includes closure costs which in total is **R 47 334.02**

Legislation	Requirements	Interpretation of these requirements for the closure design principles
	b) provide broad future land use objective(s) for the site; and c) provide proposed closure costs.	
Regulations 6(a) of GN 1147	An applicant must determine the financial provision through a detailed itemisation of all activities and costs, calculated based on the actual costs of implementation of the measures required for annual rehabilitation, as reflected in an annual rehabilitation plan	The financial provision is included in Section 6 of this Annual Rehabilitation Plan which includes the financial provision methodology, auditable calculations of financial provision per activity or infrastructure financial provision estimation and assumption on the financial provision.
Regulations 11(1)(a) of GN 1147	The holder of a right or permit must ensure that a review is undertaken of the requirements for annual rehabilitation, as reflected in an annual rehabilitation plan	Rehabilitation commitments will be assessed and reviewed upon approval of the annual rehabilitation plan.
Regulations 11(2) of GN 1147	The holder of a right or permit must, on completion of the actions contemplated in subregulation (1), ensure that the adequacy of the financial provision is assessed and any adjustments that need to be made to the financial provision are identified.	The adjustments to the financial provision are included in section 6 of this Annual Rehabilitation Plan. Note the transitional period for these Regulations.
Regulations 12(1) of GN 1147	The annual rehabilitation plan must contain all information set out in Appendix 3 to these Regulations	This Annual Rehabilitation Plan is based on the requirements of the MPRDA, as well as Appendix 3 of GN 1147 pertaining to the minimum content of a rehabilitation plan.

SECTION 3: THE PERTINENT ENVIRONMENTAL AND PROJECT CONTEXT RELATING DIRECTLY TO THE PLANNED ANNUAL REHABILITATION AND REMEDIATION ACTIVITY

3.1 Environmental context

3.1.1 Geology

Information for this section was extracted from the Klipplaatdrift Mine EMP (Shangoni Management Services (Pty) Ltd, 2014):

3.1.1.1 Regional geology

The Rustenburg Layered Suite (Bushveld Complex) covers Gauteng, Limpopo and Mpumalanga Province. The aluminous shales of the Pretoria Group within the thermal metamorphic aureole of the Bushveld Complex were metamorphosed to andalusite hornfels. The Krugerspost andalusite deposit occurs in the Magaliesburg Subgroup of the Pretoria Group, and its extent is largely defined by the subsurface weathering profile of the andalusite host rock. (Refer to Figure 3 below).

Figure 3: Geology associated with the proposed mining area *(Shangoni, 2014)*

3.1.2 Climate

Information for this section was extracted from the Klipplaatdrift Mine EMP (Shangoni Management Services (Pty) Ltd, 2014):

3.1.2.1 Regional climate

The climate is typical of the Transvaal Middleveld, with warm to hot summers and cool winters. Most rainfall occurs in the summer months from September to February in the form of thunderstorms. The area has a moderate rainfall.

3.1.2.2 Rainfall and evaporation

Mean annual rainfall amounts to ±663mm per annum. The 1:50year 24-hour storm average is 133mm and the 1:100year 24hour storm average is 154mm. The mean monthly evaporation for Krugerspost Andalusite Mine is 2140 mm.

3.1.2.3 Temperature

January is generally the warmest month of the year with a mean temperature of 25.4ºC and June is generally the coldest month of the year with a mean temperature of 18.3ºC.

3.1.2.4 Wind

Table 6 indicates the hourly wind speed for the area. Wind frequency, direction and speed for Lydenburg is illustrated in Figure 4 below. Refer to Figure 4 below for the seasonal wind roses for the year 2012.

Table 6: Hourly wind speed analysis (% frequency per speed category)

Month	0 TO 1.	1 TO 1.5	1.6 TO 3.5	3.6 TO 5.5	> 8.0
January	24.4	17.8	47.9	9.6	0.4
February	26.9	16.6	48	8.3	0.2
March	30.1	17.2	45.4	7.2	0.1
April	34.5	15.3	42.8	7.1	0.3
May	32.8	16.6	43.3	6.8	0.5
June	30.3	15.1	47.4	6.9	0.3
July	26	14	44.9	10.5	0.4
August	30	13.3	42	13.5	1.1
September	32.6	11.7	37	17	1.7
October	26	11.6	40.7	19	2.8
November	26.3	15	43.5	13.9	1.3
December	25.1	16.8	47.7	10.1	0.3
Year	28.9	15	44.1	10.9	0.8

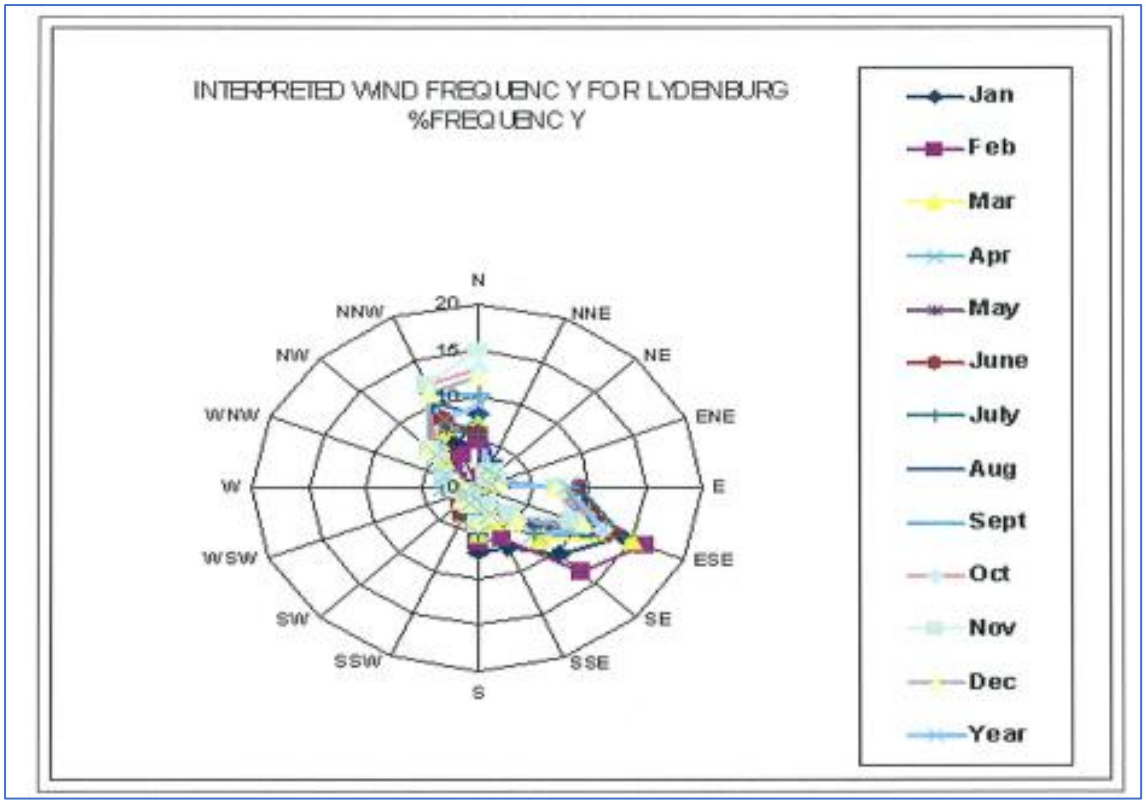


Figure 4: Wind direction and frequency

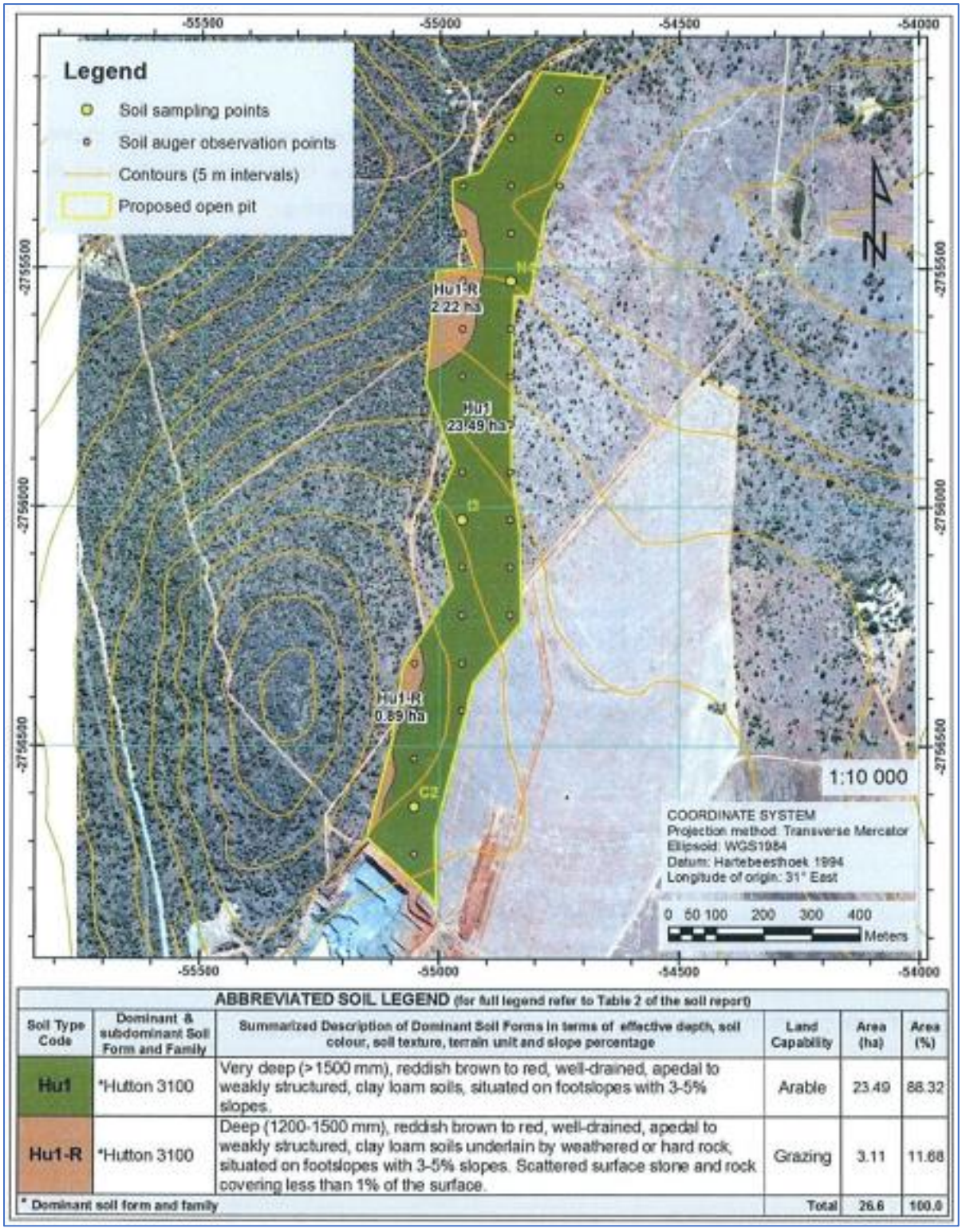
3.1.3 Topography

Information for this section was extracted from the Klipplaatdrift Mine EMP (Shangoni Management Services (Pty) Ltd, 2014): The mine is situated on the east slope of a low hill which comprises mainly hornfelsic rock. Slope class is 3-5% of most part of the area where activities will take place. Therefore, convex slope will erode most rapidly, yield most sediment and tend to change shape fastest. Figure 5 below represents a 3-dimesnional view of the topography of the area within a 10km radius. The region is fairly mountainous with rocky outcrops and ridges in places. The Lydenburg area falls within the Mountain Region catchment of the Olifants River. The tertiary catchments include the Steelpoort and Spekboom Rivers. The Krugerspost Andalusite Mine is situated on the eastern slope of a north/south water divide. Surface flow from the mine will therefore be in a south-eastern direction towards the natural drainage line and dams to the east which also acts as the mine surface water system.

Figure 5: Topography within a 10km radius of the site *(Shangoni, 2014)*

3.1.4 Soil

The following information was taken from the report titled: “Soil, land capability and land use assessment of the proposed open pit area of the Krugerspost Andalusite Mine north of Lydenburg, Limpopo Province” dated 26 October 2014 and compiled by Rehab Green Environmental and Rehabilitation Monitoring cc (Rehab green, 2014). The soil forms identified were Hut and Hul-R. The soil forms can be described as being deep to very deep, reddish brown to red in nature and are well drained. The soils are situated on foot slopes with a steepness of 3-5% and are apedal to weakly structured. The Hu 1 -R soils are however underlain by weathered or hard rock and consist of scattered surface stone and rock covering less than 1% of the surface area, the dominant soil type is the Hut as it occupies approximately 23.49 Ha (88.32% of the total surface area of the proposed open pit) (refer also to Figure 6 below).



ABBREVIATED SOIL LEGEND (for full legend refer to Table 2 of the soil report)

Soil Type Code	Dominant & subdominant Soil Form and Family	Summarized Description of Dominant Soil Forms in terms of effective depth, soil colour, soil texture, terrain unit and slope percentage	Land Capability	Area (ha)	Area (%)
Hu1	*Hutton 3100	Very deep (>1500 mm), reddish brown to red, well-drained, apedal to weakly structured, clay loam soils, situated on footslopes with 3-5% slopes.	Arable	23.49	88.32
Hu1-R	*Hutton 3100	Deep (1200-1500 mm), reddish brown to red, well-drained, apedal to weakly structured, clay loam soils underlain by weathered or hard rock, situated on footslopes with 3-5% slopes. Scattered surface stone and rock covering less than 1% of the surface.	Grazing	3.11	11.68
* Dominant soil form and family			Total	26.6	100.0

Figure 6: Soil map of proposed new open pit area

3.1.5 Pre-mining land capability, land use and existing infrastructure

The following information was taken from the report titled: “Soil, land capability and land use assessment of the proposed open pit area of the Krugerspost Andalusite Mine north of Lydenburg, Limpopo Province” dated 26 October 2014 and compiled by Rehab Green Environmental and Rehabilitation Monitoring cc (Rehab green, 2014). The location and extent of the land capability within

the proposed open pit area can be seen to directly correlate with the fertility and the soil forms identified. As described in Table 7 below, the land capability of Hu 1 is that of arable and the land capability of Hu1-R is that of grazing.

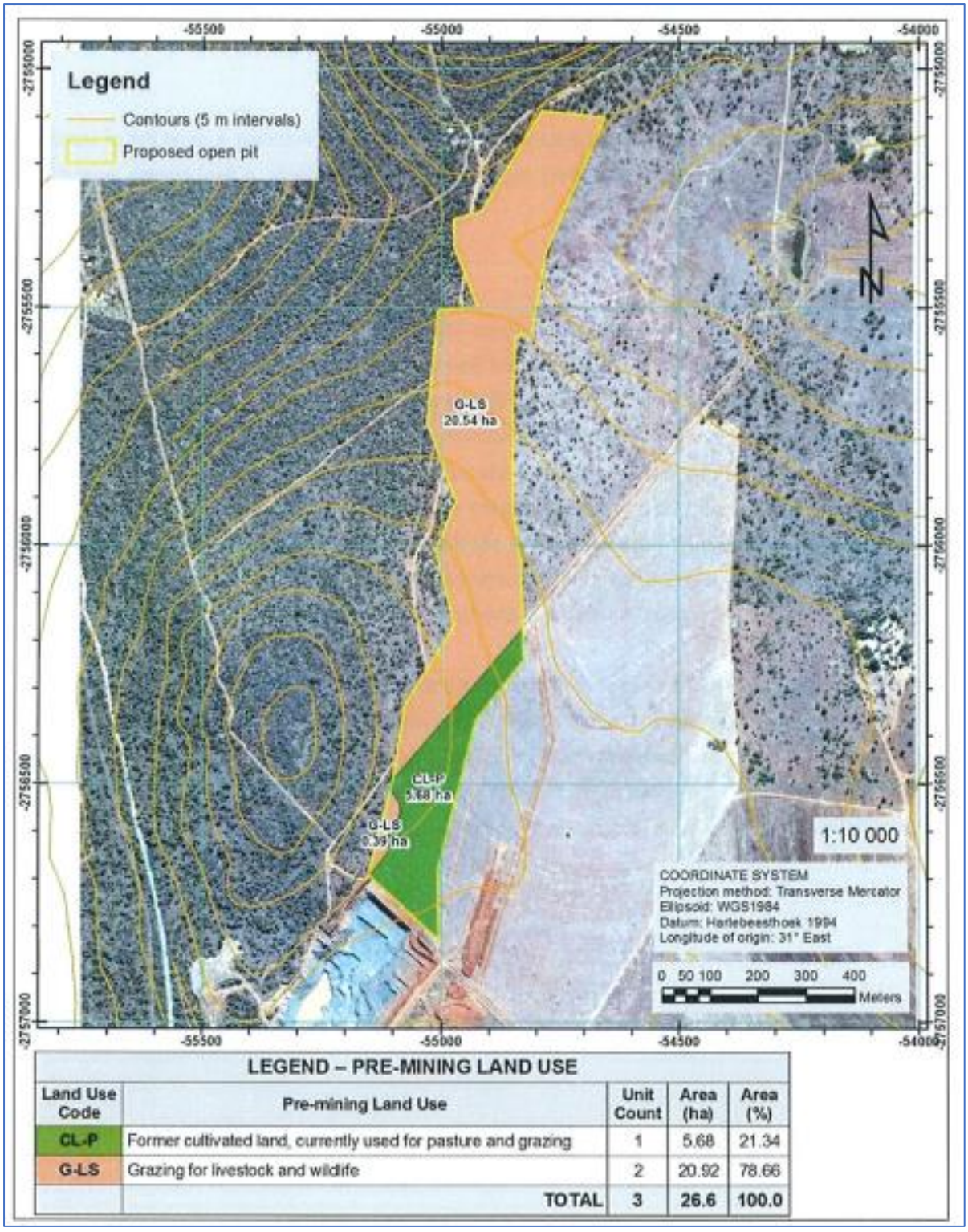
Table 7: Description of the land capability classes *(Rehab Green, 2014)*

Land Capability Code	Land Capability Class	Soil Types	Broad Soil Description	Unit Count	Area (ha)	Area (%)
A	Arable	Hu1	Very deep (1500mm), mm, reddish brown to red, well drained, apedal to weakly structured clay loam soils, soils situated on footslopes with 3-5% slopes.	1	23,49	88,32
G	Grazing	Hu1-R	Deep (1200-1500 mm), reddish brown to red well drained, apedal to weakly structured clay loam soils, soils situated on footslopes with 3-5% slopes. Scattered surface stone and rock covering 1% of the surface.	2	3,11	11,68
W	Wetland	-	-	0	0	0
WD	Wilderness	-	-	0	0	0
Total				**3**	**26,6**	**100,0**

The land use within the proposed new open pit area can be described as being predominantly grazing of livestock and wild life (20,92 ha). The land use of the remaining area (5,68 ha) is that of former cultivated lands that are currently used for pasture and grazing. Refer to Table 8 and Figure 7 below for the pre-mining land uses.

Table 8: Pre-mining land uses *(Rehab Green, 2014)*

Pre-mining Land Use	Unit Count	Area (ha)	Area (%)
Former cultivated land currently used for pasture and grazing	1	5,68	21,34
Grazing for livestock	2	20,92	78,66
TOTAL	**3**	**26,6**	**100,0**



LEGEND – PRE-MINING LAND USE

Land Use Code	Pre-mining Land Use	Unit Count	Area (ha)	Area (%)
CL-P	Former cultivated land, currently used for pasture and grazing	1	5.68	21.34
G-LS	Grazing for livestock and wildlife	2	20.92	78.66
	TOTAL	3	26.6	100.0

Figure 7: Pre-mining land use map

3.1.6 Vegetation

Information for this section was extracted from the Klipplaatdrift Mine EMP (Shangoni Management Services (Pty) Ltd, 2014):

the proposed mining area is situated within the Grassland and Savanna Biome of South Africa. Summer rainfall combined with dry winters and frost with marked diurnal temperature variations in the Grassland Biome are unfavourable to tree growth and therefore grasslands comprise mainly of grasses and plants with perennial underground storage organs, for example bulbs and tubers and less trees. However, the site is situated within Mesic Highveld grassland where the surface topography (e.g. rocky hills and protected valleys) creates habitats that are favourable to shrublands and trees (Dimela, 2014). Generally, the higher the surface rock cover, the higher the occurrence of woody vegetation such as trees and shrubs, relative to herbaceous vegetation (Mucina & Rutherford, 2006).

The Grassland Biome consists of various different vegetation types, of which the Lydenburg Thornveld dominates the study area (refer to Figure 8 below). This vegetation type, in its natural and undisturbed state, comprised open, frost hardy woodland especially on rocky outcrops, while the frost sensitive valleys and plains include less trees and contain mainly Acacia karroo and woody suffrutexes (plants which aerial parts die back to an underground rootstock during winter) (Dimela, 2014).

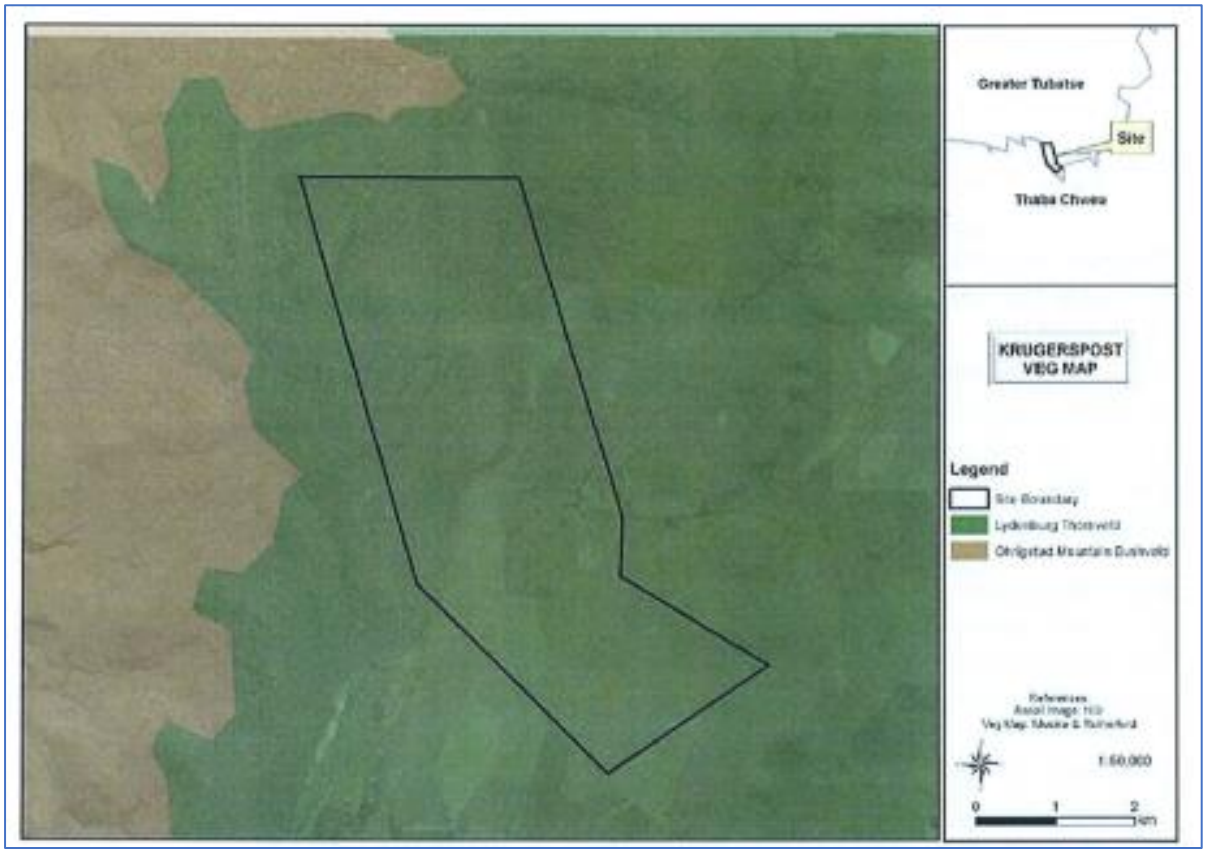


Figure 8: Krugerspost vegetation map

The conservation status of the Lydenburg Thornveld is classified as 'Vulnerable' as much of its extent are transformed by agriculture and mining. Therefore, areas where this vegetation remains in its natural state should be conserved in order to reach the national conservation target of this vegetation type.

The site is in close proximity to the Ohrigstad Mountain Bushveld, which falls within the Savannah Biome (refer to Figure 9 below). It must be noted that the National Vegetation Map is a broad scale assessment based on amongst others, geology, soil and climate. Therefore, the site may also exhibit species composition characteristic to the Ohrigstad Mountain Bushveld, which is classified as 'Least Threatened'.

3.1.6.1 Site specific

The vegetation in the mine area is categorised into the following four (4) broad vegetation groupings (refer to Figure 9 below):

1. Grazed grassland
2. Secondary grassland
3. Natural open woodland
4. Vegetation associated with watercourses:
    - Moist grasslands; and
    - Riparian vegetation

Figure 9: Krugerspost vegetation categories

3.1.6.1.1 Grazed Grassland

This grassland was characterised by a diversity of Increaser II and III grasses (grass species that increase in over utilised/overgrazed veld) and a high number of a shrubby *Berkheya* species and

Senecio microglossus which seemingly increase in overgrazed veld. Although these areas were not ploughed in the recent past, continuous grazing pressure reduced palatable grasses and subsequently changed the species composition from what is expected in natural Lydenburg Thornveld (Dimela, 2014). This vegetation is not representative of the Lydenburg Thornveld and although some mutual grass species and forbs were present, the typical open woody layer is absent, except for encroachment of the pioneer trees *Acacia karroo* (Sweet Thorn) and *Lopholaena coriifolia* (Pl uisbossie).

Although the grazed grassland includes a number of species, these are mostly associated with overgrazing and species that could be recognised included patchy occurrences of *Hyparrhenia hirta* (Common Thatching Grass), *Cynodon dactylon* (Couch Grass), *Melinis repens* (Natal Red Top), Eragrostis curvula (Weeping Love Grass) and *Aristide diffusa* (Iron Grass). The forb layer was limited in species diversity, although this could be attributed to the assessment being undertaken during winter. Forbs and shrubs observed included *Hermannia depressa* (Creeping Hermannia), *Helichrysum rugulosum, Haplocarpa scaposa, Asparagus species, Polygala species an Argyrolobium species and Macledium zeyhen.*

3.1.6.1.2 Natural and open woodland

Much of the northern section of the mine area comprised natural bushveld vegetation (northern portion of portion 14, portion 13 & 14), while open woodland was observed through the centre and towards the eastern corner of the site.

The vegetation through the centre and eastern border, as well as the south-eastern corner comprised open woodland dominated by a grass layer and were found to be representative of Lydenburg Thornveld. Although the grass layer was dry, the following species could be recognised: *Heteropogon contortus* (Spear Grass), *Themeda triandra* (Red Grass), *Hyparrhenia hirta* (Common Thatching Grass), *Melinis repens* and a *Tristachya* species. The tree layer was dominated by Acacia karroo, A. *caffra, A. ataxacantha* (Flame Thorn), *Dombeya rotundifofia*, *Cussonia transvaalensis*, *Euclea crispa* and the climber *Clematis matee* (Traveller's Joy). Herbaceous species included *Polygala mate* and *Lippea javanica.*

The centre portion of the site also included a rocky hill where the woody layer was more dense and additional species that grew here included *Gymnosporia buxifolia*, *Rhamnus prionokles* (Dogwood), *Acacia gerradii* (Red Thorn), *Diospyros whyteana* (Bladder-nut), *Euclea cripsa* (Blue Guarrie), the fern *Pellaea calomelanos*, the herbaceous *Athrixia arachnoidea*, a *Thesium* species, and the succulent Aloe marlothfi (Mountain Aloe). The area was grazed and a high number of *Senecio microglossus* was observed.

The northern section of site (specifically portion 14 and the most northern section of portion 15) comprised mountainous areas with a denser vegetation and a higher species diversity. The most northern section (portion 14) is situated on deeper sand with valleys, giving rise to denser woody layer.

In addition to the aforementioned species, additional species characteristic of the Ohrigstad Mountain Bushveld was observed and included trees such as *Boscia foetida subsp rehmanniana* (Stink Shepard's Tree), *Combretum molle* (Velvet Bushwillow), *Pelthophorum africanurn* (African Wattle), *Faurea saligna Commiphora* 'yogis (Velvet Corkwood), Croton *gratissimus* (Lavender Fever Berry) and tall growing *Aloe marlothii* and *Cussonia paniculata* (Cabbage Tree). Herbaceous species included Gerbera *cf piloselloides*, *Anthospermum rigidum*, an *Argyrolobium* species and *Schistostephiurn crateegifolium* (Berg kruie).

3.1.6.1.3 Vegetation associated with watercourses

The site included riparian areas and non-perennial drainage lines in the northern section of the site, as well as moist grasslands or wetland areas in the south-eastern section of the site.

Riparian areas and drainage lines

Riparian habitat refers to the extent of a river's footprint and includes the physical structure, as well as the vegetation associated with the river or drainage line. The interaction between land and water in the riparian zone provides a range of micro-habitats that support a diverse range of flora and fauna. Highly fertile soils and moist conditions increase the establishment and growth of a diverse range of plant species (Land for Wildlife, 2002), Although vegetation associated with non-perennial drainage lines have much the same species composition and structure of surrounding vegetation, the vegetation is highly functional in preventing soil erosion and degradation of surrounding vegetation, as well as downstream watercourses. A sample plot on the western boundary of the site, within riparian habitat, revealed a more vigorous and dense woody layer and the following species not observed within the surrounding vegetation: Ilex mites, *Olea europea subsp rmatee, Ziziphus mucronata, Syzigium corclatum* (Waterberry) and the herbs *Abutilon sonneratianum* and *Chaetacanthus cf setiger*. At the time of the site visit, a dirt road was being constructed through the riparian area resulting in some destruction of riparian vegetation.

Moist grasslands

Moist grasslands were classified as the grassland areas where the vegetation comprised of species that are adapted to grow in permanently or periodically saturated areas. These areas also included plants with an affinity for growing near water, but not within saturated soils. These areas therefore comprised of hydrophytic vegetation which is an indicator of permanent and temporary wetland conditions. The moist grassland areas where partly dammed and some showed signs of grazing pressure. Typical plants included *Haplocarpa scaposa* (near moist areas), *Imperata cylindrical* (Cotton Wool Grass) in periodically saturated areas and sedges such as *Cyperus sexangularis and Juncus effuses* (Soft Rush). Grass species in and around the wetland areas included *Hyperrhenia tamba* (Blue Thatching Grass), a *Cymbopogon species, Themeda triandre* (Red Grass) and *Aristide cf junciformis* (Gongoni Three-awn).

3.1.6.2 Limpopo Biodiversity Assessment and Conservation Plan

The Limpopo Province assessed the biodiversity in the province and classified the province in terms of Critical Biodiversity Areas (CBA's) and Ecological Support Areas (ESA's), as well as Protected Areas and areas where No Natural Habitat remain (refer to Appendix E8). Critical Biodiversity Areas (CBAs) are the sites that are required to meet the region's biodiversity targets and need to be maintained in a natural condition to safeguard identified biodiversity features.

Ecological Support Areas (ESAs) are classified as areas that are important for ensuring persistence and to provide intact mega-pathways for long-term biological movement, and they are selected primarily along river lines and altitude gradients in order to provide for the natural retreat and advance of plants and animals in response to environmental change.

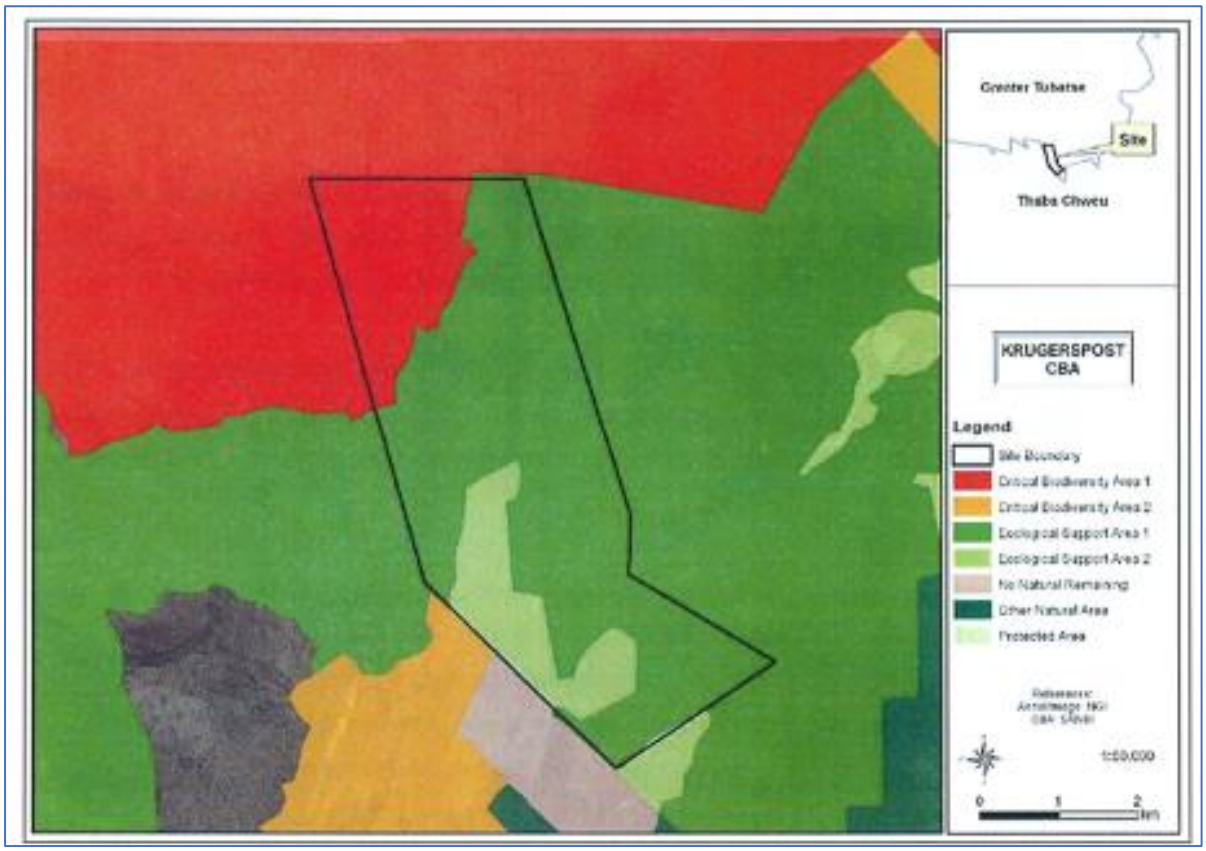


Figure 10: The Klipplaatdrift 399 KT area in relation to the Limpopo C-Plan

The CBAs have been split into CBA 1 and CBA 2. The majority of the CBAs in the province are CBA 1 which can be considered "irreplaceable" in that there is little choice in terms of areas available to meet conservation targets. If CBA 1 areas are not maintained in a natural state, then targets cannot be achieved. CBA 2's represent areas where there are spatial options for achieving targets and the selected sites are the ones that best achieve targets within the landscape design objectives of the plan.

ESAs has also been split on the basis of land-cover into ESA 1 and ESA 2, 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). As indicated in Figure 10, the northern portion of the site is situated within a CBA1, while the majority of the site is situated in an ESA1 and a small portion within an ESA2. The area where the existing but abandoned open pit mining took place south of the site, is situated within a CBA2.

3.1.6.3 Invader species

Grazed grassland

The invasive plant *Cirsium vulgare* (Scotch Thistle) was observed within the grazed grassland, in proximity to moist grasslands. This species is a declared category 1 b invader.

Natural vegetation open-woodland

The invasive succulent *Opuntia* species (Prickle Pear) was observed within the natural woodland in the northern portion of the site. This species is a declared category 1, as described in Appendix E2. A *Cotoneaster* and *Rubus* species were observed around the centre of the site.

Vegetation associated with watercourses

The invasive herbaceous plants *Cirsium vulgare* (Scotch Thistle) and *Verbena bonariensis* (Wild Verbena) were observed within the moist grasslands. These species are a declared category 1 invader.

3.1.7 Animal life

The following information was taken from the document titled: "Faunal Assessment Report, SAMREC: Krugerspost Andalusite Mine, Limpopo Province", dated August 2014 and compiled by Classic Environmental Management Services (CEMS, 2014).

The majority of mammals, reptiles and amphibians are nocturnal by nature and birds are highly mobile. The presence of suitable habitats was used to determine the status, and presence, of these species through various field guides and atlases.

3.1.7.1 General

The proposed mining area is situated within the Grassland and Savanna Biome of South Africa and as described above, the presence of suitable habitats was used to identify the possible presence of faunal species. The vegetation in the mine area is categorised into the following four (4) broad vegetation groupings:

1. Grazed Grassland
2. Secondary Grassland
3. Natural open woodland
4. Vegetation associated with watercourses
    - Moist grasslands
    - Riparian vegetation

3.1.7.2 Site specific

3.1.7.2.1 Amphibians

No frog species were identified during the site assessment although those expected to occur in the area are widespread and common throughout the thornveld, bushveld and grassland environments. Table 9 below provides a list of species of amphibians which have previously been identified in the Mashishing area.

Table 9: Species of amphibians previously identified within the Mashishing area

Common name	Scientific name
African Bullfrog	*Pyxicephalus edulis*
Southern Ornate Frog	*Hildebrandtia ornate*
Tremolo Sand Frog	*Tomopterna cryptotis*
Russet-backed Sand Frog	*Tomopterna mamorata*
Natal Sand Frog	*Tomopterna natalensis*
Common Caco	*Cacostemum boettgeri*
Bronze Caco	*Cacostemum nanum*
Bubbling Kassina	*Kassino senegalensis*
Brown-backed Tree frog	*Leptopelis mossambicus*
Southern Foam nest frog	*Chiromantis xerampelina*
Red Toad	*Schismaderma carens*
Eastern Olive toad	*Ametiophyrnus (Bufo) garmani*
Guttural toad	*Metiophyrnus (Bufo) gutturalis*
Raucous toad	*Bufo rangeri*
Northern Pygmy toad	*Bufo fenoulheti*
Tropical Platanna	*Xenopus muelleri*
Common River frog	*Xenopus laevis*
Banded Rubber frog	*Phrynomantis bifasciatus*
Dwarf Puddle frog	*Phyrnobatrachys mababiensis*
Snoring Puddle frog	*Phyrnobatrachys natalensis*
Plain grass frog	*Ptychadena anchietae*
Broad-banded grass frog	*Ptychadena mossambica*
Sharp-nosed grass frog	*Ptychadena oxyrhynchus*
Bushveld rain frog	*Breviceps adspersus*
Mozambique rain frog	*Breviceps mossambicus*
Painted reed frog	*Hyperolius mamoratus*
Water lily frog	*Yperolius pusillus*

3.1.7.2.2 Reptiles

As reptiles are elusive, secretive and particularly difficult to observe during site assessments, the identification of the species of reptiles present in the area was based on the vegetation and topography present on site as well as in the surrounding areas. The open and closed thornveld as well as the rocky

mountainous areas may provide suitable habitat for the following species of reptiles listed in Table 10 below.

Table 10: List of reptile species for the Mashishing area

Common name	Scientific name
Flap-necked chameleon	*Chamaeleo dilepis*
Boomslang	*Dispolidus typus*
Spotted bush snake	*Philothamnus variegatus*
Southern tree agama	*Acanthocercis atricolis*
Common dwarf gecko	*Lygodactylus capensis*
Wahlbergs snake-eyed skink	*Panaspis walbergii*
Yellow throated plated lizard	*Gerrhosaurus flavigularis*
Giant plated lizard	*Gerrhosaurus Validus montane*
Speckled skink	*Trachylepis (Mavuya) punctatissima*
Variable skink	*Trachylepis (Mavuya) varia*
Southern rock agama	*Agama atra*
Ground agama	*Agama matee Sekhukune*
Flat lizard	*Platysaurus orientalis*
Common flat lizard	*Platysaurus intermedius itermedius*
Common crag lizard	*Pseudocordylus melanotus*
Transvaal girdled lizard	*Cordylus vittifer*
Transvaal thick toed gecko	*Pacydactylus affinis*
South African python	*Python natalensis*
Breyers long tailed seps	*Tertadactylus breyeri*
Yellow bellied house snake	*Lamprophis fuscus S*
Triped harlequin snake	*Homoroselaps dorsalis*
Puff adder	*Britis arietans*
Crossed sand snake	*Psammophis crucifer*
Sundevals sand snake	*Mochlus sundevalli holubs*
Sandveld lizard	*Nucras holubi*
Ornate scrub llizard	*Nucras nnate*
Spotted bush snake	*Philothamus semivariegatus*
Sekukhune flat lizard	*Platysaurus orientalis*
Stigmochelys pardalis	*Stigmochelys pardalis*
Cape centipede eater	*Aparallactus carpensis*
Sundevalls garter snake	*Elapsoidea sundevallii media*
Adlers worm snake	*Leptotyphlops jacobsonii*
Cape thread snake	*Leptotyphlops scutifrons conjunctus*
Black spotted dwarf gecko	*Lygodactylus nigropunctatus*
Oscillated dwarf gecko	*Lygodactylus ocellatus*

3.1.7.2.3 Avifauna (birds)

The identification of the presence of avifauna species on site relied upon vegetation assessments, direct sightings, bird calls and presence of nests. However, during the site assessment, a lack of avifaunal species was identified, and no roosting sites could be located. Therefore, the list of conservation important bird species (according to quarter degree grid 2430CD) was obtained from the Mpumalanga Tourism and Parks Agency. This list and their likelihood of occurrence were assessed, and the species are presented in Table 11 below.

Table 11: List of bird species of conservation concern from quarter degree (2430CD)

Scientific name	**Common name**	**Conservation status**	**Likelihood of occurrence**
Gyps coprotheres	Cape Vulture	Vulnerable	Low- This species requires cliff faced ledges for roosting and breeding. This habitat type does not occur within the study area or immediate surrounds.

3.1.7.2.4 Mammals

The identification of possible mammal species, present on the site, relied upon assessment of the vegetation and confirmed by spoors/ dropping. During the site assessment, signs of mammal presence were seen and included burrows, droppings and spoor. The list of mammals occurring on site is presented in Table 12. It was identified that two (2) of the species which occur or are likely to occur are listed as species of conservation concern and are presented below in Table 13.

Table 12: List of mammals occurring on site

Common name	**Scientific name**
Leopard	*Panther pardus*
Steenbok	*Raphicerus campestris*
Common duiker	*Sylvicapra grimmia*
Kudu	*Tragelaphus strepsiceros*
Warthog	*Phacochoerus africanus*
Black-Backed jackal	*Canis mesomelas*
Common Molerat	*Cryptomys hottentotus*
Yellow Mongoose	*Cynictus penicillate*
Small grey Mongoose	*Galerella pulverulenta*
Shrub hare	*Lepus saxatillis*
Multimammate mouse	*Mastomys coucha*
Multimammate mouse	*Mastomys natalensis*
Slender mongoose	*Galerella sanguinea*
Highveld gerbil	*Gerbilliscus brantsii*
Cape porcupine	*Hystrix africaeustralis*
Tree squirrel	*Paraserus cepapi*
Vervet monkey	*Chlorobcebus pygerythrus*
Bushbuck	*Tragelaphus scriputs*

Common name	Scientific name
Eastern elephant shrew	*Elephantulus myurus*
Smiths red rock rabbit	*Pronolagus rupestris*
Jamesons red rock rabbit	*Pronolagus radensis*
Rock dormouse	*Graphiurus platyops*
Aardvark	*Orycteropus afer*
Grey rhebok	*Pelea capreolus*
Mountain reed buck	*Redunca fulvorufula*
Chacma baboon	*Papio hamadryas*
Large spotted genet	*Genetta maculate*
Side striped jackal	*Canis adustus*
Honey badger	*Mellivora capensis*
Impala	*Aepyceros melampus*
Red hartebeest	*Alcelaphus buselaphus*
Springhare	*Pedetes capensis*

Table 13: Mammal species of conservation concern

Scientific name	Common name	Conservation status	Likelihood of occurrence
Panthera pardus	Leopard	Lc but in mpumalanga and limpopo near threatened	High- through personal communication with the caretaker it was confirmed that the leopard is common in the area
Mellivora capensis	Honey badger	Near threatened	High- through personal communication with the caretaker it was confirmed that the leopard is common in the area

3.1.8 Surface water

Information for this section was extracted from the Klipplaatdrift Mine EMP (Shangoni Management Services (Pty) Ltd, 2014), The following information relating to surface water was obtained from the document titled: "Hydrological analysis and determination of floodlines for the Krugerspost Andalusite Mine (Pty) Ltd., located in the Magisterial District of Lydenburg, Mpumalanga Province", dated September 2007, compiled by GCS (Pty) Ltd, SWMP (SWMP, Shangoni 2014) as well as the document titled "SAMREC (Pty) Ltd. — Krugerspost Andalusite Mine: Integrated Water and Waste Management Plan" dated May 2013 and compiled by Shangoni Management Services (Pty) Ltd IWWMP, Shangoni 2013).

3.1.8.1 Regional description

Water quality monitoring was done in August 2016 (BECS Environmental, 2016). Refer below for the results.

The region in which the Krugerspost Andalusite Mine (including the new proposed mining area) is situated is fairly mountainous with rocky outcrops and ridges in places. The Lydenburg area falls within

the Mountain Region catchment of the Olifants River. The tertiary catchments include the Steelpoort- and Spekboom Rivers. The Spekboom River is located approximately 2 km to the west of Krugerspost which drain in a northerly direction.

The mine is located within the Olifants River Catchment in the B4 and B6 secondary catchment areas. The site falls within three quaternary catchment areas. To the south-west is the B42G quaternary catchment area, to the north-west is the B42H quaternary catchment area and to the east is the B60F quaternary catchment area.

There is no naturally occurring accumulation of surface water within the prospecting vicinity. The area is drained by a number on non-perennial drainage lines towards the Spekboom River. A number of linked process dams are utilised by the mine. Surface water users outside of the mining boundary is mainly farmers utilising clean water dams for irrigation.

Krugerspost Mine is situated on the eastern slope of north/south water divide. Surface flow from the mine will therefore be on a south-eastern direction towards the natural drainage line and dams to the east which also acts as the mine surface water system. This water flows down south-west towards the north draining Spekboom River. Any storm water emanating from the mine will therefore report to this natural drainage line.

3.1.8.2 Surface water quality

There is no naturally occurring accumulation of surface water within the mining area. The area is drained by several dry watercourses. The area is not a high-water yield area.

3.1.8.2.1 Catchment hydrology

Portions 13, 14 and 15 of the Farm Klipplaatdrift 399 KT fall within four quaternary catchment areas. Only the most southern tip of this area falls within the B6OG quaternary area. The eastern part of portion 13 and the remainder falls within the B6OF quaternary catchment area. The Kranskloof Spruit flows to the east of the mine and drains the B6OG quaternary catchment area. This spruit flows into the Ohrigstad River. Ohrigstad River is located in Mpumalanga, South Africa. The Ohrigstad River joins the Blyde River at the Blyde Rivier Poort Dam in the Blyde River Canyon Nature Reserve. Like the Blyde, it has its ultimate origin at around 2 000m altitude to the south, on the verge of the Hartebeesvlakte conservation area, but follows a more westerly course.

The south-western side of portions 13, 14 and 15 of the Farm Klipplaatdrift 399 KT fall within B42E and the north-western side B42H quaternary catchment. The Spekboom River flows approximately 3km to the south of the mining area and drains the B42E and B42H quaternary catchment areas.

Characteristics of the total catchment can be summarised as follows:

- Area = 12.1 km2.

- Time of concentration = 0.545 hours.
- Peak flow 1:50 = 99 m3/s.
- Peak flow 1:100 = 199 m3/s.

3.1.8.2.2 Dry weather flow

No dry weather flow is anticipated

3.1.8.2.3 Mean annual runoff

The mean annual run-off for the quaternary catchments ranges between 10X106m^3 and 40X106m^3.

3.1.8.2.4 Surface water quality

Drinking water for Krugerspost Mine is sourced from two boreholes (Borehole No. 1 and Borehole No. 2) on site. The quality thereof and suitability for the use is described as follows:

- The "Office Drinking Water" can be described as neutral, non-saline and moderately hard. Major cations and anions and trace metals recorded in the low or un-detected levels. Total coliforms and Faecal coliforms recorded below detection limits (<1 counts/100 ml) and the risk of microbial infection is therefore negligible. Total viable organisms (heterotrophic plate count) recorded a count of 61 /1 ml but should not pose any risks of infection in the absence of coliforms and *E. coli*. The presence of heterotrophic bacteria is natural and ubiquitous in the natural environment and is mostly included in the testing of treated potable supplies to monitor the treatment / disinfection process. The water is moderately hard (mostly contributed by magnesium Mg) and scaling of hot water appliances and / or soap lathering may be the only risks. The water quality for the Office Drinking Water is well within South African domestic water use guidelines (SANS 241: 2011; DWAF, 1998) and can be classified as an Ideal/Class 0 water type suitable for lifetime use.

The quality of the storm water / pollution control dams is described as follows:

- The water within the pollution control dams and storm water dams at Krugerspost Mine can be described as neutral, non-saline and hard to moderately hard with medium to high levels of suspended matter and turbidity. Stiff diagrams (Figure 11) indicate domination of the magnesium cation and bicarbonate anion and is indicative of the inertness of the ore and geology. The electrical conductivity recorded between 22.8 mS/m and 28.8 mS/m and major cation and anions, trace elements and nutrients are in the low to undetected ranges. Feacal coliforms were detected in Quarry 2-3, Barge Dam, HMS Plant, the Office Slimes Dam and Settling Dam 2 and should be handled with care and should be not ingested as the risk of microbial infection is high. The water quality of the surface dams is well within Livestock watering guidelines but the Barge Dam, Ericsson Dams, HMS Plant, Plant and Office Slimes Dam suspended solid levels exceed the General Limit guidelines for wastewater discharge.

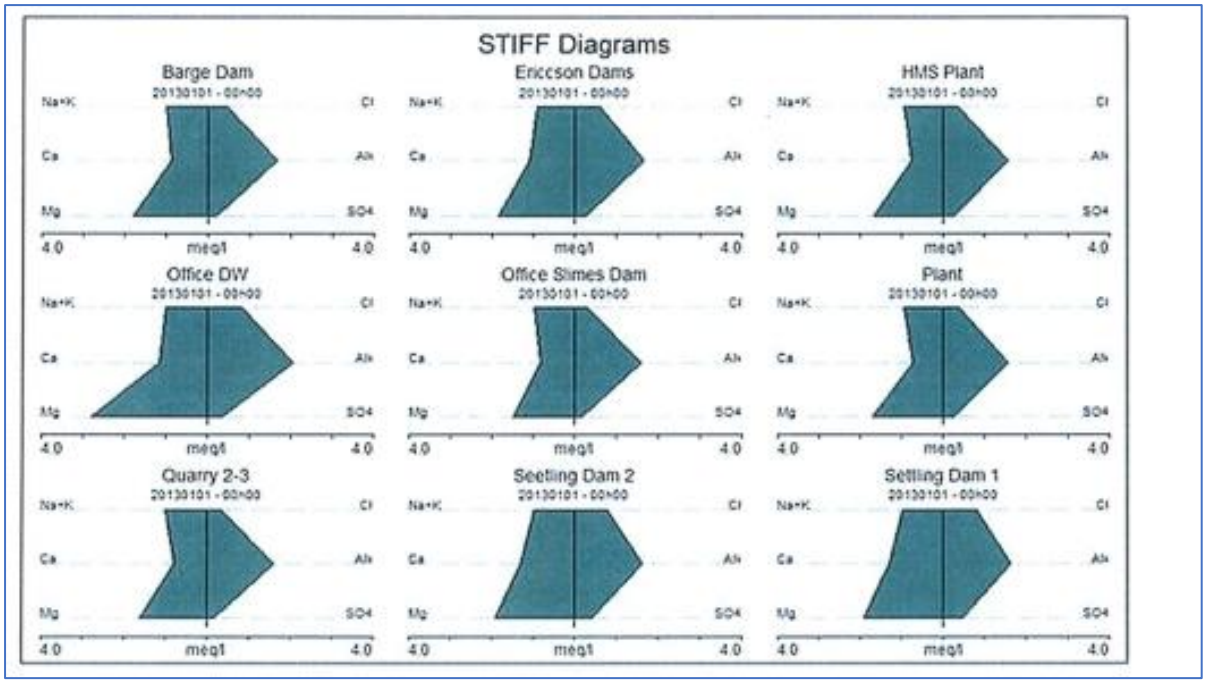


Figure 11: STIFF diagrams showing dominant cations and anions (in meg/l) for the water quality at Krugerspost Mine.

There is no surface water quality monitoring taking place at the site of prospecting.

3.1.8.2.5 Surface water use

Within the mine catchment area, the water users are mainly farmers using the clean water dams for irrigation.

3.1.8.2.6 Wetlands

An un-channelled valley bottom wetland (to the east of the site boundary area) and four (4) riparian areas have been identified.

3.1.8.2.7 Water management area

The mine is situated within the lower Olifants Management area, within the Steelpoort Sub-management area.

3.1.9 Groundwater

The following groundwater information was extracted from the approved EMP of Krugerspost Andalusite Mine, dated October 1999, the IWWMP and the desktop hydrogeological study titled: "SAMREC Krugerspost Andalusite Mine: Desktop Hydrogeological Study" dated May 2013 and compiled by Shangoni Management Services (Pty) Ltd. (Shangoni, 2013)

3.1.9.1 Depth of water tables

During the desktop hydrocensus for the Krugerspost Andalusite Mine, conducted by Shangoni (2013), 18 boreholes and 1 spring were located within a 5 km radius of the Krugerspost Andalusite Mine. According to the desktop hydrogeological study (Shangoni, 2013) and data obtained from NGA South Africa, the water levels in the study area varied between Om and 14.32m below ground level with an average of 5.87 m. The mining depth in the mining pits is deeper than the groundwater level, the fact that little to no seepage of groundwater into the mining pits occur and no active dewatering takes place, is evident of the impervious nature of the rock and the assumption can be made that groundwater flow in the occurring aquifers will be relatively slow.

3.1.9.2 Groundwater zones

Water compartments are defined by north-south striking dykes. The area is not a high groundwater recharge area.

The South African Aquifer System Management Classification is presented by five major classes:

- Sole Source Aquifer System.
- Major Aquifer System.
- Minor Aquifer System.
- On-Aquifer System.
- Special Aquifer System.

Krugerspost Mine is directly underlain by rocks of the Lydenburg Member occurring in the Pretoria Group of the Transvaal sequence of rocks. The Lydenburg Member consists predominantly of laminated shales with interbedded carbonate layers and hornfels in places. The hydrogeology can be summarised as follows:

- Laminated shales with interbedded carbonate layers and hornfels in places.
- Large scale abstractions for irrigational use occur to the north of Krugerspost Mine.
- Aquifer yields are typically between 0.5 lfs and 2.0 ifs with relatively good water quality and is classified as a d3 intergranular and fractured aquifer.
- According to the Parsons aquifer classification system, the aquifer can be regarded as a minor aquifer.

3.1.9.3 Groundwater use

Three (3) boreholes, located outside the mining area, are utilized by the Mine for domestic purposes, the cleaning of trucks and for dust suppression.

The Krugerspost Andalusite Mine is currently in possession of a Water Use Licence (WUL), with Licence No. 24009412, for which the abstraction of water from two boreholes (Borehole 1 and borehole 2) for domestic purposes is included.

The majority of the boreholes, within a 5 km radius of the Krugerspost Andalusite Mine, are utilised for domestic purposes and livestock watering.

3.1.9.4 Groundwater quality

According to a geohydrological evaluation conducted in July 2010, no chemical other than FeSi are being used in the process and no sulphides, heavy metals or leachates are present in the plant discard or final product. Therefore, it is unlikely that the mining operation will have any negative effect on the groundwater conditions in future.

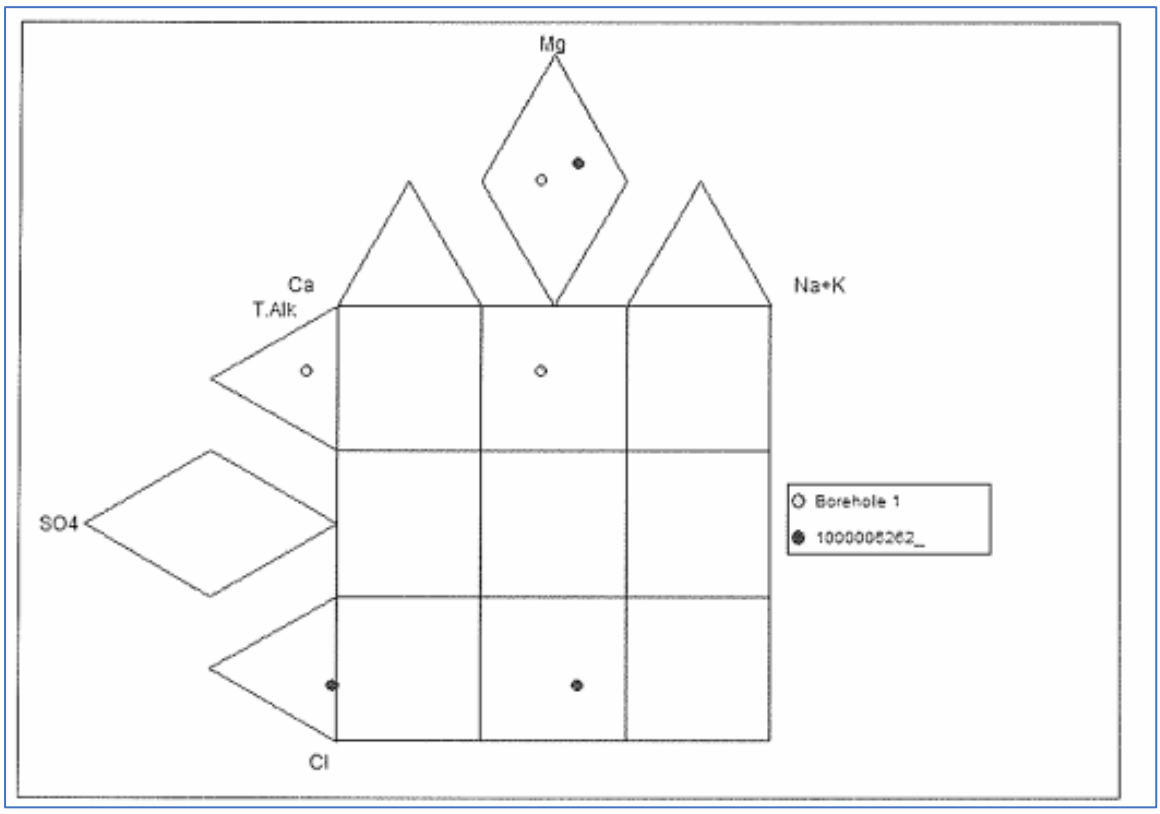


Figure 12: Expanded Durov diagram for groundwater quality in B42E quaternary catchment

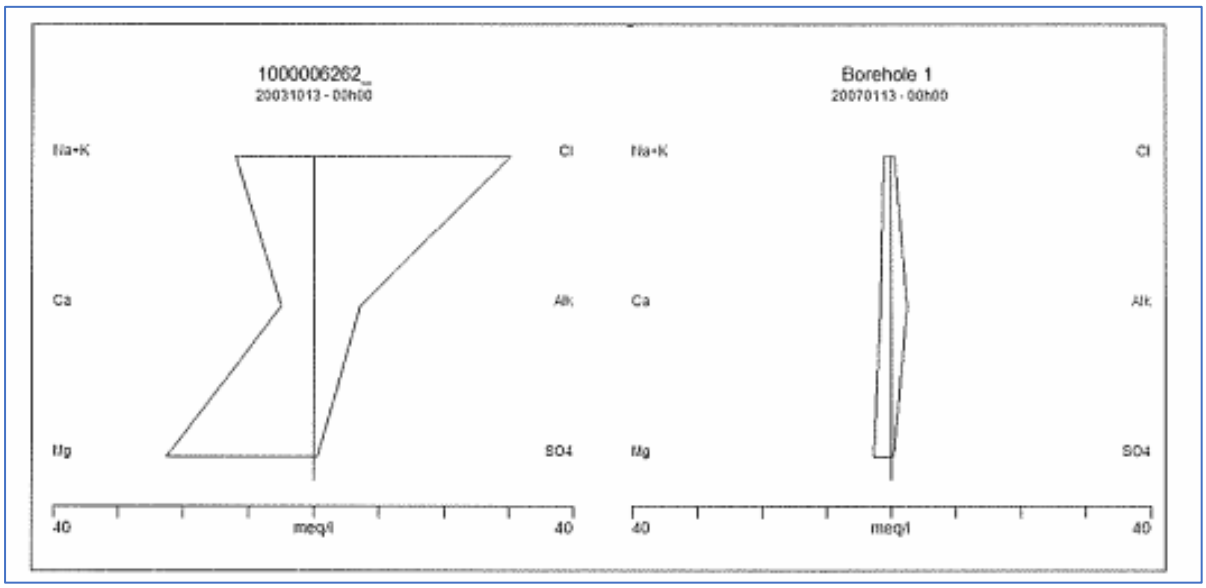


Figure 13: STIFF diagram showing dominant cations and anions (in meg/l) for groundwater in B42E quaternary catchment

3.1.10 Air quality

An air quality impact assessment was conducted in October 2014 for the Krugerspost Andalusite Mine and the proposed new Mining Right area. The document titled "An atmospheric impact assessment of SAMREC: Krugerspost Andalusite Mine's proposed mine on the Farm Klipplaatdrift 399KT dated October 2014 and compiled by Shangoni and the findings summarised below.

3.1.10.1 General

No ambient air quality monitoring station were identified within a 50 km radius of the proposed new Mining Right area (refer to AIA Shangoni, 2014). The closest ambient air quality monitoring station is located more 100 km away from the site and can thus not be seen as representative of the area. As a result of this and the fact that no dust fall-out monitoring is currently conducted, information relating to PM10 and dust fall out levels are not available

The proposed new Mining Right area falls outside of the Highveld, Waterberg and VAAL triangle airshed priority areas and there are also no industrial and / or metropolitan areas within a 50 km radius of the site. Therefore, the current opencast mining area of the Krugerspost Andalusite Mine is the most likely source to cumulatively contribute to the particulate matter in the atmosphere of the area.

3.1.11 Environmental noise

Information for this section was extracted from the Klipplaatdrift Mine EMP (Shangoni Management Services (Pty) Ltd, 2014):

Noise pollution and vibrations caused by existing mining machinery and vehicles. The noise level is only significant in the immediate vicinity of the source, with no impact beyond the boundaries of the site. The potential causes of noise are:

- Percussion drilling for prospecting

There are no notable sources of the noise from the surrounding area.

3.1.12 Visual aspects

Information for this section was extracted from the Klipplaatdrift Mine EMP (Shangoni Management Services (Pty) Ltd, 2012):

The proposed new mining area is somewhat visible from JC Steenekamp, landowner of the remainder of Klipplaatdrift 399KT. The residence on the remainder of the farm Klipplaatdrift 399 KT is approximately 2.4km away from the proposed new mining right activities. The existing mine pits on the adjacent mine are visible from the R36 from approximately 7km outside of Mashishing for approximately 2km.

3.1.13 Cultural and heritage resources

Information for this section was extracted from the Klipplaatdrift Mine EMP (Shangoni Management Services (Pty) Ltd, 2005):

There are no graveyards, old houses or sites of historical significance within 1km of the area.

3.1.14 Sensitive features

Information for this section was extracted from the Klipplaatdrift Mine EMP (Shangoni Management Services (Pty) Ltd, 2014):

3.1.14.1 Wetlands

The information in this section is taken from the document titled: "Mining Application for portion 15 of the Farm Klipplaatdrift 399 KT, Lydenburg (Limpopo Province): Wetland/Riparian delineation and functional assessment", dated June 2014 and compiled by Limosella Consulting (Limosella, 2014).

Wetlands are delineated based on scientifically sound methods (Limosella, 2014) and utilises a tool from the Department of Water Affairs (DWA) titled "A practical field procedure for the identification and delineation of wetlands and riparian areas" (DWAF, 2008). Wetlands are identified based on one or more of the following characteristic:

- The terrain unit indicator.
- The presence of plants adapted to saturated soils.
- Wetland soils.
- A high-water table that results in saturation near or on the surface

In order to delineate wetlands and riparian areas, the delineation methods described in the following documents were utilised during the field survey (Limosella, 2014):

• Updated manual for the identification and delineations of wetlands and riparian areas, DWAF (2008).

• Minimum requirements for biodiversity assessments, GDACE (2012).

• Classification system for wetlands and other Aquatic ecosystems in South Africa. User manual: Inland Systems, Ollis et al (2013).

3.1.14.1.1 Site specific

Site specific During the field survey, four (4) riparian areas and one (1) wetland area were delineated on the study area (Limosella, 2014). Refer to Figure 14 below for an indication of the position of delineated wetland and riparian areas.

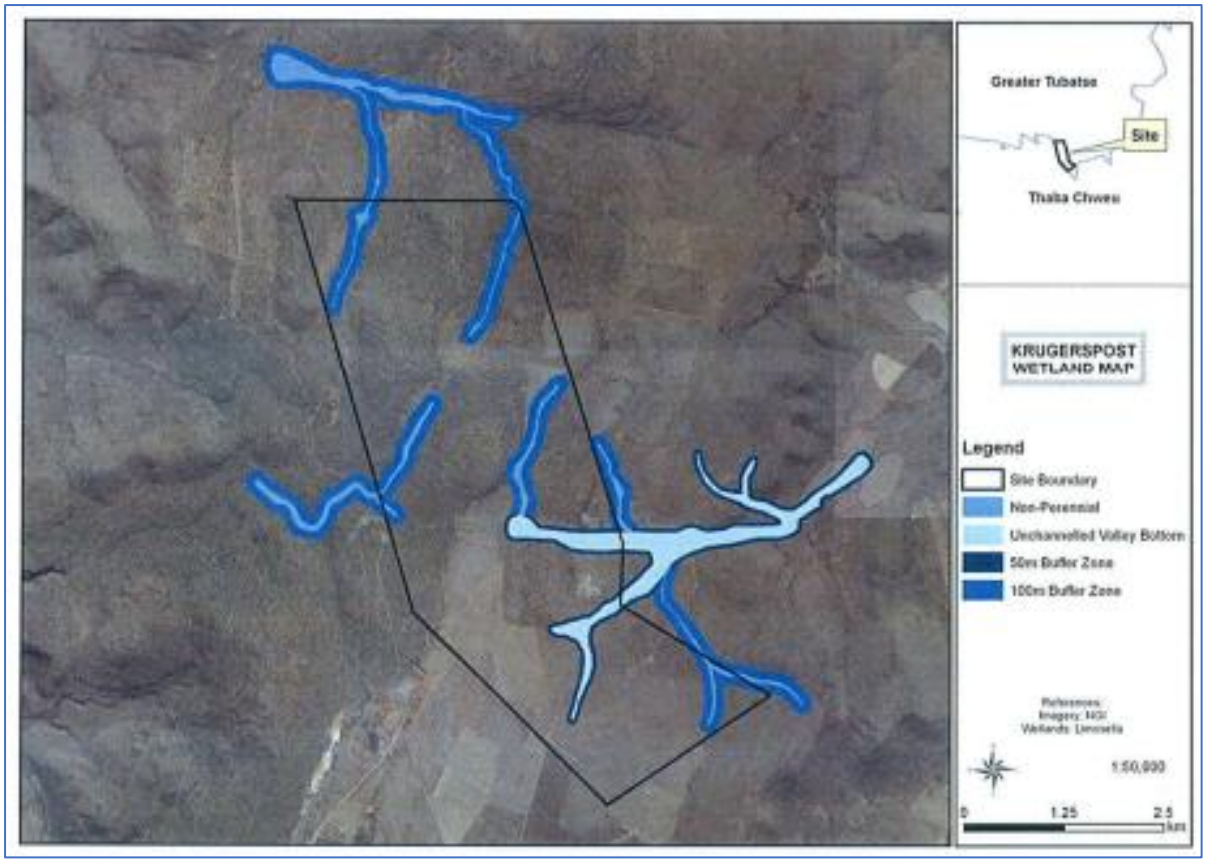


Figure 14: Map indicating the position of the delineated wetlands and riparian areas in relation to the prospecting area

All four of the riparian areas were classified as episodic riparian areas. These episodic riparian areas are characterised by rivers that occur high in their respective catchments and only flow in response to extreme rainfall events (refer to Appendix E8). Due to the episodic nature of the riparian areas, landscape was utilised as the primary delineation indicator. Two of the delineated riparian areas are connected to and flow into an unchannelled valley bottom wetland on the eastern side of the study area. This unchannelled valley bottom wetland reflected some hydrophytic vegetation growth, however it is likely that some vegetation was over looked as the field survey was conducted during winter (dry season).

The EIS of the unchannelled valley bottom wetland are presented below in Table 19.

Table 14: EIS scores obtained for the valley bottom wetland

Wetland importance and sensitivity	**Importance**	**Confidence**
Ecological importance and sensitivty	2,7	3,0
Hydro-functional importance	1,9	3,0
Direct human benefits	2,1	3,0
Overall score	2,2	

During the wetland delineation and functional assessment field survey, it was identified that the unchanneled valley bottom wetland and the riparian areas had been impacted upon. Table 20 below

presents the identified Present Ecological Status (PES), Quick Habitat Integrity (QHI) and the Riparian Vegetation Response Assessment Index (VEGRAI) ratings as well as the current impacts.

Table 15: PES, QHI, VEGRAI and current impacts associated with the unchanneled valley bottom wetland as well as the riparian areas

Area	Current impacts	PES score	QHI score	VEGRAI score
Unchanneled valley bottom	The greatest impact on the wetland is historical and current farming within and surrounding the wetland. Although the infrastructure within and surrounding the wetland is limited to a few dirt road wetland they impact on the wetland to some degree	C	N/A	N/A
Non- perennial streams (Episodic)	The riparian areas are located high in their catchments and the impacts are limited due to the dry nature of the streams in numerous sections within the streams thus blocking water from reaching the surrounding wetland or river systems during rainfall events	N/A	C	C

The Biodiversity Act (Act 10 of 2004) provides for listing of threatened or protected ecosystems, in one of four categories: critically endangered (CR), endangered (EN), vulnerable (VU) or protected. The ecosystems listed make up 9.5% of the country, with critically endangered and endangered ecosystems together accounting for 2.7% and vulnerable ecosystems a further 6.8%. The National Environmental Management: Biodiversity Act: National list of ecosystems that are threatened and in need of protection, (G 34809, GN 1002), 9 December 2011 has listed a map showing remaining protected ecosystems. According to this map many endangered areas occur south to east some distance away from the mine. Some distance to south-east of the mine is a protected area namely the Mauchesburg Alpine Grassland.

3.1.14.1.2 Listed ecosystems

The National Environmental Management: Biodiversity Act (Act 10 of 2004) provides for listing threatened or protected ecosystems in one of four categories: critically endangered (CR), endangered (EN), Vulnerable (VU) or Protected (Section 52(1)(a) of the National Environmental Management: Biodiversity Act (Government Gazette 34809, Government Notice 1002, 9 December 2011)). The ecosystem status is based on the percentage of original area remaining untransformed (by croplands, mining, urban development & roads) in relation to the biodiversity target and a threshold for ecosystem functioning. The purpose of listing threatened ecosystems is primarily to reduce the rate of ecosystem and species extinction, this includes preventing further degradation and loss of structure, function and composition of threatened ecosystems.

Neither the Lydenburg Thornveld nor the Ohrigstad Mountain Bushveld is situated within a listed ecosystem.

3.1.15 Regional socio-economic aspects

Information for this section was extracted from the Klipplaatdrift Mine EMP (Shangoni Management Services (Pty) Ltd, 2012):

The proposed mine is located in a rural farming area of Mpumalanga where the population density is low, population growth small and the population is centred on farmsteads. A part of the mine major economic activity of the area is agriculture.

As the people staying in the immediate area either works in mining or in agriculture, the unemployment level is low.

Mine employees are housed either in a hostel on site or in the nearby town of Lydenburg. To see current and future dwelling conditions refer to Table 21 and Table 22. All information below was taken from Social and Labour Plan (SLP) of Krugerspost Andalusite Mine.

Table 16: Current status of available dwelling for employees

Type	Mark (x)	Percentage
Hostels		0%
Own houses	X	23%
Rentals	X	26%
Other (specify)	X (Informal)	51%

Table 17: Housing and living conditions plan

Type of accommodation	2010	2011	2012	2013	2014
	Baseline	25%	50%	75%	100%
Hostels	0%	0%	0%	0%	0%
Own houses	15%	23%	35%	45%	55%
Rentals	20%	26%	30%	30%	30%
Other (Informal)	75%	51%	35%	25%	15%

The social infrastructure is centred in Mashishing which has a Magistrates Court, schools, a hospital, recreation facilities, shops and a police station.

3.1.15.1 Demographic Profile

3.1.15.1.1 Population and population distribution

According to the Census of 2001 for the TCLM, the total population consisted of 81 236 people of whom 86% are African, 2% are Coloured, 0.37% are Indian and 11.66% are White. The population group for TCLM is indicated in Table 23 below.

Table 18: The population group according to the census (2001 and 1996) for TCLM

Population group for TCLM (2001)				Total population
African	Coloured	Indian	White	
69 848	1 609	300	9 479	81 236

3.1.15.1.2 Age, gender and households

The 2001 Census recorded the age and gender of people living in the TCLM area. The different ages of the two genders are indicated in Table 24 below.

Table 19: Age and gender of people living in the TCLM area during the 2001 census

PERSONS	2001
Males - 0 to 4	3 917
Males - 5 to 14	7 596
Males - 15 to 34	15 409
Males - 35 to 64	12 059
Males - Over 65	1 467
Females - 0 to 4	3 809
Females - 5 to 14	7 788
Females - 15 to 34	15 250
Females - 35 to 64	11 808
Females - Over 65	2 132
Males - Total	40 448
Females - Total	40 787

The composition of households was also determined during the 2001 Census. The types of dwelling (Table 25), household sizes (Table 26) and household incomes (Table 27) are indicated in the tables below. 65% of people taken up in the Census have a formal dwelling and 9% make use of a traditional dwelling. Approximately 47% of households consist of one household and approximately 2% consist of 10 or more households. 1 % of households have no income, while 31.53% has an annual income of R4 801–R9 600. Only 0.08% of households have an income of over R 2 457 600.

Table 20: Type of dwelling (census 2001)

Formal	Informal	Traditional	Other
14 556	4 533	1 894	91

Table 21: Household size (census 2001)

1	2	3	4	5	6	7	8	9	10 and over
5782	4267	3090	2784	1925	1293	722	489	309	412

Table 22: Annual household income (Census 2001)

Households	2001
None	3 792
R 1 – 4 800	2 733
R 4 801 – 9 600	6 645
R 9 601 – 19 200	6 138
R 19 201 – 38 400	3 501
R 38 401 – 76 800	1 831
R 76 801 – 153 600	1 179
R 153 601 – 307 200	509
R 307 201 – 614 400	128
R 614 401 – 1 228 800	41
R 1 228 801 - 2457600	46
Over R 2 457 600	18

3.1.15.2 Education Profile

The Education Profile of the people living in the TCLM area as it was recorded in the Census 2001 is indicated in Table 28. According to the Census (2001), only 3.2% of individuals between the ages of 5 and 24 do not attend an educational institution. 63.36% of individuals in the same age group attend school and only a limited number of individuals attend tertiary educational institutions. The highest education levels attained by over 20-year olds are stipulated in Table 29. A mere 2% have had no schooling and the largest percentage of people has some secondary education (29.37%).

Table 23: Education institutions being attended by 5 to 24-year olds

Persons	2001
None	9 930
Pre - school	1 101
School	19 481
College	90
Technikon	39
University	37
Adult Education Centre	26
Other	40

Table 24: Highest education levels attained by over 20-year olds

Persons	2001
No schooling	10 441
Some primary	9 298
Complete primary	3 494
Secondary	14 813
Grade 12	9 329
Higher	3 058

3.1.15.3 Economic Profile

3.1.15.3.1 Industries

Farming is an important economic resource in the TCLM, which stretches from the Olifants River, north of the Strydom Tunnel to 35km south of Mashishing and from Ohrigstad to Steelpoort Park. A wide range of products are cultivated owing to the good soil conditions, the sub-tropical climate and reasonable access to water. The products that are produced are fruit, vegetables, grain, cotton, citrus, maize, tobacco and meat.

The main sources of natural water that encourage and are essential for present and long-term irrigation are the Olifants-, Steelpoort- and Spekboom Rivers. Due to the high number of unskilled labour, this area also unfortunately has the highest potential for desertion due to overgrazing and the inability to plan ahead.

Except for the expansion of citrus orchids, very little expansion has taken place in the agricultural sector. The Tswelopele Agricultural Scheme in the Steelpoort River Valley in the vicinity of Bothashoek was launched and production has begun.

3.1.15.3.2 Unemployment

In the Census (2001) of the TCLM area, the total labour force was 37 114 of which 75% individuals were employed. 17 753 individuals were not economically active and not included in the Total Labour force. The results are indicated in Table 30 below.

Table 25: Labour force of the TCLM according to the census in 2001

Persons	**2001**
Employed	27 802
Unemployed	9 312
Not economically active	17 753
Total labour force	37 114

According to the Reviewed IDP (2004 / 2005) of the GTLM, unemployment is becoming an increasing concern as the number of people exceeds the number of job opportunities. The high demand for unskilled labour, due to the low levels of literacy, also increases unemployment.

3.1.15.4 Community, social and personal services

Krugerspost Mine employees are housed in the nearby town of Mashishing. The social infrastructure is centred in Mashishing which has a Magistrates Court, schools, a hospital, recreation facilities, shops and a police station.

3.2 Project context

The prospecting right commenced on the 16th November 2006 and was in place for a period of five years. The prospecting right thus expired on the 15th November 2011. On the 27th of January 2004, a prospecting right was granted for portion 3 of the farm Vlakfontein 520KT which expired on the 26th January 2005. The prospecting rights have not been renewed since expiry. No drilling is currently taking place and no drilling holes could be observed on site. No access roads were constructed. A earthen dam was made on site by the contractors.

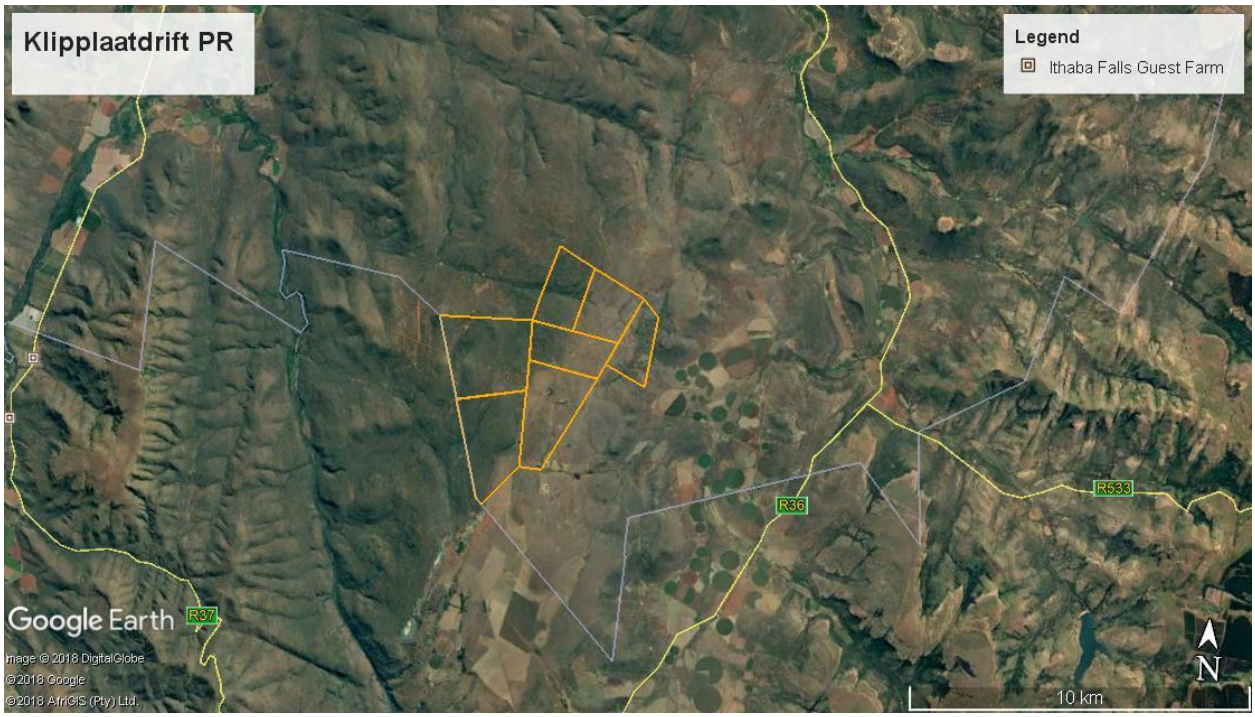


Figure 15: Site layout plan - *Prospecting area= orange*

3.3 Zone of influence

Since prospecting is the only activity that has been done, the zone of influence will be the soil which is not impacted greatly as yet. If mining does occur, the zone of influence will expand as the impact on the environment grows.

3.3.1 Geology

Prospecting activities according to the Klipplaatdrift Mine EMP Shangoni Management Services (Pty) Ltd, 2005 is approximately 6-10m deep. This will disturb the geology of the constructed boreholes only. The material from the topsoil to 10m deep consists mainly of silt, fine sand and gravel. Therefore, the zone of influence is restricted to the project area.

3.3.2 Climate

There is no zone of influence for the climatology of the region

3.3.3 Topography

There is no zone of influence for the topography of the region

3.3.4 Soil

The potential impacts on soil relate to the disturbance of topsoil and potential contamination of the soil with hydrocarbons and other chemicals spilled by equipment associated with prospecting activities such as vehicular movement to and from site. Soil erosion may occur if adequate soil management structures to control storm water run-off are not implemented and maintained. Surface water runoff can cause erosion on the area disturbed. The impact on the soil will however be localised and will not transverse the boundaries of the mine. Siltation of surrounding areas can occur when soil is washed across the boundaries of the mine e.g. Klipplaatdrift. This may continue after closure if the mitigation measures are not well implemented and maintained.

3.3.5 Pre-mining capability, land use and existing infrastructure

The mine has only performed prospecting activities which include the digging of boreholes, therefore, there are no noteworthy activities yet taking place to impact the zone of influence.

3.3.6 Vegetation

The zone of influence on flora can extend outside the current prospecting area in the event that invader plants migrate from the mine to the surrounding farms. This can be minimised through an invader plant control programme. Once prospecting has ceased the influence will be prevented by continuing with the implementation of such a plan.

3.3.7 Animal life

The zone of influence with regards to fauna will be limited to the prospecting area and will not extend outside the prospecting area for the duration of the prospecting. The end land-use has been identified as game ranching. If exotic species are introduced, the zone of influence can extend further than the mine. This can be managed through a land management plan and the biodiversity action plan.

3.3.8 Surface water

No haul roads are constructed. Therefore, there is no zone of influence.

3.3.9 Groundwater

The mine has only undertaken prospecting, therefore, there are no noteworthy activities yet taking place to impact the zone of influence.

3.3.10 Air quality

The only potential sources of post closure air pollution would be dust generated from the disturbed areas. The effective rehabilitation will minimise this impact.

3.3.11 Environmental noise

The only noteworthy activities that generated noise during prospecting was drilling which restricts the zone of influence to the region of prospecting as well as the surrounding landowners, communities and could frighten animal life.

3.3.12 Visual aspects

There is no zone of influence for visual impacts as the holes in ground are barely visible when walking in the field.

3.3.13 Cultural and heritage resources

The zone of influence on heritage resources is limited to the direct surrounding where the heritage resource occurs. There were no resources of cultural or heritage importance which results in no zone of influence being impacted.

3.3.14 Sensitive features

The mine has only prospected there are thus no noteworthy activities yet taking place. However, one of the important sensitive features is the wetland.

3.3.15 Regional socio-economic aspects

The zone of influence from a social economic point of view can extend further than the boundaries of the mine.

SECTION 4: ANNUAL REHABILITATION PLAN

4.1 Proposed final post-mining land use

The end land-use has been identified as game ranching. The goal of rehabilitation with respect to the prospecting that has taken place is to leave the area level and even in a natural state containing no foreign debris or other materials. The environment is expected to look exactly the same after prospecting as it did before the prospecting activities (open veldt).

4.2 Results of monitoring of risks identified in the annual rehabilitation, decommissioning and mine closure plan with a view to informing rehabilitation and remediation activities

Refer to the Environmental Risk Assessment Report, attached as **Addendum 1** for a complete description of all the risks identified in the final rehabilitation, decommissioning and mine closure plan with a view to informing rehabilitation and remediation activities.

4.3 An identification of shortcomings experienced in the preceding 12 months

This is the first annual rehabilitation plan to be submitted. The rehabilitation can only commence once the EMP has been approved. Prospecting right commenced on the 16th November 2006

4.4 Details of the planned annual rehabilitation and remediation activities or measures for the forthcoming 12 months, including those which will address the shortcomings contemplated in Section 4.2 above or which were identified from monitoring in the preceding 12 months

4.4.1 If no areas are available for annual rehabilitation and remediation concurrent with mining

There is only a small region of prospecting that is taking place.

4.4.2 If areas are available for annual rehabilitation and remediation concurrent with mining

Key closure objectives are to ensure all drill holes are covered.

4.4.2.1 Soil and surface water (drainage line)

Description	Comment
Nature or type of activity and associated infrastructure.	Constructed earthen dam
Planned remaining life of activity under consideration.	Until 2020
Surface area of already disturbed area.	325m²:
Planned-to-be-disturbed area.	325m²
Area already disturbed* in percentage of planned-to-be-disturbed area, available for concurrent rehabilitation and remediation activities.	100%
Notes to indicate why total available or planned to be available area differs from area already disturbed or planned to be disturbed.	N/A
Notes to indicate why concurrent rehabilitation will not be undertaken on the full available or planned to be available area.	N/A
Details of rehabilitation activity planned on this area for the period of review;	If the dam is not used, it must be sloped and returned to the natural topography.
The pertinent closure objectives and performance targets that will be addressed in the forthcoming year, which objectives and targets are aligned to the final rehabilitation, decommissioning and mine closure plan;	To remove dam and return area to final land use.
Description of the relevant closure design criteria adopted in the annual rehabilitation and remediation activities and the expected final land use once all	Not necessary. No design criteria needed for the stripping of topsoil.

Description	Comment
rehabilitation and remediation activities are complete for the activity or aspect	

* This disturbed area refers only to the area disturbed by the soil, and not the entire area of the Operation.

4.4.3 A site plan indicating at least the total area disturbed, area available for rehabilitation and remediation and the area to be rehabilitated or remediated per aspect or activity

No area can be indicated on plan that has been disturbed. All drill holes have been removed.

4.5 A review of the previous year's annual rehabilitation and remediation activities, indicating a comparison between activities planned in the previous year's annual rehabilitation and remediation plan and actual rehabilitation and remediation implemented

This is the first annual rehabilitation report, mining has just commenced, therefore, no review available of the previous year's annual rehabilitation and remediation activities.

4.6 Details of the timeframes of implementation of the current, and review of the previous rehabilitation activities

Nothing has commenced therefore no details on the timeframes yet.

SECTION 5: POST REHABILITATION ACTIVITIES

Post rehabilitation will take place after closure of the mine. These activities will be in the form of maintenance and monitoring. This section will form part of the closure plan to be compiled when closure of mine is neared. If, during monitoring it is noticed that re-vegetation or removal of plants is necessary, or if during maintenance re-vegetation or removal of plants must be done.

5.1 Monitoring plan

At every stage of the operation, all aspects will be checked against prescriptions given in Section F of the EMP and any shortcomings will be addressed immediately.

Inspections and monitoring:

- Regular monitoring of all environmental management measures and components shall be carried out by the holder of the prospecting right, mining right, mining permit or reconnaissance permission in order to ensure that the provisions of this programme are adhered to
- Ongoing and regular reporting of the progress of implementation of this programme will be done
- Various points of compliance will be identified with regard to various impacts that the operations will have on the environment

- Inspections and monitoring shall be carried out on both the implementation of the programme and the impact of plan and animal life
- Visual inspections on erosion and physical pollution shall be carried out on a regular basis

5.2 Internal, external and legislated audits of the monitoring plan

The monitoring plan will be audited to ensure effective implementation.

5.2.1 Person responsible for undertaking the audit

Mine Manager for internal audits and consultant for external audits.

5.2.2 Planned date of audit and frequency of audit

Annually.

5.2.3 An explanation of the approach that will be taken to address and close out audit results and schedule

Refer to the monitoring plan in section 5.1 for approach that will be taken to address and close out audit results and schedule.

5.2.4 Disclosure of updates of the plan to stakeholders

The audit report will be sent to DMR and Department of Water and Sanitation (DWS) once finalised, therefore on an annual basis.

SECTION 6: ANNUAL UPDATED FINANCIAL PROVISION

This section is the annual updated financial provision for Klipplaatdrift Mine. This section includes

i. an explanation of the closure cost and methodology,
ii. auditable calculations of costs per activity or infrastructure,
iii. cost assumptions;
iv. and monitoring and maintenance costs likely to be incurred both during the period of the annual rehabilitation plan and those that will extend past the period of the final rehabilitation, decommissioning and mine closure plan, on condition that the monitoring and maintenance costs included in previous annual rehabilitation plans must be accumulated into subsequent versions of the annual rehabilitation plan until such time as the monitoring and maintenance obligation is discharged

6.1 Financial provision methodology

The following is extracted from the Annesley Andalusite Mine Closure Liability Update (Shangoni Management Services, 2016):

The CES Group was contracted by Shangoni to acquire rates for demolition and rehabilitation of mining activities (**Table 31**). Procurement of budget pricing approached by identifying reputable demolition companies, various sites of varying sizes at various locations and identifying local companies in the study area with the ability to work on similar scale project. A bill of quantities (BoQ) was distributed to the various companies. The table below indicates the number of contractors to which the BoQ was distributed and the number of tenders received afterwards.

Table 26: Results of rate acquisition process

Area	Number of contractors identified	Tenders received
National	6	1
North West	6	3
Free State	5	1
Northern Cape	7	2
Limpopo	5	3 (One joint venture with national based company)
Total	29	10

The prices received from contractors were reviewed by the CES Group, after which average and meridian rates were drawn rates to correctly establish a baseline rate. The following methods to establish the baseline rates were followed:

- Price A - Average if priced – across the board average of rates received per category;
- Price B - Median pricing – “middle” rate of all rates in series per category;
- Price C - Average between Price A & B;
- Price D - Average rate excluding top and bottom rates per category.
- Price D - rate category that was used in the closure cost calculation, unless otherwise indicated in the closure cost spreadsheet “Rate” sheet.

The closure budget consists of the following areas:

- Physical - Demolition of infrastructure where infrastructure does not form part of end land use. Potential to transfer to third party was identified.
- Biophysical - Actions to safeguard (making safe and stable) and re-establish the biophysical to ensure a sustainable landform and mitigate identified risks. This includes levelling of the dumps, seeding of the trees and grass.

6.2 Auditable calculations of financial provision per activity or infrastructure

The monitoring and maintenance costs likely to be incurred both during the period of the annual rehabilitation plan and those that will extend past the period of the final rehabilitation, decommissioning and mine closure plan, on condition that the monitoring and maintenance costs included in previous annual rehabilitation plans must be accumulated into subsequent versions of the annual rehabilitation plan until such time as the monitoring and maintenance obligation is discharged are included in the table below.

Table 27: Tariffs used for quantum determination

Rehabilitation and Demolition	**Unit**	**Rates**
Traditional seeding	m^2	R 3.36
Sloping and replacement of topsoil	m^3	R8.89

6.3 Financial provision estimation

The following table contains a summary of the calculations made for the closure cost.

Table 28: Summary of the closure cost calculation of actual disturbance

Item	Size (m / m² / m³)	Rate	Final cost	Comment	Percentage of total costs
Physical rehabilitation					
Sloping and replacement of topsoil	325.00	R8.89	R32 235.14	Sloping of earthen dam	
Physical rehabilitation sub total			*R32 235.14*		86.52%
Vegetation					
Traditional seeding	325.00	R3.36	R1 092.00	Revegetation of earthen dam	
Vegetation sub total			*R1 092.00*		2.85%
Monitoring					
Soil erosion, vegetation growth, and alien vegetation monitoring	Year 1	R5 000.00	R5 000.00		
Monitoring sub total			*R5 000.00*		10.63%
Sub-total			R 38 327.14		100.00%
P&G (13.5%)			R 5 174.16		
Contingency (10%)			R 3 832.71		
Total			**R 47 334.02**		

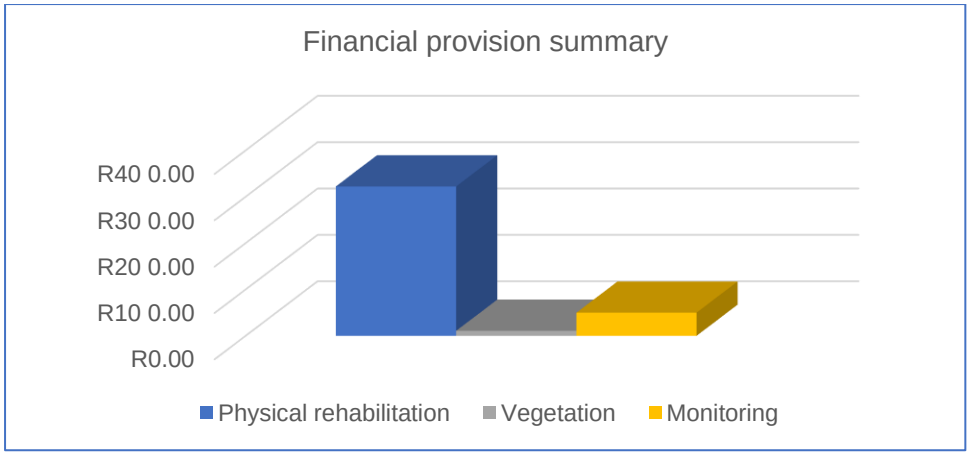


Figure 16: Financial provision summary

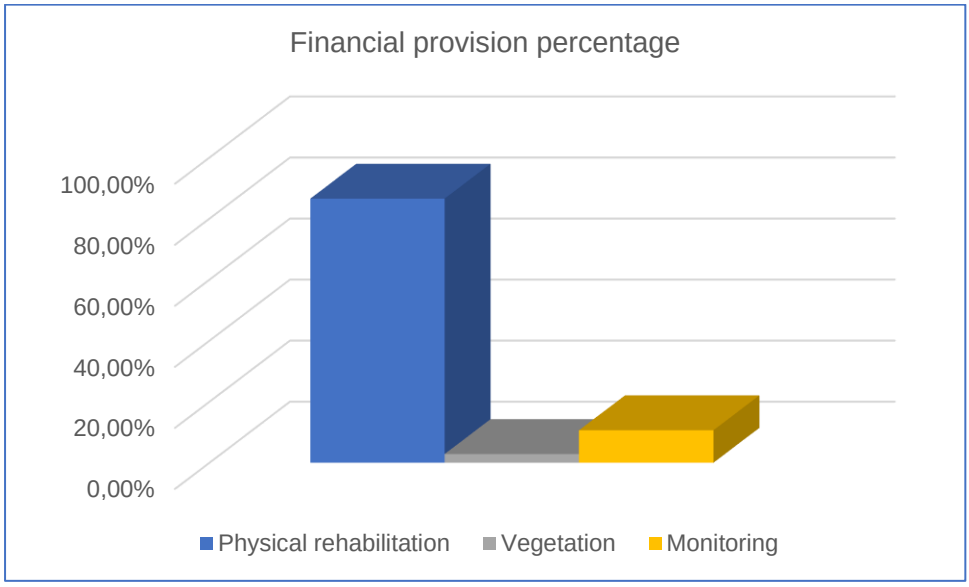


Figure 17: Percentage of financial provision

Referring to **Figures 16 and 17** above, it is evident that physical rehabilitation will be almost 87% of the entire financial provision.

6.4 Financial provision assumptions

No drill holes on site. All roads will be kept as farm roads.

SECTION 7: CONCLUSION AND GAP ANALYSIS

The objective of the annual rehabilitation plan will be ensuring the post-closure land capability goals are achieved, in accordance with the overall closure objectives. The monitoring programme was designed to collect information to demonstrate the criteria that was used. This report is the first annual rehabilitation plan compiled and an explanation of motivations for any amendments made to the final

rehabilitation, decommissioning and mine closure plan, given the monitoring results in the previous auditing period and the identification of gaps will only become applicable in subsequent updates.

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