Lead & Zinc Metals (Pty) Limited

Paardenvallei Prospecting Area

Basic Assessment Report (BAR) and Environmental Management Programme (EMPr)

Draft

Compiled in terms of Appendix 1 and Appendix 4 of the amended Environmental Impact Assessment Regulations, 2014 (Government Notice No. 326) (EIA Regulations, 2014) and submitted as contemplated in Regulation 19 of Chapter 4 of the EIA Regulations, 2014
For
The application for an Environmental Authorization in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), Amended Environmental Impact Assessment Regulations 2014, Government Notice R327 - Listing Notice 1 of 2014

For

Prospecting Right Application

DMRE Reference No.: NW 30/5/1/1/2/13569 PR

DECEMBER 2022

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CONTENTS PAGE

APPENDICES IX

EXECUTIVE SUMMARY 1

1. INTRODUCTION 4

1.1. Who is Developing the BAR and EMPR? 4

1.1.1. Name and contact details of the EAP who prepared the BAR and EMPR 4

1.1.2. Expertise of the EAP who prepared the BAR and EMPR 4

1.2. Who will Evaluate and Approve the BAR and EMPR? 5

1.3. DETAILS OF THE APPLICANT 6

1.3.1. Name of the Applicant 6

1.3.2. Name of the Project 6

1.3.3. Postal Address of Applicant 6

1.3.4. Responsible Person 6

1.3.5. Contact Person 6

1.4. DESCRIPTION OF THE PROPERTY (LOCATION OF THE PROJECT) 6

1.4.1. Regional Setting 6

1.4.2. Physical Address and Farm Name of the prospecting Area 8

1.4.3. Magisterial District & Regional Services Council 8

1.4.4. Direction and Distance to Nearest Towns 8

1.4.5. Locality Plan 8

1.4.6. Land Tenure and Use of Immediate and Adjacent Land 10

2. DESCRIPTION OF THE SCOPE OF THE PROPOSED PROJECT 16

2.1. Listed Activities and Specified Activities 16

2.2. Description of the proposed Project 16

2.2.1. Target Mineral 18

2.2.2. Prospecting method to be used at the Paardenvallei prospecting area. 18

2.2.3. Planned Life of Project 18

2.3. Paardenvallei prospecting area Surface Infrastructure Description 18

2.3.1. Access 18

2.3.2. Power line Infrastructure 18
2.3.3. Water Supply Infrastructure 18
2.3.4. Workshops and Buildings 18
2.3.5. Waste Management 19
2.4. Paardenvallei Prospecting Area- Method Statement 19
2.4.1. Pre-Construction Phase 19
2.4.2. Construction Phase 20
2.4.3. Operational Phase 20
2.4.4. Decommissioning phase 21
2.4.5. Final Rehabilitation 21
2.4.6. Pre-feasibility study 21
2.4.7. Mining feasibility study 21
2.4.8. After Closure Phase 21
3. POLICY AND LEGISLATIVE CONTEXT 23
3.1. Constitution of the Republic of South Africa (Act No. 108 of 1996) 23
3.2. National Environmental Management Act 23
3.3. National Environmental Management Air Quality Act 24
3.4. The National Heritage Resources Act 24
3.5. National Environmental Management Biodiversity Act (Act 10 of 2004) (NEMBA) 24
3.6. North West Biodiversity Management Act (Act 4 of 2016) 25
3.7. Mineral and Petroleum Resources Development Act (MPRDA): Act 28 of 2002 25
3.8. National Water Act (NWA): Act No. 36 of 1998 25
3.9. National Environmental Management: Waste Act (Act No. 59 of 2008) 26
3.10. EIA Guidelines 26
4. NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES 28
4.1. Motivation for the Need and desirability of the Project 28
5. MOTIVATION FOR THE PREFERRED DEVELOPMENT FOOTPRINT 30
5.1. Consideration of Alternatives 30
5.1.1. Location Alternatives 30

5.1.2. Prospecting Sites 30
5.1.3. Access Routes/Transport alternatives 30
5.1.4. Campsite Location 30
5.1.5. Design/ Layout Alternatives 31
5.1.6. Technology Alternatives 31
5.1.7. Input Material Alternatives 31
5.1.8. Operational Alternatives 31
5.1.9. Exploration Drilling Methods 31
5.1.10. No Go Option 31
5.1.11. Concluding Statement 32
5.2. Details Of The Public Participation Process Followed and Results Thereof 32
5.2.1. Registration and BAR Phase 33
5.2.2. Draft Basic Assessment Report 34
5.2. Environmental Attributes (Baseline Information) 35
5.2.1. Geology 35
5.2.2. Climate 39
5.2.3. Topography 39
5.2.4. Soil 41
5.2.5. Land Use 42
5.2.6. Natural Vegetation/Plant Life 43
5.2.7. Animal Life 47
5.2.8. Surface Water 52
5.2.9. Groundwater 55
5.2.10. Sensitive Landscapes 55
5.2.11. Air Quality 63
5.2.12. Noise 63
5.2.13. Socio-Economic Status 63
6. ENVIRONMENTAL IMPACT ASSESSMENT 68
6.1. Environmental Impact Assessment Process Followed 68
6.1.1. Approach to Environmental Impact Assessment 68

6.1.2. Environmental Impact Assessment Process Followed 68
6.2. Environmental Impact Assessment Methodology 69
6.3. Results of the Environmental Impact Assessment 71
6.3.1. Assessment of the Paardenvallei prospecting area impacts/risks 71
6.4. Summary of Specialist Reports 86
6.5. Environmental Impact Statement 86
6.5.1. Description of affected environment 86
6.5.2. Summary of key findings of the environmental impact assessment 86
6.5.3. Final Master Layout Plan 87
6.6. Aspects for Inclusion as conditions of the Environmental Authorisation 87
6.7. Description of Assumptions, Uncertainties and Gaps in Knowledge 87
6.8. Reasoned Opinion as to Whether the Proposed Project should or should not Continue 88
6.8.1. Reason why the activity should be authorised or not 88
6.8.2. Conditions that must be included in the authorisation 88
6.9. Period for which the Environmental Authorisation 88
6.10. Undertaking 88
6.11. Financial Provision 88
6.12. Other Information Required by the Competent Authority 88
6.13. Other Matters Required in Terms of Section 24 (4) (a) and (b) of the Act 88
1. DETAILS OF THE EAP 90
2. DESCRIPTION OF THE ASPECTS OF THE ACTIVITY 90
3. COMPOSITE MAP 90
4. DESCRIPTION OF THE MANAGEMENT OBJECTIVES INCLUDING MANAGEMENT STATEMENTS 90
4.1. General Closure Principles and Objectives 90
4.2. Management of Environmental Damage, Environmental Pollution and Ecological degradation caused by THE Paardenvallei prospecting area Activities 90
4.2.1. Infrastructure Areas 91
4.3. Potential Risk of Acid Mine Drainage 91

4.4. Steps taken to Investigate, Assess and Evaluate the Impacts of the Acid Mine Drainage 91

4.5. Engineering and designs Solutions to be Implemented to Avoid or Remedy Acid Mine Drainage 91

4.6. Measures to Remedy Residual or Cumulative Impacts from Acid Mine Drainage 91

4.7. Volumes and Rates of Water Use Required for the Proposed Project 91

4.8 Water Use Licence Application 91

5. ENVIRONMENTAL MANAGEMENT PROGRAMME 92

6. FINANCIAL PROVISION 103

6.1 Description of Closure Objectives and Extent to which they have been aligned to the described Baseline Environment 103

6.2 Confirmation that the Environmental Objectives in relation to Closure have been Consulted with Landowners and Interested and Affected Parties 103

6.3 Rehabilitation Plan for the Proposed Project 103

6.4 Compatibility of the Rehabilitation Plan with the Closure Objectives 103

6.5 Determination of the Quantum of the Financial Provision Required to Manage and Rehabilitate the Environment 104

6.6 Method of Providing for the Financial Provision 104

7. MECHANISM FOR MONITORING COMPLIANCE WITH AND PERFOMAMCE ASSESSMENT AGAINST THE ENVIRONMENTAL MANAGEMENT PROGRAMME AND REPORTING THEREOF 106

7.1 Inspections and Monitoring 106

7.2 Monitoring compliance with and performance assessment against the environmental management programme and reporting thereof 106

7.3 PROCEDURE FOR ENVIRONMENTAL RELATED EMERGENCIES AND REMEDIATION 106

7.3.1 Introduction 107

7.3.2 What is an Environmental Emergency? 107

7.3.3 Purpose of the procedure 107

7.3.4 Who should use this procedures? 107

7.3.5 Responsibilities 107

7.3.6 Notification process 108

7.3.7 Emergency equipment and supplies 108

7.3.8 Communication systems 108
7.3.9 Training 108
7.3.10 Review of procedure 108
7.3.11 Emergency Response flowchart for Lead & Zinc Metals (Pty) Limited. 108
7.4 ENVIRONMENTAL AWARENESS PLAN 109
7.4.1 Objectives and Legal Requirements 109
7.4.2 Manner of informing employees of risks to avoid pollution and degradation of the environment 110
7.4.3 Induction for all employees, including contractors 113
7.4.4 General environmental awareness training 113
7.4.5 Provision for job specific environmental awareness training 113
7.4.6 Competency training 113
7.4.7 Review of awareness and training material 114
7.4.8 Roles and responsibilities 114
7.5 Undertaking to Comply 115

TABLES

Table #	Table Description	Page

Table 1: Direction and Distance to Nearest Towns. 8

Table 2: Schedule of properties listing surface ownership surrounding Paardenvallei prospecting area. 10

Table 3: Proposed Paardenvallei prospecting area Listed Activities. 17

Table 5: Information regarding the above-mentioned quaternary catchment areas**Error! Bookmark not defined.**

Table 6: Detailed descriptions regarding the North-West Biodiversity Sector Plan Terrestrial and Aquatic. 61

Table 7: Population Details (2011 census)..... 64

Table 8: Neighbourhoods within Ramotshere Moiloa Local Municipality (2011 census). 65

Table 9: Socio-economic status 66

Table 10: Economic drivers 66

Table 11: The above criteria are expressed for each impact in tabular form according to the following definitions:..... 69

Table 12: Results of the Environmental Impact Assessment for Paardenvallei prospecting area. 71

Table 13: Environmental Management Programme for the proposed Paardenvallei Prospecting Area. 92

Table 14: Responsibilities 107

Table 15: Environmental Awareness Matrix. 111

FIGURES

Figure #	Figure Description	Page
Figure 1:	Regional setting	7
Figure 2:	Locality Plan.	9
Figure 3:	Land Tenure Plan for the Paardenvallei prospecting area.	14
Figure 4:	Geology of the study area	36
Figure 5:	Local Geology	38
Figure 6	Elevation figure.	40
Figure 7:	Current land-use.	42
Figure 8:	National Vegetation Types in the vicinity of the proposed Paardenvallei prospecting area	43
Figure 9:	Water management areas.	53
Figure 10:	Quaternary catchment areas of the proposed prospecting area.	54
Figure 11 :	Threatened Ecosystems in the vicinity of the proposed Paardenvallei prospecting area (SANBI).	55
Figure 12:	Strategic Water Sources of South Africa (Department of Water and Sanitation).	56
Figure 13:	National River Freshwater Ecosystem Priority Areas (NFEPA's).	57
Figure 14:	National Wetland Types in the vicinity of the proposed Paardenvallei prospecting area (National Wetland Map 5, SANBI).	58
Figure 15:	National Wetland Vegetation Types in the vicinity of the proposed Paardenvallei prospecting area (SANBI).	59
Figure 16:	North- West Biodiversity Sector Plan, Terrestrial Assessment for the proposed Paardenvallei Prospecting area (NWBSP).	60
Figure 17:	North- West Biodiversity Sector Plan Aquatic Assessment for the proposed Paardenvallei Prospecting area (NWBSP).	61
Figure 19:	Biosphere Reserve associated with the proposed Paardenvallei Prospecting area (South African Conservation Areas Database).	63
Figure 19:	emergency response.	109

APPENDICES

APPENDIX A	REGULATION 2 (2) PLAN
APPENDIX B	EAP's CURRICULUM VITAE
APPENDIX C	WINDEED LIST OF THE DIRECT FARMS
APPENDIX D	NATIONAL WEB BASED ENVIRONMENTAL SCREENING TOOL

EXECUTIVE SUMMARY

Lead & Zinc Metals (Pty) Limited has lodged an application for a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, 2004 (Act 28 of 2004). Lead & Zinc Metals (Pty) Limited proposes to prospect for Lead and Zinc on certain portions of the farm Paardenvallei 67 JO, Uitvlugt 275 JP and the remaining extent portion of farm Uitvlugt 281, situated within the Zeerust Magisterial District, See Appendix A – regulation 2(2) plan.

Paardenvallei Prospecting Area will be undertaken in different phases i.e., literature review (available data interpretation and deciding whether to commence with drilling), field mapping and geophysical survey, positioning of drilling sites, diamond core drilling, logging/sampling of borehole cores and rehabilitation of the drilling site.

The commencement of the proposed Paardenvallei Prospecting Area will results in the undertaking of activities that are considered as listed activities in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) as amended (NEMA). In terms of the above-mentioned legislation, an application for an environmental authorisation must be submitted to the competent authority which application must be granted before the commencement of the proposed listed activities. In addition to the above, an environmental impact assessment must be undertaken in support of the environmental authorisation application for the proposed listed activities. In view of the above, Lead & Zinc Metals (Pty) Limited appointed Geovicon Environmental (Pty) Limited, an independent environmental consulting company, to undertake and manage the environmental authorisation application and the environmental impact assessment for the proposed Paardenvallei Prospecting Area. An application for an environmental authorisation for the proposed Paardenvallei Prospecting Area was submitted to the Department of Mineral Resources and Energy, North West Regional Office (Competent Authority) for their consideration. The application has ever since been received by the Department and a Basic Assessment Report (BAR) together with an EMPR must be compiled and submitted in terms of the requirements of the EIA Regulations, 2014.

This document (BAR and EMPR), which concerns assessment of environmental impacts and a programme for management of the impacts for the proposed activities at the Paardenvallei prospecting area, was compiled in terms of the amended EIA Regulations, 2014 for review by interested and affected parties including the competent authority.

Environmental baseline data that are used in this report has been obtained through desktop assessments by making use of available information pertaining to surface water, geohydrological data, topography, soil, vegetation types, wetlands, threatened ecosystems and the socio-economic aspects that are associated with the proposed Paardenvallei Prospecting area. Weather data was acquired from the website, world weather online. Historic land uses were determined through available google satellite imagery. The data accumulated and analysed is; therefore, deemed sufficient to gain a baseline indication of the present state of the environment. The implementation of this baseline data for undertaking impact assessments are thus justified, and reliable conclusions could be made. The impacts that could arise during and after the proposed activities at the Paardenvallei Prospecting area were determined and ranked according to their significance. Based on the impact assessment, recommendations were made for the mitigation of significant negative environmental impacts that will result from the activities that are proposed at the proposed Paardenvallei Prospecting area

PART A

BASIC ASSESSMENT REPORT

SECTION ONE

Introduction

1. INTRODUCTION

1.1. WHO IS DEVELOPING THE BAR AND EMPR?

1.1.1. Name and contact details of the EAP who prepared the BAR and EMPR

EAP: Mr. Ornassis Tshepo Shakwane

Professional registration:

SACNASP: 117080

EAPASA: 2019/1763

IAIA Membership No.: 3847

Company: Geovicon Environmental (Pty) Limited

Postal Address:

P.O. Box 4050

MIDDELBURG, 1050

Tel: (013) 243 5842

Fax: (086) 632 4936

Cell No.: 082 498 1847

Email: tshepo@geovicon.co.za

1.1.2. Expertise of the EAP who prepared the BAR and EMPR

Geovicon Environmental (Pty) Limited is a geological and environmental consulting company. The company was formed during 1996, and currently has more than 20 years' experience in the geological and environmental consulting field. Geovicon Environmental (Pty) Limited has successfully completed consulting areas in the Mining sector (coal, lead and zinc, gold, base metal and diamond), Quarrying sector (sand, aggregate and dimension stone), Industrial sector and housing sector. Geovicon Environmental (Pty) Limited has undertaken contracts within all the provinces of South Africa, Swaziland, Botswana and Zambia. During 2001 Geovicon Environmental (Pty) Limited entered the field of mine environmental management and water monitoring.

Geovicon Environmental (Pty) Limited is a Black Economically Empowered Company with the BEE component owning 60% of the company. Geovicon Environmental (Pty) Limited has three directors i.e., O.T Shakwane, J.M. Bate and T.G Tefu.

Mr. O.T Shakwane obtained his BSc (Microbiology and Biochemistry) from the University of Durban Westville in 1994, and completed his honours degree in Microbiology in 1995. Mr O.T Shakwane has also completed short courses on environmental law and environmental impact assessment with the University of North West's Centre for Environmental Management. He has worked with the three state departments tasked with mining and environmental management i.e. Department of Water and Sanitation (Gauteng and Mpumalanga Region), Department of Mineral Resources and Energy (Mpumalanga Region) and Department of Agriculture, Conservation and Environment (Gauteng Region). Mr. Shakwane has been in the consulting field since 2004 and has completed various areas similar to the proposed Paardenvallei Prospecting Area as an environmental assessment practitioner.

Mr Shakwane is the environmental assessment practitioner for the environmental impact assessment for the proposed Paardenvallei Prospecting Area.

Over the past years Geovicon Environmental (Pty) Limited has formalised working relationships with companies that offer expertise in the following fields i.e., Geohydrology, Civil and Geotechnical Engineering, Geotechnical Consultancy, Survey and Mine Planning and Soil & Land Use Consultancy. Geovicon Environmental (Pty) Limited is an independent consulting company, which has no interest in the outcome of the decision regarding the Paardenvallei Prospecting Area basic assessment process.

The curriculum vitae of the EAP is attached as Appendix B.

1.2. WHO WILL EVALUATE AND APPROVE THE BAR AND EMPR?

Before the proposed project can proceed, an Environmental Assessment Practitioner (EAP) must compile an application for an environmental authorisation for the proposed project. An impact assessment (basic assessment process) must be undertaken in support of the application for an environmental authorisation. The basic assessment process will determine the potential environmental impacts that may result from the proposed project and an environmental management programme will be compiled to provide measures for mitigation against the identified impacts. The above-mentioned application must be made to the competent authority and in terms of section 24D (1) of NEMA, the Minister responsible for mineral resources is the responsible competent authority for this application. In view of the above, the application for the environmental authorisation for the proposed project was submitted to the Department of Mineral Resources and Energy (DMRE), North West Regional Office for their consideration and decision making.

In the spirit of co-operative governance and in compliance with the requirements of NEMA and the MPRDA, the competent authority may, during the processing for the environmental authorisation application, consult with other organs of state that administers laws that relate to matters affecting the environment relevant to this application. Note that during the public participation process for the proposed project, the EAP will also consult with the below listed state authorities.

The organs of state that are to be consulted may include the following:

- North West Department of Rural, Environment and Agriculture Development (NWREAD)
- Department of Land Affairs

Note however that this list is not exhaustive as more organs of state may be identified by the competent authority and EAP during the public participation process.

1.3. DETAILS OF THE APPLICANT

1.3.1. Name of the Applicant

Lead & Zinc Metals (Pty) Limited

1.3.2. Name of the Project

Paardenvallei Prospecting Area

1.3.3. Postal Address of Applicant

Lead & Zinc Metals (Pty) Limited

P.O. Box 90512

Garsfontein

Pretoria

0042

1.3.4. Responsible Person

Mongwe Mojalefa

1.3.5. Contact Person

Mongwe Mojalefa

Cell No: 074 5489 726

Fax: (086) 663 5033

E-mail: douglas@xakwa.com

1.4. DESCRIPTION OF THE PROPERTY (LOCATION OF THE PROJECT)

1.4.1. Regional Setting

The Paardenvallei Prospecting Area is situated within the Zeerust Magisterial District approximately 8 km south-west of Zeerust and approximately 13 km north of Ottoshop, Access to the mine is via the R49 Provincial Road or unnamed farm road that passes through the prospecting area. See Figure 1, for the location of Paardenvallei prospecting area and Table 1 for the distance and directions of towns around the Paardenvallei prospecting area.

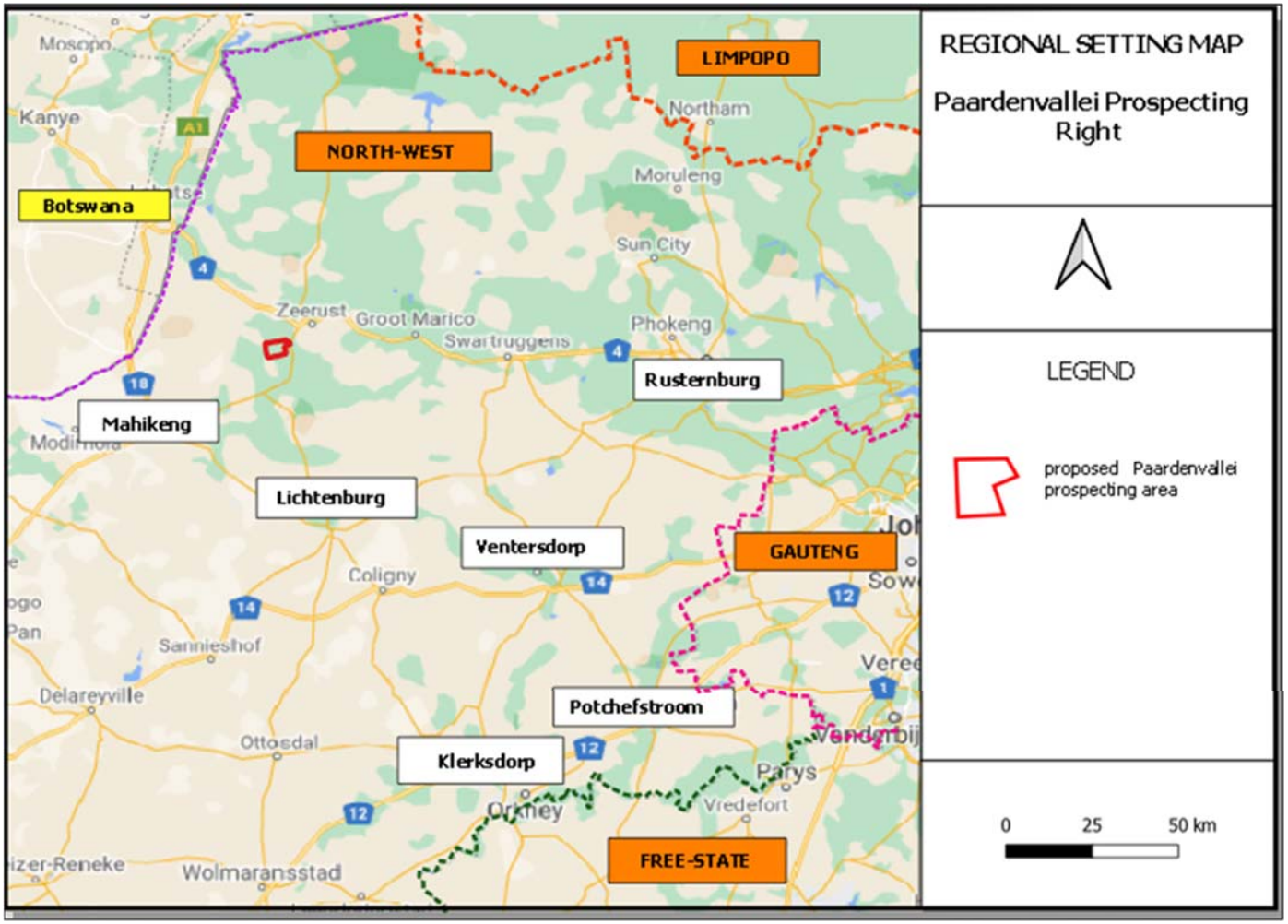


Figure 1:Regional setting

1.4.2. Physical Address and Farm Name of the prospecting Area

Paardenvallei Prospecting Area is situated on certain portions of the farm Paardenvallei 67 JO, Uitvlugt 275 JP and the remaining extent portion of farm Uitvlugt 281, North West province.

1.4.3. Magisterial District & Regional Services Council

- Magisterial District: Zeerust Magisterial District, North West
- District Municipality: Ngaka Modiri Molema District Municipality
- Local Municipality: Ramotshere Moiloa Local Municipality

1.4.4. Direction and Distance to Nearest Towns

Table 1: Direction and Distance to Nearest Towns.

TOWN	DIRECTION	DISTANCE (KM)
Zeerust	NE	8 km
Lehurutshe	NW	14 km
Ottoshop	S	13 km
Khunotswana	NW	14 km

1.4.5. Locality Plan

Refer to Figure 2 for the locality plan of the Paardenvallei prospecting area.

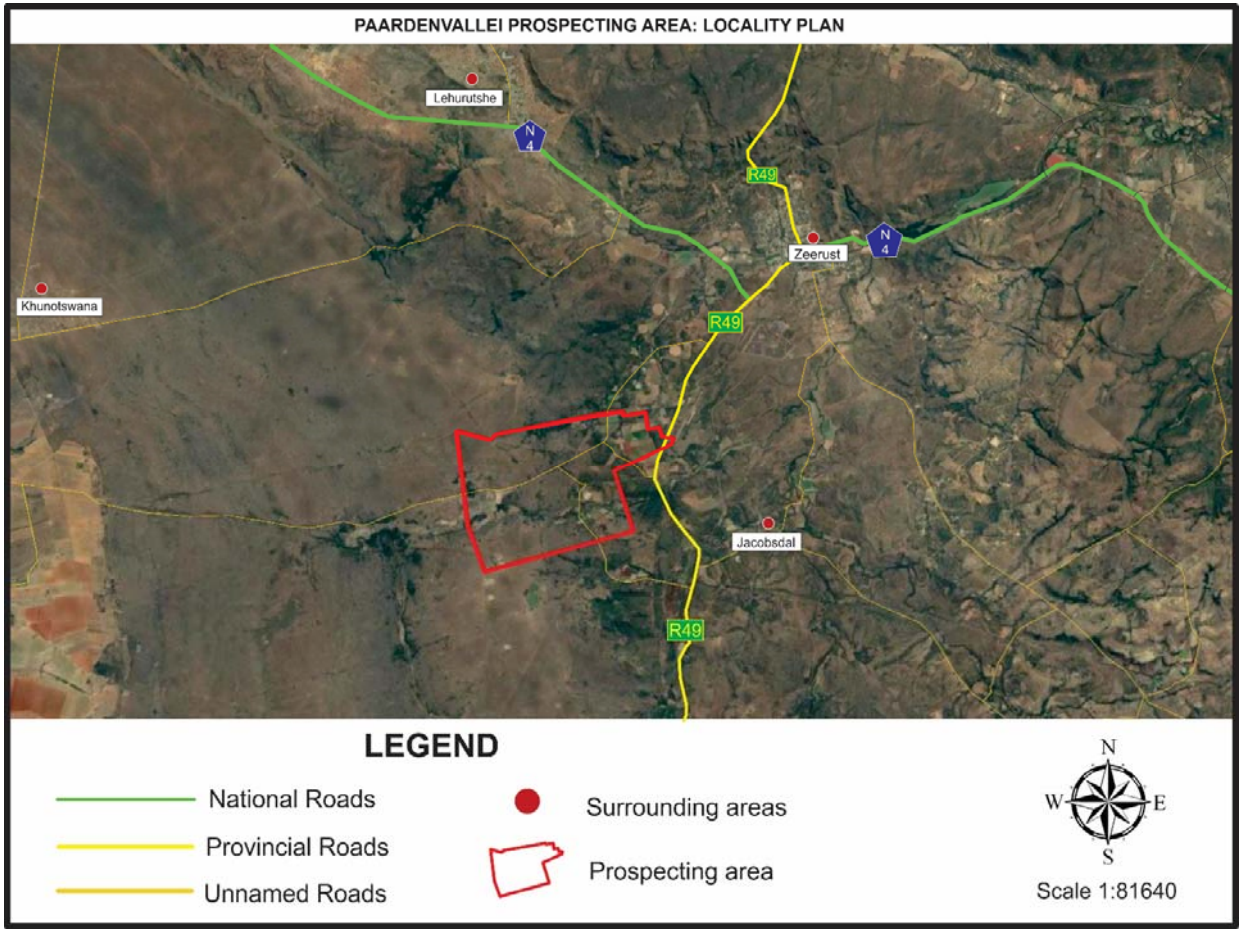


Figure 2: Locality Plan.

1.4.6. Land Tenure and Use of Immediate and Adjacent Land

Land tenure for the properties within and immediately around the proposed Paardenvallei prospecting area is indicated on Figure 3 and described in Table 2.

Table 2: Schedule of properties listing surface ownership surrounding Paardenvallei prospecting area.

FARM NAME AND NUMBER	21 DIGIT SURVEYOR GENERAL CODE	DESCRIPTION OF SUB-DIVISION	SURFACE OWNER
DIRECT FARM			
Paardenvallei 67 JO			
	T0JO00000000006700000	RE	Albert & Jan Boerdery cc
	T0JO00000000006700001	Portion 1	Tajbhai Muinuddin
	T0JO00000000006700003	Portion 3	Pieter Louw Steyn
	T0JO00000000006700005	Portion 5	Pieter Louw Steyn
	T0JO00000000006700006	Portion 6	Maria Frederika Johanna Van Niekerk
	T0JO00000000006700007	Portion 7	Freddie Coates
	T0JO00000000006700008	Portion 8	Albert Diederick Otto
	T0JO00000000006700009	Portion 9	Jan Hendrik Alberts
	T0JO00000000006700010	Portion 10	Petro Anelie Steyn
	T0JO00000000006700011	Portion 11	Pieter Louw Steyn
	T0JO00000000006700013	Portion 13	Pieter Louw Steyn
	T0JO00000000006700014	Portion 14	Pieter Louw Steyn
	T0JO00000000006700015	Portion 15	David Max Klachko
	T0JO00000000006700016	Portion 16	Jan Johannes Kruger
	T0JO00000000006700018	Portion 18	David Max Klachko
	T0JO00000000006700020	Portion 20	Marthinus Philippus Van Der Merwe
	T0JO00000000006700021	Portion 21	Kotiem Pty Ltd
	T0JO00000000006700022	Portion 22	Andries Johannes Joubert
	T0JO00000000006700026	Portion 26	David Max Klachko
	T0JO00000000006700028	Portion 28	Moatswi Trust
	T0JO00000000006700029	Portion 29	Moatswi Trust
	T0JO00000000006700030	Portion 30	Moatswi Trust
	T0JO00000000006700031	Portion 31	Moatswi Trust
	T0JO00000000006700032	Portion 32	Moatswi Trust

FARM NAME AND NUMBER	21 DIGIT SURVEYOR GENERAL CODE	DESCRIPTION OF SUB-DIVISION	SURFACE OWNER
	T0JO00000000006700033	Portion 33	Moatswi Trust
	T0JO00000000006700034	Portion 34	Moatswi Trust
	T0JO00000000006700035	Portion 35	Moatswi Trust
	T0JO00000000006700036	Portion 36	Kotiem Pty Ltd
	T0JO00000000006700037	Portion 37	Kotiem Pty Ltd
	T0JO00000000006700038	Portion 38	Kotiem Pty Ltd
	T0JO00000000006700039	Portion 39	Kotiem Pty Ltd
	T0JO00000000006700040	Portion 40	Moatswi Trust
	T0JO00000000006700041	Portion 41	Christiaan Van Staden
	T0JO00000000006700042	Portion 42	Moatswi Trust
	T0JO00000000006700043	Portion 43	Tajbhai Muinuddin
	T0JO00000000006700044	Portion 44	Adriaan Jordaan Van Wyk
	T0JO00000000006700045	Portion 45	Gloria Kgalalelo Magagane
	T0JO00000000006700046	Portion 46	Moatswi Trust
	T0JO00000000006700047	Portion 47	Moatswi Trust
	T0JO00000000006700051	Portion 51	Pieter Louw Steyn
	T0JO00000000006700052	Portion 52	Pieter Louw Steyn
	T0JO00000000006700054	Portion 54	Kotiem Pty Ltd
Uitvlugt 275 JP			
	T0JP00000000027500001	Portion 1	Carel Frederik De Waal
	T0JP00000000027500007	Portion 7	Dionysius Joubert
	T0JP00000000027500009	Portion 9	Dionysius Joubert
	T0JP00000000027500010	Portion 10	Carel Frederik De Waal
Uitvlugt 281 JP			
	T0JP00000000028100000	RE	Gonow Motors Zeerust Cc
Vergenoegd 274 JP			
	T0JP00000000027400023	Portion 23	Ngaka Modiri Molema District Municipality
ADJACENT FARMS			
Uitvalgrond 60 JO			

FARM NAME AND NUMBER	21 DIGIT SURVEYOR GENERAL CODE	DESCRIPTION OF SUB-DIVISION	SURFACE OWNER
	T0JO00000000006000000	RE	Gonow Motors Zeerust CC
	T0JO00000000006000001	Portion 1	Gonow Motors Zeerust CC
Kafferkraal 66 JO			
	T0JO00000000006600002	Portion 2	Ferdinand Johannes Niehaus
	T0JO00000000006600003	Portion 3	Mohammed Faizel Bhyat
Rietpoort 69 JO			
	T0JO00000000006900011	Portion11	Jaco Du Preez CC
Stinkhoutboom 68 JO			
	T0JO00000000006600003	Portion 15	Kotiem (Pty) Limited
	T0JO00000000006600016	Portion 16	Alarmtec (Pty) Limited
	T0JO00000000006600019	Portion 19	Harman Du Preez Familie Trust
Weltevreden 276 JP			
	T0JP00000000027600001	Portion 1	Uitvlught Boardery
	T0JP00000000027600002	Portion 2	Silas Mothupi Sebonta
	T0JP00000000027600004	Portion 4	Christos Vlachos
	T0JP00000000027600007	Portion 7	Judith Gertruida Vermaak
	T0JP00000000027600013	Portion 13	South African National Roads Agency SOC Limited
Weltevreden 327 JP			
	T0JP00000000032700000	RE	Keobusitswe Communal Prop Assoc
Kalkfontein 277 JP			
	T0JP00000000027700003	Portion 3	Mun Zeerust
Uitvlugt 275 JP			
	T0JP00000000027500008	Portion 8	Francois Viljoen
	T0JP00000000027500011	Portion 11	Dionysius Joubert
	T0JP00000000027500013	Portion 13	South African National Roads Agency Soc Ltd
Vergenoegd 274 JP			
	T0JP00000000027400018	Portion 18	Gerhard Van Vuuren
	T0JP00000000027400023	Portion 23	Ngaka Modiri Molema District Municipality

FARM NAME AND NUMBER	21 DIGIT SURVEYOR GENERAL CODE	DESCRIPTION OF SUB-DIVISION	SURFACE OWNER
	T0JP00000000027400025	Portion 25	Pelken cc

Also refer to **Appendix C** Windeed list of direct farm owners.

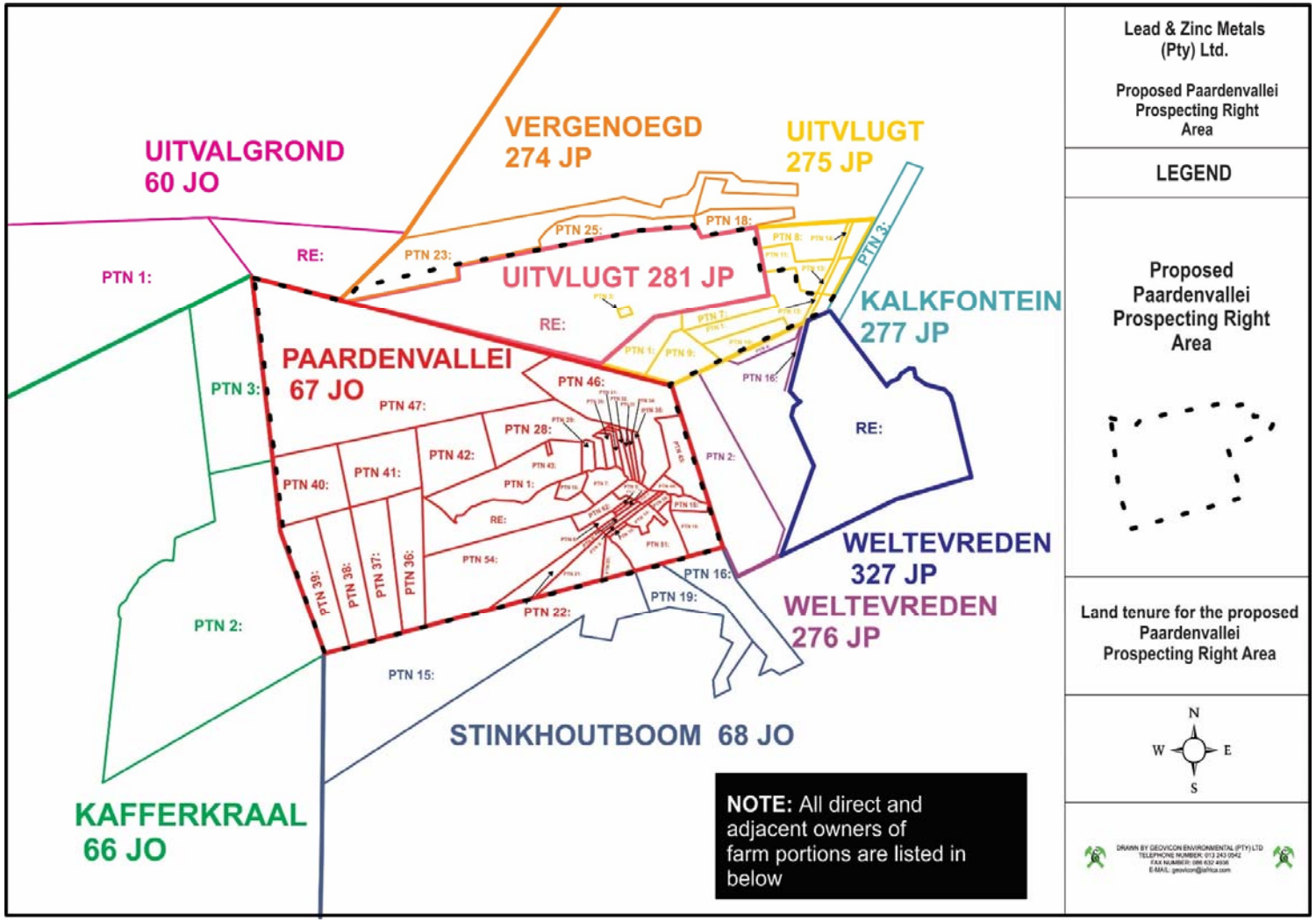


Figure 3: Land Tenure Plan for the Paardenvallei prospecting area.

SECTION TWO

Description of the Scope of the proposed Project

2. DESCRIPTION OF THE SCOPE OF THE PROPOSED PROJECT

2.1. LISTED ACTIVITIES AND SPECIFIED ACTIVITIES

In terms of the NEMA, the proposed Paardenvallei Prospecting Area will result in activities that are considered as listed activities. In terms of the above-mentioned legislations, none of the above-mentioned listed activities can be conducted without an environmental authorisation. In view of the above, Lead & Zinc Metals (Pty) Limited has applied for an environmental authorisation for all listed activities to be conducted at the proposed Paardenvallei prospecting area to the competent authority (DMRE). This section will give a description of the listed activities that will be included in the application for an environmental authorisation. Table 3 is compiled as prescribed by the DMRE, EIR and EMPr template and reflects all project activities applied for.

2.2. DESCRIPTION OF THE PROPOSED PROJECT

Lead & Zinc Metals (Pty) Limited proposes to prospect for Zinc on the Paardenvallei prospecting area. This will include the usage of diamond core drilling methods. The activities will be undertaken on certain portions of the farm Paardenvallei 67 JO, Uitvlugt 275 JP and the remaining extent portion of farm Uitvlugt 281.

Table 3: Proposed Paardenvallei prospecting area Listed Activities.

LISTED ACTIVITY	NAME OF ACTIVITY	AERIAL EXTENT OF THE ACTIVITY	APPLICABLE LISTING NOTICE
PROPOSED PAARDENVALLEI PROSPECTING AREA LISTED AND SPECIFIC ACTIVITIES			
NATIONAL ENVIRONMENTAL MANAGEMENT ACT			
Activity 20 of Listing Notice 1: Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including associated infrastructure, structures and earthworks, directly related to prospecting of a mineral resource, including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).	Conducting prospecting activities within the Paardenvallei prospecting area for the exploration of minerals applied for using a diamond core drilling prospecting method together with all associated infrastructure and activities. These include site establishment (access to site and a campsite), pegging of drilling sites, drilling of exploration boreholes with associated sumps, logging and sampling of drilled cores and site rehabilitation.	2 631 ha	NO. 327

2.2.1. Target Mineral

Zinc.

2.2.2. Prospecting method to be used at the Paardenvallei prospecting area.

The proposed Paardenvallei prospecting area will be explored in three phases i.e. literature review/field mapping phase and two drilling phases. Only the field mapping and drilling phases have potential for environmental impacts, thus only these two last phases will be described in this section of the report.

The field mapping phase will include the establishment of access to the site (tracks and/or existing roads), establishment of a campsite (a caravan and chemical toilet), field surveying (to determine sensitive areas), geophysical surveys (if necessary) and pegging of the drilling sites.

Drilling phase will involve the drilling of the sited drilling boreholes by drill rig, using a diamond core drilling technique. A sump will be constructed in each drilling borehole for the collection and recycling of water from the drilling operation. The sump will be constructed to be one square meter in size and have a maximum depth of 1 meter. Any soils removed from the sump (approximately one cubic meters) will be placed adjacent the drilling site and used for rehabilitation of the site.

Boreholes will be drilled at pre-planned sites. The boreholes will be drilled to intersect all the expected reserves and will be logged by a geologist. The samples will be sent to a laboratory for quality determination. This data will form the basis for the geological modelling and financial evaluation.

2.2.3. Planned Life of Project

The current estimated life of the proposed Paardenvallei Prospecting Area is five years.

2.3. PAARDENVALLEI PROSPECTING AREA SURFACE INFRASTRUCTURE DESCRIPTION

2.3.1. Access

There is a good network of both tarred and gravel roads connecting the prospecting area with surrounding towns. Existing roads to be used for the proposed area include the R49, a secondary road and a number of private farm roads. Where no roads exist, tracks will be used to access the drilling sites. No clearing of natural vegetation will be undertaken.

2.3.2. Power line Infrastructure

Diesel powered vehicles and machinery will be used for the proposed project.

2.3.3. Water Supply Infrastructure

Water for the operation of machines and for domestic use will be required within drilling sites and campsites, respectively. Therefore, water will be obtained from the landowner’s borehole or any farm dam that might exist on the property and will be trucked with a water cart to all drill sites.

2.3.4. Workshops and Buildings

No workshops and office buildings will be required for this project. All machinery will be maintained at an offsite workshop. Should emergency repairs be required the repairs will be conducted on site on areas covered with tarpaulins.

2.3.5. Waste Management

2.3.5.1. Waste Identification and Management

Hazardous Waste

Hazardous waste to be generated includes hydrocarbon wastes (oil and liquid fuel wastes) and sewage waste. Oil waste and liquid fuels waste include used oils from mine machinery and vehicles and diesel/petrol waste.

General Waste

General waste to be generated from the proposed area is domestic waste. Domestic waste will include papers, containers, food waste, stationary and discarded PPE generated from the drilling and campsites.

2.3.5.2. Waste Management Facilities

Hazardous Waste

Hydrocarbon waste will be collected in 210 litre drums for storage. The removal of the drums or any other appropriate receptacle will be undertaken by a waste disposal company, for disposal at a registered licensed waste disposal site. The drums will be placed on protected ground.

Chemical toilets will be used for the management of sewage waste generated on site.

General Waste

General waste will be collected in wheeled bins or refuse bags. The removal of this waste will be undertaken by the municipality or disposed at a registered landfill site.

2.4. PAARDENVALLEI PROSPECTING AREA- METHOD STATEMENT

In terms of the DMRE BAR and EMPR template, Lead & Zinc Metals (Pty) Limited must describe the methods and technology to be employed for the proposed project. In view of the above, a method statement for each phase of the proposed project has been provided. This identifies all actions, activities or processes associated with the proposed prospecting operation.

2.4.1. Pre-Construction Phase

2.4.1.1. Data gathering

Relevant information regarding the potential of the identified prospecting area will be sourced from institutions like the Council for Geoscience. This information will be analysed and interpreted through computer modelling of existing data.

The interpretation of the said data will result in compilation of a literature review report. The said report will give indication as to what processes (in order of priority) to follow to complete the prospecting activities.

2.4.1.2. Field Mapping

The field mapping will include field surveying (to determine sensitive areas), geophysical or geomagnetic surveys and pegging of the drilling sites.

2.4.1.3. Detailed site survey and investigation

Demarcation of sensitive and protected areas will be conducted by physical survey of the proposed area by a suitability qualified person. This should be done before establishment of access to the site, campsites and drilling of exploration boreholes.

2.4.1.4. Geophysical/Geomagnetic surveys and data interpretation

Geophysical survey methods will be used to perform the survey over the proposed prospecting site.

2.4.1.5 Pegging of drill sites

All exploration borehole sites will be staked by a suitably qualified person. The sites will thereafter be plotted on a plan drawn to an appropriate scale.

2.4.1.6 Decision to commence with prospecting activities

Once all factors are gathered, a physical inspection of the terrain will be conducted to verify certain aspects, such as, type of the terrain involved, type of methods to be used, etc. The important point to note is that a decision on whether or not to proceed with prospecting depends not only on the scientific and reliability of the methods under consideration, but also upon many fewer tangible factors, such as restrictions that might be imposed by the relevant Department when granting a prospecting right.

2.4.2. Construction Phase

Construction phase will involve the establishment of access to the drilling sites (tracks and/or existing roads) and establishment of campsite (a caravan/tents and chemical toilet).

2.4.2.1. Establishment of access

The R49 route runs east of the proposed area. A secondary road and a number of private farm roads and tracks lie in close proximity to the proposed prospecting area, hence access to the site will be through these roads. Where necessity arise for access to the drilling sites, tracks will be established and used as access to the drilling sites. These, tracks will be established to be more than hundred meters away from any sensitive landscapes. The tracks will also be sited away from protected areas. Vegetation clearance will be avoided during the establishment of the access tracks.

2.4.2.2. Establishment of campsite

Tents and/or caravans, ablution facilities (chemical toilets) and waste storage facilities will be provided for employees. Clearing of vegetation will be avoided during the establishment of the campsite

2.4.3. Operational Phase

2.4.3.1. Diamond core drilling and sump construction

Geological boreholes will be drilled on a predetermined grid. During drilling of each borehole, a sump of approximately 1.0 x 1.0 x 1.0 m will be excavated for collecting excess muds (water) from the drilling operation and for recycling of the water used for the operation of the drilling machine. Please note that the borehole layout can only be determined once the Prospecting Right is granted, thereafter it will be sent in to the Department of Mineral Resources and Energy.

2.4.3.2. Topsoil storage site

The top and sub soils removed from the sump and drilling boreholes will be stockpiled in close proximity to the sump. The sumps will be backfilled manually by spade, once drilling and sampling of boreholes is completed.

2.4.3.3. Logging and sampling of the Core

This involves the physical description of the rocks intersected by the drilling process. The interpretation of these rock descriptions will assist in establishing the general stratigraphy of the area. Sampling will be taken at the desired horizons and sent to the laboratory for analyses.

2.4.3.4. Site Rehabilitation

Concurrent rehabilitation (Plugging and reseeding) of disturbed areas will be undertaken as drilling continues.

Please note that the borehole layout can only be determined once the Prospecting Right is granted; thereafter, it will be sent in to the Department of Mineral Resources and Energy.

2.4.4. Decommissioning phase

2.4.5. Final Rehabilitation

Except for farm roads, no tracks and infrastructure related to the prospecting operation will remain in place after the decommissioning phase. Where tracks have resulted in more damage, such tracks will be ripped and allowed to return to the natural state, and seeding is not done as experience has shown that the natural process returns the site to its former state within a seasonal cycle. The sumps will be rehabilitated in such a manner to return the area to as close as possible to its pre-drilling environment. Post closure, the prospecting area will consist of re-vegetated areas with vegetation cover comparable to the surrounding areas. No prospecting related infrastructure will remain on the prospecting site. The area will conform to the pre-prospecting topography. The areas affected by prospecting will be stable and erosion free.

2.4.6. Pre-feasibility study

This involves the compilation of a final geological report, reserve determination and pre-feasibility studies.

2.4.7. Mining feasibility study

This involves the conducting of a mining feasibility study, market research, sales agreements etc.

2.4.8. After Closure Phase

The rehabilitated area will be monitored on a quarterly basis to ensure that the site returns to an acceptable state, in the event that is not happening naturally, the area will be seeded. After the decommissioning of the site and if it can be determined that the site is stable, an environmental authorisation for the decommissioning of the site and a closure certificate will be applied for in terms of the relevant laws.

SECTION THREE

Policy and legislative context

3. POLICY AND LEGISLATIVE CONTEXT

3.1. CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA (ACT NO. 108 OF 1996)

Section 24 of the Constitution of the Republic of South Africa (Act No.108 of 1996) states that everyone has the right:

a) to an environment that is not harmful to their health or well-being; and

b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that;

(i) prevent pollution and ecological degradation;

(ii) promote conservation; and

(iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

In terms of Section 24 of the Constitution of the Republic of South Africa (Act No.108 of 1996), everyone has the right to an environment that is not harmful to their health or well-being. In addition, people have the right to have the environment protected, for the benefit of present and future generations, through applicable legislations and other measures that prevent pollution, ecological degradation and promote conservation and secure ecological sustainable development through the use of natural resources while prompting justifiable economic and social development. The needs of the environment, as well as affected parties, should thus be integrated into the overall project in order to fulfil the requirements of Section 24 of the Constitution. In view of the above, a number of laws pertaining to environmental management were promulgated to give guidance on how the principles set out in section 24 of the Constitution of the Republic of South Africa (Act No.108 of 1996) would be met. Below are laws applicable to the proposed project that were promulgated to ensure that section 24 of the Constitution of the Republic of South Africa (Act No.108 of 1996) is complied with.

3.2. NATIONAL ENVIRONMENTAL MANAGEMENT ACT

Section 24(1) of the NEMA states:

“In order to give effect to the general objectives of integrated environmental management laid down in this Chapter [Chapter 5], the potential consequences for or impacts on the environment of listed activities or specified activities must be considered, investigated, assessed and reported on to the competent authority or the Minister of the Department of Mineral Resources and Energy, as the case may be, except in respect of those activities that may commence without having to obtain an environmental authorisation in terms of this Act.”

In order to regulate the procedure and criteria as contemplated in Chapter 5 of NEMA relating to the preparation, evaluation, submission, processing and consideration of, and decision on, applications for environmental authorisations for the commencement of activities, subjected to environmental impact assessment, in order to avoid or mitigate detrimental impacts on the environment, and to optimise positive environmental impacts, and for matters pertaining thereto, Regulations (EIA Regulations, 2014) were promulgated. These Regulations took effect from the 4th of December 2014.

In addition to the above, Section 28 of the NEMA includes a general “Duty of Care” whereby care must be taken to prevent, control and remedy the effect of significant pollution and environmental degradation. This section stipulates the importance to protect the environment from degradation and

pollution irrespective of the operations taking places or activities triggered / not triggered under No. 326, No. 325 and No. 324.

In view of the above, an environmental impact assessment is being undertaken to comply with the requirements of the NEMA and the NEMA EIA Regulations, 2014. The NEMA EIA Regulations of December 2014 determines requirements to be met in order to obtain an environmental authorisation. This report has; therefore, been compiled in compliance with the above regulations.

3.3. NATIONAL ENVIRONMENTAL MANAGEMENT AIR QUALITY ACT

The National Environmental Management: Air Quality Act (Act No.39 of 2004) (NEM:AQA) focuses on reforming the law regulating air quality in South Africa in order to protect the environment through the provision of reasonable measures protecting the environment against air pollution and ecological degradation and securing ecological sustainable development while promoting justifiable economic and social developments. This Act provides national norms and standards regulating air quality management and control by all spheres of government. These include the National Ambient Air Quality Standards (NAAQS) and the National Dust Control Regulations (NDCR). The standards are defined for different air pollutants with different limits based on the toxicity of the pollutants to the environment and humans, number of allowable exceedances and the date of compliance of the specific standard.

On 22 November 2013 the list of activities which result in atmospheric emissions which have or may have a significant detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions or cultural heritage was published under GN R893 in Governmental Gazette No 37054, in terms of Section 21(1)(b) of the NEM:AQA.

The proposed project will not trigger any of the activities listed under the above-mentioned Regulations; however, Lead & Zinc Metals (Pty) Limited must ensure that emissions from their activities complies with the standards as set in the above-mentioned regulations.

3.4. THE NATIONAL HERITAGE RESOURCES ACT

The National Heritage Resources Act (Act No. 25 of 1999) (NHRA) focuses on the protection and management of South Africa's heritage resources. The governing authority for this act is the South African Heritage Resources Agency (SAHRA). In terms of the NHRA, historically important features such as graves, trees, archaeology and fossil beds are protected as well as culturally significant symbols, spaces and landscapes. Section 38 of the NHRA stipulates the requirements a developer must undertake prior to development. In terms of Section 38 of the NHRA, SAHRA can call for a Heritage Impact Assessment (HIA) where certain categories of development are proposed.

A Heritage Impact Assessment (HIA) is the process to be followed in order to determine whether any heritage resources are located within the area to be developed as well as the possible impact of the proposed development thereon.

The Act also makes provision for the assessment of heritage impacts as part of an EIA process and indicates that if such an assessment is deemed adequate, a separate HIA is not required. An assessment of the proposed area will be done during the drilling programme to determine if there are any sites that require protection. Any sites identified will be marked and no drilling will be undertaken in close proximity of such a site.

3.5. NATIONAL ENVIRONMENTAL MANAGEMENT BIODIVERSITY ACT (ACT 10 OF 2004) (NEMBA)

The National Environmental Management: Biodiversity Act (Act No. 10 of 2004) (NEMBA) provides for the management and protection of South Africa's biodiversity within the framework established by

NEMA. The Act aims to legally provide for biodiversity conservation, sustainable, equitable access and benefit sharing and provides for the management and control of alien and invasive species to prevent or minimize harm to the environment and indigenous biodiversity. The Act imposes obligations on landowners (state or private) governing alien invasive species as well as regulates the introduction of genetically modified organisms. The Act encourages the eradication of alien species that may harm indigenous ecosystems or habitats. The NEMBA ensures that provision is made by the site developer to remove any aliens which have been introduced to the site or are present on the site.

The NEMBA also provides for listing of threatened or protected ecosystems, in one of four categories: critically endangered, endangered, vulnerable or protected. The purpose of listing protected ecosystems is primarily to conserve sites of exceptionally high conservation value.

The Act supports South Africa's obligations under sanctioned international agreements regulating international trade in specimens of endangered species, and ensures that the utilization of biodiversity is managed in an ecological sustainable way.

The BAR and EMPR has been complied to ensure that all applicable requirements prescribed in the NEMBA are complied with.

3.6. NORTH WEST BIODIVERSITY MANAGEMENT ACT (ACT 4 OF 2016)

To provide for the management and conservation of the North West's biophysical environment and protected areas within the framework of the National Environment Management Act, 1998 (Act No 107 of 1998); to provide for the protection; to provide for the sustainable use of indigenous biological resources; and to provide for matters connected therewith.

The BAR and EMPr has been compiled to ensure that all applicable requirements prescribed in the Act are complied with.

3.7. MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT (MPRDA): ACT 28 OF 2002

The Department of Mineral Resources and Energy (DMRE) is responsible for regulating the mining and minerals industry to achieve equitable access to the country's resources and contribute to sustainable development. The Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002) (MPRDA) requires that an EIA be conducted and that the EMP be drafted for the mitigation of impacts identified during the environmental impact assessment for a prospecting project. During December 2014, the "One Environmental System" was implemented by Government which initiated the streamlining of the licensing processes for mining, environmental authorisations and water use. Under the One Environmental System, The Minister of Mineral Resources, will issue environmental authorisations and waste management licences in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), and the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)(NEMWA), respectively, for mining and related activities. The Minister of Environmental Affairs will be the appeal authority for these authorisations. In view of the above the application for the environmental authorisation for the proposed project was submitted to the Department of Mineral Resources and Energy as the competent authority.

3.8. NATIONAL WATER ACT (NWA): ACT NO. 36 OF 1998

The National Water Act (Act No. 36 of 1998) (NWA) is the primary regulatory legislation, controlling and managing the use of water resources as well as the pollution thereof in South Africa. The NWA recognises that the ultimate aim of water resource management is to achieve sustainable use of water for the benefit of all users and that the protection of the quality of water resources is necessary to ensure sustainability of the nation's water resources in the interests of all water users. The NWA presents

strategies to facilitate sound management of water resources, provides for the protection of water resources, and regulates use of water by means of Catchment Management Agencies, Water User Associations, Advisory Committees and International Water Management. The National Government has overall responsibility for and authority over water resource management, including the equitable allocation and beneficial use of water in the public interest. Further, an industry can only be entitled to use water if the use is permissible under the NWA. The enforcing authority on water users is the Department of Water and Sanitation (DWS).

Further, Regulation 704 of the NWA deals with the control and use of water for prospecting and related activities aimed at the protection of water resources.

No water use licence application will be submitted to the Department of Water and Sanitation for their consideration. However, measures will be undertaken to ensure that requirements in terms of the NWA and the GN 704 are complied with where necessary.

3.9. NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT (ACT NO. 59 OF 2008)

The National Environmental Management: Waste Act (NEMWA) requires that all waste management activities must be licensed. According to Section 44 of the NEMWA, the licensing procedure must be integrated with an EIA process in terms of the NEMA.

The objectives of NEMWA involve the protection of health, wellbeing and the environment. The NEMWA provides measures for the minimisation of natural resource consumption, avoiding and minimising the generation of waste, reducing, recycling and recovering waste, and treating and safely disposing of waste.

Waste management activities are not triggered by the proposed project, hence no application in terms of the NEMWA was submitted to the Department of Mineral Resources and Energy.

3.10. EIA GUIDELINES

A number of national and provincial EIA guidelines were published by different departments. These guidelines are mainly aimed at assisting relevant stakeholders by providing information and guidance and giving recommendations on a number of aspects relating to the environmental impact assessment process. The guidelines can be used by the competent authority, applicant and the EAP during the EIA process. It is therefore important that the EAP and the person compiling a specialist report must have relevant expertise when conducting the environmental impact assessments.

A number of guidelines were consulted during the compilation of this report and these include amongst them the following i.e. Guidelines on the Need and Desirability, Department of Environmental Affairs and Tourism Integrated Environmental Management Guidelines, Department of Water and Sanitation's Best Practice Guidelines and the Western Cape Provincial Department of Environmental Affairs and Development Planning Guidelines on Public Participation.

SECTION FOUR

Need and desirability of the proposed activities

4. NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES

4.1. MOTIVATION FOR THE NEED AND DESIRABILITY OF THE PROJECT

In terms of the EIA Regulations the need and desirability of any development must be considered by the relevant competent authority when reviewing an application. The need and desirability must be included in the reports to be submitted during the environmental authorisation application processes.

The section of the BAR and EMPr will indicate the need and desirability for the approval of the Paardenvallei Prospecting Area.

Assessment of the geological information available has determined that the area in question may have Zinc reserves. In order to ascertain the above and determine the nature, location and extent of the above-mentioned minerals within the proposed prospecting area, it will be necessary for prospecting to be undertaken. The prospecting will also determine if there are any features that may have an impact on the economic extraction of the above-mentioned minerals.

The information that will be obtained from the proposed prospecting project will be necessary to determine where the minerals are located, how they can be viably extracted and the economic value of the total reserve within the prospecting area.

Lead & Zinc Metals (Pty) Limited predicts that substantial benefits from the area (should a viable reserve be found) will accrue to the immediate area, the sub-region and the province of North West. These benefits must be offset against the costs of the area, including the impacts to land owners.

The potential benefits of the proposed project are:

- Potential reduction in crime because of short-term job creation during construction (providing farm safety and security measures), and also in the long-run as a result of job creation.
- Local growth in the economy of the host community and surrounding areas, and for local businesses including those that supply accommodation, transport etc
- Economic benefits for contractors and other suppliers of goods and services.
- Economic opportunities and other potential benefits for land owners from compensation for impacts.
- Based on the environmental assessment conducted as described in this report, there are no environmental impacts associated with the proposed area that cannot be mitigated.

SECTION FIVE

Motivation for the preferred development footprint

5. MOTIVATION FOR THE PREFERRED DEVELOPMENT FOOTPRINT

5.1. CONSIDERATION OF ALTERNATIVES

The National Environmental Management Act 107 of 1998, Environmental Impact Assessment Regulations, 2014 requires a BAR and EMPR to identify alternatives for areas applied for. In terms of the above-mentioned regulations an alternative in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to the (a) the property on which or location where it is proposed to undertake the activity; (b) the type of activity to be undertaken; (c) the design or layout of the activity;(d) the technology to be used in the activity;(e) the operational aspects of the activity; and (f) the option of not implementing the activity.

Lead & Zinc Metals (Pty) Limited intends to undertake prospecting on certain portions of the farm Paardenvallei 67 JO, Uitvlugt 275 JP and on the remaining extent portion of farm Uitvlugt 281 to determine whether or not the area consist of Zinc and to also determine if the available reserves have economic value.

Therefore, a number of alternatives were considered for the proposed prospecting project. This section of the report will highlight the alternatives considered for the proposed prospecting activities.

5.1.1. Location Alternatives

The location alternative considered for the proposed project include the prospecting sites and associated campsite location and access routes. The location alternatives were selected based on a number of criteria, which include the environmental considerations (how sensitive is the area in terms of soils, wetlands, groundwater etc.), sensitive receptors (proximity to communities and farmsteads) and the dependency of the area to the required infrastructure.

5.1.2. Prospecting Sites

The prospecting sites were selected based on published relevant literature; therefore, no alternatives were considered since the anticipated minerals could be located on certain portions of the farm Paardenvallei 67 JO, Uitvlugt 275 JP and on the remaining extent portion of farm Uitvlugt 281.

5.1.3. Access Routes/Transport alternatives

Two alternatives were considered i.e., existing road and a new road. Since the proponent would like to limit their pollution footprint, the existing access road was decided upon. The R49 route passes in close proximity to the farm, and an unnamed road passes right across the farm.

5.1.4. Campsite Location

Regarding the location of the campsite, three alternatives were considered. These locations included a static location close to the entrance of the site, a mobile campsite and an offsite campsite.

Since the site closer to the farm home steads may result in undesirable impacts on the residents of the farm steads and the offsite alternative may results in unforeseen impacts due to the unavailability of other necessary services that comes with having a local campsite these two alternatives were discarded.

The static campsite would be used during the construction phase (site establishment) of the area and the mobile alternative would be used during the operational phase of the area. Note that the mobile

alternatives will move with the drilling team from site to site during the execution of the drilling programme.

5.1.5. Design/ Layout Alternatives

Since no complicated surface infrastructure will be required for this area no design and layout alternatives for the proposed area were determined. The plan depicting all possible drilling sites will be compiled in consultation with the landowner and submitted with the progress to the DMRE.

5.1.6. Technology Alternatives

The minerals applied for are less cumbersome; hence the normal exploration technologies will be used. In view of the above, no technology alternatives were considered for this project.

5.1.7. Input Material Alternatives

No in-put material alternatives were considered for this area.

5.1.8. Operational Alternatives

5.1.9. Exploration Drilling Methods

Drilling is used to determine the depth, thickness and quality of the minerals in question at any point across a prospecting area. Drilling is also used to determine the actual local geology of the area.

Non-Core Drilling Methods

Non-core drilling techniques mostly uses the rotary drilling methods. In this technique, a string of metal rods is rotated axially and a bit at the base of the string is forced downward, under controlled pressure, breaking up the ground and advancing the depth of the hole. Cuttings are swept away from the bit and lifted to the surface either by means of pumped circulating water or by jets of compressed air.

Logging of the hole drilled by non-core drilling methods is mainly based on the cuttings obtained as the drill progresses. In view for the difficulty and error bound logging, this method of drilling was discarded and may be used only for infill drilling wherever necessary.

Core-Drilling Methods

Core drilling techniques uses diamond drilling methods. In this technique, a hollow cylindrical drill bit impregnated with industrial diamonds is attached to a series of metal drill rods and rotated under controlled downward pressure. A circle of rock is ground away, the cutting removed by water flushing and a cylindrical core remains in the hollow centre of the drill string.

Core drilling is the only satisfactory means of obtaining representative samples of seams at depth for quality determination. In view of the above and the fact that geophysical surveys will not be done, the preferred drilling methods is the core drilling technique using the diamond drill.

5.1.9.1. Transportation

See access route alternatives.

5.1.10. No Go Option

Lead & Zinc Metals (Pty) Limited intends to prospect for the above-mentioned minerals. Should the project not commence, the following will result i.e.:

The reserve's economic value will not be known thus no mine will commence, which will result in the potential labour force losing their employment opportunity and all support that the mine would have provided to the local businesses which will boost the economy of the country.

Potential mining operations will also assist with the establishment of small and medium businesses and infrastructure development, community development and poverty eradication as well boost the local economy in the surrounding previously disadvantaged communities. Since the proposed prospecting process itself will have very low environmental impacts, as detailed in the EMPR, investigating the feasibility of future mining operations should be considered.

5.1.11. Concluding Statement

Based on the above, the proposed Paardenvallei Prospecting Area, situated on certain portions of the farm Paardenvallei 67 JO, Uitvlugt 275 JP and on the remaining extent portion of farm Uitvlugt 281; accessed via the R49 and unnamed farm access road is preferred for the proposed prospecting project.

5.2. Details Of The Public Participation Process Followed and Results Thereof

Public participation is the cornerstone of any EIA process. The principles of the NEMA govern many aspects of EIA's, including public participation. The general objectives of integrated environmental management laid down in the NEMA include to "ensure adequate and appropriate opportunity for public participation in decisions that may affect the environment". The National Environmental Management Principles include the principle that "The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary to achieve equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured", which basically means that the person responsible for the application (EAP) must ensure that provision of sufficient and transparent information on an ongoing basis to stakeholders are made to allow them to comment, and to ensure that the participation of previously disadvantaged people like women and the youth are undertaken.

In terms of the EIA Regulations, 2014, when applying for environmental authorisation, the Environmental Assessment Practitioner managing the application must conduct at least a public participation process where all potential and registered interested and affected parties, including the competent authority, are given a period of at least 30 days to submit comments on each of the basic assessment reports, environmental management programme, scoping report and environmental impact assessment report, and where applicable the closure plan. In this case a Basic Assessment Report (BAR) is considered.

This section of the BAR and EMPR will explain the public participation process taken in order to comply with the above-mentioned requirements. A number of public participation guidelines were published in a bid to assist persons responsible for the environmental authorisation applications. As much of the available guidelines were used in determining the public participation process, in guiding the public participation process of the proposed project.

Geovicon Environmental (Pty) Limited on behalf of Lead & Zinc Metals (Pty) Limited is applying for an environmental authorisation for the proposed Paardenvallei Prospecting Area. The application for the environmental authorisation is undertaken in terms of the process as laid out in part 2 of Chapter 4 under the NEMA EIA Regulations, 2014. The above-mentioned regulations require that an applicant for an environmental authorisation submit a BAR and EMPR to the competent authority after having subjected the reports to a public participation process.

In view of the above, a public participation process was initiated for the proposed Paardenvallei Prospecting Area. The public participation process for the proposed project was designed to provide sufficient and accessible information to interested and affected parties (I&APs) in an objective manner to assist them to:

- raise issues of concern and make suggestions for enhanced benefits;
- contribute local knowledge and experience;
- verify that their issues have been captured;
- verify that their issues have been considered in the technical investigations; and
- comment on the findings of the EIA.

The following will be conducted in the undertaking of the public participation process for the proposed project.

5.2.1. Registration and BAR Phase

The public participation process commenced with the provision of potential Interested and affected parties (I&AP's) 30 days to register as interested and affected parties and to comment on the draft BAR and EMPR. The registration and commenting process starts on the 9th of December 2022 and ends on the 30th of January 2023. Note that all parties are provided enough time (at least 30 days) to comment on the report.

5.2.1.1. Notification of potential interested and affected parties

The following methods of notification were used to notify the potential interested and affected parties of the opportunity to register during the public participation process for the proposed project:

- On the 9th of December 2022, notices were posted in the Mafikeng Mail Newspaper which is distributed in host and surrounding town of the proposed prospecting area, informing the public that the BAR is in the Mafikeng Library. The notices were compiled in compliance with the requirements of Regulation 41(3) of the EIA Regulations, 2014.
- Written notices were sent to all surface owners and lawful occupiers of the land on which the proposed prospecting project will be undertaken.
- Site notices inviting the public to register as interested and affected parties were also used to invite comments on the BAR and EMPR from the public.
- The draft BAR and EMPR was also submitted to all the commenting authorities for their comments.
- A copy of the draft BAR and EMPR was placed in the local library (Mafikeng Library).

5.2.1.2. Registered Interested and Affected Parties

The following are currently registered as interested and affected parties for the Paardenvallei Prospecting Area:

- Department of Mineral Resources and Energy, North West Regional Office (Competent Authority).
- North West Department of Rural, Environment, Agriculture and Development
- South African Heritage Resources Agency (Commenting Authority).
- Department of Public Works, Roads and Transport – North West.
- Department of Rural Development and Land Reform.

- Department of Water Affairs.
- North West Department of Economic Development, Environment, Conservation and Tourism.
- Ward 16 Councillor (Ramotshere Moiloa Local Municipality).
- Ramotshere Moiloa Local Municipality.
- Land owners and lawful occupiers within the Paardenvallei project's area.
- Land owners and lawful occupiers immediately adjacent to the project's area.

5.2.1.3. Proof of Consultation

Proof of the above-mentioned consultation and results; thereof, will be included in the final BAR after this consultation.

5.2.1.4. Finalisation of Interested and Affected Party Database

On expiry of registration period, the database of interested and affected parties will be finalised. All parties who indicated the interest of being registered as interested and affected parties will be added to the list of interested and affected parties.

Note: All organs of state, which have jurisdiction in respect of any aspect of the proposed project and the competent authority are automatically registered as interested and affected parties.

5.2.2. Draft Basic Assessment Report

The draft BAR and EMPR is made available for comment to all relevant stakeholders during the above-mentioned registration phase of the proposed project's public participation process.

5.2.2.1. Comments, Issues and Responses on the Draft Basic Assessment Report

The comments and issues that will be raised by the interested and affected parties will be addressed and included in the final BAR and EMPR.

5.2. ENVIRONMENTAL ATTRIBUTES (BASELINE INFORMATION)

5.2.1. Geology

5.2.1.1. Regional Geology

The area is located in the north west part of South Africa and falls within the Transvaal Supergroup Basin which is charecterized by interbedded by rocks of the Pretoria group, Chuniespoort group and Dwyka group.

The Transvaal Supergroup is an end-Archaean/earliest Proterozoic platform succession developed on the Kaapvaal Craton. The rocks are preserved within three structural basins: Griqualand West (Ghaap-Postmasburg Groups) in central South Africa, Kanye (Taupone-Segwagwa Groups) in eastern Botswana and Transvaal (protobasinal rocks–Chuniespoort-Pretoria-Rooiberg Groups) in northern South Africa (Moore et al,2001).

In this threefold subdivision of the Transvaal Supergroup, the lowermost sequences (eastern Chuniespoort Group), typified by basal quartz arenites, a thick succession of dolomites and upper iron formations, are most widespread and easily correlated across the two basins. The middle sequence is represented in both the Transvaal (Pretoria Group) and Griqualand West (Postmasburg Group) basins, and the uppermost volcanic-dominated sequence (Rooiberg Group) is restricted to the Transvaal basin (Eriksson et al., 1993 and Eriksson et al., 1995).

The rocks are characterized by relatively unmetamorphosed volcanic, clastic and chemical sedimentary rocks. Protobasinal clastic sediments and basaltic to rhyolitic volcanics are ascribed to fluvial deposition and subaerial extrusion (Eriksson and Clendenin, 1990)

These units' grade into the dolomites of the Chuniespoort Group, which are interpreted as having been laid down within a widespread epeiric sea; associated iron formations probably represent deposition within a distal, deeper basinal facies. The resurgent Chuniespoort depository expanded towards the northeast, and was the fourth component of a successor basin sequence, initiated in preceding Witwatersrand and Ventersdorp Supergroup times (Eriksson and Clendenin, 1990). Figure 4 below shows the general geology of the area.

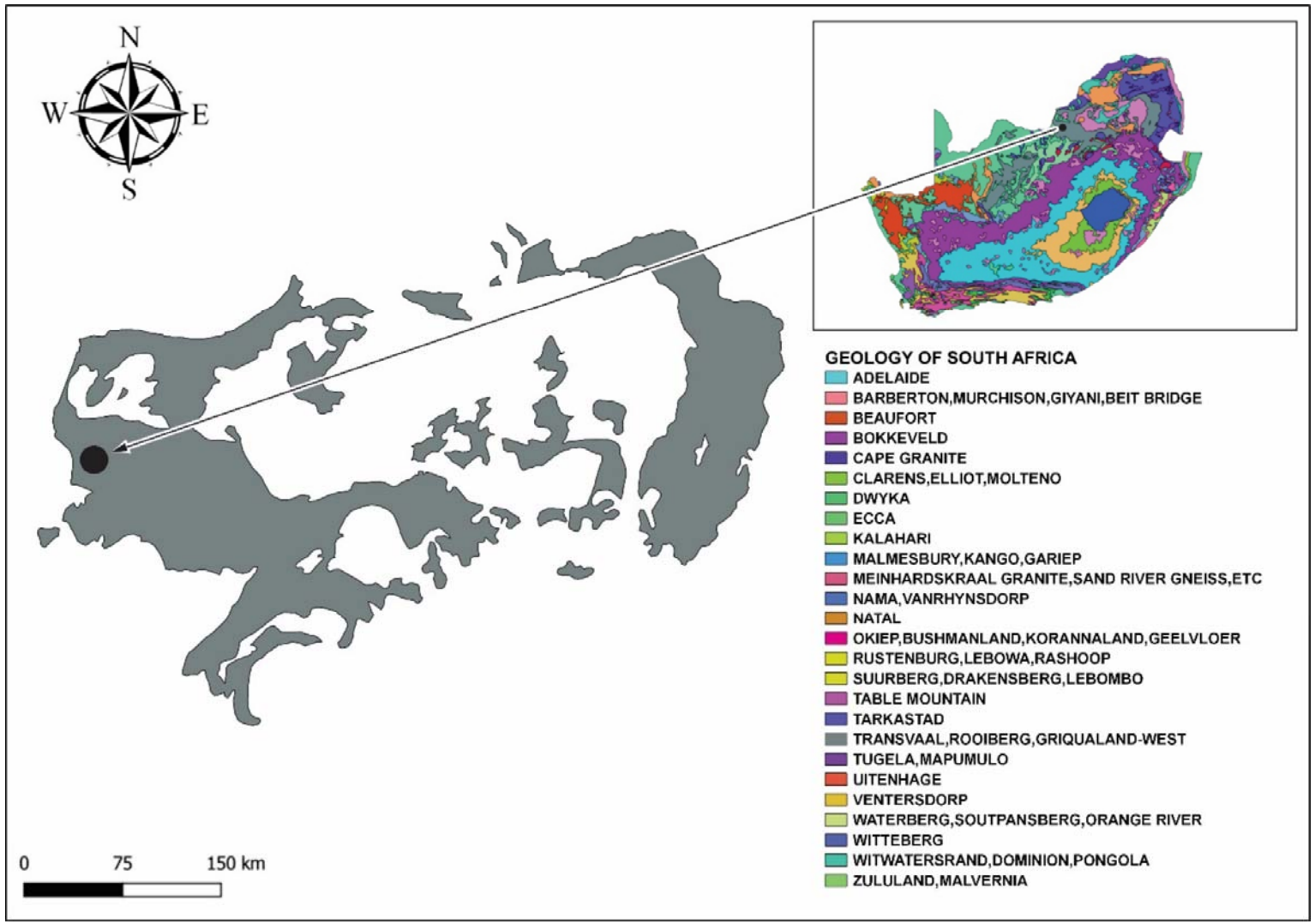


Figure 4:Geology of the study area

5.2.1.2. Local Geology

The chromitite resources in South Africa are situated within the Bushveld Complex (“BC”), which is an enormous saucer-like ultramafic/mafic intrusion extending for about 400km east to west and roughly the same distance north and south. The ultramafic/mafic rocks of the BC are collectively known as the Rustenburg Layered Suite (“RLS”) and have been subdivided, from base to top, into five zones, known as the Marginal, Lower, Critical, Main and Upper Zones (Figure 5).

Chromitite layers occur throughout the Critical Zone, usually, but not always, at the base of crystallisation cycles. The chromitite seams have been classified into lower, middle and upper groups, with the Lower Group occurring in the Lower Critical Zone and the Upper Group in the Upper Critical Zone. The Middle Group chromitite seams straddle the boundary between lower and upper divisions of the Critical Zone. The chromitite seams are named according to their location within the layered succession, with numbers commencing from the bottom up, with the lowermost group being named LG1, followed by LG2, LG3, etc. in the Lower Group (consisting of 7 layers), progressing to MG0, MG1, MG2, etc. in the Middle Group (consisting 4 layers), and then two layers in the Upper Group, UG1 and UG2. The thickness of these chromitite layers ranges from several millimetres to several metres and named chromitite layers may comprise multiple, composite layers of chromitite separated by interlaminated silicate rocks. The thickest chromitite layers, specifically the LG6 and MG1, are mined for their chromite content.

The target area of this application is underlain by rocks of the Critical Zone of the BC, consisting of chromitite interlayered with pyroxenite, norite, anorthositic norite, and mottled anorthosite.

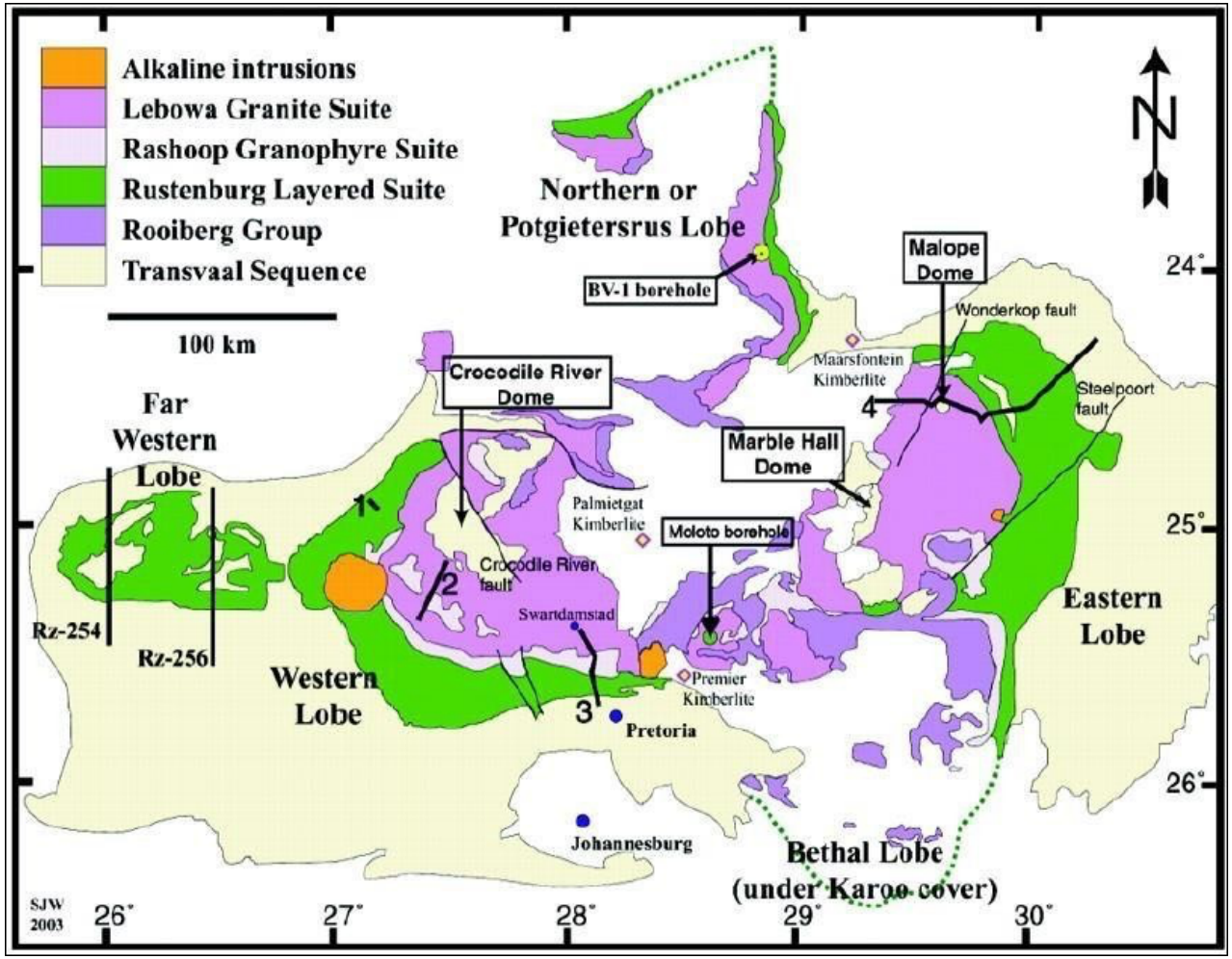


Figure 5: Local Geology

5.2.2. Climate

5.2.2.1. Regional Climate

Paardenvallei prospecting area falls within the summer rainfall region of South Africa, in which more than 80% of the annual rainfall occurs from October to April. The mean annual rainfall ranges from 500 to 700 mm. Temperatures range from 16° to 31 °C (60.8° to 88 °F) in the summer and from 3° to 21 °C (37° to 70 °F) in the winter.

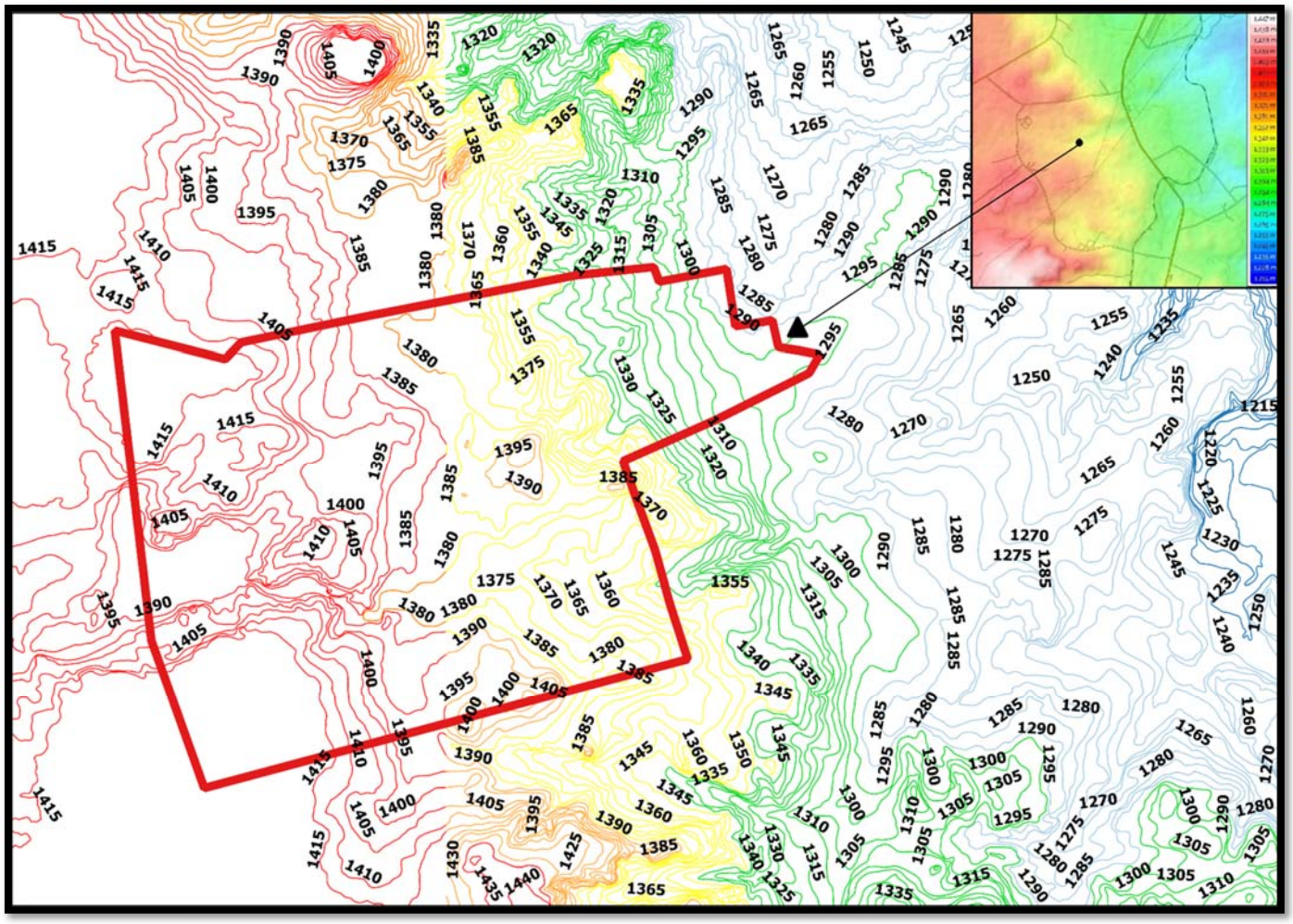
5.2.2.2. Extreme weather conditions

The area is prone to host extreme events on a regular basis. These events include the following:

- The area is prone to drought conditions.
- Regular frost occurs during the winter months.
- Rainfall occurs as scattered thunderstorms.

5.2.3. Topography

The elevation of the area ranges between 1290 m above mean sea level and 1415 m above mean sea level. The surrounding area is considered predominantly flat with several streams. See Figure 6 below.



**the black dot indicates the centre of the proposed prospecting area. Map extracted from topographic-map.com.

Figure 6 Elevation figure.

5.2.4. Soil

The area consists of soils influenced by the geology of the area, the Transvaal Supergroup. Most of the area is covered by stony shallow soils of the Glenrosa and Mispah soil forms, with some deep, freely drained soils. Some of the area (on the edges) is covered by deeper red to yellow apedal soils (Hutton and Clovelly forms) with high base status also with some vertic or melanic clays.

Land capability

The land capability classification adopted by the Chamber of Mines (2007) recognises four classes, viz. Class I (wetland), Class II (arable land) Class III (grazing land), and Class IV (wilderness land). The land capability in the Paardenvallei prospecting area covers Class I and II.

Land use/cover

The land use of the area is shown in the map below as Figure 7.

5.2.5. Land Use

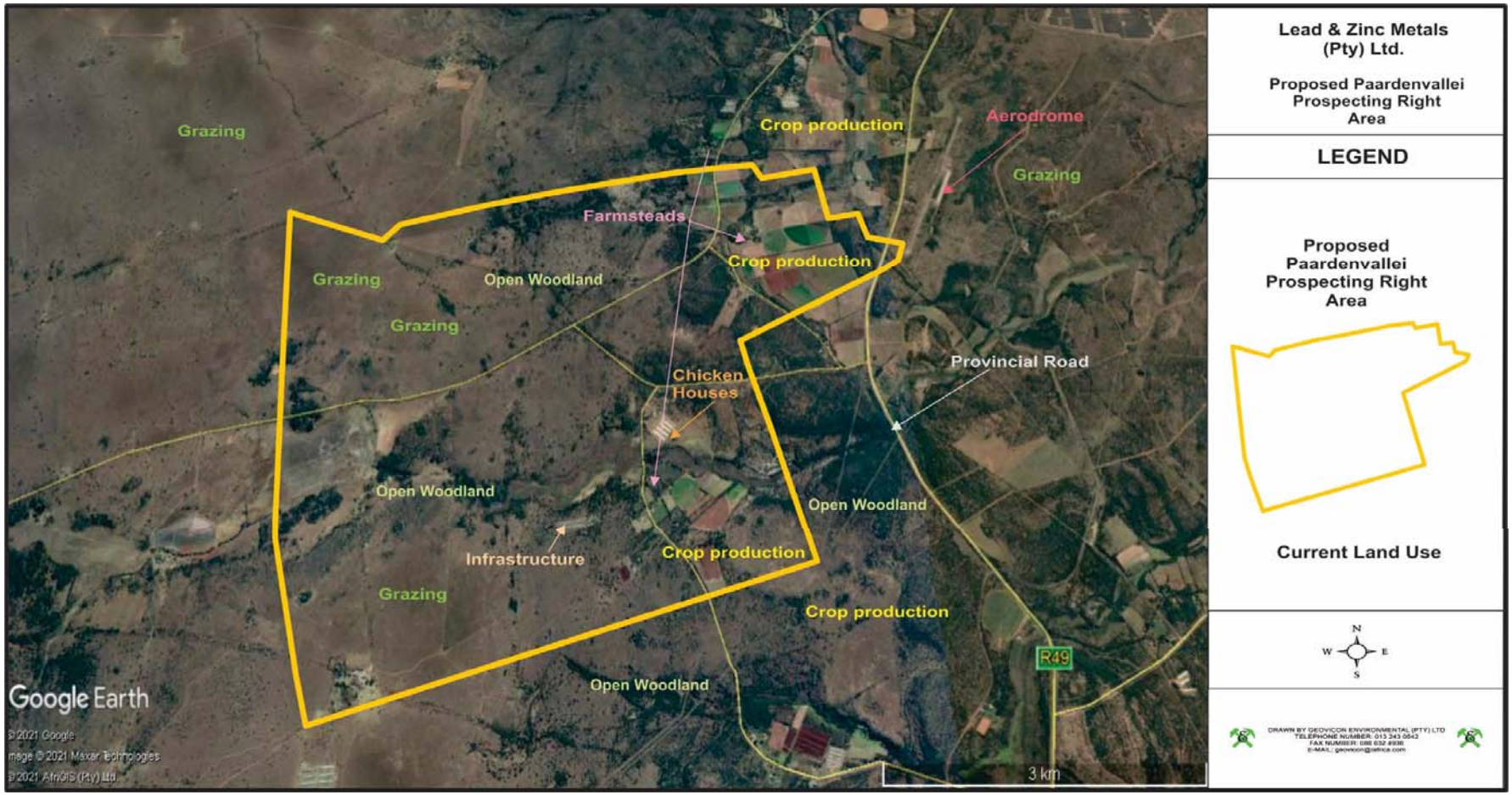


Figure 7: Current land-use.

5.2.6. Natural Vegetation/Plant Life.

The proposed Paardenvallei prospecting area is situated in three vegetation types that include Carletonville Grassland (Gh 15) vegetation type/ ecosystem in the Grassland Biome as well as the majority of the proposed prospecting area occuring within the Dwarsberg- Swartruggens Mountain Bushveld (SVcb4)- and Zeerust Thornveld (SVcb3) vegetation type/ ecosystem in the Savanna Biome See Figure 10 for a visual indication (South African National Biodiversity Institute – SANBI; VEGMAP 2018).

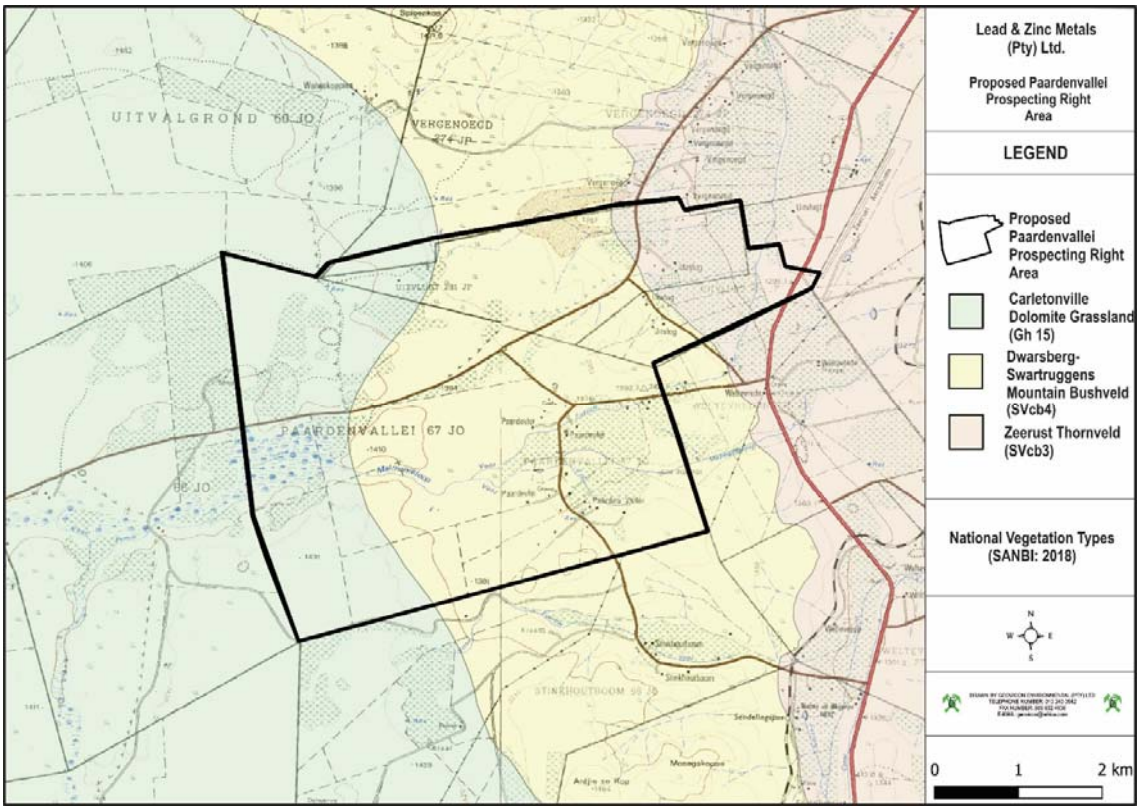


Figure 8: National Vegetation Types in the vicinity of the proposed Paardenvallei prospecting area

5.2.6.1.1. Gh 15 Carletonville Dolomite Grassland

Distribution: North-West Province (mainly) and Gauteng and marginally into the Free State Province: In the region of Potchefstroom, Ventersdorp and Carletonville, extending westwards to the vicinity of Ottoshoop, but also occurring as far east as Centurion and Bapsfontein in the Gauteng Province. Altitude varies from 1360 to 1620 metres above mean sea level, but largely 1 500–1 560 metres above mean sea level.

Vegetation & Landscape Features: Slightly undulating plains dissected by prominent rocky chert ridges. Species-rich grasslands forming a complex mosaic pattern dominated by many species.

Geology & Soils: Dolomite and chert of the Malmani Subgroup (Transvaal Supergroup) supporting mostly shallow Mispah and Glenrosa soil forms typical of the Fa land type, dominating the landscapes of this unit. Deeper red to yellow apedal soils (Hutton and Clovelly forms) occur sporadically, representing the Ab land type.

Climate: Warm-temperate, summer-rainfall region, with overall Mean Annual Precipitation of 593 mm. Summer temperatures high. Severe frequent frost occurs in winter. See also climate diagram for Gh 15 Carletonville Dolomite Grassland

Important Taxa:

Graminoids: *Aristida congesta* (d), *Brachiaria serrata* (d), *Cynodon dactylon* (d), *Digitaria tricholaenoides* (d),*Diheteropogon amplectens* (d), *Eragrostis chloromelas* (d), *E.racemosa* (d), *Heteropogon contortus* (d), *Loudetia simplex* (d), *Schizachyrium sanguineum* (d), *Setaria sphacelata* (d),*Themeda triandra* (d), *Alloteropsis semialata* subsp. *eckloniana*, *Andropogon schirensis*, *Aristida canescens*, *A. diffusa*, *Bewsia biflora*, *Bulbostylis burchellii*, *Cymbopogon caesius*, *C. pospischilii*,

Elionurus muticus, *Eragrostis curvula*, *E. gummiflua*, *E. plana*, *Eustachys paspaloides*, *Hyparrhenia hirta*, *Melinis nerviglumis*, *M. repens* subsp. *repens*, *Monocymbium ceresiiforme*, *Panicum coloratum*, *Pogonarthria squarrosa*, *Trichoneura grandiglumis*, *Triraphis andropogonoides*, *Tristachya leucothrix*,*T. rehmannii*.

Herbs: *Acalypha angustata*, *Barleria macrostegia*, *Chamaecrista mimosoides*, *Chamaesyce inaequilatera*, *Crabbea angustifolia*, *Dianthus mooiensis*, *Dicoma anomala*,*Helichrysum caespititium*, *H. miconiifolium*, *H. nudifolium* var.*nudifolium*, *Ipomoea ommaneyi*, *Justicia anagalloides*, *Kohautia*

amatymbica, *Kyphocarpa angustifolia*, *Ophrestia oblongifolia*, *Pollichia campestris*, *Senecio coronatus*, *Vernonia oligocephala*.

Geophytic Herbs: *Boophone disticha*, *Habenaria mossii*.

Low Shrubs: *Anthospermum rigidum* subsp. *pumilum*, *Indigofera comosa*, *Pygmaeothamnus zeyheri* var. *rogersii*, *Searsia magalismontana*,*Tylosema esculentum*, *Ziziphus zeyheriana*.

Geoxylic Suffrutices: *Elephantorrhiza elephantina*, *Parinari capensis* subsp. *capensis*.

Endemic Taxon:

Succulent Shrub: *Delosperma davyi*.

Conservation: Vulnerable. Target 24%. Small extent conserved in statutory (Sterkfontein Caves—part of the Cradle of Humankind World Heritage Site, Oog Van Malmanie, Abe Bailey, Boskop Dam, Schoonspruit, Krugersdorp, Olifantsvlei,Groenkloof) and in at least six private conservation areas. Almost a quarter already transformed for cultivation, by urban sprawl or by mining activity as well as the building of the Boskop and Klerkskraal Dams. Erosion very low (84%) and low (15%).

5.2.6.1.2. SVcb 3 Zeerust Thornveld

Distribution: North-West Province: Extends along the plains from the Lobatsi River in the west via Zeerust, Groot Marico and Mabaalstad to the flats between the Pilanesberg and westernend of the Magaliesberg in the east (including the valley of the lower Selons River). Altitude mainly ranges from 1 000–1 250 metres above mean sea level.

V**egetation & Landscape Features:** Deciduous, open to dense short thorny woodland, dominated by species of the Genera *Vachellia* and *Senegalia* with herbaceous layer of mainly grasses on deep, high base-status and some clay soils on plains and lowlands, also between rocky ridges of SVcb 4 Dwarsberg-Swartruggens Mountain Bushveld.

Geology & Soils: Sediments of the Pretoria Group (Transvaal Supergroup) in this area, particularly the Silverton and Rayton Formations, are mostly shale with less quartzite and conglomerate. Carbonates, volcanic rocks, breccias and diamictites also occur in the Pretoria Group. Bronzite, harzburgite, gabbro and norite of the Rustenburg Layered Suite (Bushveld Igneous Complex) are also found. Soils are

mostly deep, red-yellow, apedal, freely drained with high base status also with some vertic or melanic clays. Land types mainly Ae and Ea.

Climate: Summer rainfall with very dry winters. MAP has a relatively narrow range: 550–600 mm. Frost fairly frequent in winter. Mean monthly maximum and minimum temperatures for Marico-Irr weather station 36.7°C and –0.4°C for January and June, respectively.

Important Taxa:

Tall Trees: *Senegalia burkei* (d), *Vachellia. erioloba* (d).

Small Trees: *Senegalia mellifera* subsp. *detinens* (d), *Vachellia. nilotica* (d),*Vachellia. tortilis* subsp. *heteracantha* (d), *Searsia lancea* (d), *Senegalia fleckii*, *Peltophorum africanum*, *Terminalia sericea*.

Tall Shrubs: *Diospyros lycioides* subsp. *lycioides*, *Grewia flava*, *Mystroxylon aethiopicum* subsp. *burkeanum*.

Low Shrubs: *Agathisanthemum bojeri*, *Chaetacanthus costatus*, *Clerodendrum ternatum*, *Indigofera filipes*, *Searsia grandidens (Rhus grandidens)*, *Sida chrysantha*, *Stylosanthes fruticosa*.

Graminoids: *Eragrostis lehmanniana* (d), *Panicum maximum* (d), *Aristida congesta*, *Cymbopogon pospischilii*.

Herbs: *Blepharis integrifolia*, *Chamaecrista absus*, *C. mimosoides*, *Cleome maculata*, *Dicoma anomala*, *Kyphocarpa angustifolia*, *Limeum viscosum*, *Lophiocarpus tenuissimus*.

Endemic Taxon

Low Shrub: *Searsia maricoana*

Conservation: Least threatened. Target 19%. Less than 4% statutorily conserved, spread between four reserves including the Pienaar and Marico Bushveld Nature Reserves. Some 16% transformed mainly by cultivation, with some urban or built-up. A few areas with scattered plants of the Category 1b invader *Cereus jamacaru* and several other alien species very scatered elsewhere. Erosion is mainly very low to low.

Remark: This unit is somewhat more temperate than the SVcb 1 Dwaalboom Thornveld that borders it to the north.

5.2.6.1.3. SVcb 4 Dwarsberg-Swartruggens Mountain Bushveld

Distribution: North-West Province: Occurs on hills and ridges east of the Lobatsi River through the Zeerust and the Swartruggens areas to Mabeskraal and the Selons River Valley in the east. Also occurs on the parallel ridges of the Dwarsberge from Witkleigat in the west to the hills of the Dwarsberg area in the east. Altitude about 1 000–1 500 m.

Vegetation & Landscape Features: Rocky low to medium high hills and ridges with some steep faces in places. Height above the surrounding plains can reach about 300 m. Variable vegetation structure depending on slope, exposure, aspect and local habitat—various combinations of tree and shrub layers often with dense grass layer. Bush clumps also occur.

Geology & Soils: Shales, quartzites and andesites of the Pretoria Group (Transvaal Supergroup) with stony shallow soils of the Glenrosa and Mispah soil forms, with some deep, freely drained soils. Land types mainly Fb, Ib and Ae.

C**limate:** Summer rainfall with very dry winters. MAP from about 550–650 mm. Frost fairly frequent in winter in lower-lying areas,less so on the hills. Mean monthly maximum and minimum temperatures for Lindleyspoort-Irr weather station 35.2°C and –0.4oC for January and June, respectively.

I**mportant Taxa:**

Tall Tree: *Vachellia robusta* (d).

Small Trees: *Senegalia caffra* (d), *Senegalia. erubescens* (d), *Burkea africana* (d), *Combretum apiculatum* (d), *Faurea saligna* (d), *Protea caffra* (d), *Combretum imberbe*, *C. molle*, *Cussonia paniculata*, *C. transvaalensis*, *Dombeya rotundifolia*, *Ozoroa paniculosa*, *Pappea capensis*, *Peltophorum africanum*, *Spirostachys africana*, *Vangueria infausta*, *Ziziphus mucronata*.

Succulent Tree: *Aloe marlothii* subsp. *marlothii* (d).

Tall Shrubs: *Dichrostachys cinerea* (d), *Croton pseudopulchellus*, *Ehretia rigida* subsp. *rigida*, *Grewia flava*, *Mundulea sericea*, *Tarchonanthus camphoratus*, *Vitex zeyheri*.

Low Shrubs: *Athrixia elata*, *Pavonia burchellii*, *Searsia magalismontana* subsp. *magalismontana*, *Searsia. rigida* var. *rigida*.

Woody Climber: *Asparagus africanus*.

Graminoids: *Aristida canescens* (d), *Cenchrus ciliaris* (d), *Chrysopogon serrulatus* (d),*Digitaria eriantha* subsp. *eriantha* (d), *Enneapogon scoparius*(d), *Loudetia simplex* (d), *Schizachyrium sanguineum* (d), *Setaria lindenbergiana* (d), *Bewsia biflora*, *Bothriochloa insculpta*, *Cymbopogon caesius*, *C. pospischilii*, *Elionurus muticus*, *Eragrostis rigidior*, *Fingerhuthia africana*, *Heteropogon contortus*,*Melinis nerviglumis*, *Panicum maximum*, *Setaria sphacelata*, *Themeda triandra*, *Trachypogon spicatus*, *Tristachya biseriata*.

Herbs: *Barleria macrostegia*, *Commelina africana*, *Hermannia depressa*, *Senecio venosus*.

Geophytic Herbs: Hypoxis hemerocallidea, Pellaea calomelanos, Tritonia nelsonii.

Biogeographically Important Taxon (Central Bushveld endemic) Tall Shrub: Erythrophysa transvaalensis.

Endemic Taxon Succulent Shrub: Euphorbia perangusta.

Conservation Least threatened. Target 24%. Less than 2% statutorily conserved, mainly in the Marico Bushveld Nature Reserve. Some 7% transformed, mainly by cultivation. Aliens include scattered *Cereus jamacaru* (Category 1b Invader) and *Acacia mearnsii* (Category 2 Invader) in few areas. Erosion is mainly very low to low.

Remarks: This vegetation has some similarities with the SVcb 9 Gold Reef Mountain Bushveld to the east but is drier and warmer than this unit. The unitextends into Botswana, for example on the hills around Lobatse.

5.2.7. Animal Life

The North West Province has wide array of species, ecosystem and habitats. This is largely due to the diverse nature of the Province's landscapes and variation in climate. The area has rare and threatened species (e.g. wild dog). The indigenous fauna and flora inhabiting the numerous dolomitic eyes (particularly the aquatic invertebrates and fish) are also considered to be unique.

The proposed Paardenvallei Prospecting Area is situated in the Carletonville Dolomite Grassland, Dwarsberg-Swartruggens Mountain Bushveld and Zeerust ecosystem or vegetation unit, therefore the animal species that are likely to inhabit the ecosystem are associated with both the grassland and bushveld habitats. In accordance with the above-mentioned land uses certain species can occur within and in the surrounding areas of the proposed Paardenvallei Prospecting Area. The North West Biodiversity Sector Plan does indicate the specific fauna species that are of conservation concern, refer to the tables below for the lists of species that are seen as species of conservation concern in the North West Province.

These are the following categories that pertain to conservation status used to assess the threat status of faunal species within the North West Province:

CR = Critically Endangered

EN = Endangered

VU = Vulnerable

NT = Near Threatened

DD = Data Deficient

LC = Least Concern

Table 4: Mammal species of conservation concern in the North West Province (NWBSP, 2015)

Scientific Name	Common Name	Friedmann & Daly (2004)	IUCN Status
Acinonyx jubatus	Cheetah	VU	VU
Atelerix frontalis	African Hedgehog	NT	LC
Ceratotherium simum	White Rhino	LC	NT
Cloeotis percivali	Short-eared trident bat	CR	LC
Crocuta	Spotted Hyena	NT	LC
Damaliscus lunatus	Tsessebe	EN	LC
Dasymus incomtus	African Marsh Rat	NT	LC
Diceros bicornis mnor	Black Rhinoceros	CR	CR
Eidolon helvum	Straw-Coloured Fruit Bat	NT	NT
Felis nigripes	Black-Footed Cat	LC	VU
Felis silvestris	African Wild Cat	LC	LC
Hippopotamus amphibius	Hippo	LC	VU
Hippotragus equinus	Roan Antelope	VU	LC
Hippotragus niger	Sable Antelope	VU	LC
Hyaena brunnea	Brown Hyena	NT	NT
Leptailurus sefval	Serval	NT	LC

Loxodonta africana	African Savanna Elephant	LC	VU
Lutra (Hydrictis) maculicollis	Spotted-necked otter	NT	NT
Lycaon pictus	African Wild dog	EN	EN
Mellivora capensis	Honey Badger	NT	LC
Miniopterus schreibersii	Shreibers' Long-Fingered Bat	NT	NT
Myotis tricolor	Temminck's Hairy Bat	NT	LC
Mystromys albicaudatus	White-tailed mouse	EN	EN
Ourebia ourebi	Oribi	EN	LC
Panthera leo	Lion	LC	VU

Table 5: Reptile species of conservation concern in the North West Province (NWBSP, 2015)

Scientific name	**Common name**	**Power & Verbugt**	**IUCN Status**
Chamaesaura aenea	Coppery Grass Lizard	NT	NYBA
Crocodylus niloticus	Nile Crocodile	VU	LC
Homoroselaps dorsalis	Striped Harlequin snake	NT	NT
Python natalensis	Southern African Python	LC	NYBA

Table 6: Amphibian species of conservation concern in the North West Province (NWBSP, 2015)

Scientific Name	**Common Name**	**Power & Verbugt (2014)**	**IUCN Status**
Pyxicephalus adspersus	African Giant Bullfrog	NT	LC

Table 7: Avifaunal species of conservation concern in the North West Province (NWBSP, 2015)

Scientific name	**Common name**	**Provincial (2012)**	**National (Taylor *et al.*, 2015)**	**IUCN Status**
Alcedo semitorquata	Half-collared Kingfisher	NT	NT	LC
Anastomus lamelligerus	African Openbill Stork	NT	LC	LC
Anthropoides paradiseus	Blue Crane	VU	NT	VU
Aquila rapax	Tawny Eagle	VU	EN	LC
Ardeotis kori	Kori Bustard	VU	NT	NT
Buphagus erythrorhynchus	Red-billed Oxpecker	NT	LC	LC
Certhilauda chuana	Short-clawed Lark	NT	NT	LC
Charadrius pallidus	Chestnut-banded Plover	NT	NT	NT
Ciconia nigra	Black Stork	NT	VU	LC
Circus macrourus	Pallid Harrier	NT	NT	NT
Circus maurus	Black Harrier	NT	EN	VU
Circus ranivorus	African Marsh Harrier	VU	EN	LC

Ephippiorhynchus	Saddle-billed Stork	EN	EN	LC
Eupodotis cafra (senegalensis)	White-bellied Korhaan	VU	VU	LC
Falco biarmicus	Lanner Falcon	NT	VU	LC
Falco naumanni	Lesser kestrel	VU	LC	LC
Falco peregrinus	Peregrine Falcon	NT	LC	LC
Glareola nordmanni	Black-winged Pratincole	NT	NT	NT

Table 8: List of bird species that occur in ADU pentad: 2530_2600

Ref	Common_group	Common_species	Genus	Species	Status
6	Grebe	Little	Tachybaptus	ruficollis	
50	Cormorant	Reed	Microcarbo	africanus	
54	Heron	Grey	Ardea	cinerea	
55	Heron	Black-headed	Ardea	melanocephala	
61	Egret	Western Cattle	Bubulcus	ibis	
72		Hamerkop	Scopus	umbretta	
78	Stork	Abdim's	Ciconia	abdimii	Near Threatened
81	Ibis	African Sacred	Threskiornis	aethiopicus	
84	Ibis	Hadada	Bostrychia	hagedash	
88	Goose	Spur-winged	Plectropterus	gambensis	
89	Goose	Egyptian	Alopochen	aegyptiaca	
90	Shelduck	South African	Tadorna	cana	
96	Duck	Yellow-billed	Anas	undulata	
100	Duck	White-faced Whistling	Dendrocygna	viduata	
129	Kite	Yellow-billed	Milvus	aegyptius	
130	Kite	Black-winged	Elanus	caeruleus	
139	Eagle	Booted	Hieraaetus	pennatus	
154	Buzzard	Common	Buteo	buteo	
158	Sparrowhawk	Little	Accipiter	minullus	
162	Goshawk	Gabar	Micronisus	gabar	
171	Harrier-Hawk	African	Polyboroides	typus	
173	Francolin	Coqui	Peliperdix	coqui	
174	Francolin	Crested	Dendroperdix	sephaena	
183	Spurfowl	Natal	Pternistis	natalensis	
185	Spurfowl	Swainson's	Pternistis	swainsonii	
192	Guineafowl	Helmeted	Numida	meleagris	
196	Buttonquail	Common	Turnix	sylvaticus	
238	Plover	Three-banded	Charadrius	tricollaris	
242	Lapwing	Crowned	Vanellus	coronatus	
245	Lapwing	Blacksmith	Vanellus	armatus	
275	Thick-knee	Spotted	Burhinus	capensis	
311	Pigeon	Speckled	Columba	guinea	

312	Pigeon	African Olive	Columba	arquatrix	
314	Dove	Red-eyed	Streptopelia	semitorquata	
316	Dove	Cape Turtle	Streptopelia	capicola	
317	Dove	Laughing	Spilopelia	senegalensis	
318	Dove	Namaqua	Oena	capensis	
321	Dove	Emerald-spotted Wood	Turtur	chalcospilos	
339	Go-away-bird	Grey	Crinifer	concolor	
343	Cuckoo	Red-chested	Cuculus	solitarius	
348	Cuckoo	Jacobin	Clamator	jacobinus	
352	Cuckoo	Diederik	Chrysococcyx	caprius	
359	Owl	Western Barn	Tyto	alba	
365	Owlet	Pearl-spotted	Glaucidium	perlatum	
368	Eagle-Owl	Spotted	Bubo	africanus	
372	Nightjar	Rufous-cheeked	Caprimulgus	rufigena	
373	Nightjar	Fiery-necked	Caprimulgus	pectoralis	
374	Nightjar	Freckled	Caprimulgus	tristigma	
383	Swift	White-rumped	Apus	caffer	
385	Swift	Little	Apus	affinis	
387	Swift	African Palm	Cypsiurus	parvus	
390	Mousebird	Speckled	Colius	striatus	
392	Mousebird	Red-faced	Urocolius	indicus	
399	Kingfisher	Woodland	Halcyon	senegalensis	
402	Kingfisher	Brown-hooded	Halcyon	albiventris	
404	Bee-eater	European	Merops	apiaster	
418	Hoopoe	African	Upupa	africana	
419	Wood Hoopoe	Green	Phoeniculus	purpureus	
421	Scimitarbill	Common	Rhinopomastus	cyanomelas	
424	Hornbill	African Grey	Lophoceros	nasutus	
426	Hornbill	Southern Yellow-billed	Tockus	leucomelas	
431	Barbet	Black-collared	Lybius	torquatus	
432	Barbet	Acacia Pied	Tricholaema	leucomelas	
437	Tinkerbird	Yellow-fronted	Pogoniulus	chrysoconus	
439	Barbet	Crested	Trachyphonus	vaillantii	
440	Honeyguide	Greater	Indicator	indicator	
447	Woodpecker	Golden-tailed	Campethera	abingoni	
450	Woodpecker	Cardinal	Dendropicos	fuscescens	
458	Lark	Rufous-naped	Mirafra	africana	
460	Lark	Sabota	Calendulauda	sabota	
493	Swallow	Barn	Hirundo	rustica	
501	Swallow	Red-breasted	Cecropis	semirufa	
502	Swallow	Greater Striped	Cecropis	cucullata	
503	Swallow	Lesser Striped	Cecropis	abyssinica	
506	Martin	Rock	Ptyonoprogne	fuligula	
513	Cuckooshrike	Black	Campephaga	flava	
517	Drongo	Fork-tailed	Dicrurus	adsimilis	

521	Oriole	Black-headed	Oriolus	larvatus	
522	Crow	Pied	Corvus	albus	
527	Tit	Southern Black	Melaniparus	niger	
533	Babbler	Arrow-marked	Turdoides	jardineii	
536	Babbler	Southern Pied	Turdoides	bicolor	
544	Bulbul	African Red-eyed	Pycnonotus	nigricans	
545	Bulbul	Dark-capped	Pycnonotus	tricolor	
552	Thrush	Kurrichane	Turdus	libonyana	
557	Thrush	Groundscraper	Turdus	litsitsirupa	
561	Thrush	Short-toed Rock	Monticola	brevipes	
570	Chat	Familiar	Oenanthe	familiaris	
581	Robin-Chat	Cape	Cossypha	caffra	
588	Scrub Robin	White-browed	Cercotrichas	leucophrys	
599	Warbler	Willow	Phylloscopus	trochilus	
601	Eremomela	Burnt-necked	Eremomela	usticollis	
606	Warbler	African Reed	Acrocephalus	baeticatus	
621	Crombec	Long-billed	Sylvietta	rufescens	
622	Apalis	Bar-throated	Apalis	thoracica	
629	Cisticola	Zitting	Cisticola	juncidis	
637		Neddicky	Cisticola	fulvicapilla	
639	Cisticola	Wailing	Cisticola	lais	
642	Cisticola	Rattling	Cisticola	chiniana	
646	Cisticola	Levaillant's	Cisticola	tinniens	
649	Prinia	Tawny-flanked	Prinia	subflava	
650	Prinia	Black-chested	Prinia	flavicans	
654	Flycatcher	Spotted	Muscicapa	striata	
658	Warbler	Chestnut-vented	Curruca	subcoerulea	
665	Flycatcher	Fiscal	Melaenornis	silens	
673	Batis	Chinspot	Batis	molitor	
682	Flycatcher	African Paradise	Terpsiphone	viridis	
686	Wagtail	Cape	Motacilla	capensis	
696	Pipit	Striped	Anthus	lineiventris	
706	Shrike	Lesser Grey	Lanius	minor	
707	Fiscal	Southern	Lanius	collaris	
708	Shrike	Red-backed	Lanius	collurio	
709	Boubou	Southern	Laniarius	ferrugineus	
711	Shrike	Crimson-breasted	Laniarius	atrococcineus	
712	Puffback	Black-backed	Dryoscopus	cubla	
714	Tchagra	Brown-crowned	Tchagra	australis	
715	Tchagra	Black-crowned	Tchagra	senegalus	
719	Bushshrike	Orange-breasted	Chlorophoneus	sulfureopectus	
722		Bokmakierie	Telophorus	zeylonus	
723	Bushshrike	Grey-headed	Malaconotus	blanchoti	
724	Shrike	Magpie	Urolestes	melanoleucus	
731		Brubru	Nilaus	afer	

734	Myna	Common	Acridotheres	tristis	
735	Starling	Wattled	Creatophora	cinerea	
736	Starling	Violet-backed	Cinnyricinclus	leucogaster	
737	Starling	Cape	Lamprotornis	nitens	
743	Starling	Burchell's	Lamprotornis	australis	
745	Starling	Red-winged	Onychognathus	morio	
748	Oxpecker	Red-billed	Buphagus	erythrorynchus	
755	Sunbird	Marico	Cinnyris	mariquensis	
763	Sunbird	White-bellied	Cinnyris	talatala	
772	Sunbird	Amethyst	Chalcomitra	amethystina	
780	Sparrow-Weaver	White-browed	Plocepasser	mahali	
784	Sparrow	House	Passer	domesticus	
785	Sparrow	Great	Passer	motitensis	
797	Weaver	Village	Ploceus	cucullatus	
803	Weaver	Southern Masked	Ploceus	velatus	
804	Weaver	Thick-billed	Amblyospiza	albifrons	
805	Quelea	Red-billed	Quelea	quelea	
808	Bishop	Southern Red	Euplectes	orix	
814	Widowbird	White-winged	Euplectes	albonotatus	
821	Finch	Cut-throat	Amadina	fasciata	
823	Mannikin	Bronze	Spermestes	cucullata	
830	Pytilia	Green-winged	Pytilia	melba	
835	Firefinch	Jameson's	Lagonosticta	rhodopareia	
837	Firefinch	Red-billed	Lagonosticta	senegala	
839	Waxbill	Blue	Uraeginthus	angolensis	
840	Waxbill	Violet-eared	Granatina	granatina	
841	Waxbill	Black-faced	Brunhilda	erythronotos	
852	Whydah	Long-tailed Paradise	Vidua	paradisaea	
859	Canary	Yellow-fronted	Crithagra	mozambica	
867	Seedeater	Streaky-headed	Crithagra	gularis	
872	Bunting	Cinnamon-breasted	Emberiza	tahapisi	
874	Bunting	Golden-breasted	Emberiza	flaviventris	
940	Dove	Rock	Columba	livia	
1104	Thrush	Karoo	Turdus	smithi	
1172	White-eye	Cape	Zosterops	virens	
4142	Sparrow	Southern Grey-headed	Passer	diffusus	

5.2.8. Surface Water

The Paardenvallei prospecting area falls within the Crocodile (west) Marico Water Management Area See Figure 8 below. The site is located in two quaternary catchments, the A31C and A31D. The drainage of Malmanieloop passes through the area and connect to the Klein Marico. Refer to Figure 9.

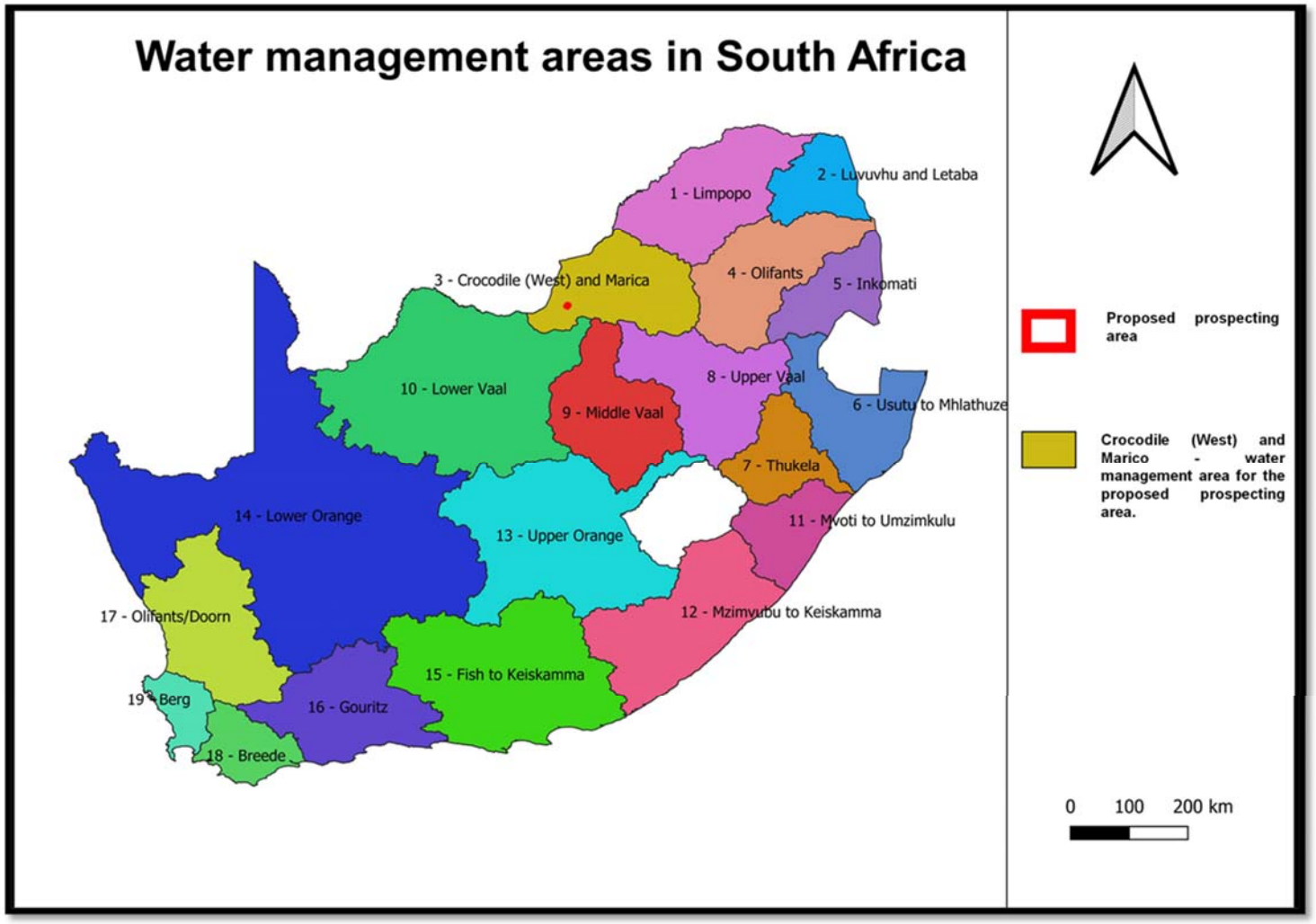


Figure 9: Water management areas.

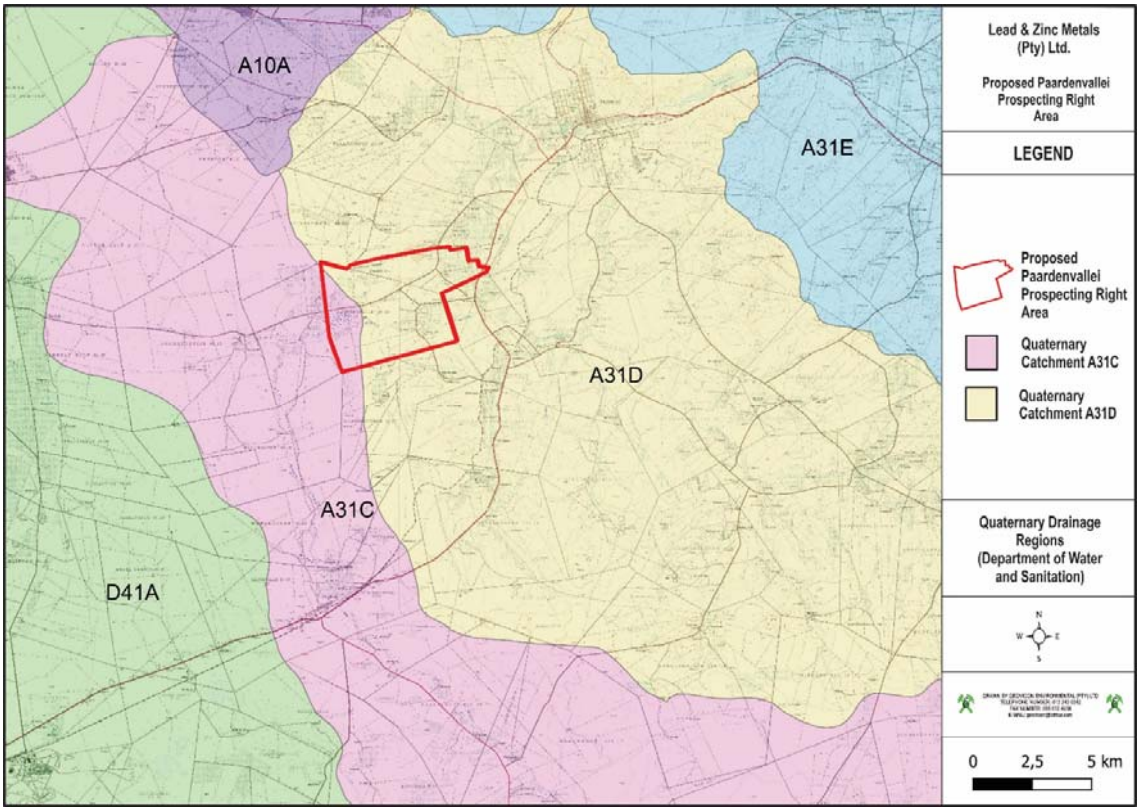


Figure 10: Quaternary catchment areas of the proposed prospecting area.

River diversions
No river diversions are planned for the prospecting activities covered by this report.

Water Use

The likely downstream users were determined by examining aerial photography and literature surveys.

The downstream users were therefore considered in the stream. The downstream usage classes are evaluated below:

- Domestic users –local inhabitants may consume this river water and will likely also use the water for laundry.
- Recreational users – it is likely that local inhabitants will swim in the streams.
- Aquatic users – fishing.
- Irrigation users – the river water is might to be used for small-scale or informal irrigation.
- Livestock – the river water is likely to be used for drinking by livestock.

Water Authority

The catchment area is government water-controlled catchment. The authority in charge is the Department of Water and Sanitation (North West Regional Office).

5.2.9. Groundwater

The study area is known for its large dolomite aquifers. In general, large quantities of water are abstracted from these aquifers. The aquifer is characterized by karst, fractured and intergranular calcareous rocks, argillaceous and meta-arenaceous rocks.

5.2.10. Sensitive Landscapes

Sensitive landscapes include vulnerable, endangered and critically endangered ecosystems; all water courses and wetland areas. Sensitive areas also include all critical biodiversity areas, ecological support areas; South African conservation areas, South African protected areas; and strategic water resource areas. To this extent, Geovicon Environmental (Pty) Limited an independent environmental consultant, undertook a desktop study over the proposed Paardenvallei Prospecting area to determine the presence of any sensitive areas. According to the study there are sites that resembles sensitive landscapes which were identified in close proximity to the site. Figure 11 below provides an indication of the threatened ecoystems in the vicinity of the proposed Paardenvallei Prospecting area.

See **Appendix C** for the National Web Based Environmental Screening Tool Report.

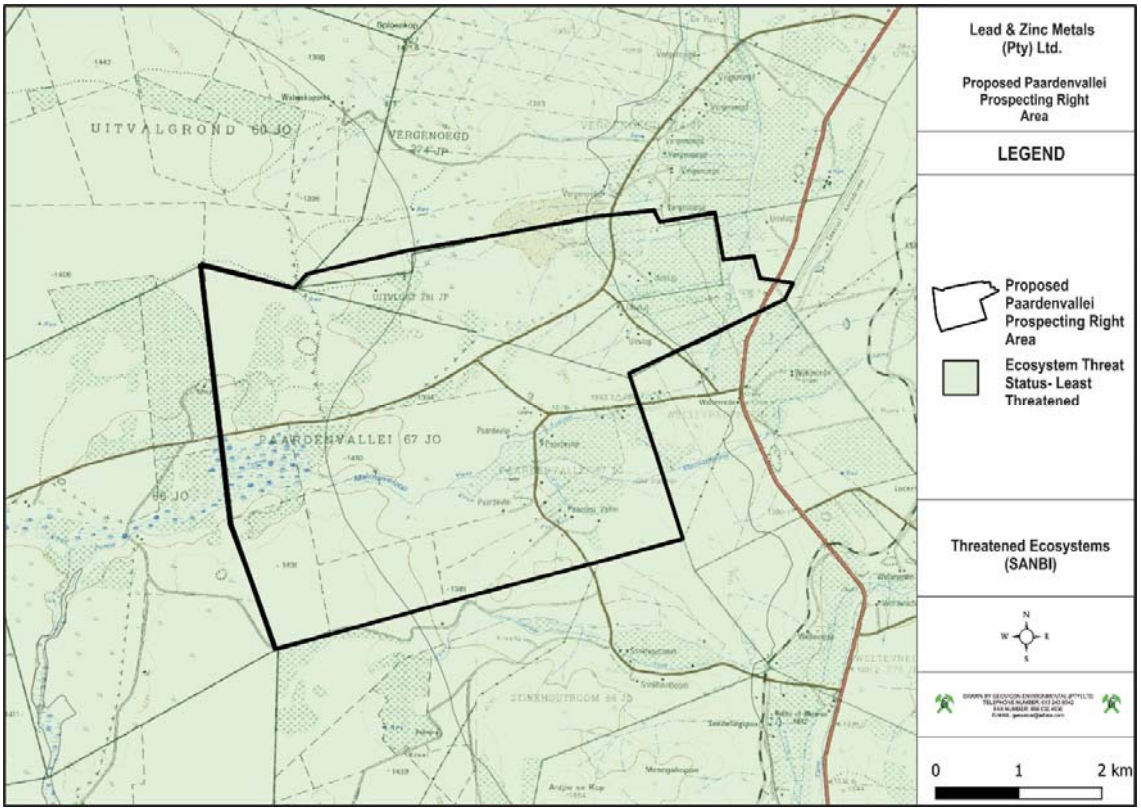


Figure 11 : Threatened Ecosystems in the vicinity of the proposed Paardenvallei prospecting area (SANBI).

The proposed Paardenvallei prospecting area is situated over a groundwater Strategic Water Source of South Africa namely the Bo-Molopo Karst Belt (Figure 12)

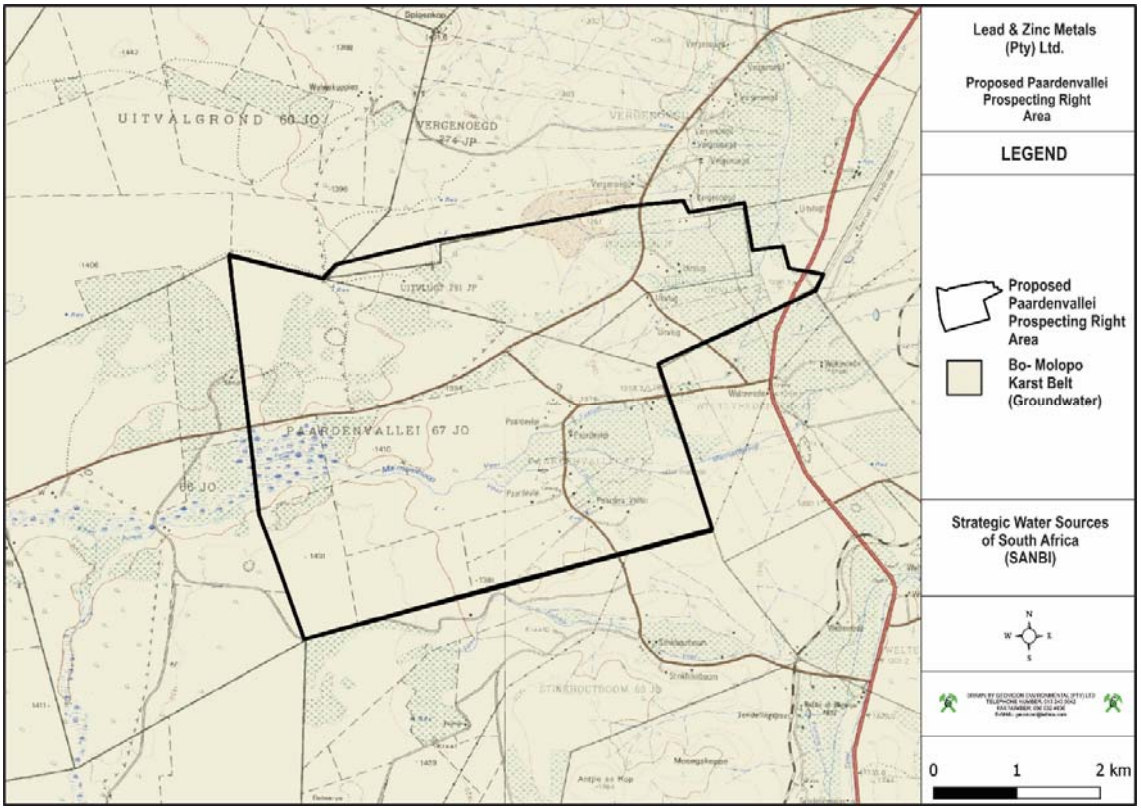


Figure 12: Strategic Water Sources of South Africa (Department of Water and Sanitation).

The proposed Paardenvallei prospecting area is situated in the following National River Freshwater Ecosystem Priority Areas (Figure 13):

River FEPAs achieve biodiversity targets for river ecosystems and threatened/near threatened fish species, they should remain in a good condition in order to contribute to national biodiversity goals and support sustainable use of water resources.

Fish Support Areas include sub-quaternary catchments that are important for migration of threatened or near threatened fish species. A goal of NFEPA is to keep further freshwater species from becoming threatened and to prevent those fish species that are already threatened or near threatened from going extinct. In order to achieve this, there should be no further deterioration in river condition in fish sanctuaries and no new permits should be issued for stocking invasive alien fish in farm dams in the associated sub-quaternary catchment.

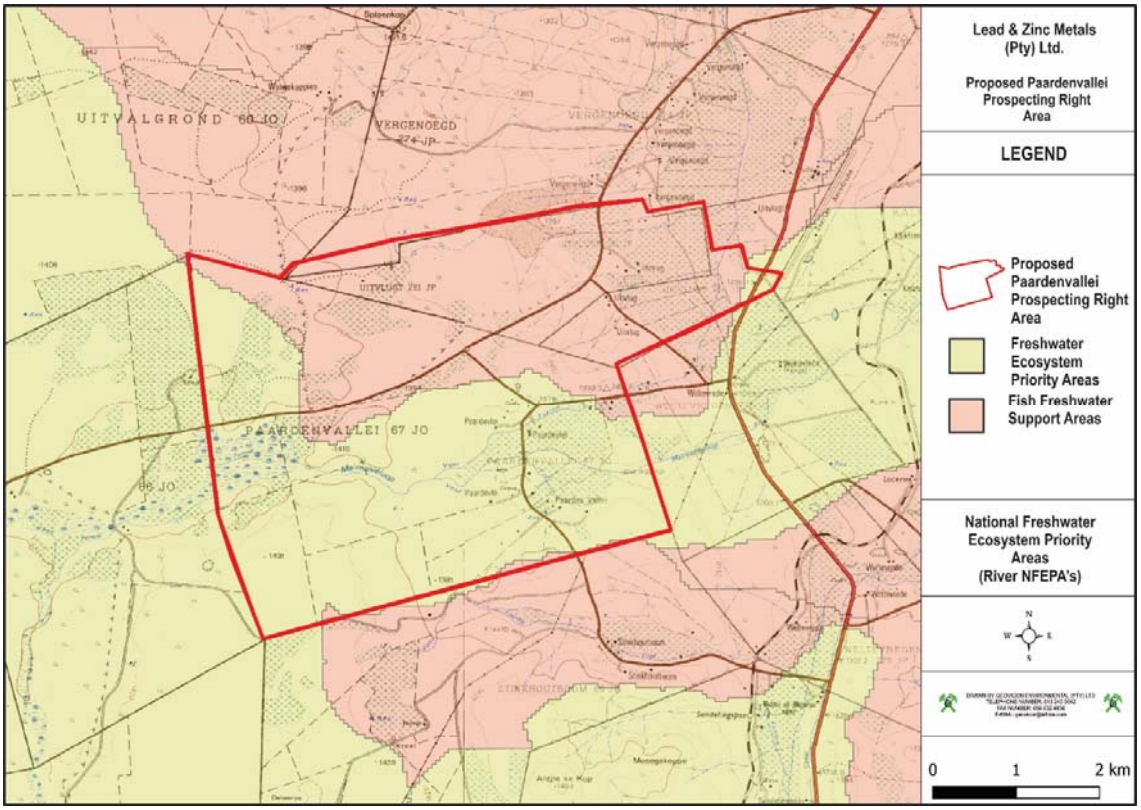


Figure 13: National River Freshwater Ecosystem Priority Areas (NFEPA's).

Figure 14 provides a visual indication of the Wetland Types that are present in the proposed Paardenvallei Prospecting area.

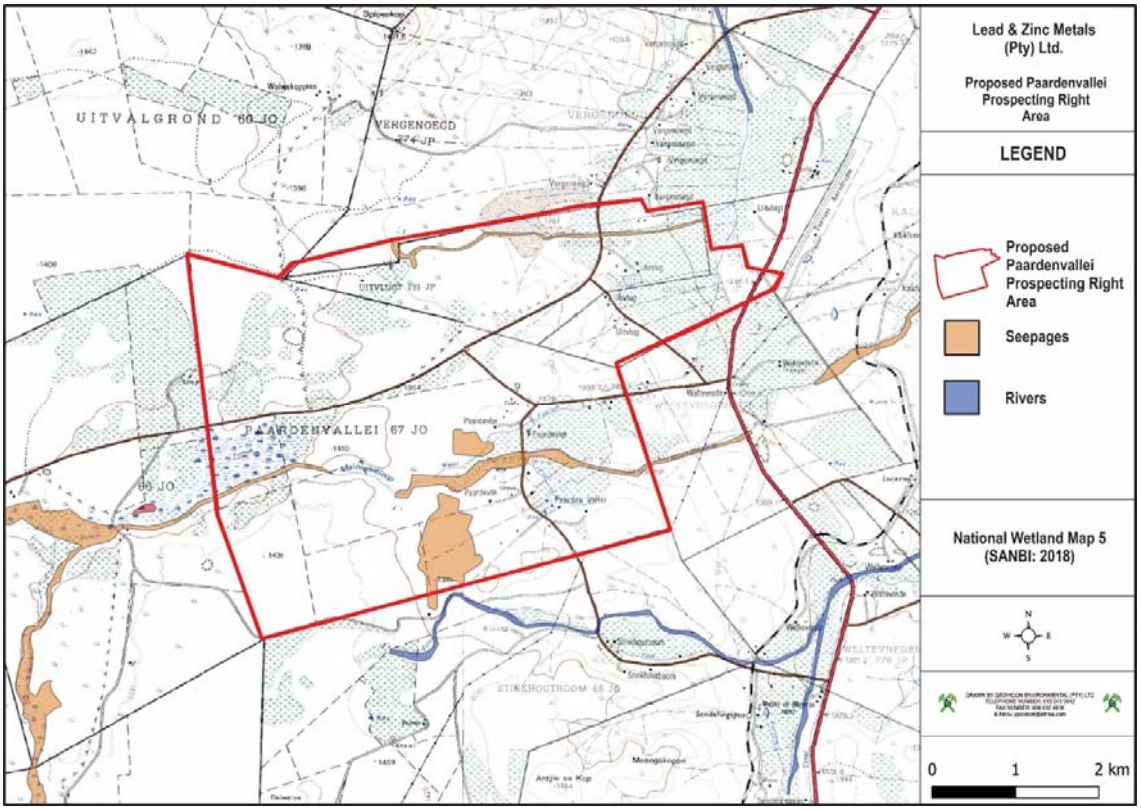


Figure 14: National Wetland Types in the vicinity of the proposed Paardenvallei prospecting area (National Wetland Map 5, SANBI).

The proposed Paardenvallei prospecting area is situated in three Wetland Vegetation Types that include the Dry Highveld Grassland Group 5, Central Bushveld Group 1 as well as Central Bushveld Group Figure 15 provides a visual indication of the Wetland Vegetation Types (SANBI).

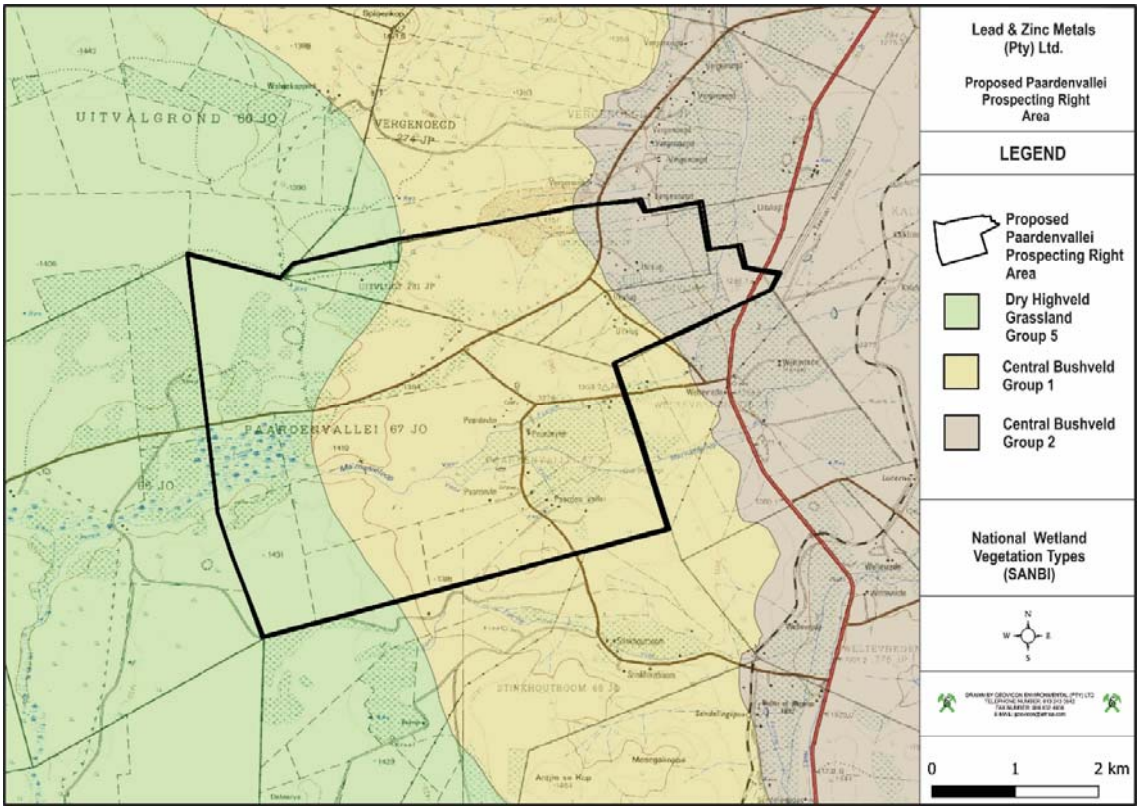


Figure 15: National Wetland Vegetation Types in the vicinity of the proposed Paardenvallei prospecting area (SANBI).

Figure 16 provides a visual indication that the proposed Paardenvallei prospecting area is situated over terrestrial Ecological Support Areas (ESA's) as well as Critical Biodiversity Areas (CBA's).

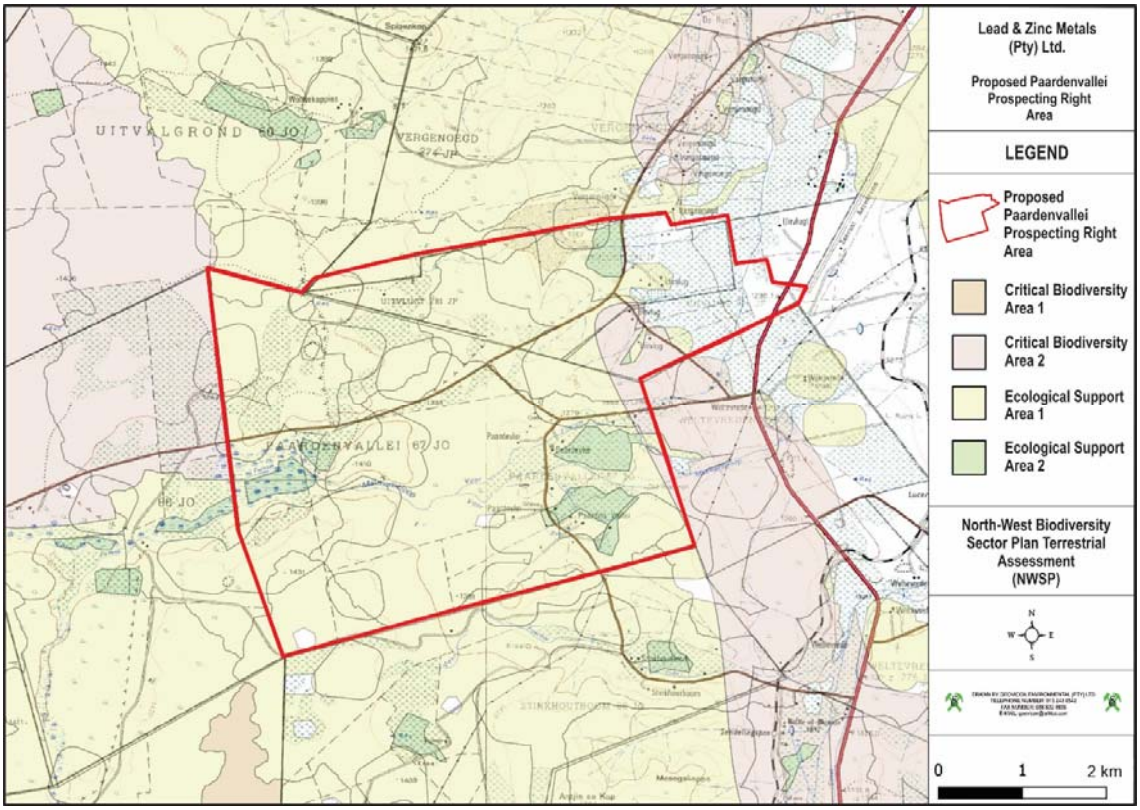


Figure 16: North- West Biodiversity Sector Plan, Terrestrial Assessment for the proposed Paardenvallei Prospecting area (NWBSP)

Figure 17 provides a visual indication that the proposed Paardenvallei prospecting area is situated over aquatic Ecological Support Areas (ESA's) as well as Critical Biodiversity Areas (CBA's)

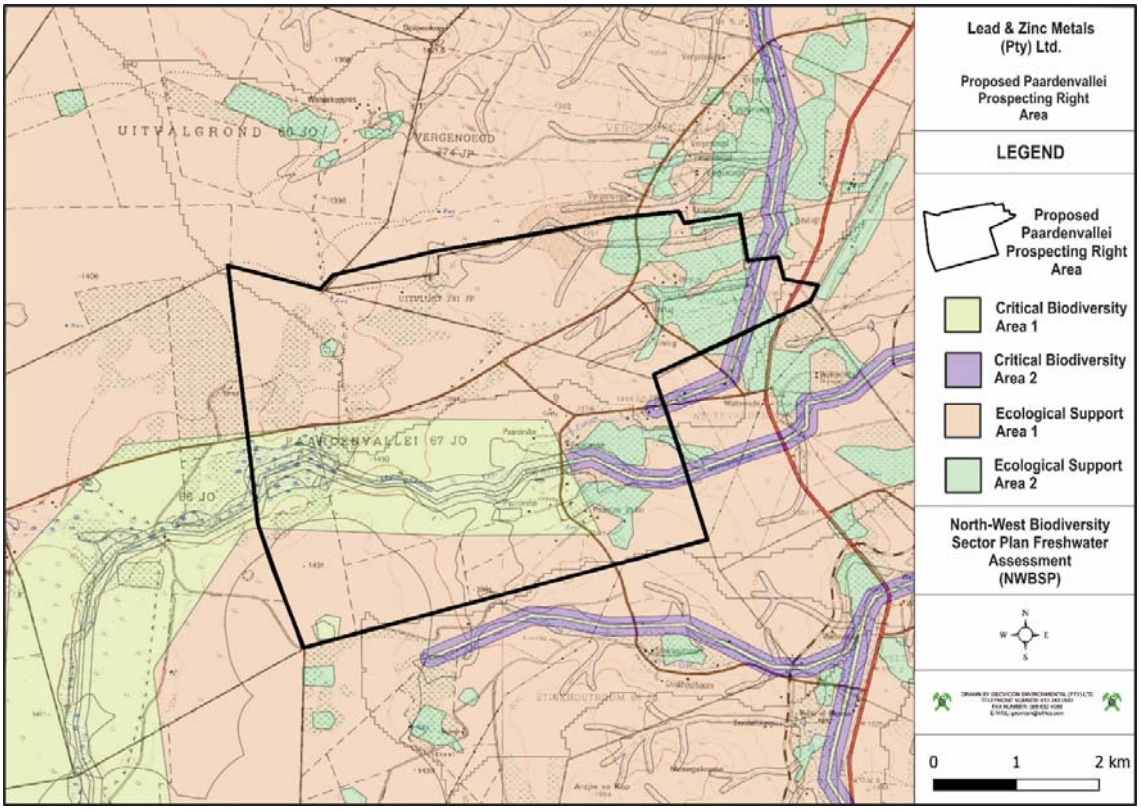


Figure 17: North- West Biodiversity Sector Plan Aquatic Assessment for the proposed Paardenvallei Prospecting area (NWBSP).

Table 9 provides a full definition for both Terrestrial and Aquatic CBA and ESA categories.

Table 9: Detailed descriptions regarding the North-West Biodiversity Sector Plan Terrestrial and Aquatic.

Terrestrial Critical Biodiversity Area Level 1 - Map Code CBA 1	
Critical Patches: Ecosystem Status – Critically Endangered Ecosystems	Remaining patches larger than 3 ha of provincially Critically Endangered ecosystems (vegetation types), i.e. the amount of vegetation remaining intact (of these ecosystems) is less than the representation/biodiversity target, therefore all remaining patches of these vegetation units are of the highest conservation priority and further impacts on natural habitat should be avoided
Irreplaceable Sites	Planning units with high irreplaceability values based on the provincial MARXAN analysis, i.e. areas or sites that are mandatory if biodiversity targets are to be achieved
Critical Biodiversity Corridors Linkages	Critical linkages in the provincial biodiversity corridor network where existing conversion of natural landscapes to other land uses has severely restricted options for maintaining connectivity in the natural landscape. Critical linkages that are not in a natural state are categorised as ESA 2
Important Terrestrial Habitats:	Areas in the terrestrial environments less than 10 000 ha in extent identified by experts as being important for biodiversity conservation

Expert Areas	
Important Terrestrial Habitats: Kloofs	All medium to large kloofs identified as an important habitat for climate change adaptation
Aquatic Critical Biodiversity Areas Level 1 – Map Code CBA 1	
FEPA Rivers	All FEPA River lines (FEPA rivers, fish sanctuary and free-flowing rivers) buffered by 100 m as identified in NFEPA and modified by DWS National River Eco status Monitoring Program (REMP) and experts.
Important Habitats: Peat Wetlands	Peat wetlands as mapped by experts
Important Habitats: Dolomitic Eyes	Dolomitic eyes as mapped by experts
Aquatic Ecological Support Areas Level 1 and Level 2 – Map Code ESA1 if natural ESA2 if not natural	
FEPA Fish Catchments	Catchments supporting FEPA fish rivers
Wetland Clusters	Clusters of larger wetlands and pans and their collective buffer (500 m).
Peat Wetland Buffers	500 m buffer around peat wetlands
Dolomite Recharge Area	The karst landscape of central North West around which all major eyes emerge and based on topography is the most likely area for the dolomitic aquifer recharge zone

The proposed Paardenvallei Prospecting Area area is situated within a UNESCO biosphere reserve, namely the Marico Biosphere Reserve, which was declared as such in 2018, see Figure 18 for a visual indication.

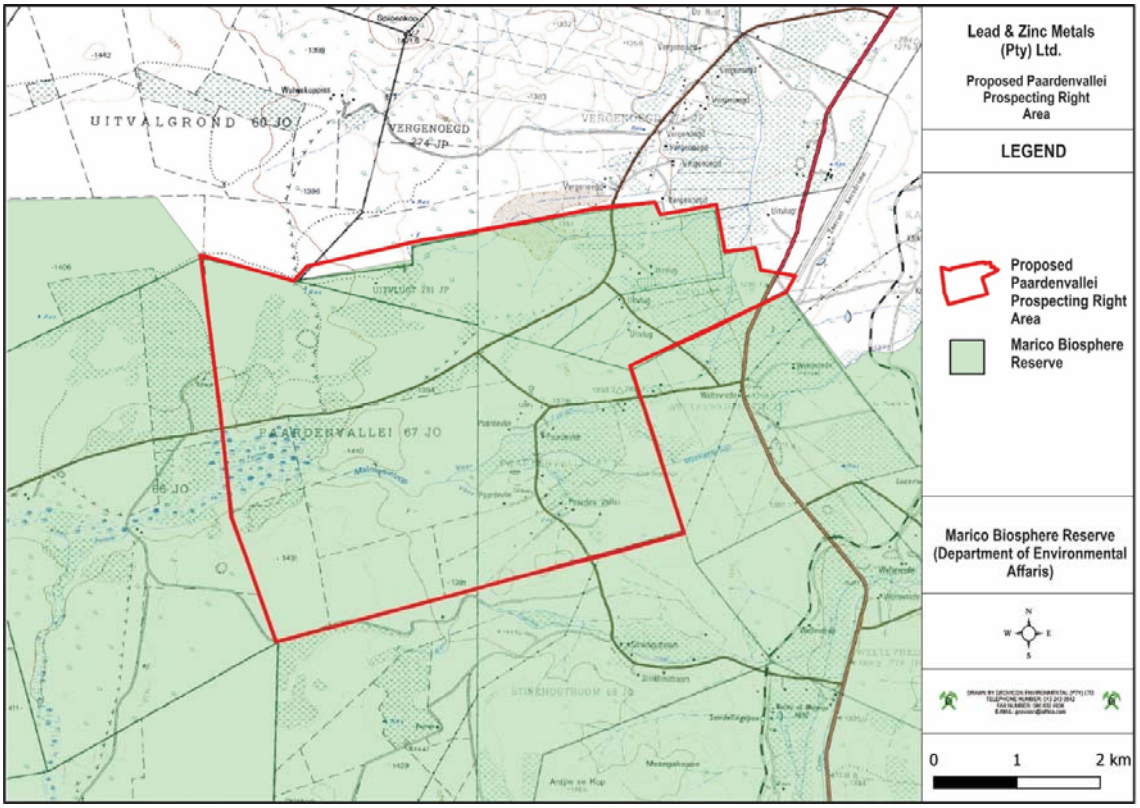


Figure 18: Biosphere Reserve associated with the proposed Paardenvallei Prospecting area (South African Conservation Areas Database).

5.2.11. Air Quality

Potentially air pollution from human activities may arise as a result of particulates entering the atmosphere. The sources of air pollution from human activities comprise of three broad categories i.e., stationary sources (agriculture, mining, quarrying, manufacturing, mineral products, industries and power generation), community sources (homes or buildings, municipal waste and sewage sludge incinerators, fireplaces, cooking facilities, laundry services and cleaning plants) and mobile sources combustion-engine vehicles and fugitive emissions from vehicle traffic). Air pollutants are generally classified into suspended particulate matter (dust, fumes, mists and smokes), gaseous pollutants (gases and vapours) and odours.

Assessment of the proposed prospecting right area has determined that all three categories of air pollution sources are found at the proposed area.

5.2.12. Noise

The proposed project area is predominantly a farming area. Noise from the area is mainly from farming activities with use of associated infrastructure and land use activities. Potential noise sources from the area may therefore be emanating from the following sources i.e.: roads and surrounding land uses.

5.2.13. Socio-Economic Status

Ramotshere Moiloa Local Municipality (formerly Zeerust Local Municipality) is a local municipality in the Ngaka Modiri Molema District Municipality, North West Province, South Africa.

The Municipality is characterized by a few urban areas including Zeerust Town (the main town in the LM) as well as some formal settlement at Ikageleng, Henryville, Olienhout Park, Shalimar Park,

Welbedacht (Lehurutshe Town) and Groot Marico. The vast majority of the population lives in a rural or peri-urban environment, which for most part is unplanned and poorly serviced. The rural part of the municipality is estimated at 70% of its total area, with over 40 villages spread across distances of up to 120 km from the main town. Mountainous terrain forms a significant divide between the areas along the N4 and the remainder of the LM area (courtesy of the municipality 2018/2019 Annual Performance Report).

5.2.13.1. Population density, growth and location

The demographic information is given on Table 10 and 11 below.

Table 10: Population Details (2011 census)

Population Details									
							Population '000		
Age	Year -2			Year -1			Year 0		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Age: 0 - 4	9482	8972	18454	9482	8972	18454	9482	8972	18454
Age: 5 - 9	8100	7824	15924	8100	7824	15924	8100	7824	15924
Age: 10 - 19	15192	14324	29516	15192	14324	29516	15192	14324	29516
Age: 20 - 29	12207	12235	24442	12207	12235	24442	12207	12235	24442
Age: 30 - 39	9051	9633	18684	9051	9633	18684	9051	9633	18684
Age: 40 - 49	6780	8276	15056	6780	8276	15056	6780	8276	15056
Age: 50 - 59	5782	6762	12544	5782	6762	12544	5782	6762	12544
Age: 60 - 69	3870	4879	8749	3870	4879	8749	3870	4879	8749
Age: 70+	2755	4588	7343	2755	4588	7343	2755	4588	7343
Source: Statistics SA									

Table 11: Neighbourhoods within Ramotshere Moiloa Local Municipality (2011 census).

Overview of Neighborhoods within '*Ramotshere Moiloa Local Municipality***		
Settlement Type	**Households**	**Population**
Towns		
Zeerust	2 437	9 093
	-	-
Sub-Total	2 437	9 093
Townships	4 292	17166
	-	-
Sub-Total	4 292	17 166
Rural settlements	9 029	35 459
	-	-
Sub-Total	9 029	35 459
Informal settlements	2 300	9 200
	-	-
	-	-
Sub-Total	2 300	9 200
Total	40 740	150 730

5.2.13.2. Socio economic status and natural resources in the area

The socio-economic status and economic activities are demonstrated below in Table 8 and Table 9 respectively.

Table 12: Socio-economic status

Socio Economic Status						
Year	Housing Backlog as proportion of current demand	Unemployment Rate	Proportion of Households with no Income	Proportion of Population in Low-skilled Employment	HIV/AIDS Prevalence	Illiterate people older than 14 years
Year -2	19%	22%	26%	44%	10%	27%
Year -1	20%	23%	26%	48%	15%	37%
Year 0	21%	24%	26%	52%	20%	44%

(Courtesy of the municipality 2018/2019 Annual Performance Report)

Table 13: Economic drivers

Economic Activity by Sector			R '000
Sector	Year -2	Year -1	Year 0
Agric, forestry and fishing	2700	2700	2700
Mining and quarrying			300
Manufacturing	180000	180000	18000
Govt, community and social services			
Total	182700	182700	21000

(Courtesy of the municipality 2018/2019 Annual Performance Report)

SECTION SIX

Environmental impact assessment

6. ENVIRONMENTAL IMPACT ASSESSMENT

6.1. ENVIRONMENTAL IMPACT ASSESSMENT PROCESS FOLLOWED

6.1.1. Approach to Environmental Impact Assessment

The term 'environment' is used in the broadest sense in an EIA. It covers the physical, biological, social, economic, cultural, historical, institutional and political environments.

An Environmental Impact Assessment is a good planning tool. It identifies the environmental consequences of a proposed project from the beginning and helps to ensure that the project, over its life cycle, will be environmentally acceptable and integrated into the surrounding environment in a sustainable way.

6.1.2. Environmental Impact Assessment Process Followed

Under Section 24 of the National Environmental Management Act (NEMA), the Minister promulgated the regulations pertaining to environmental impact assessments (EIA Regulations, 2014) under Government Notice No. 326 in Government Gazette 38282 of 4 December 2014. These EIA regulations repealed the 2010 EIA regulations and therefore any process relating to environmental authorisations must be undertaken under the EIA Regulations, 2014.

Chapter 4 of the EIA Regulations, 2014 deals with the provisions for application for environmental authorisation. In view of the above, Lead & Zinc Metals (Pty) Limited is obliged to comply with provisions of Chapter 4 for the intended environmental authorisation application for the activities (listed activities) within the proposed project.

Part 2 of chapter 4 of the EIA Regulations, 2014 contemplate process to be undertaken for the application for environmental authorisation for the proposed project, which is the BAR process. The process to be followed is describe below.

6.1.2.1. Pre-application consultation with the Competent Authority

In terms of section 24D (1) of the National Environmental Management Act, 1998 (Act 107 of 1998), the Minister responsible for mineral resources is the competent authority for environmental matters relating to mining and associated activities. In view of the above, the application for the environmental authorisation for the proposed project was submitted to the Department of Mineral Resources and Energy (DMRE), Klerksdorp Regional Office for their consideration and decision making.

6.1.2.2. BAR Phase

In compliance with Regulation 19 of the EIA Regulations, 2014, the BAR and EMPR will be submitted to the competent authority within 90 days after the acknowledgement of the environmental authorisation application.

As part of the public participation, the draft BAR and EMPR is made available to the competent authority, potential and registered interested and affected parties for their comment for a period of 30 days during the EIA phase.

6.1.2.3. Information Gathering

Environmental baseline data has been obtained via desktop studies, pertaining to surface water, geohydrological data, topographical analyses, soil surveys, vegetation surveys, wetland surveys and geological conditions. The data accumulated and analysed is sufficient to gain a baseline indication of the present state of the environment. The use of this baseline study for impact assessments is thus justified and reliable conclusions could be made.

6.1.2.4. Decision on the BAR application

In compliance with Regulation 20 of the EIA Regulations, 2014, the competent authority will within 107 days of receipt of the BAR and EMPR grant or refuse the environmental authorisation.

6.2. ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY

The following prediction and evaluation of impacts is based on the proposed Paardenvallei prospecting area and associated activities.

The evaluation distinguishes between significantly adverse and beneficial impacts and allocates significance against national regulations, standards and quality objectives governing:

- Health & Safety;
- Protection of Environmentally Sensitive Areas;
- Land use; and
- Pollution levels.

Irreversible impacts are also identified. See Table 15 for the results.

The significance of the impacts is determined through the consideration of the following criteria:

Probability	:	likelihood of the impact occurring
Area (Extent)	:	the extent over which the impact will be experienced.
Duration	:	the period over which the impact will be experienced.
Intensity	:	the degree to which the impact affects the health and welfare of humans and the environment (includes the consideration of unknown risks, reversibility of the impact, violation of laws, precedents for future actions and cumulative effects).

Table 14: The above criteria are expressed for each impact in tabular form according to the following definitions:

Probability	Definition
Low	There is a slight possibility (0 – 30%) that the impact will occur.
Medium	There is a 30 –70% possibility that the impact will occur.
High	The impact is definitely expected to occur (70% +) or is already occurring.
Area (Extent)	**Definition**
Small	0 – 40 ha
Medium	40 – 200 ha
Large	200 + ha
Duration	**Definition**
Short	0 – 5 years
Medium	5 – 50 years
Long	51 – 200 years

Permanent	200 + years

Intensity	Definition
Low	Does not contravene any laws. Is within environmental standards or objectives. Will not constitute a precedent for future actions. Is reversible. Will have a slight impact on the health and welfare of humans or the environment.
Medium	Does not contravene any laws. Will not constitute a precedent for future actions. Is not within environmental standards or objectives. Is not irreversible. Will have a moderate impact on the health and welfare of humans or the environment.
High	Contravene laws. May constitute a precedent for future actions. Is not within environmental standards or objectives. Is irreversible. Will have a significant impact on the health and welfare of humans or the environment.

Significance and Risk Category	Definition
Negligible	The impact/risk is insubstantial and does not require management
Low	The impact/risk is of little importance, but requires management
Medium	The impact/risk is important; management is required to reduce negative impacts to acceptable levels
High	The impact/risk is of great importance, negative impacts could render options or the entire project unacceptable if they cannot be reduced or counteracted by significantly positive impacts, and management of these impacts is essential
Positive (No risk identified)	The impact, although having no significant negative impacts, may in fact contribute to environmental or economical health

6.3. RESULTS OF THE ENVIRONMENTAL IMPACT ASSESSMENT

6.3.1. Assessment of the Paardenvallei prospecting area impacts/risks

Table 15: Results of the Environmental Impact Assessment for Paardenvallei prospecting area.

6.3.1.1. Construction Phase

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
PRE-CONSTRUCTION AND CONSTRUCTION PHASES							
Site Establishment: Establishment of the access (tracks) to the prospecting site, Establishment of the campsite, Site physical surveying and pegging of drilling sites							
The establishment of access, campsite and the surveying with pegging of the drilling sites may result in the stripping of soils if the site establishment of not properly conducted. This may result in the loss of soils and erosion that may render the area unusable. During site establishment, machinery and vehicles used for the prospecting operation may result in hydrocarbon leakages, which may result in the contamination of the soils within the access tracks, campsite and drilling sites.	Soil/Land capability	Without mitigation					Establishment of the site will be undertaken according to the prospecting method statement. No soil stripping will be allowed during site establishment. Ensure minimal disturbance of soil when conducting geophysical surveys and geological mapping (if necessary). Any area that may result into the disturbance of the soils must be rehabilitated immediately on discovery. Machinery to be used for the operation will be of good working conditions. Any hydrocarbon spill from the site establishment will be remediated as soon as possible.
		S	L	S	M	M	
		With mitigation					
		S	L	S	L	L	
	Land use	Without mitigation					

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
PRE-CONSTRUCTION AND CONSTRUCTION PHASES							
Current land use over the area to be used for site establishment will cease completely. This may have an impact on the land owners' livelihood should they not be able to use the land. Drilling activities may infringe the livelihood and operations of activities occurring within and immediately adjacent the prospecting right area.		S	M	S	M	M	Use sites that are unused and that are in the degraded state for the proposed development. This will be done in agreement with the land owner. The sitting of the boreholes will be conducted to ensure that rocky ridges, sensitive grass lands, indigenous trees and shrubs, sites of geological importance and farmlands actively used for crop farming are avoided. Buffer zones will be instituted around farm dwellers immediately and adjacent to the prospecting areas. No prospecting activities will be undertaken within the instituted buffer zones.
		With mitigation					
		S	L	S	L	L	
The establishment of the site (access, campsite and drilling sites) may result in the removal of vegetation cover if the establishment is not done correctly. This may render the land unusable to the land owners after completion of the area.	Natural vegetation	Without mitigation					Use sites with most disturbed vegetation cover for the development. No strip of topsoil and vegetation will be allowed during site establishment. Ensure minimal disturbance of vegetation when conducting geophysical surveys and geological mapping. Any area that may result into the disturbance of the vegetation cover must be rehabilitated immediately on discovery. Pictures of possible plant species that may be present in the prospecting right area will be made available to the drilling crew for easy identification and avoidance.
		S	L	S	L	L	
		With mitigation					
		S	L	S	L	N	

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
PRE-CONSTRUCTION AND CONSTRUCTION PHASES							
							Before the drilling activities can commence, a biodiversity specialist must do a site inspection on the proposed marked drilling sites (proposed boreholes) to assess if there are no protected and/or critical natural vegetation. If any protected and/or critical natural vegetation occurs, the location of the proposed boreholes must be changed.
Animal burrows and habitats remaining within the proposed development site may be destroyed during construction. This may result in the migration of remaining animal life away from the affected areas. Poaching of wild animals and livestock by the labourers will result in the loss of wild live and loss of livestock to the land owner.	Animal Life	Without mitigation					Establishment of the site will be undertaken according to the prospecting method statement. No soil stripping will be allowed during site establishment. Any area that may result into the disturbance of the soils must be rehabilitated immediately on discovery. Use sites with most degraded environment for the site development. Poaching will be prohibited at the prospecting site. Before the drilling activities can commence, a biodiversity specialist must do a site inspection on the proposed marked drilling sites (proposed boreholes) to assess if there are no animal burrows and habitats. If any burrows or habitat exist, the location of the proposed boreholes must be changed.
		S	L	S	L	L	
		With mitigation					
		S	L	S	L	N	
		Without mitigation					

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
PRE-CONSTRUCTION AND CONSTRUCTION PHASES							
Exposure of soils during construction by the stripping of vegetation and soils may cause erosion, which may lead to increased silt loads in surface water runoff. This may result in the contamination of the clean water environment. Waste generated from the site may result in the contamination of surface and ground water should not management of such waste be undertaken.	Surface and Ground Water	S	L	S	M	M	Site establishment will not be undertaken within sensitive landscapes. These areas will be avoided. A distance of 100 meters will be created between the sites and the sensitive landscapes. The applicant must also apply for a GA before drilling within 500m of nearby streams and/or wetlands Avoid stripping of areas within the construction sites. Rehabilitate areas that may have been mistakenly stripped. Storm water upslope of the campsite and drill sites should be diverted around these areas. Proper waste management facilities will be put in place at the campsite and drilling site. Any hydrocarbon spill from the site establishment will be remediated as soon as possible.
		With mitigation					
		S	L	S	L	L	
Construction activities during the establishment of the site will include material loading and hauling. These activities will result in the mobilisation of particulates that will migrate away from the site to the nearby local residents. This will be a nuisance to the communities and will result in aesthetic	Air Quality	Without mitigation					Ensure that source specific management measures for Paardenvallei prospecting area are complied with.
		S	L	S	L	L	
		With mitigation					

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
PRE-CONSTRUCTION AND CONSTRUCTION PHASES							
impacts associated with fugitive dust emissions. On-site dust fall may have health and nuisance implications to employees at the existing offices.		S	L	S	L	N	
The noise level generated from the construction activities may exceed the SANS 10103 Levels for Residential areas and may exceed the maximum rating levels for ambient noise indoors. This may have an impact in the surrounding residents and employees using/delivering the machinery.	Noise	Without mitigation					Ensure that proper management measures as well as technical changes are undertaken to reduce the impacts on surrounding residents and employees. This include ensuring that less noisy equipment is used, that equipment is kept in good working order and that the equipment must be fitted with correct and appropriate noise abatement measures and where possible use white-noise generators instead of tonal reverse alarms on heavy vehicles operating on roads.
		S	L	S	L	L	
		Without mitigation					
		S	L	S	L	N	
The activities undertaken during construction and associated infrastructure will be visible from the nearby roads and properties. However, due to the undulating topography, visibility for the most part will most probably be restricted to short distances.	Visual Aspects	Without mitigation					Inform the land owner on the type of machinery and equipment to be used at the prospecting site. Ensure that lighting is conducted in manner that will reduce the impacts on visual aspects at night times.
		S	L	S	L	L	
		With mitigation					
		S	L	S	L	N	
		Without mitigation					
		S	M	S	H	H	

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
PRE-CONSTRUCTION AND CONSTRUCTION PHASES							
The site may be located in close proximity to a heritage site and may result in the destruction of the identified heritage site.	Sites of Archaeological and Cultural Importance	With mitigation					The establishment of the construction infrastructure complex will be such that the development is always away from the any heritage sites. A buffer of more than fifty meters will be created between the grave yards and the proposed site development. A management plan will be drafted for the sustainable preservation of the grave yard should graveyards be identified on site. Any grave site must have access for descendants.
		S	L	S	L	L	
The commencement of the proposed area may result in an influx of 'outsiders' seeking jobs, which may be caused by increase in local unemployment levels. This may result in the have potential increase in crime. It must however be noted that prospecting activities would unlikely attract job seeker due to its small nature of its scale.	Socio economic aspects	Without mitigation					Recruitment will not be undertaken on site.
		S	L	S	L	L	
		With mitigation					
		S	L	S	L	N	

6.3.1.2. Operational Phase

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
OPERATIONAL PHASE							
Drilling and rehabilitation of the exploration boreholes							
Topsoil removal, storage and replacement during the excavation of the sumps will result. This will result in the disruption of the soils profile.	Soils	Without mitigation					Ensure that topsoil is properly stored, away from the streams and drainage areas. The soils must be used for the backfilling and rehabilitation of the sumps. The rehabilitated sump must be seeded with recommended seed mix.
		S	M	S	L	L	
		With mitigation					
		S	L	S	L	N	
The use of vehicles during the siting, pegging and drilling of the exploration boreholes may result in the spillages of hydrocarbon liquids from the vehicles and machinery. This will result in the contamination of the vegetation cover and soils. The material removed from the drilling exercises will contain carbonaceous material, which has a potential for pollution should it be allowed stay for a prolonged period at the drilling site. The above material, if not properly managed, may result in the contamination of the surrounding soils and vegetation cover, which may render the land not usable after the backfilling operation.	Natural Vegetation and Soils	Without mitigation					Ensure that the drilling of the exploration boreholes is done in such a manner that the environment is protected from probable spillages and contamination by carbonaceous material. All boreholes and sumps will be rehabilitated to pre-drilling conditions. Tarpaulins will be placed on the ground to prevent oil, grease, hydraulic fluid and diesel spills during emergency repairs. All oil spills will be remedied using approved methodologies. The contaminated soils will be removed and disposed of at a licensed waste disposal facility.
		S	M	S	M	M	
		With mitigation					
		S	L	S	L	L	

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
OPERATIONAL PHASE							
							Pictures of possible plant species that may be present in the prospecting right area will be made available to the drilling crew for easy identification and avoidance. All waste generated from the drilling sires and the campsite will be collected in proper receptacles and removed top registered disposal facilities e.g., sewage treatment plant, solid waste disposal site or hydrocarbon recycling or treatment facilities. Before the drilling activities can commence, a biodiversity specialist must do a site inspection on the proposed marked drilling sites (proposed boreholes) to assess if there are no protected and/or critical natural vegetation. If any protected and/or critical natural vegetation occurs, the location of the proposed boreholes must be changed
Animal burrows and habitats will be destroyed by the preparation of the backfilling sites. This will further result in the migration of animals away from these areas of disturbance. It must however be noted that no significant amount of animal life exists due to the agricultural activities currently undertaken at the proposed prospecting sites.	Animal Life	Without mitigation					The rehabilitation of the disturbed areas must be conducted such that the rehabilitated areas will encourage the migration of animals back into the rehabilitated areas. Poaching of wild animals and livestock will be prohibited. Before the drilling activities can commence, a biodiversity specialist must do a site inspection on the proposed marked drilling sites (proposed boreholes) to assess if there are no
		S	L	S	L	L	
		Without mitigation					
		S	L	S	L	N	

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
OPERATIONAL PHASE							
							animal burrows and habitats. If any burrows or habitat exist, the location of the proposed boreholes must be changed
The drilling operations may result in the generation of surface water runoff contaminated with drilling muds and cuttings should spillages occur. The sedimentation and possible contamination with carbonaceous material will have negative impacts on the surrounding clean water environment. These will cause an increase in the turbidity and will decrease acidity of the water in the streams, which will affect the aquatic habitat of the wetland, hence important habitats may be lost.	Surface Water	Without mitigation					No prospecting operations will be undertaken within 100 metres from the nearby steams and wetland areas. The applicant must also apply for a GA before drilling within 500m of nearby streams and/or wetlands The sumps will be excavated for the collection mud and excess water from the drilling sites. The sump will be sized such that it will be able to contain the water and mud that will be generated during the prospecting operation. Storm water generated around the drilling site will be diverted away to the clean water environment. No concrete mixing and vehicle maintenance will be allowed on site. All hydrocarbons will be stored on protected storage areas away from the streams.
		S	L	S	M	L	
		With mitigation					
		S	L	S	L	L	
The prospecting operations will require the drilling of boreholes. The boreholes may result in the drawdown, which may affect the yield to the surrounding groundwater users. Material used for backfilling may leach pollutants that will result in the pollution of the surrounding groundwater regime.	Groundwater	Without mitigation					Ensure that the land owners' borehole yield is observed during the drilling operation. Should it be proven that the operation is indeed affecting the quantity and quality of groundwater available to users and surrounding water resources, the affected parties must be compensated.
		S	L	S	L	L	
		With mitigation					
		S	L	S	L	N	

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
OPERATIONAL PHASE							
This may even spread beyond the backfilling site via plume migration.							
The prospecting operation will require vehicular movement. This will result in the generation of dust by movement of vehicles and due to blowing winds. Vehicles and machinery will also generate diesel or petrol fumes. Generated dust will migrate towards the predominant wind direction and may settle on surrounding properties including nearby vegetation.	Air Quality	Without mitigation					Dust suppression must be conducted during the operational phase of the area. Correct speed will be maintained at the proposed area site. Vehicle maintenance must be conducted regularly to avoid excessive diesel fumes.
		S	L	S	L	L	
		With mitigation					
		S	L	S	L	N	
Noise generated from prospecting operations activities may add to the current noise levels. This may have impacts on surrounding property owners and occupiers.	Noise	Without mitigation					Ensure that proper management measures as well as technical changes are undertaken to reduce the impacts on surrounding residents and employees. This include ensuring that less noisy equipment is use, that equipment is kept in good working order and that the equipment must be fitted with correct and appropriate noise abatement measures and where possible use white-noise generators instead of tonal reverse alarms on heavy vehicles operating on roads. Correct speed will be maintained at the proposed area site. Limit operation of machinery and vehicle movement between sunrise and sunset.
		S	L	S	M	L	
		With mitigation					
		S	L	S	L	L	
	Visual Aspects	Without mitigation					

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
OPERATIONAL PHASE							
The drill rigs and towers used during the drilling operations will be visible from the nearby residents and properties.		S	L	S	L	L	Ensure that the period used for the drill rigs is optimised to ensure that the drill rigs are moved from one site to another over short periods.
		With mitigation					
		S	L	S	L	N	
Operation may affect the day-to-day operation of the land owners hence result in direct impact on their livelihood.	Socio economic aspects	Without Mitigation					Ensure that all safety measures (EMPR) are implemented to prevent the impacts on the property owners. Ensure that negotiations on compensation are undertaken before the drilling programme can commence. This will include any other conditions that the landowner may deem necessary for the prospecting operation.
		S	L	S	L	L	
		With Mitigation					
		S	L	S	L	N	
Operation will result in the employment of locals and support on local businesses.	Socio economic aspects	Positive					The applicant will ensure that as far as possible locals will be used during the operation of the prospecting area.
The drilling operation may result in the destruction of graves and any other heritage sites during operational phase of the area.	Sites of archaeological and cultural importance	Without Mitigation					Locate exploration borehole more than one hundred meters from the identified heritage sites. Should any cultural or heritage materials be identified, these areas will be demarcated and treated as no-go areas during the prospecting activities. Detailed heritage studies would then be undertaken if it is deemed that these sites would be affected by the prospecting activities. Any finds will be reported to the nearest National Monuments office to comply
		S	M	S	H	H	
		With Mitigation					
		S	S	S	L	L	

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
OPERATIONAL PHASE							
							with the National Heritage Resources Act (Act No 25 of 1999) and to DEA. Local museums as well as the South African Heritage Resource Agency (SAHRA) will be informed if any artefacts are uncovered in the affected area. The prospecting workforce will be made aware of the necessity of reporting any possible historical or archaeological finds to the ECO so that appropriate action can be taken. Any discovered artefacts shall not be removed under any circumstances. Any destruction of a site can only be allowed once a permit is obtained and the site has been mapped and noted. Permits shall be obtained from the South African Heritage Resources Association (SAHRA) should the proposed site affect any world heritage sites or if any heritage sites are to be destroyed or altered.

6.3.1.3. Decommissioning and Closure Phases

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
DECOMMISSIONING AND CLOSURE PHASES							
Decommissioning of prospecting site (Site Rehabilitation)							
The removal of the campsite equipment and the rehabilitation of the drilling sites and associated access infrastructure will result in the affected soil and land use being restored. This will also result in the resumption of the use of the land since the infrastructure would have been removed.	Soils, Land Capability and Land Use	Positive impact					Ensure that rehabilitation is conducted in accordance with a rehabilitation method statement approved by the mine management. See description of the rehabilitation plan and management actions in the EMPR. Ensure that contamination of the rehabilitate area by carbonaceous material and hydrocarbon liquids are prevented.
Positive impacts will result due to the reduction in areas of disturbance and the return of land use of the affected areas and making available an area that was covered by the campsite and drilling sites.	Land Use	Positive impact					
		Without mitigation					

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
DECOMMISSIONING AND CLOSURE PHASES							
The use of vehicles/machinery during the rehabilitation of the exploration sites may result compaction of soils and in the spillages of hydrocarbon liquids from the vehicles and machinery. This will result in the contamination and destruction of the vegetation cover and soils.	Soils and Natural Vegetation	S	M	S	M	M	Ensure that the rehabilitation work is done in such a manner that the environment is protected from probable spillages and contamination by carbonaceous material. All boreholes and sumps will be rehabilitated to pre-drilling conditions. Tarpaulins will be placed on the ground to prevent oil, grease, hydraulic fluid and diesel spills during emergency repairs. All oil spills will be remedied using approved methodologies. The contaminated soils will be removed and disposed of at a licensed waste disposal facility. All waste generated from the rehabilitation sites will be collected in proper receptacles and removed to registered disposal facilities e.g., sewage treatment plant, sold waste disposal site or hydrocarbon recycling or treatment facilities.
		With mitigation					
		S	L	S	L	L	
During the decommissioning and closure phases equipment will be removed, stockpiled soils will be used for rehabilitation, remaining sumps will be backfilled, levelled, topsoiled and the area re-seeded. During the process of rehabilitation surface water runoff from the rehabilitation site may have elevated silt load, which may cause pollution of the nearby water environment.	Surface Water	Without mitigation					Ensure that water leaving the site do not have elevated silt load. Ensure that the rehabilitated areas are free draining and that water from these areas is clean.
		S	L	S	L	L	
		With mitigation					
		S	L	S	L	N	

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
DECOMMISSIONING AND CLOSURE PHASES							
Rehabilitation and removal of the prospecting sites and equipment will require vehicular movement. This will result in the generation of dust by movement of vehicles and due to blowing winds. Vehicles and machinery will also be generated diesel or petrol fumes. Generated dust will migrate towards the predominant wind direction and may settle on surrounding properties including nearby vegetation.	Air Quality	Without mitigation					Dust suppression must be conducted during the decommissioning phase of the area whenever excessive dust is generated. Correct speed will be maintained at the proposed area rehabilitation sites. Vehicle maintenance must be conducted regularly to avoid excessive diesel fumes.
		S	L	S	L	L	
		With mitigation					
		S	L	S	L	N	
Noise will be generated during the removal of equipment and rehabilitation of the sites. This noise is not expected to exceed occupational noise limits and will be short lived.	Noise	Without mitigation					Where necessary, provide employees with ear plugs and employees must be instructed to use the ear plugs. Ensure that equipment is well maintained and fitted with the correct and appropriate noise abatement measures.
		S	L	S	L	L	
		With mitigation					
		S	L	S	L	N	

6.4. SUMMARY OF SPECIALIST REPORTS

For this basic assessment draft report, only the desktop study was conducted hence no specialist reports are summarized.

6.5. ENVIRONMENTAL IMPACT STATEMENT

Lead & Zinc Metals (Pty) Limited has applied for a prospecting right over the Paardenvallei prospecting area. The prospecting operation will involve the systematic removal of Zinc. The prospecting operation will involve the exploration for the above-mentioned minerals within the prospecting right area. Diamond core drilling will be used or the exploration and a campsite will be established on site. Each drilling site will have an access route in the form of a track and a sump for the collection of waste water generated during the drilling operation.

6.5.1. Description of affected environment

The proposed project is situated within the Zeerust region situated in an area characterised by elevated undulating plateau with rivers such as Malmanieloop and Klein Marico River. A variety of soil types were identified within the project area, which include recharge, interflow and responsive soils. The land uses over the project area correspond to the soils found in the area and include mainly agriculture, wilderness and residential stands.

6.5.2. Summary of key findings of the environmental impact assessment

During the proposed prospecting operation impacts may occur on soils, natural vegetation, surface water, groundwater, sensitive landscapes, air quality, noise, visual aspects, and sites of archaeological and cultural importance should the prospecting method statement not be adhered to. Alternatives considered for the location campsite and drilling sites has shown that the selected locations would be the most favourable. Lead & Zinc Metals (Pty) Limited will undertake measures to ensure that the identified impacts are minimised. Assessment of the impacts with the proposed mitigation measures has shown the significance of the impacts on all affected environmental aspects to be reduced from to low and negligible significance.

Land use will not change. Several landowners and land occupiers within the proposed area may be affected although on a temporary basis due to the need to access the sites and establishment and use of the campsite. Measures such as safety along the roads and dust suppression will be undertaken to ensure that the impacts on the land owners and land occupiers are minimised.

Assessment of the vegetation within the footprint (proposed boreholes) of the development area has shown limited presence of natural vegetation.

Storm water runoff from the dirty water areas of the drilling sites, its associated surface infrastructure (campsite) may have a detrimental impact on the surrounding water environment should this water be released to the environment. In order to prevent the occurrence of the above-mentioned impacts, dirty water collection sump will be used to collect all dirty water from the drilling site. The water collected from the sump will re-used, evaporated and the sump will be rehabilitated once the drilling is finished. Sediments will be created from the site during the construction, operational and decommissioning phase, which may impact negatively on the surrounding water environment, will be treated should they contain hydrocarbon waste.

All workers will be housed in the campsite to be established on site. The employees will be given stick instruction not to undertaken activities that will affect the environment and that may have an impact on

the landowner. Waste generated from the site will be collected in proper receptacle and disposed of in registered waste disposal sites.

6.5.3. Final Master Layout Plan

The final maps showing the layouts of the proposed area will be submitted to the DMRE on granting of the prospecting right. The map will be developed to superimpose the proposed prospecting area together and associated infrastructure with the environmental sensitivities within the proposed area site.

6.6. Aspects for Inclusion as conditions of the Environmental Authorisation

In authorising the proposed Paardenvallei Prospecting Area; the following conditions should form part of the environmental authorisation:

- Lead & Zinc Metals (Pty) Limited may not alter the location of any of the project activities included in this environmental impact assessment without obtaining the required environmental authorisation to do so under NEMA.
- Lead & Zinc Metals (Pty) Limited will not undertake any new activity that was not part of this environmental impact assessment and that will trigger a need for an environmental authorisation without proper authorisation.
- The EMPR must be implemented fully at all stages of the proposed project
- Lead & Zinc Metals (Pty) Limited must limit night-time operations. This would be relevant for all work taking place at night within 150 m from the closest receptors in this community. If night work is conducted, such must be conducted in agreement with the land owners and affected parties (lawful land occupier and labours).

6.7. Description of Assumptions, Uncertainties and Gaps in Knowledge

The EIA Regulations, 2014 outline specific requirements that a description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures must be provided in the BAR.

The assessments undertaken are based on conservative methodologies and these methods attempts to determine potential negative impacts that could occur on the affected environmental aspects. These impacts may however be of smaller magnitude than predicted, while benefits could be of a larger extent than predicted.

This section outlines various limitations to the specialist studies that have been undertaken and indicates, where appropriate, the adequacy of predictive methods used for the assessment. This has been done to provide the authorities and interested and affected parties with an understanding of how much confidence can be placed in this impact assessment.

The impact assessment has investigated the potential impact on key environmental media relating to the specific environmental setting for the site. A number of desktop assessment were undertaken and result thereof and are presented in this report.

The information provided in this BAR and EMPR is therefore considered sufficient for decision-making purposes.

6.8. REASONED OPINION AS TO WHETHER THE PROPOSED PROJECT SHOULD OR SHOULD NOT CONTINUE

6.8.1. Reason why the activity should be authorised or not

According to the impact assessment undertaken for the proposed area, the key impacts of the area are on soils, natural vegetation and land owners/occupiers.

The area will also have positive impacts due to the employment to be created although for a short term.

The public will also be requested for their comments. All comments to be received during Public Participation Process will be included in this BAR and EMPR. These comments will be addressed the as far as possible to the satisfaction of the interested and affected parties.

The management of the impacts identified in the impact assessment for all phases of the proposed area will be undertaken through a range of programmes and plans contained in the EMPR. In consideration of the programmes and plans contained within the EMPR, layouts and method statements compiled for the area, which is assumed will be effectively implemented, there will be significant reduction in the significance of potential impacts.

Based on the above, it is therefore the opinion of the EAP that the activity should be authorised.

6.8.2. Conditions that must be included in the authorisation

See section 6.6 above.

6.9. PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION

Based on the prospecting method statement, the environmental authorisation should be given for five years.

6.10. UNDERTAKING

The signed undertaking will be presented to the DMRE on execution of the Paardenvallei Prospecting Area.

6.11. FINANCIAL PROVISION

According to Appendix 3 of the EIA Regulations, 2014, where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts must be provided in the BAR and EMPR. In order to avoid duplication, the financial provision for the proposed area has only been provided under the relevant section of the EMPR.

6.12. OTHER INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

Aside from the BAR and EMPR no other information has been requested by the competent authority.

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

Any matter required in terms of the above section of the Act will be complied together with Lead & Zinc Metals (Pty) Limited

PART B

Environmental Management Programme

1. DETAILS OF THE EAP

The details of the EAP are provided in section 1.1 of Part A of this document

2. DESCRIPTION OF THE ASPECTS OF THE ACTIVITY

The requirements to describe the aspects of the activity are covered by the environmental management programme and are included in PART A of the document under section 1. The reader is; therefore, referred to section 1 of PART A of this document.

3. COMPOSITE MAP

The map superimposing the proposed project, its associated structures and infrastructure on the environmental sensitivities of the preferred site will be provided on approval of the EMPR. Note that all areas that must be avoided due to their environmental sensitivity will be indicated in the Layout Plan.

4. DESCRIPTION OF THE MANAGEMENT OBJECTIVES INCLUDING MANAGEMENT STATEMENTS

4.1. General Closure Principles and Objectives

The following are the closure objectives, general principles and objectives guiding closure of the Paardenvallei prospecting area closure planning:

- Rehabilitation of areas disturbed as a consequence of prospecting to a land capability that will support and sustain a predetermined post-closure land use;
- Removal of all infrastructure/equipment that cannot be beneficially re-used, as per agreements established, and returning the associated disturbed land to the planned final land use;
- Removal of existing contaminated material from affected areas;
- Establishment of final landforms that are stable and safe in the long run;
- Establishment and implementation of measures that meet specific closure related performance objectives;
- Monitoring and maintenance of rehabilitated areas forming part of site closure to ensure the long-term effectiveness and sustainability of measures implemented.

4.2. Management of Environmental Damage, Environmental Pollution and Ecological degradation caused by THE Paardenvallei prospecting area Activities

The following actions will be undertaken by Lead & Zinc Metals (Pty) Limited to ensure that the closure objectives are attained.

4.2.1. Infrastructure Areas

- All infrastructure and equipment used during the prospecting operation will be removed from the site.
- All haul roads that were used for access during prospecting will be allowed to re-establish to its pre- prospecting condition. Should unsatisfactory results be noted, the area will be physically rehabilitated.
- All rehabilitated areas will be maintained for a period of 2 years, where after the frequency will be reassessed. Where necessary, vegetation cover will be maintained by annual application of fertiliser.
- Maintenance with respect to erosion will be conducted on a minimum three-monthly basis if and where required.

4.2.1.1. Buildings (Offices, Workshops and Stores)

Mobile structures will be used and such structures will be removed from the sites during decommissioning of the site.

4.3. Potential Risk of Acid Mine Drainage

No potential risk of acid mine drainage.

4.4. Steps taken to Investigate, Assess and Evaluate the Impacts of the Acid Mine Drainage

Since there is no risk of acid mine drainage, there will be no need for steps to be taken to investigate, assess and evaluate the impacts of acid mine drainage.

4.5. Engineering and designs Solutions to be Implemented to Avoid or Remedy Acid Mine Drainage

Since there is no risk of acid mine drainage, there will be no need for measures to remedy residual or cumulative impacts from acid mine drainage.

4.6. Measures to Remedy Residual or Cumulative Impacts from Acid Mine Drainage

Since there is no risk of acid mine drainage, there will be no need for measures to remedy residual or cumulative impacts from acid mine drainage.

4.7. Volumes and Rates of Water Use Required for the Proposed Project

Since there is no risk of acid mine drainage, this section will not applicable.

4.8 Water Use Licence Application

No water use activities will be undertaken during the proposed prospecting operation; hence no water use licence will be applied for.

5. ENVIRONMENTAL MANAGEMENT PROGRAMME

Table 16: Environmental Management Programme for the proposed Paardenvallei Prospecting Area.

Impact Activity Reference	Environmental Attribute	Impact Management Objectives	Targets (Impact Management Outcomes)	Management Actions And Interventions	Responsibility For Actions/Intervention	Monitoring Action	Responsibility and Frequency For Monitoring	Time period for Management Action
CONSTRUCTION PHASE								
Establishment of access, to prospecting sites, establishment of the campsite, physical surveying of the site and pegging of drilling boreholes								
Loss of soils, erosion of the soils and impacts on land owner's livelihood.	Soils, Land Use and Land Capability.	To ensure that the activities in the development of the prospecting sites and associated infrastructure do not have detrimental impacts on the soils, land use and land capability.	Ensure that the establishment of the prospecting sites is undertaken in accordance with the approved EMPR. Buffer zones will be instituted around farm dwellers immediately and adjacent to the prospecting areas. No prospecting activities will be undertaken within the instituted buffer zones.	Establishment of the site will be undertaken according to the prospecting method statement. No soil stripping will be allowed during site establishment. Should it be necessary to conduct geophysical surveys and geological mapping, ensure minimal disturbance of soil. Any area that may result into the disturbance of the soils must be rehabilitated immediately on discovery. Machinery to be used for the operation will be of good working conditions. Any hydrocarbon spill from the site establishment will be remediated as soon as possible. Use sites that are unused and that are in the degraded state for the proposed development. This must be done in agreement with the land owner. The sitting of the boreholes must be conducted such that ensure that rocky ridges, sensitive grass lands, indigenous trees and shrubs, sites of geological importance and farmlands	Appointed contractor and site manager. Appointed contractor. Appointed contractor. Appointed contractor and the applicant site manager. Appointed contractor. Appointed contractor.	Visual monitoring through inspections. Visual monitoring and inspections Visual monitoring and inspections. Visual monitoring and inspections. Visual monitoring and inspections Undertake regular inspections.	Environmental Control Officer (ECO) during construction. ECO monthly. ECO monthly. ECO monthly. ECO monthly. ECO monthly.	During construction phase. During construction phase. During construction phase. During construction phase. During construction phase. During construction phase.

Impact Activity Reference	Environmental Attribute	Impact Management Objectives	Targets (Impact Management Outcomes)	Management Actions And Interventions	Responsibility For Actions/Intervention	Monitoring Action	Responsibility and Frequency For Monitoring	Time period for Management Action
				actively used for crop farming are avoided.				
Loss of natural vegetation in the affected areas.	Flora.	To ensure that the establishment of the prospecting site and associated infrastructure/equipment do not have detrimental impact on the area's flora.	The management of the impact will comply with the company's biodiversity management plan. Ensure that protected species should they be identified are not destroyed.	Use sites with most disturbed vegetation cover for the development. Before the drilling activities can commence, a biodiversity specialist must do a site inspection on the proposed marked drilling sites (proposed boreholes) to assess if there are no protected and/or critical natural vegetation. If any protected and/or critical natural vegetation occurs, the location of the proposed boreholes must be changed No strip of topsoil and vegetation will be allowed during site establishment. Ensure minimal disturbance of vegetation when conducting geophysical surveys and geological mapping. Any area that may result into the disturbance of the vegetation cover must be rehabilitated immediately on discovery.	Appointed contractor and site manager. Appointed contractor and site manager. Appointed contractor and site manager. Appointed contractor and site manager.	Visual monitoring and inspections. Visual monitoring and inspections. Visual monitoring and inspections.	ECO monthly. ECO monthly. ECO monthly.	During construction phase. During construction phase. During construction phase. During construction phase.
Migration of animal life due to disturbance caused proposed area	Animal Life	Ensure that the animal life within in the area is not affected by the proposed area	Maintenance of the current status on animal life within the area	Establishment of the site will be undertaken according to the prospecting method statement. No soil stripping will be allowed during site establishment. Any area that may result into the disturbance of the soils must be rehabilitated immediately on discovery.	Appointed contractor and site manager. Appointed contractor and site manager.	Visual monitoring and inspections. Visual monitoring and inspections. Visual monitoring and inspections.	ECO monthly. ECO monthly.	During construction phase. During construction phase.

Impact Activity Reference	Environmental Attribute	Impact Management Objectives	Targets (Impact Management Outcomes)	Management Actions And Interventions	Responsibility For Actions/Intervention	Monitoring Action	Responsibility and Frequency For Monitoring	Time period for Management Action
				Use sites with most degraded environment for the site development. Poaching will be prohibited at the prospecting site. Before the drilling activities can commence, a biodiversity specialist must do a site inspection on the proposed marked drilling sites (proposed boreholes) to assess if there are no animal burrows and habitats. If any burrows or habitat exist, the location of the proposed boreholes must be changed	Appointed contractor and site manager. Appointed contractor and site manager.	Visual monitoring and inspections.	ECO monthly. ECO monthly.	During construction phase. During construction phase.
Deterioration of water quality in in the nearby steams and within the groundwater regime.	Surface and Ground Water.	Ensure that the establishment of the area and its associated infrastructure does not have detrimental impact on nearby stream and the groundwater regime.	The quality of streams and groundwater within the site will comply with the target DWS target water quality objectives. Construction will be in compliance with the regulations under the GN704.	Site establishment will not be undertaken within sensitive landscapes. These areas will be avoided. A distance of 100 meters will be created between the sites and the sensitive landscapes. The applicant must also apply for a GA before drilling within 500m of nearby streams and/or wetlands Avoid stripping of areas within the construction sites. Rehabilitate areas that may have been mistakenly stripped. Storm water upslope of the campsite and drill sites should be diverted around these areas. Proper waste management facilities will be put in place at the campsite and drilling site. Any hydrocarbon spill from the site establishment will be remediated as soon as possible.	Appointed contractor and site manager. Appointed contractor and site manager. Appointed contractor and site manager. Appointed contractor and site manager.	Regular inspections Regular inspections Regular inspections Regular inspections	ECO monthly. ECO monthly. ECO monthly. ECO monthly.	During construction phase During construction phase During construction phase During construction phase.
Wetland destruction and loss of habitat.	Sensitive Landscapes.	Ensure that the construction activities do not have detrimental impacts on the sensitive landscapes.	Maintain the current state of the sensitive landscapes within the	Construction activities will be limited to be more than hundred meters from the edge of the dams and seepage zone. The applicant must also apply for a	Appointed contractor and site manager.	Inspection to ensure compliance with the action plan will	ECO will conduct the inspections monthly.	Whenever construction is undertaken near the sensitive landscapes.

Impact Activity Reference	Environmental Attribute	Impact Management Objectives	Targets (Impact Management Outcomes)	Management Actions And Interventions	Responsibility For Actions/Intervention	Monitoring Action	Responsibility and Frequency For Monitoring	Time period for Management Action
			area (farm dams and seepage zone).	GA before drilling within 500m of nearby streams and/or wetlands		be conducted at the construction site.		
Air pollution through air pollutants' emissions, from the construction site.	Air quality.	Ensure that all operations during the construction phase do not result in detrimental air quality impacts.	The construction will be undertaken such that the ambient air quality does not exceed the National Air Quality Standards.	Wet suppression using will be conducted at areas with excessive dust emissions. Traffic will be restricted to demarcated areas and traffic volumes and speeds within the construction site will be controlled.	Appointed contractor and site manager. Appointed contractor and site manager.	Visual inspections of areas with possible dust emissions. Regular inspections.	ECO monthly. ECO monthly.	Throughout the construction phase. Throughout the construction phase.
Increased noise levels.	Noise aspects.	Ensure that the noise levels emanating from the construction sites will not have detrimental effects on the mine employees and surrounding communities/land owners.	The noise levels from the construction sites will be managed and measures will be taken to ensure that noise levels are below the National Noise Control Regulations, SANS10103:2008 guidelines.	Limit the maximum speed to 60 km/h or less, subject to risk assessment. Less noisy equipment will be used, the equipment will be kept in good working order and the equipment will be fitted with correct and appropriate noise abatement measures. Ensure that the employees are issued with earplugs and that they are instructed to use them. Educate employees on the dangers of hearing loss due to mine machinery noise.	Appointed contractor and site manager. Site manager. Site manager.	Undertake site checks on speeds used. Speed checking will be conducted. Use of earplugs will be checked and reported.	Site manager. Site manager checking as regularly as possible. Site manager will check the use of the earplugs as regularly as possible.	Throughout the construction phase. Throughout the duration of the construction phase Throughout the duration of the construction phase.
Visual impacts on the surrounding communities and road users from the construction.	Visual aspects.	Ensure that all operations during the construction phase do not result in detrimental visual impacts on surrounding properties, communities and road users.	Measures will be undertaken by the mine to ensure that the visual aspects from the site are complying with the relevant visual standards and objectives.	The land owner will be informed on the type of machinery and equipment to be used at the prospecting sites. Lighting will be conducted in manner that will reduce the impacts on visual aspects at night times.	Applicant and site manager. Appointed contractor.	The constructed perimeter berms will be inspected for compliance with the design specifications. Night time inspection of the site will be undertaken.	Mine Engineer on a monthly basis. The site manager once	Throughout the construction phase. During construction phase.

Impact Activity Reference	Environmental Attribute	Impact Management Objectives	Targets (Impact Management Outcomes)	Management Actions And Interventions	Responsibility For Actions/Intervention	Monitoring Action	Responsibility and Frequency For Monitoring	Time period for Management Action
Damage or destruction of sites with archaeological and cultural significance.	Sites of archaeological and cultural importance.	Ensure that the construction activities do not have detrimental impacts on the heritage sites.	The construction will be undertaken in compliance with the requirements of the National Heritage Resources Act, 1999 (Act 25 of 1999) and recommendations from the specialist.	The establishment of the sites will be away from any identified grave site or heritage sites. A buffer of hundred meters will be created between the sites and the proposed camp and drilling sites.	Appointed contractor and site manager.	The site will be monitored for any damages on a regular basis.	ECO monthly	Throughout the construction phase when activities are in close proximity to the heritage sites.
Impact from the influx of job seekers and employment of farm labourers.	Socio-economic aspects.	Ensure that measures are taken to discourage influx of job seekers and employment of farm labourers.	Measures taken will be in line with the company's recruitment policies.	Recruitment will not be undertaken on site.	Appointed contractor and site manager.	Visual monitoring.	Site manager	Throughout the pre-construction and construction phase.
OPERATIONAL PHASE								
Diamond Core drilling of the exploration boreholes, use of campsite and rehabilitation of the drilling sites								
Soil profile disruption, contamination of soils, destruction of natural vegetation and loss of land use.	Soils, Natural Vegetation, Land Use and Land Capability.	Ensure that the operation of the drilling sites and use of campsite and rehabilitation of drilling site do not have detrimental impacts on the soils, natural vegetation and current land use.	The land use and capability of the sites where the operations will be undertaken will continue after the proposed area.	Ensure that the drilling of the exploration boreholes is done in such a manner that the environment is protected from probable spillages and contamination by carbonaceous material. Before the drilling activities can commence, a biodiversity specialist must do a site inspection on the proposed marked drilling sites (proposed boreholes) to assess if there are no protected and/or critical natural vegetation. If any protected and/or critical natural vegetation occurs, the location of the proposed boreholes must be changed. All boreholes and sumps will be rehabilitated to pre-drilling conditions. Tarpaulins will be placed on the ground to prevent oil, grease, hydraulic fluid and diesel spills during emergency repairs. All oil spills will be remedied using approved	Appointed contractor and site manager. Appointed contractor. Appointed contractor. Appointed contractor	Regular inspections Regular inspections Regular inspections. Inspection of the site will be conducted.	ECO monthly. ECO monthly. ECO monthly. ECO monthly.	During the operational phase of the area. During the operational phase of the area. During the operational phase of the area. During the operational phase of the area.

Impact Activity Reference	Environmental Attribute	Impact Management Objectives	Targets (Impact Management Outcomes)	Management Actions And Interventions	Responsibility For Actions/Intervention	Monitoring Action	Responsibility and Frequency For Monitoring	Time period for Management Action
				methodologies. The contaminated soils will be removed and disposed of at a licensed waste disposal facility. All waste generated from the drilling sires and the campsite will be collected in proper receptacles and removed top registered disposal facilities e.g., sewage treatment plant, sold waste disposal site or hydrocarbon recycling or treatment facilities.				
Migration of animal life due to disturbance caused proposed area	Animal Life	Ensure that the animal life within in the area is not affected by the proposed area	Maintenance of the current status on animal life within the area	Sites will be operated according to the prospecting method statement. As much as possible sites with degraded environment will be used or the drilling purposes. Poaching will be prohibited at the prospecting site. Before the drilling activities can commence, a biodiversity specialist must do a site inspection on the proposed marked drilling sites (proposed boreholes) to assess if there are no animal burrows and habitats. If any burrows or habitat exist, the location of the proposed boreholes must be changed	Appointed contractor and site manager. Appointed contractor and site manager. Appointed contractor and site manager.	Visual monitoring and inspections. Visual monitoring and inspections. Visual monitoring and inspections.	ECO monthly. ECO monthly. ECO monthly.	During operational phase. During operational phase. During operational phase.
The drilling operation and use of campsite may result in the generation of surface water runoff contaminated with silt (sedimentation) and possibly hydrocarbon fluids	Surface and Ground Water.	Ensure that the drilling operation does not have detrimental impacts on the surface and ground water environment.	Clean surface and ground water environment/regime will not be affected.	No prospecting operations will be undertaken within 100 metres from the nearby steams and 100 meters from the nearby wetland areas. The applicant must also apply for a GA before drilling within 500m of nearby streams and/or wetlands The sumps will be excavated for the collection mud and excess water from	Appointed contractor and site manager. Appointed contractor and site manager.	Visual monitoring and inspections. Visual monitoring and inspections.	ECO monthly. ECO monthly.	During operational phase. During operational phase.

Impact Activity Reference	Environmental Attribute	Impact Management Objectives	Targets (Impact Management Outcomes)	Management Actions And Interventions	Responsibility For Actions/Intervention	Monitoring Action	Responsibility and Frequency For Monitoring	Time period for Management Action
should spillages occur.		Ensure that drilling operation does not have a detrimental impact on the number of aquifers underlain by the site.	Aquifers will not be affected.	the drilling sites. The sump will be sized such that it will be able to contain the water and mud that will be generated during the prospecting operation. Storm water generated around the drilling site will be diverted away to the clean water environment. No concrete mixing and vehicle maintenance will be allowed on site. All hydrocarbons will be stored on protected storage areas away from the streams. Ensure that the land owners' borehole yield is observed during the drilling operation. Should it be proven that the operation is indeed affecting the quantity and quality of groundwater available to users and surrounding water resources, the affected parties must be compensated. Ensure minimum distance as per legislation is kept from the waste disposal site. Ensure that an experienced geologist must oversee the drilling process.	Appointed contractor and site manager. Appointed contractor and site manager.	Visual monitoring and inspections. Regular meetings with landowners	ECO monthly. Site manager	During operational phase. During operational phase.
Generation of dust and fuel fumes by vehicular movement.	Air quality.	Ensure that the air quality in the vicinity of the prospecting sites and sites' access routes are not detrimentally altered.	The air quality in the vicinity of the drilling sites and sites' access routes will be maintained to stay within the national air quality standards.	Dust suppression must be conducted during the operational phase of the area. Correct speed will be maintained at the proposed area site. Vehicle maintenance must be conducted regularly to avoid excessive diesel fumes.	Appointed contractor and site manager. Appointed contractor and site manager. Appointed contractor and site manager.	Visual inspections of areas with possible dust emissions. Regular speed checks. Regular inspections.	ECO monthly. Site manager monthly. ECO monthly.	Throughout the operational phase. Throughout the operational phase. During operational phase.

Impact Activity Reference	Environmental Attribute	Impact Management Objectives	Targets (Impact Management Outcomes)	Management Actions And Interventions	Responsibility For Actions/Intervention	Monitoring Action	Responsibility and Frequency For Monitoring	Time period for Management Action
Wetland destruction and loss of habitat.	Sensitive Landscapes.	Ensure that the drilling operation does not have detrimental impacts on the farms dams and identified seepage zone.	Maintain the current state of the wetlands within the area.	Operation of the drilling site will be limited to be more than hundred meters from the edge of the sensitive landscapes. The applicant must also apply for a GA before drilling within 500m of nearby streams and/or wetlands	Appointed contractor.	Inspection to ensure compliance with the action plan.	ECO monthly.	During operational phase.
Increased noise levels.	Noise aspects.	Ensure that the noise levels emanating from the operational sites will not have detrimental effects on the mine employees and surrounding communities/land owners.	The noise levels from the sites will be managed and measures will be taken to ensure that noise levels are below the National Noise Control Regulations, SANS10103:2008 guidelines.	Limit the maximum speed to 60 km/h or less, subject to risk assessment. Less noisy equipment will be used, the equipment will be kept in good working order and the equipment will be fitted with correct and appropriate noise abatement measures. Ensure that the employees are issued with earplugs and that they are instructed to use them. Educate employees on the dangers of hearing loss due to mine machinery noise.	Appointed contractor and site manager. Site manager. Appointed contractor.	Site checks regularly. Regular monitoring and site check. Use of earplugs will be checked and reported.	Site manager. Site manager. Site manager.	During operational phase. During operational phase. During operational phase.
Visual impacts on the surrounding communities and road users from the construction.	Visual aspects.	Ensure that the drilling operations do not result in detrimental visual impacts on surrounding properties, communities and road users.	Measures will be undertaken by the mine to ensure that the visual aspects from the site are complying with the relevant visual standards and objectives.	The land owner will be informed on the type of machinery and equipment to be used at the prospecting sites. Lighting will be conducted in manner that will reduce the impacts on visual aspects at night times.	Applicant and site manager. Appointed contractor.	The constructed perimeter berms will be inspected for compliance with the design specifications. Night time inspection of the site will be undertaken.	Mine Engineer on a monthly basis. The site manager once	During operational phase. During operational phase.

Impact Activity Reference	Environmental Attribute	Impact Management Objectives	Targets (Impact Management Outcomes)	Management Actions And Interventions	Responsibility For Actions/Intervention	Monitoring Action	Responsibility and Frequency For Monitoring	Time period for Management Action
Damage or destruction of sites with archaeological and cultural significance.	Sites of archaeological and cultural importance.	Ensure that the operational activities does not have detrimental impacts on the heritage sites.	The drilling operations will be undertaken in compliance with the requirements of the National Heritage Resources Act, 1999 (Act 25 of 1999) and recommendations from the specialist.	The drilling sites will be away from any identified grave site or heritage sites. A hundred-meter buffer will be created between the sites and the proposed camp and drilling sites.	Appointed contractor.	The site will be monitored for any prospecting related damages on a regular basis.	ECO monthly.	Throughout the operational phase.
Safety, intrusion and livelihood impacts on the landowners and occupiers.	Socio-economic aspects.	Ensure that the drilling operation does not significantly disrupt the daily living and movements of the land owners and occupiers.	The mine will ensure that all safety standards are met and that access to landowners and occupiers are not detrimentally affected.	Announce any road closures and other disruptions and maintain roads used for the operation in good order. Keep communication with land owners and land occupiers open during the operational phase of the area. Ensure that negotiations on compensation are undertaken before the drilling programme can commence. This will include any other conditions that the landowner may deem necessary for the prospecting operation. Ensure that safety measures are implemented to prevent impacts on land owners and occupiers.	Appointed contractor and site manager. Applicant and site manager. Site manager.	Liaison with affected parties. Meetings with the landowners. Minutes of any meeting held with landowners and agreements will be recorded and filed. Regular checks and inspections.	Site manager as and when necessary. Site manager as and when meetings are held. Site manager.	Throughout the operational phase. Throughout the operational phase. Throughout the operational phase.
DECOMMISSIONING AND CLOSURE PHASE								
Removal of infrastructure and final rehabilitation of disturbed areas								
Compaction and contamination of soils within the rehabilitation site.	Soils.	Ensure that the soils in the vicinity of the rehabilitation site is not detrimentally impacted.	Rehabilitated areas will be maintained to comply with the closure objectives.	All vehicles and machinery used at the rehabilitation site will be kept in good working order. No repairs of vehicles or machinery will be conducted at the rehabilitation site unless it is emergency repairs,	Appointed contractor. Appointed contractor.	Vehicles and machinery will be inspected regularly and any oil incidences will be reported. All incidents of emergency repairs will be inspected	Site manager will conduct the inspections monthly. Site manager.	Throughout the decommissioning and closure phases.

Impact Activity Reference	Environmental Attribute	Impact Management Objectives	Targets (Impact Management Outcomes)	Management Actions And Interventions	Responsibility For Actions/Intervention	Monitoring Action	Responsibility and Frequency For Monitoring	Time period for Management Action
				which will be conducted on protected ground. Movement of mine vehicles and machinery will be limited to demarcated routes, which will be rehabilitated when no longer in use.	Appointed contractor.	and occurrence recorded. Rehabilitation site will be inspected to monitor areas with compaction or hydrocarbon contamination.	ECO will conduct the inspections monthly.	Throughout the decommissioning and closure phases. Throughout the decommissioning and closure phases.
Re-instatement of soil productivity, land capability, land use and topographical patterns.	Soils, Land Capability, Land Use and Topography.	Ensure that the rehabilitation of the sites re-instate the soil productivity, land capability, land use and topographical patterns	Rehabilitated areas will be maintained to comply with the closure objectives.	All infrastructure will be removed from the site in accordance to the rehabilitation plan.	Appointed contractor.	Removal of the infrastructure will be inspected.	Site manager will conduct the inspections.	During decommissioning phase.
Pollution of surface water environment.	Surface Water.	Ensure that the rehabilitation of the site does not have detrimental impacts on the surface water environment.	The surface water leaving the rehabilitation site will comply with the DWS target water quality parameters.	The site area will be rehabilitated to be free draining. Erosion protection measures such as the use of contour berms and repair of gullies will be undertaken until such time that the rehabilitated surfaces can be shown to be sustainable. Existing roads should be used where possible and new disturbed areas should be minimised.	Appointed contractor. Appointed contractor. Rehabilitation officer.	Progress of rehabilitation will be monitored. Areas where grass has not yet been established will be monitored for excessive erosion. Rehabilitation site will be inspected for misuse.	ECO will conduct monitoring of the rehabilitation annually.	Throughout the decommissioning and closure phases.
Air pollution from rehabilitation site.	Air quality.	Ensure that rehabilitation do not have detrimental impacts on air quality.	Decommissioning and rehabilitation of the site will be conducted in such a manner that the ambient air quality does not exceed the air quality standards.	Where necessary, wet suppression will be conducted at areas with excessive dust emissions. Vehicles and machinery will be well maintained. The traffic volumes and speed within the rehabilitation site will be controlled.	Appointed contractor. Site manager and appointed contractor.	Visual inspections of areas with possible dust emissions will be conducted Site inspections will be conducted.	ECO will conduct inspections monthly. Site manager will conduct inspections monthly.	Throughout the decommissioning phase. Throughout the decommissioning phase.

Impact Activity Reference	Environmental Attribute	Impact Management Objectives	Targets (Impact Management Outcomes)	Management Actions And Interventions	Responsibility For Actions/Intervention	Monitoring Action	Responsibility and Frequency For Monitoring	Time period for Management Action
Generated noise from the rehabilitation site.	Noise.	Ensure that the rehabilitation activities do not have detrimental impacts on people.	Ensure that the noise from the rehabilitation activities do not exceed the SANS 10103 Rating Level.	Smaller or less noisy equipment should where possible be used when working near receptors. Equipment will be well maintained and fitted with the correct and appropriate noise abatement measures.	Appointed contractor and site manager. Site manager and appointed contractor.	Regular site check. Regular site check.	Site manager. Site manager.	Throughout the decommissioning phase.
Damage or destruction of sites with archaeological and cultural significance.	Sites of archaeological and cultural importance.	Ensure that the rehabilitation does not have detrimental impacts on heritage sites.	Should heritage sites be identified, rehabilitation in close proximity to the sites will not be damaged or destroyed by the rehabilitation activities.	A hundred-meter buffer will be maintained between any site and the rehabilitation site.	Appointed contractor and the site manager.	The sites will be monitored for any rehabilitation related damages.	ECO will monitor the site monthly.	Throughout the decommissioning phase.

6. FINANCIAL PROVISION

Section 24 P of NEMA requires an applicant applying for an environmental authorisation related to mining to comply with the prescribed financial provision for the rehabilitation, closure and ongoing post decommissioning management of negative environmental impacts before the Minister responsible for mineral resources issues the environmental authorisation. The above-mentioned financial provision may be in the form of an insurance, bank guarantee, trust fund or cash.

Regulations pertaining to the pertaining to the financial provision for prospecting, exploration, mining or production operations (GNR 1147) were promulgated on the 20th of November 2015. Lead & Zinc Metals (Pty) Limited has undertaken the financial provision determination in line with the requirements of section 11 of the Regulations pertaining to the Financial Provision for prospecting, Exploration, Mining or Production Operations (GNR 1147). The financial provision determination for the proposed area is submitted to the Department of Mineral Resources for their consideration.

6.1 Description of Closure Objectives and Extent to which they have been aligned to the described Baseline Environment

The closure objectives for the proposed project as detailed under section 4.1 of the EMPR, were determined in consideration of physical (infrastructure), biophysical (environmental) and socio-economic measures as well as alignment to the closure components provided by the Department of Mineral Resources and Energy (DMRE). See section 4.1 for the closure objectives.

6.2 Confirmation that the Environmental Objectives in relation to Closure have been Consulted with Landowners and Interested and Affected Parties

The draft BAR and EMPR is made available to the interested and affected parties during the public participation process for the proposed project. Note that the consultation of interested and affected parties included the owners of the properties directly affected by the proposed project and owners of land immediately adjacent the proposed project area.

The above confirms that the land owners and interested and affected parties will be consulted regarding the environmental objectives in relation to the closure of the proposed project.

6.3 Rehabilitation Plan for the Proposed Project

In terms of Regulation 23 of NEMA EIA Regulations, 2014, an EMPR must address the requirements as determined in the regulations, pertaining to the financial provision for the rehabilitation, closure and post closure of the proposed operations. In view of the above, a rehabilitation plan must be provided to the DMRE in support of the financial provision determined for the proposed operations. Since no disturbance has results on site due to the proposed project no annual rehabilitation plan was compiled.

6.4 Compatibility of the Rehabilitation Plan with the Closure Objectives

The rehabilitation plan will be drafted to be compatible with the closure objectives.

6.5 DETERMINATION OF THE QUANTUM OF THE FINANCIAL PROVISION REQUIRED TO MANAGE AND REHABILITATE THE ENVIRONMENT

The financial pecuniary provision for Paardenvallei prospecting area is determined based on the requirements of Chapter 2.4.1 of the *Guideline document for the evaluation of the quantum of closure-related financial provision provided by a Mine, revision 1.6, September 2004, DMRE.*. The financial provision for the first year is determined to the value of **R 70 183,00**, see Table 17 below.

6.6 METHOD OF PROVIDING FOR THE FINANCIAL PROVISION

According to Regulation 8 of the Regulations pertaining to the pertaining to the financial provision for prospecting, exploration, mining or production operations (GNR 1147), an applicant or holder of a right or permit must make financial provision by one or a combination of the following:

- financial guarantee from a bank registered in terms of the Banks Act, 1990 (Act No. 94 of 1990) or from a financial institution registered by the Financial Services Board as an insurer or underwriter;
- deposit into an account administered by the Minister responsible for mineral resources; *or*;
- contribution to a trust fund established in terms of applicable legislation.

Lead & Zinc Metals (Pty) Limited has opted to use a financial guarantee to provide for the determined quantum for financial provision.

Table 17: Financial Provision for the Paardenvallei Prospecting Area

CALCULATION OF THE QUANTUM

Applicant: **Lead and Zinc Metals (Pty) Limited - Paardenvallei Prospecting Area** **Ref No.:** **NW 30/5/1/1/2/13569**
Evaluator: **O. T. Shakwane** **Date:** **05/12/2022**

No.	Description	Unit	A Quantity	B Master Rate	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	0	17.33	1	1	0
2 (A)	Demolition of steel buildings and structures	m2	0	241.33	1	1	0
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	355.65	1	1	0
3	Rehabilitation of access roads	m2	150	43.19	1	1	6478.5
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	419.16	1	1	0
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0	228.63	1	1	0
5	Demolition of housing and/or administration facilities	m2	0	482.67	1	1	0
6	Opencast rehabilitation including final voids and ramps	ha	0	253019.03	1	1	0
7	Sealing of shafts adits and inclines	m3	0	129.56	1	1	0
8 (A)	Rehabilitation of overburden and spoils	ha	0.01	168679.35	1	1	1686.7935
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0	210087.08	1	1	0
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0	610192.47	1	1	0
9	Rehabilitation of subsided areas	ha	0	14124	1	1	0
10	General surface rehabilitation	ha	0.25	133622.5	1	1	33405.625
11	River diversions	ha	0	133622.5	1	1	0
12	Fencing	m	0	152.42	1	1	0
13	Water management	ha	0	50807.03	1	1	0
14	2 to 3 years of maintenance and aftercare	ha	0.5	17782.46	1	1	8891.23
15 (A)	Specialist study	Sum	0			1	0
15 (B)	Specialist study	Sum				1	0
					Sub Total 1		50462.1485
1	Preliminary and General		6055.45782		weighting factor 2: 1		6055.45782
2	Contingencies		5046.21485				5046.21485
					Subtotal 2		61563.82
					VAT (15%)		8618.93
					Grand Total		**70183**

7. MECHANISM FOR MONITORING COMPLIANCE WITH AND PERFOMAMCE ASSESSMENT AGAINST THE ENVIRONMENTAL MANAGEMENT PROGRAMME AND REPORTING THEREOF

7.1 INSPECTIONS AND MONITORING

During the impact assessment, potential impacts on the environment were identified. Mitigation measures were also specified for prevention and management of the impact so as to minimise their effect on the environment. This section will describe how the mine intends to ensure that the mitigation measures are being undertaken and that their effectiveness is proven.

A monitoring programme has been developed for the identified impacts and their mitigation measures. This monitoring programme will be undertaken and results thereof used to determine the effectiveness of the mitigation measures. The ECO will have an overall responsibility for ensuring that all monitoring is conducted according to the approved EMPR.

7.2 MONITORING COMPLIANCE WITH AND PERFORMANCE ASSESSMENT AGAINST THE ENVIRONMENTAL MANAGEMENT PROGRAMME AND REPORTING THEREOF

As part of the general terms and conditions for a prospecting right, and in order to ensure compliance with the environmental management programme and to assess the continued appropriateness and adequacy of the environmental management programme Lead & Zinc Metals (Pty) Limited will:

- Conduct monitoring on a continuous basis (see EMPr)
- Conduct performance assessments of the environmental management programme annually
- Compile and submit a performance assessment report to the minister in which compliance with the approved environmental management programme is demonstrated

The performance assessment report will as a minimum contain the following:

- Information regarding the period applicable to the performance assessment
- The scope of the assessment
- The procedure used for the assessment
- The interpreted information gained from monitoring the approved environmental management programme
- The evaluation criteria used during the assessment
- The results of the assessment

Recommendations on how and when non-compliance and deficiencies will be rectified

7.3 PROCEDURE FOR ENVIRONMENTAL RELATED EMERGENCIES AND REMEDIATION

Lead & Zinc Metals (Pty) Limited has developed procedures for environmental related emergencies for Paardenvallei prospecting area which is explained in more detail below. Note that these procedures will be revised by the responsible person. The date of commencement of the revised procedures will always be indicated to prevent confusion

7.3.1 Introduction

An effective, comprehensive, well considered and tested environmental emergency preparedness and response plan has the potential to save lives, prevent unnecessary damage to the company and other property and to manage environmental risk. The aim is to identify potential for and respond to accidents and emergency situations, and for preventing and mitigating the environmental impacts that may be associated with them. However, the emergency preparedness and response should be reviewed and revised where necessary.

7.3.2 What is an Environmental Emergency?

An environmental emergency is an unplanned event, which has the potential to result in a significant adverse environmental impact and/or could result in legal liability to Lead & Zinc Metals (Pty) Limited in terms of environmental legislation requirements. The following define most likely potential environmental emergencies:

- Hydrocarbon spills or leaks
- Surface fires, including veld fires
- A chemical spill
- Transportation accidents
- Other environmental emergencies requiring special services

7.3.3 Purpose of the procedure

To provide guidance to all mine employees and contractors in the event of an environmental emergency at Paardenvallei prospecting area and related to its activities.

This procedure is developed so as to provide guidance to ensure that:

Danger to the environment, personnel, contractors and the non-employee is minimised.

- Legal liability is managed and minimised.
- Public relations are effectively managed during and following emergencies.
- Reporting is effective and corrective/follow-up actions are implemented.

7.3.4 Who should use this procedures?

This procedure contains information relevant to all employees and contractors of the mine. It is the responsibility of all employees to familiarise themselves with the contents of this procedure. Furthermore, mine management should ensure that all contractors have access to this procedure and the requirements contained herein (See Table 18).

7.3.5 Responsibilities

Table 18: Responsibilities

Mine Management	Lead & Zinc Metals (Pty) Limited is responsible for the safety and well-being of employees working at Paardenvallei prospecting area as well as the protection of the environment from unnecessary negative impacts. The management of the prospecting area has a responsibility to initiate a warning process should an emergency occur or should something at the prospecting area deteriorate in an uncontrolled manner presenting a risk to employees, the public or the environment.

Local Government(s)	Local governments have the responsibility to warn residents of a hazardous situation, these warnings must be based on information provided by the prospecting area.
All employees, contractors and other relevant parties	All employees, contractors and other relevant parties should ensure that they are familiar with this procedure.

7.3.6 Notification process

There are six main steps in managing an emergency, from the identification of the situation to final close off. They are as follows:

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

7.3.7 Emergency equipment and supplies

There is a directory of emergency equipment and other supplies on site as well as person/s responsible for the equipment.

7.3.8 Communication systems

Communication is critical during an emergency on site so that efforts to manage the situation are coordinated to produce the desired results. The communication channels that are available on site include:

- Internal phone line system
- Hand held radios
- Cellular phones

7.3.9 Training

The mine management ensures that employees are trained regarding potential emergencies that may occur at Paardenvallei prospecting area

7.3.10 Review of procedure

To ensure that the procedure is adequate, management will review the procedure at any time deemed necessary and change the emergency procedures at Paardenvallei prospecting area.

7.3.11 Emergency Response flowchart for Lead & Zinc Metals (Pty) Limited

The emergency response at Paardenvallei prospecting area is undertaken, as shown in Figure 19 below.

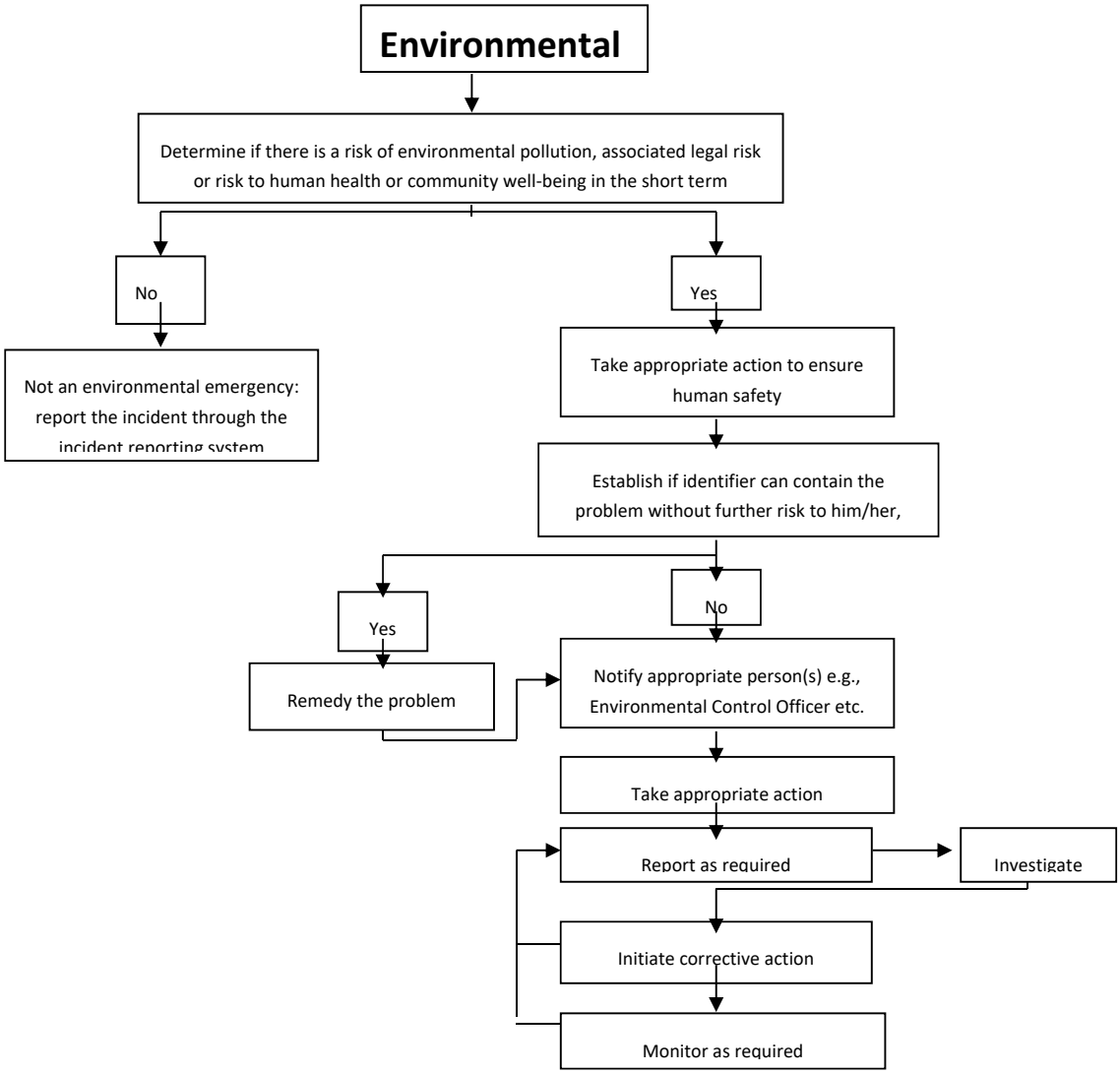


Figure 19: emergency response.

7.4 ENVIRONMENTAL AWARENESS PLAN

In terms of section 39(3)(c) of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002), Paardenvallei prospecting area must compile and implement an environmental awareness plan. The above-mentioned environmental awareness plan must describe the manner in which the site manager (in this case Paardenvallei prospecting area) will inform their employees of any environmental risk which may result from their work and the manner in which the environmental risks will be addressed to avoid pollution or/and degradation of the environment. This document, therefore concerns the details of the environmental awareness plan for Paardenvallei prospecting area as required by the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002).

7.4.1 Objectives and Legal Requirements

The following are the objectives of the environmental awareness plan

- To identify the necessary training needs for different categories of employees in the mine
- To train all employees on environmental issues on the mine

The following legislation apply to this environmental awareness plan

- Employment Equity Act, 1998 (Act 55 of 1998)
- National Environmental Management Act, 198 (Act 77 of 1998)
- Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002).

7.4.2 Manner of informing employees of risks to avoid pollution and degradation of the environment

The identification of environmental training and environmental awareness needs are derived from an analysis of the type of role different categories of employees play at Paardenvallei prospecting area. The following categories are considered, *viz*:

- Senior Management
- Middle management (Environmental Officers)
- Supervisors
- Operators
- Visitors and contractors

Each of these categories have different responsibilities and therefore have different knowledge requirements and environmental awareness training needs, to obtain that knowledge.
The different categories and environmental awareness and training needs are summarised below in Table 19:

Table 19: Environmental Awareness Matrix.

Occupation Category	EMP Responsibility	Required knowledge and output	Training required	Interval
Senior management	Managing	Understand the EMP objectives	Induction and post-leave awareness/training	Annually
		Knowledge of the prospecting area's significant impacts and risks.	EMP Workshops	Once off
		Review the EMP actions	EMP objectives and actions /Management reviews	Annually
		Knowledge of EMP Procedures (awareness and emergency)	Specific training program on EMP	Once off, refresh annually
Middle and Junior management	Implementing and daily management	Knowledge of prospecting area's significant environmental impacts	EMP Review workshops	Annually
		Setting of EMP objectives for environmental improvement	EMP Review workshops	Annually
		Knowledge of EMP procedures (awareness and emergencies)	Specific training programmes on EMP	Once off, refresh annually
	Adhering to procedures to control impacts	Understand EMP objectives	Induction and post-leave training	Annually
		Knowledge of significant impacts	Induction and post-leave training	Annually
		Knowledge of procedures (awareness and emergency)	EMP Review workshop	Annually
Plant and machine operators, assemblers and elementary occupations	Executing assigned EMP actions Controlling work activities to prevent impacts.	General awareness of EMP impacts and objectives.	Induction and post-leave training	Continuously
		Understand environmental requirements relating to work	Induction and post-leave training	Annually

Occupation Category	EMP Responsibility	Required knowledge and output	Training required	Interval
		activities and consequences of not following requirements		
		Knowledge of procedures	Training and information sharing	Continuously
Visitors and contractor	Managing and controlling daily actions to prevent or control impacts	Basic awareness of EMP	Induction or specific modules/ awareness programme	Once off, annual review if applicable
		Environmental requirements of work activities	Induction or specific awareness programme	Once off, annual review if applicable
		Knowledge of procedures	Training and information sharing	Continuously
		Understanding environmental consequences of personal actions and performance.	Induction or specific modules/ awareness programme	Once off, annual review if applicable
		Compliance to procedures	Induction or specific awareness programmes.	
Personnel requiring specific training and awareness identified on site by management, Environmental Officer, training department, etc.	Managing and controlling daily actions to prevent impacts	Examples include but are not limited to: Waste management Hazardous chemical handling	Specific training programme on EMP procedures.	As required

7.4.3 Induction for all employees, including contractors

All employees (including contractor employees) undergo induction. Paardenvallei prospecting area's induction includes training and awareness on environmental issues on the prospecting area and is compulsory for all new employees. The induction programme as mentioned above, have an environmental management component. On an annual basis the environmental section of the induction gets updated. Consideration is given to the following:

- Significant environmental impacts as identified in the EMP
- Procedures: environmental awareness and emergency procedures
- Trends in incidents
- Trends in audit findings

7.4.4 General environmental awareness training

General awareness training is offered to operators, processors and the other various sections of the mine during the safety toolbox talks. This is conducted on rotational basis. New environmental awareness topics are determined and new topics are introduced after all the shifts have received training/awareness on the current topic. The following is undertaken to ensure that the above awareness training is conducted.

- A monthly environmental awareness topic for discussion is distributed to all mine sections. These topics are discussed at the safety toolbox talks, by SHE (Safety, Health and Environmental) representative and environmental officers if available.
- The topics are displayed on the notice boards of all mine sections.
- Ad hoc environmental awareness sessions to various departments/sections are conducted on request. The presentations focus on the environmental issues relevant to individual tasks.

7.4.5 Provision for job specific environmental awareness training

Job specific training is developed to address urgent training needs as identified /required. The training material focus on the following:

- Waste prevention and control (implementation of the waste management procedure).
- Water management (Leaking pipes and taps)
- Hydrocarbon and chemical spill reporting and clean-up
- Storing and handling of chemicals
- Rehabilitation
- Dust management on the mine

Supervisory staff within specific mine sections are equipped with the necessary knowledge and information to guide their employees on environmental aspects applicable in performing a specific task.

7.4.6 Competency training

Management (training official/environmental officer) is responsible for the environmental awareness training of middle management and supervisors. This training is conducted through workshops. If required, external organisations may be requested to provide training to selected employees (e.g. EMP auditing).

Competence and the effectiveness of training and development initiatives as described in the matrix, are determined through the following:

- Trend analysis and reporting
- Analysis of work areas during visits and audits
- Trend analysis of monthly incidents (or zero tolerance if available) as recorded per mine section.

7.4.7 Review of awareness and training material

The content of all awareness and training material will be updated at least once a year.

7.4.8 Roles and responsibilities

In the case where there is no training department on site, a responsible person should be identified (Mine manager, Environmental Officer or Consultant) to ensure that the objective of this procedure is met.

7.5 UNDERTAKING TO COMPLY

I, ..., the undersigned and duly authorised thereto by **Lead & Zinc Metals (Pty) Limited** have studied and understand the contents of this document in it's entirety and hereby duly undertake to adhere to the conditions as set out therein including the amendment(s) agreed to by the Regional Manager.

Signed at .....……..... this.....day of…….....20.....

..... **.....**

Signature of applicant **Designation**

APPROVAL

Approved in terms of Section 39(4) of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002)

Signed at…….this.....day of…….....20.....

.....

REGIONAL MANAGER

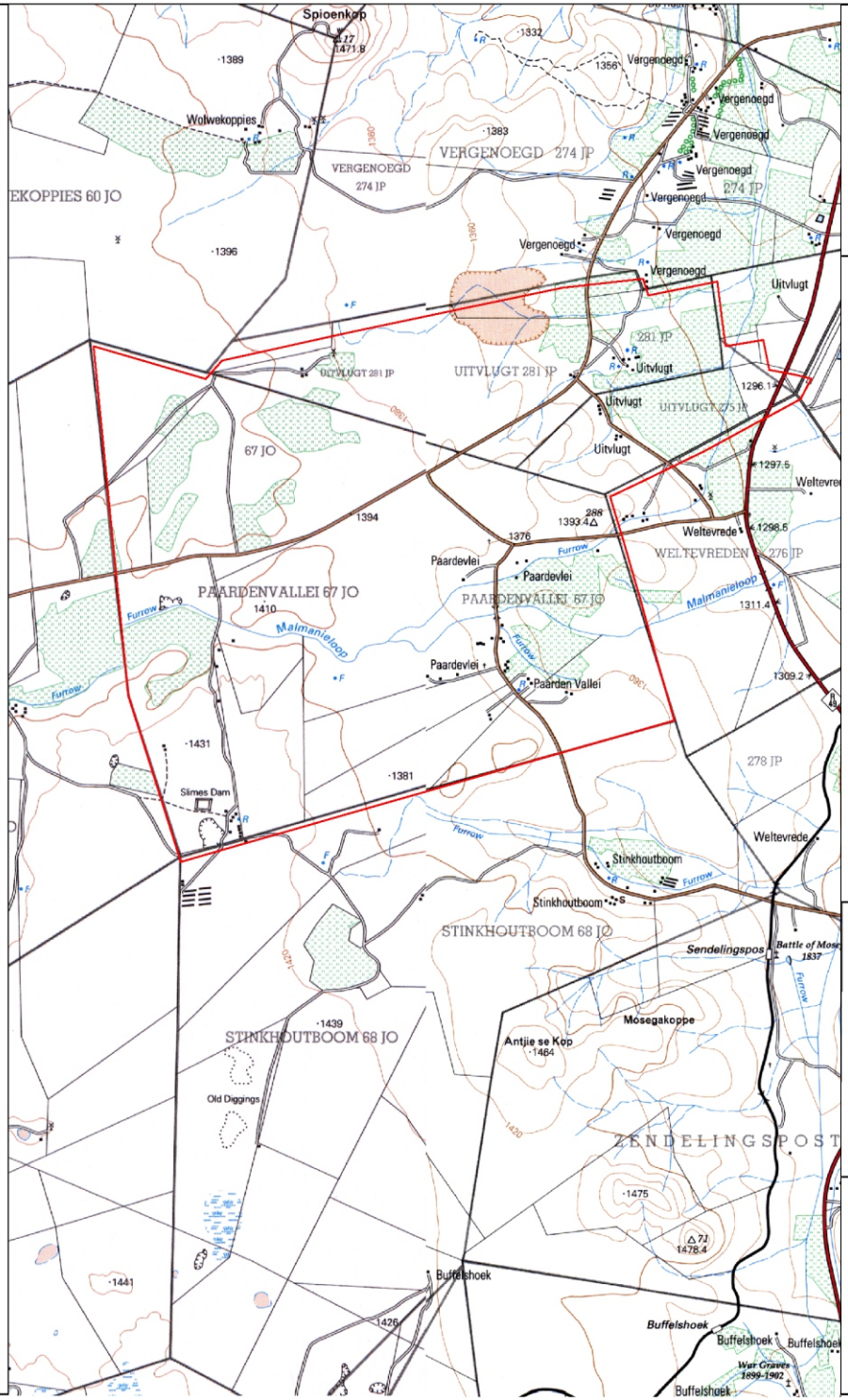
REGION:……

APPENDIX A

REGULATION 2 (2) PLAN

PROSPECTING CO-ORDINATES WG 25°

POINTS	LAT	LONG
1	-25.603609	25.9665753
2	-25.6257162	25.9691834
3	-25.6261158	25.9692306
4	-25.6342213	25.9701871
5	-25.6349004	25.9702672
6	-25.6497935	25.9755983
7	-25.6489929	25.9785997
8	-25.648115	25.9818905
9	-25.6472707	25.9850552
10	-25.6465366	25.9878064
11	-25.6447122	25.994643
12	-25.6430811	26.0007543
13	-25.6408241	26.0092081
14	-25.6396977	26.0134265
15	-25.6388906	26.0164488
16	-25.6379329	26.0200347
17	-25.6367793	26.0243585
18	-25.6311491	26.022551
19	-25.6259286	26.0209077
20	-25.6205553	26.0191447
21	-25.6167607	26.0178275
22	-25.6152764	26.0211555
23	-25.6139779	26.0240689
24	-25.6137767	26.0245203
25	-25.6126342	26.0270835
26	-25.6101189	26.0320937
27	-25.6092764	26.0337881
28	-25.6092223	26.0338965
29	-25.6090064	26.0343288
30	-25.6089577	26.0344262
31	-25.6078554	26.0366019
32	-25.6060212	26.0376584
33	-25.6056839	26.0360215
34	-25.6056085	26.0356559
35	-25.6052723	26.0334981
36	-25.6025747	26.0328902
37	-25.6031654	26.0291626
38	-25.6000901	26.028688
39	-25.5973752	26.0282689
40	-25.5986687	26.0214722
41	-25.5971831	26.0209299
42	-25.5980285	26.0130458
43	-25.6002122	26.0019303
44	-25.6022273	25.9916695
45	-25.6048028	25.979309
46	-25.6064611	25.9777093
1	-25.603609	25.9665753



LEAD AND ZINC METALS (PTY) LTD REG NO: 2021/443042/07

APPLICATION FOR PROSPECTING RIGHT

Plan compiled in accordance with
Regulation 2(2) of the Mineral & Petroleum
Resources Development Act 2002
(ACT 28 of 2002)

Scale 1 : 1 800

LEGEND

PROSPECTING RIGHT AREA

National Freeway; National Route
Arterial Route
Main Road
Secondary Road; Bench Mark
Other Road; Bridge
Track and Hiking Trail
Railway; Station or Siding
Other Railway; Tunnel
Embankment; Cutting
Power Line
Built-up Area
Buildings; Ruin
Post Office; Police Station; Store
Place of Worship; School; Hotel
Fence; Wall
Windpump;Monument
Communication Tower
Mine Dump; Excavation
Trigonometrical Station; Marine Beacon
Lighthouse and Marine Light
Cemetery; Grave
International Boundary and Beacon
Provincial Boundary
Game, Nature Reserve & State Forest Boundary
Perennial River
Perennial Water
Non-perennial River
Non-perennial Water
Dry Water Course
Dry Pan
Marsh and Vlei
Pipeline (above ground)
Water Tower; Reservoir; Water Point
Coastal Rocks
Prominent Rock Outcrop
Erosion; Sand
Woodland
Cultivated Land
Orchard or Vineyard
Recreation Ground
Row of Trees

N

The figure lettered 1-47 AND 1 represent a Prospecting Right area in extent of approximately 2626.63ha, comprising of Remaining Extent of the farm UITVLUGT 281 JP, portion 1,3,7,9,10 and Remaining Extent of the farm UITVLUGT 275 JP, portion 1,3,5,6,7,8,9,10,11,13,14,15,16,18,20,21,22,28,29, 30,31,32,33,34,35,36,37,38,39,40,41,42,44,45,46,47,51,54 and Remaining Extent of the farm PAARDENVALLEI 67 JO, Located 8.33km South West of the town ZEERUST, in the Magisterial district of ZEERUST for which LEAD AND ZINC METALS (PTY) LTD REG NO. 2021/443042/07 has applied for a prospecting right in terms of Section 16 of the Mineral and Petroleum Resources Development Act, 2002, (Act 28 of 2002), but subject to Regulation 17 of the Mine Health and Safety Act, 1996 (Act 29 of1996), excluding any area within 100 meters of any public road, railway, cemetery, residential area or public area.

SIGNED: .....
REGIONAL MANAGER
NORTH WEST PROVINCE

SIGNED: .....
LEAD AND ZINC METALS
(PTY) LTD Reg No: 2021/443042/07

XAKWA TECHNICAL SERVICES

Contact : 012 472 0328
Email : info@xakwa.com
tiisetso@xakwa.com

Address : 175 Corobay
Waterkloof Glen
0010

APPENDIX C

WINDEED LIST OF THE DIRECT FARMS

WinDeed Database D/O Property - List

JO, 67, A, PRETORIA

Lexis® WinDeed

Any personal information obtained from this search will only be used as per the Terms and Conditions agreed to and in accordance with applicable data protection laws including the Protection of Personal Information Act, 2013 (POPI), and shall not be used for marketing purposes.

SEARCH CRITERIA			
Search Date	2022/12/07 10:16	Farm Number	67
Reference	-	Registration Division	JO
Report Print Date	2022/12/07 10:17	Portion Number	A
Farm Name	-	Remaining Extent	NO
Deeds Office	Pretoria	Search Source	WinDeed Database

PORTION LIST

Portion	Owner	Title Deed	Registration Date	Purchase Price (R)
0	ALBERT & JAN BOERDERY CC	T108251/1997	1997/10/15	
1	TAJBHAI MUINUDDIN	T84206/2004	2004/06/28	
2	** FOR INFO REFER TO REGISTRAR OF DEEDS **	REPLACED	-	-
3	STEYN PIETER LOUW	T22990/1992	1992/04/07	
4	** FOR INFO REFER TO REGISTRAR OF DEEDS **	REPLACED	-	-
5	STEYN PIETER LOUW	T51510/2017	2017/07/13	
6	NIEKERK MARIA FREDERIKA JOHANNA VAN	T14551/1972	1972/05/29	-
7	COATES FREDDIE	T67614/2017	2017/09/20	
8	OTTO ALBERT DIEDERICK	T134224/2000	2000/10/31	
9	MERWE JACOBA MAGRETHA VAN DER	T45886/1989	1989/07/11	
10	STEYN PIETER LOUW	T67140/2006	2006/06/09	
11	STEYN PIETER LOUW	T67140/2006	2006/06/09	
12	** FOR INFO REFER TO REGISTRAR OF DEEDS **	REPLACED	-	-
13	STEYN PIETER LOUW	T22990/1992	1992/04/07	
14	STEYN PIETER LOUW	T67140/2006	2006/06/09	
15	KLACHKO DAVID MAX	T7624/1960	1960/03/23	-
16	KRUGER JAN JOHANNES	T17556/2003	2003/02/19	
18	KLACHKO DAVID MAX	T7624/1960	1960/03/23	-
19	** FOR INFO REFER TO REGISTRAR OF DEEDS **	REPLACED	-	-

PORTION LIST				
Portion	Owner	Title Deed	Registration Date	Purchase Price (R)
20	KOTIEM PTY LTD	T23100/2008	2008/03/06	
21	MERWE MARTHINUS PHILIPPUS VAN DER	T45886/1989	1989/07/11	
22	KOTIEM TRUST	T94572/2017	2017/12/15	
23	** FOR INFO REFER TO REGISTRAR OF DEEDS **	REPLACED	-	-
24	** FOR INFO REFER TO REGISTRAR OF DEEDS **	REPLACED	-	-
25	** FOR INFO REFER TO REGISTRAR OF DEEDS **	REPLACED	-	-
26	KLACHKO DAVID MAX	T7624/1960	1960/03/23	-
28	MOATSWI TRUST	T68858/2006	2006/06/13	
29	MOATSWI TRUST	T68858/2006	2006/06/13	
30	MOATSWI TRUST	T68858/2006	2006/06/13	
31	MOATSWI TRUST	T68858/2006	2006/06/13	
32	MOATSWI TRUST	T68858/2006	2006/06/13	
33	MOATSWI TRUST	T68858/2006	2006/06/13	
34	MOATSWI TRUST	T68858/2006	2006/06/13	
35	MOATSWI TRUST	T68858/2006	2006/06/13	
36	KOTIEM PTY LTD	T23101/2008	2008/03/06	
37	KOTIEM PTY LTD	T23101/2008	2008/03/06	
38	KOTIEM PTY LTD	T23100/2008	2008/03/06	
39	KOTIEM PTY LTD	T23100/2008	2008/03/06	
40	MOATSWI TRUST	T68858/2006	2006/06/13	
41	STADEN CHRISTIAAN VAN	T54329/1998	1998/05/22	
42	MOATSWI TRUST	T68858/2006	2006/06/13	
43	TAJBHAI MUINUDDIN	T84206/2004	2004/06/28	
44	WYK ADRIAAN JORDAAN VAN	T75044/1988	1988/10/27	
45	MAGAGANE GLORIA KGALALELO	T4788/2019	2019/02/07	
46	MOATSWI TRUST	T68858/2006	2006/06/13	
47	MOATSWI TRUST	T68858/2006	2006/06/13	
50	** FOR INFO REFER TO REGISTRAR OF DEEDS **	REPLACED	-	-
51	STEYN PIETER LOUW	T67140/2006	2006/06/09	
52	STEYN PIETER LOUW	T67134/2006	2006/06/09	-
53	** FOR INFO REFER TO	REPLACED	-	-

PORTION LIST				
Portion	Owner	Title Deed	Registration Date	Purchase Price (R)
	REGISTRAR OF DEEDS **			
54	KOTIEM PTY LTD	T23100/2008	2008/03/06	

WinDeed Database D/O Property - List

JP, 275, PRETORIA

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SEARCH CRITERIA			
Search Date	2022/12/06 09:15	Farm Number	275
Reference	-	Registration Division	JP
Report Print Date	2022/12/06 09:16	Portion Number	-
Farm Name	-	Remaining Extent	NO
Deeds Office	Pretoria	Search Source	WinDeed Database

PORTION LIST

Portion	Owner	Title Deed	Registration Date	Purchase Price (R)
1	WAAL CAREL FREDERIK DE	T61398/2015	2015/07/13	-
3	NATIONAL GOVERNMENT OF THE REPUBLIC OF SOUTH AFRICA	T7693/1913	1913/09/15	-
7	JOUBERT DIONYSIUS	T87624/2007	2007/07/05	-
8	VILJOEN FRANCOIS	T97402/2013	2013/11/20	
9	JOUBERT DIONYSIUS	T87624/2007	2007/07/05	-
10	WAAL CAREL FREDERIK DE	T61398/2015	2015/07/13	-
11	JOUBERT DIONYSIUS	T87624/2007	2007/07/05	-
13	SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LTD	T27099/2020	2020/07/03	
14	SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LTD	T76233/2011	2011/10/27	-

WinDeed Database D/O Property

JP, UITVLUGT, 281, 0, PRETORIA

Lexis® WinDeed

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SEARCH CRITERIA			
Search Date	2022/12/07 10:19	Farm Number	281
Reference	-	Registration Division	JP
Report Print Date	2022/12/07 10:19	Portion Number	A
Farm Name	-	Remaining Extent	NO
Deeds Office	Pretoria	Search Source	WinDeed Database

PROPERTY INFORMATION			
Property Type	FARM	Diagram Deed Number	T279/978
Farm Name	UITVLUGT	Local Authority	MAFIKENG LOCAL MUNICIPALITY
Farm Number	281	Province	NORTH-WEST
Registration Division	JP	Remaining Extent	NO
Portion Number	0	Extent	517.7543H
Previous Description	-	LPI Code	T0JP00000000028100000

OWNER INFORMATION (1)			
GONOW MOTORS ZEERUST CC			Owner 1 of 1
Company Type	CLOSE CORPORATION	Document	T72613/2017
Registration Number	200803911023	Microfilm / Scanned Date	-
Name	GONOW MOTORS ZEERUST CC	Purchase Price (R)	
Multiple Owners	NO	Purchase Date	2016/10/12
Multiple Properties	NO	Registration Date	2017/10/10
Share (%)	-		

ENDORSEMENTS (3)

#	Document	Institution	Amount (R)	Microfilm / Scanned Date
1	FROM-PTN7,274,JP	-	-	-

ENDORSEMENTS (3)				
#	Document	Institution	Amount (R)	Microfilm / Scanned Date
2	FROM-R/E,PTN2,275,JP	-	-	-
3	JP,281	-	-	1987 0760 1595

HISTORIC DOCUMENTS (4)				
#	Document	Institution	Amount (R)	Microfilm / Scanned Date
1	T754/1986	BOSHOFF PETRUS		1988 2156 1433
2	T754/1986	BOSHOFF PETRUS 1010000*		1988 2156 1433
3	T53059/1988	OUNOOI GELDENHUYS TRUST		1989 1518 0094
4	T279/1978	HEERDEN JOHANNES L VAN	-	1986 0022 0762

APPENDIX D

NATIONAL WEB BASED ENVIRONMENTAL SCREENING TOOL

SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORIZATION AS REQUIRED BY THE 2014 EIA REGULATIONS – PROPOSED SITE ENVIRONMENTAL SENSITIVITY

EIA Reference number: NW 30/5/1/1/2/13569 PR

Project name: Paardenvallei Prospecting Area

Project title: Paardenvallei Prospecting Area

Date screening report generated: 07/12/2022 10:13:53

Applicant: Lead and Zinc Metals (Pty) Limited

Compiler: Geovicon Environmental (Pty) Limited

Compiler signature:

.....

Application Category: Mining|Prospecting rights

Table of Contents

Proposed Project Location 3

Orientation map 1: General location 3

Map of proposed site and relevant area(s) 4

Cadastral details of the proposed site 4

Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area 5

Environmental Management Frameworks relevant to the application 5

Environmental screening results and assessment outcomes 6

Relevant development incentives, restrictions, exclusions or prohibitions 6

Map indicating proposed development footprint within applicable development incentive, restriction, exclusion or prohibition zones 7

Proposed Development Area Environmental Sensitivity 7

Specialist assessments identified 8

Results of the environmental sensitivity of the proposed area. 10

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY 10

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY 11

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY 12

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY 13

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY 14

MAP OF RELATIVE DEFENCE THEME SENSITIVITY 15

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY 16

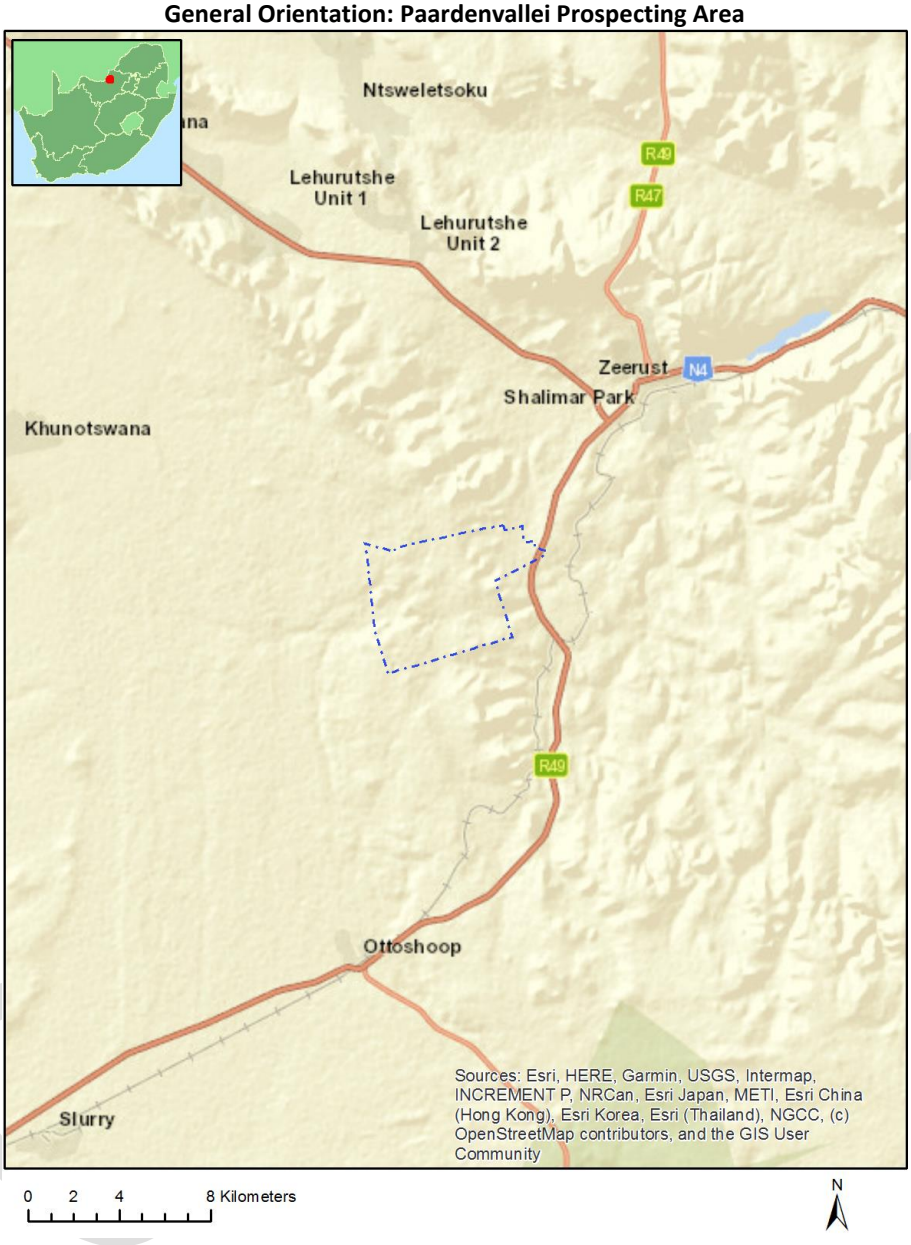
MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY 17

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY 18

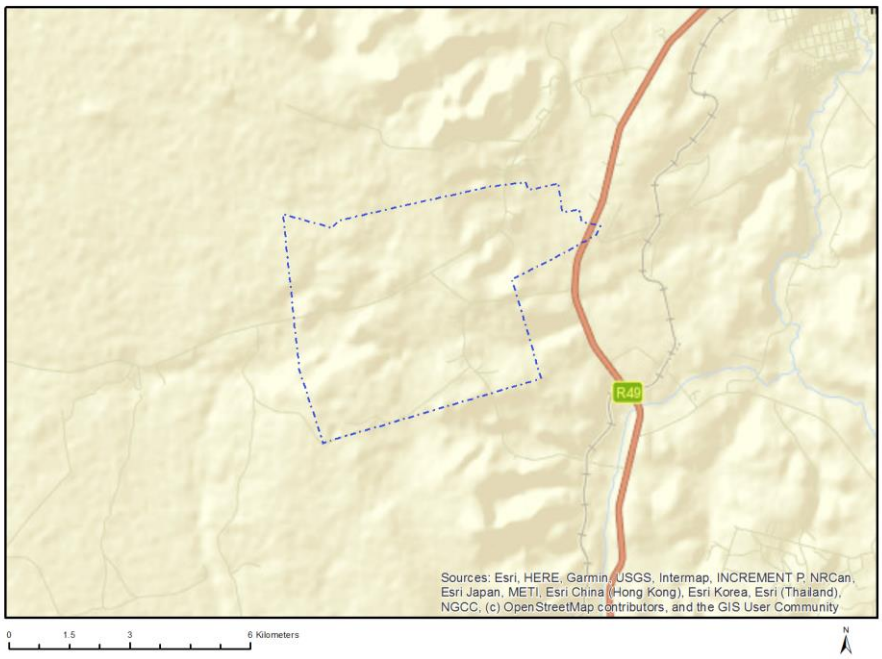
Proposed Project Location

Orientation map 1: General location

General Orientation: Paardenvallei Prospecting Area



Map of proposed site and relevant area(s)



Cadastral details of the proposed site

Property details:

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1	VERGENOEGD	274	0	25°35'4.91S	26°0'59.49E	Farm
2	UITVLUGT	275	0	25°36'29.09S	26°0'43.66E	Farm
3	STINKHOUTBOOM	68	0	25°39'33.2S	25°59'42.66E	Farm
4	UITVLUGT	275	0	25°36'31.3S	26°1'42.94E	Farm
5	UITVLUGT	281	0	25°36'20.45S	26°0'32.95E	Farm
6	PAARDENVALLEI	67	0	25°37'48.51S	25°59'33.92E	Farm
7	PAARDENVALLEI	67	32	25°37'29.94S	26°0'42.54E	Farm Portion
8	PAARDENVALLEI	67	6	25°37'59.95S	26°0'34.87E	Farm Portion
9	PAARDENVALLEI	67	11	25°37'49.82S	26°0'53.19E	Farm Portion
10	PAARDENVALLEI	67	40	25°37'45.18S	25°58'25.66E	Farm Portion
11	PAARDENVALLEI	67	1	25°37'43.31S	25°59'53.92E	Farm Portion
12	PAARDENVALLEI	67	9	25°37'57.84S	26°0'45.53E	Farm Portion
13	PAARDENVALLEI	67	5	25°37'46.86S	26°0'46.07E	Farm Portion
14	PAARDENVALLEI	67	51	25°38'11.74S	26°0'56.54E	Farm Portion
15	PAARDENVALLEI	67	42	25°37'31.48S	25°59'28.09E	Farm Portion
16	UITVLUGT	275	9	25°36'49.58S	26°1'8.23E	Farm Portion
17	PAARDENVALLEI	67	8	25°37'58.52S	26°0'41.31E	Farm Portion
18	PAARDENVALLEI	67	0	25°38'0.15S	25°59'46.16E	Farm Portion
19	PAARDENVALLEI	67	16	25°37'45.38S	26°0'19.99E	Farm Portion
20	PAARDENVALLEI	67	46	25°37'5.62S	26°0'38.81E	Farm Portion
21	PAARDENVALLEI	67	41	25°37'37.21S	25°58'56.22E	Farm Portion
22	STINKHOUTBOOM	68	15	25°39'4.22S	25°59'25.17E	Farm Portion
23	VERGENOEGD	274	18	25°35'47.75S	26°1'33.71E	Farm Portion
24	PAARDENVALLEI	67	30	25°37'29.27S	26°0'36.56E	Farm Portion
25	PAARDENVALLEI	67	45	25°37'33.15S	26°1'8.95E	Farm Portion
26	PAARDENVALLEI	67	14	25°37'58.57S	26°0'51.45E	Farm Portion
27	PAARDENVALLEI	67	3	25°37'54.6S	26°0'43.66E	Farm Portion

28	PAARDENVALLEI	67	47	25°36'56.01S	25°58'59.72E	Farm Portion
29	PAARDENVALLEI	67	13	25°37'53.39S	26°0'42.6E	Farm Portion
30	PAARDENVALLEI	67	7	25°37'43.86S	26°0'33.85E	Farm Portion
31	PAARDENVALLEI	67	52	25°37'57.11S	26°0'31.37E	Farm Portion
32	PAARDENVALLEI	67	38	25°38'25.01S	25°58'42.07E	Farm Portion
33	PAARDENVALLEI	67	18	25°38'5.17S	26°1'16.39E	Farm Portion
34	PAARDENVALLEI	67	29	25°37'32.07S	26°0'27.37E	Farm Portion
35	PAARDENVALLEI	67	15	25°37'53.08S	26°1'10.91E	Farm Portion
36	PAARDENVALLEI	67	31	25°37'29.21S	26°0'39.75E	Farm Portion
37	PAARDENVALLEI	67	21	25°38'20.89S	26°0'26.51E	Farm Portion
38	PAARDENVALLEI	67	20	25°38'18.46S	26°0'40.07E	Farm Portion
39	PAARDENVALLEI	67	39	25°38'27.82S	25°58'28.46E	Farm Portion
40	PAARDENVALLEI	67	37	25°38'20.6S	25°58'55.58E	Farm Portion
41	UITVLUGT	275	3	25°36'28.04S	26°0'43.67E	Farm Portion
42	PAARDENVALLEI	67	34	25°37'30.09S	26°0'46.97E	Farm Portion
43	PAARDENVALLEI	67	33	25°37'28.87S	26°0'44.73E	Farm Portion
44	PAARDENVALLEI	67	22	25°38'23.44S	26°0'9.99E	Farm Portion
45	PAARDENVALLEI	67	43	25°37'28.66S	26°0'10.28E	Farm Portion
46	PAARDENVALLEI	67	26	25°37'51.85S	26°0'59.19E	Farm Portion
47	PAARDENVALLEI	67	44	25°37'45.36S	26°1'2.38E	Farm Portion
48	VERGENOEGD	274	23	25°35'59.38S	25°59'37.99E	Farm Portion
49	UITVLUGT	275	7	25°36'28.76S	26°1'27.86E	Farm Portion
50	UITVLUGT	281	0	25°36'14.36S	26°0'33.12E	Farm Portion
51	UITVLUGT	275	12	25°36'27.19S	26°2'5.75E	Farm Portion
52	PAARDENVALLEI	67	35	25°37'31.24S	26°0'49.67E	Farm Portion
53	PAARDENVALLEI	67	10	25°38'4.21S	26°0'39.97E	Farm Portion
54	PAARDENVALLEI	67	54	25°38'22.44S	25°59'43.89E	Farm Portion
55	PAARDENVALLEI	67	36	25°38'17.3S	25°59'8.82E	Farm Portion
56	PAARDENVALLEI	67	28	25°37'18.8S	26°0'4.21E	Farm Portion
57	UITVLUGT	275	10	25°36'40.89S	26°1'36.58E	Farm Portion
58	UITVLUGT	275	1	25°36'24.05S	26°1'58.43E	Farm Portion

Development footprint[1] vertices:
No development footprint(s) specified.

Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

No	EIA Reference No	Classification	Status of application	Distance from proposed area (km)
1	14/12/16/3/3/1/997	Solar PV	Approved	21.8

Environmental Management Frameworks relevant to the application

No intersections with EMF areas found.

[1] "development footprint", means the area within the site on which the development will take place and incudes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.

Environmental screening results and assessment outcomes

The following sections contain a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development site as well as the most environmental sensitive features on the site based on the site sensitivity screening results for the application classification that was selected. The application classification selected for this report is: **Mining|Prospecting rights**.

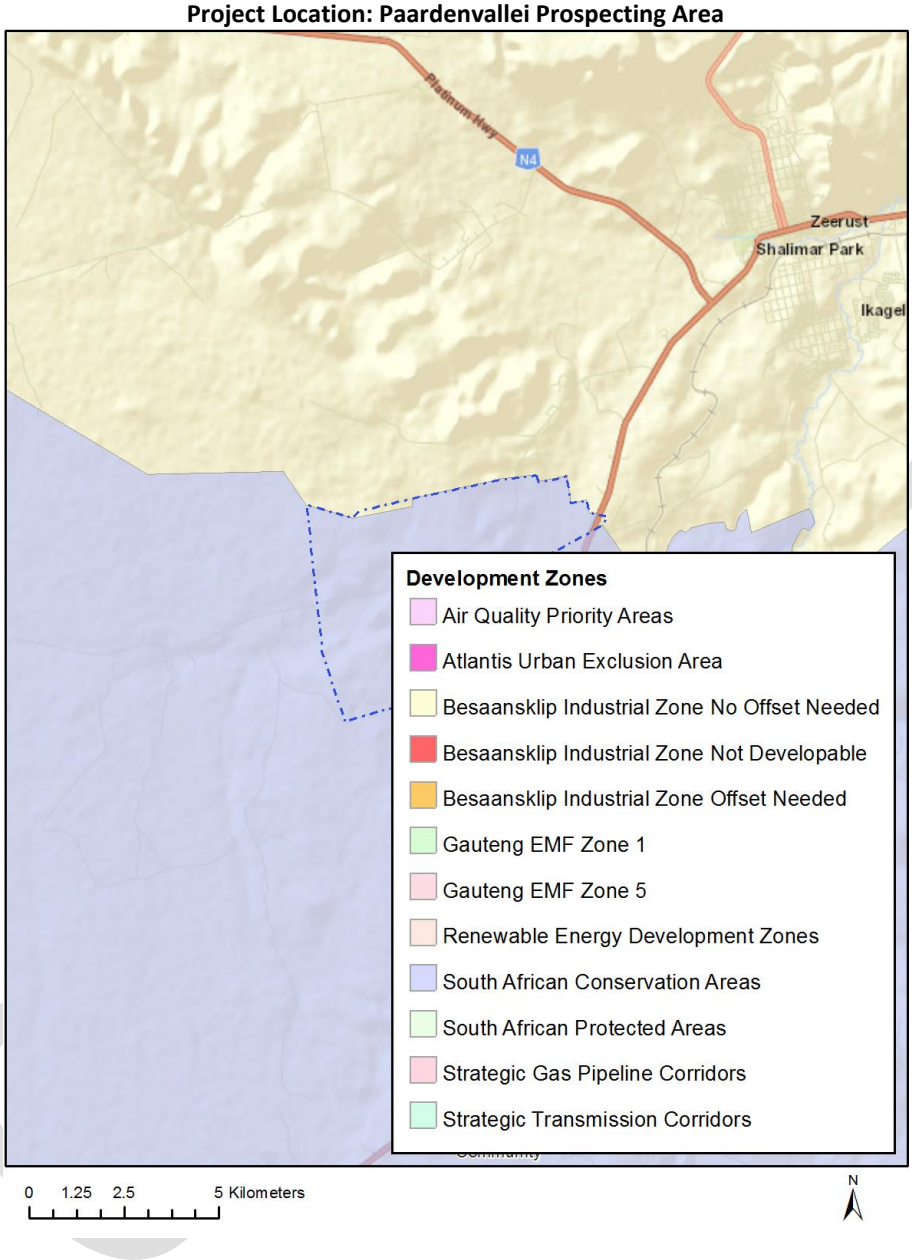
Relevant development incentives, restrictions, exclusions or prohibitions

The following development incentives, restrictions, exclusions or prohibitions and their implications that apply to this site are indicated below.

Incentive, restriction or prohibition	Implication
South African Conservation Areas	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/SACAD_OR_2022_Q2_Metadata.pdf

Map indicating proposed development footprint within applicable development incentive, restriction, exclusion or prohibition zones

Project Location: Paardenvallei Prospecting Area



Proposed Development Area Environmental Sensitivity

The following summary of the development site environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme	X			
Animal Species Theme		X		

Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme		X		
Defence Theme				X
Paleontology Theme	X			
Plant Species Theme		X		
Terrestrial Biodiversity Theme	X			

Specialist assessments identified

Based on the selected classification, and the environmental sensitivities of the proposed development footprint, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

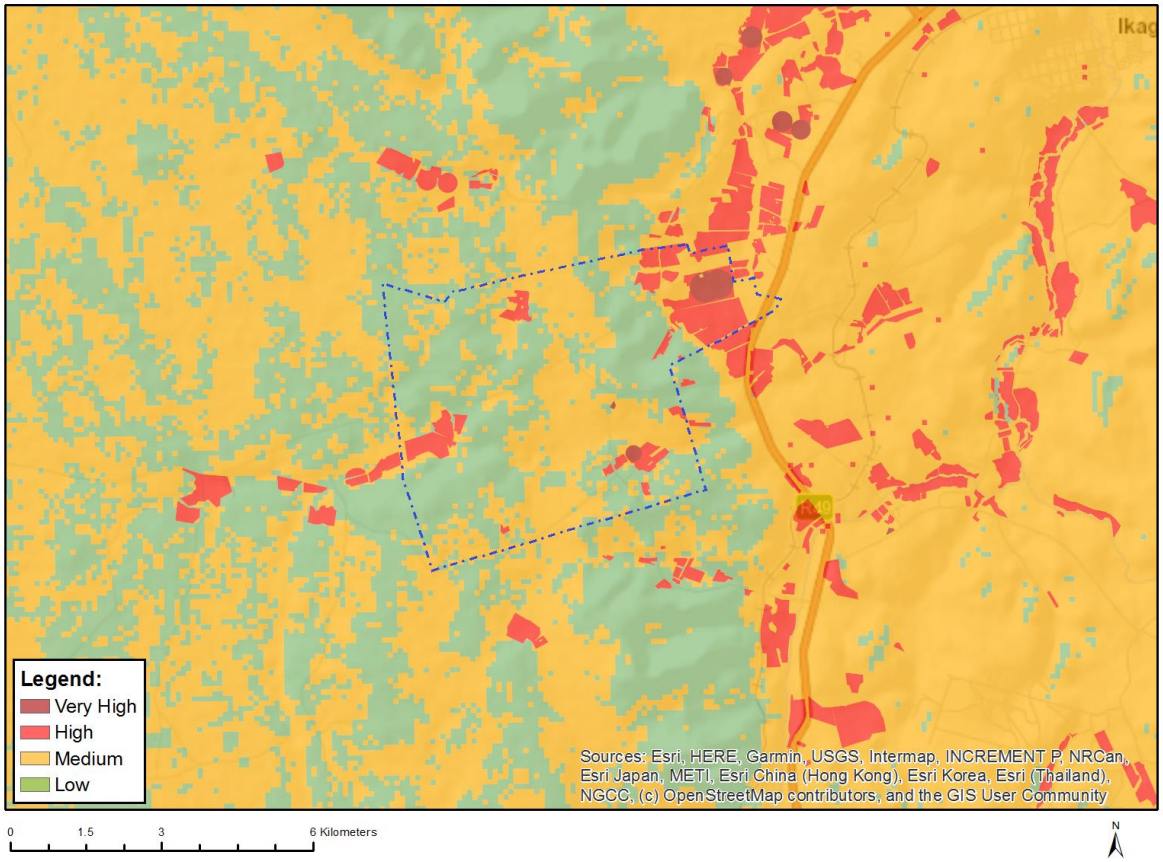
No	Specialist assessment	Assessment Protocol
1	Agricultural Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Agriculture_Assessment_Protocols.pdf
2	Archaeological and Cultural Heritage Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
3	Palaeontology Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
4	Terrestrial Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf
5	Aquatic Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf
6	Noise Impact Assess	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Noise_Impacts_Assessment_Protocol.pdf

	ment	
7	Radioactivity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
8	Plant Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Plant_Species_Assessment_Protocols.pdf
9	Animal Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Animal_Species_Assessment_Protocols.pdf

Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed site for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY



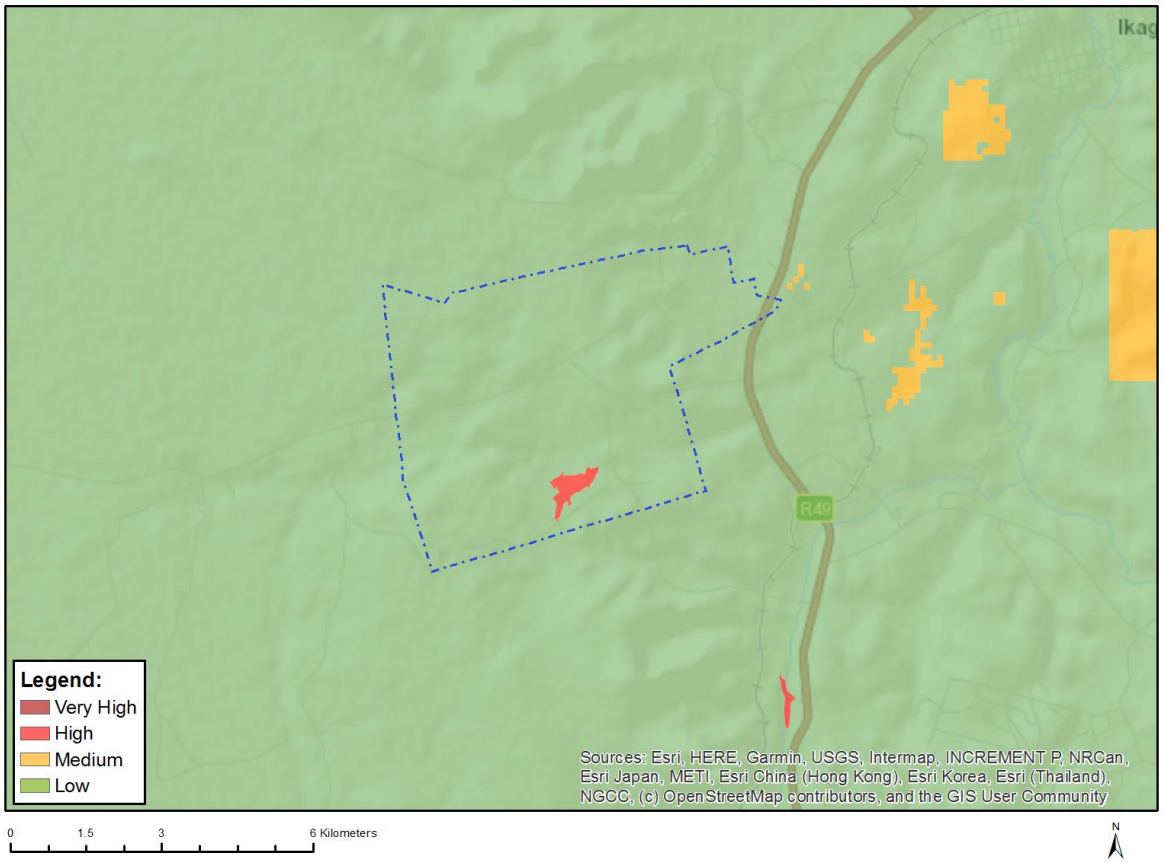
Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;01. Very low/02. Very low/03. Low-Very low/04. Low-Very low/05. Low
High	Old Fields;Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
High	Old Fields;Land capability;01. Very low/02. Very low/03. Low-Very low/04. Low-Very low/05. Low
Low	Land capability;01. Very low/02. Very low/03. Low-Very low/04. Low-Very low/05. Low
Medium	Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
Very High	Pivot Irrigation;Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
Very High	Horticulture / Viticulture;Land capability;01. Very low/02. Very low/03. Low-Very low/04. Low-Very

	low/05. Low
Very High	Horticulture / Viticulture;Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



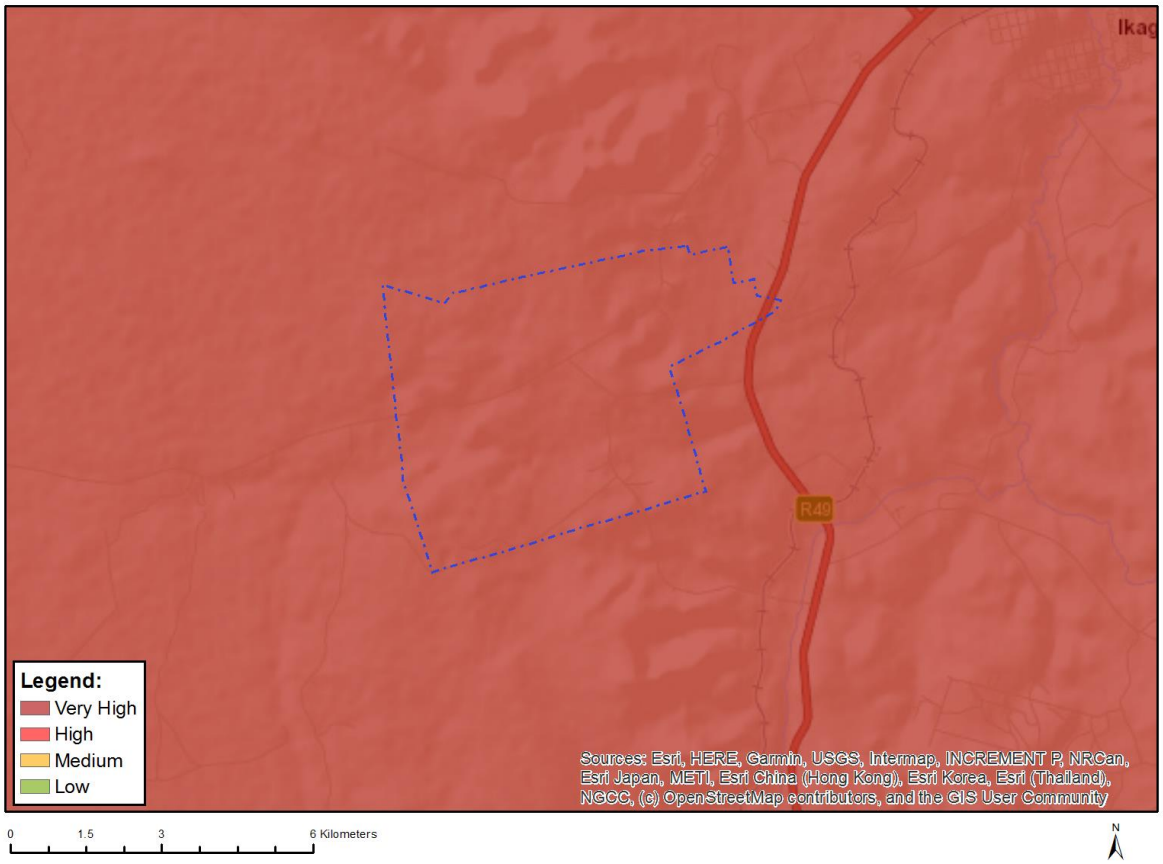
Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Mammalia-Redunca fulvorufula fulvorufula
Low	Subject to confirmation

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

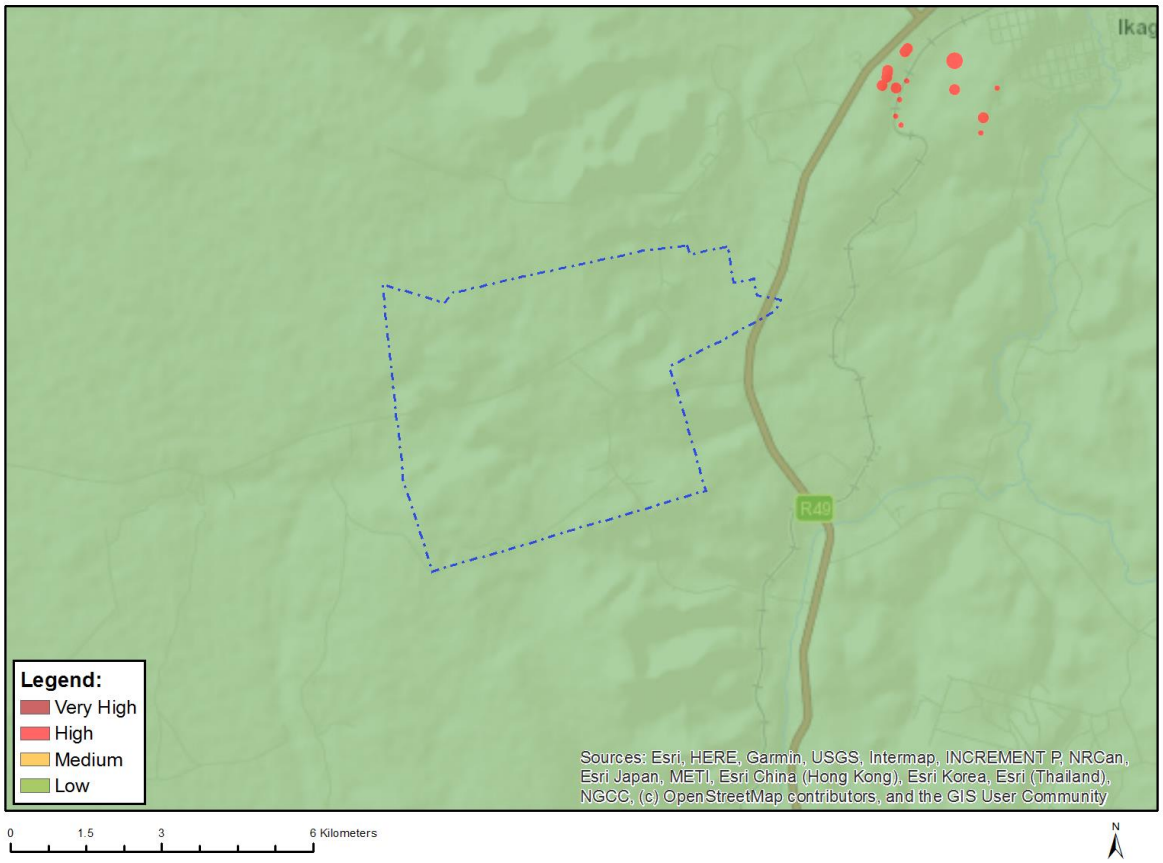


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	Aquatic CBAs
Very High	Strategic water source area
Very High	Wetlands and Estuaries
Very High	Freshwater ecosystem priority area quinary catchments

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY

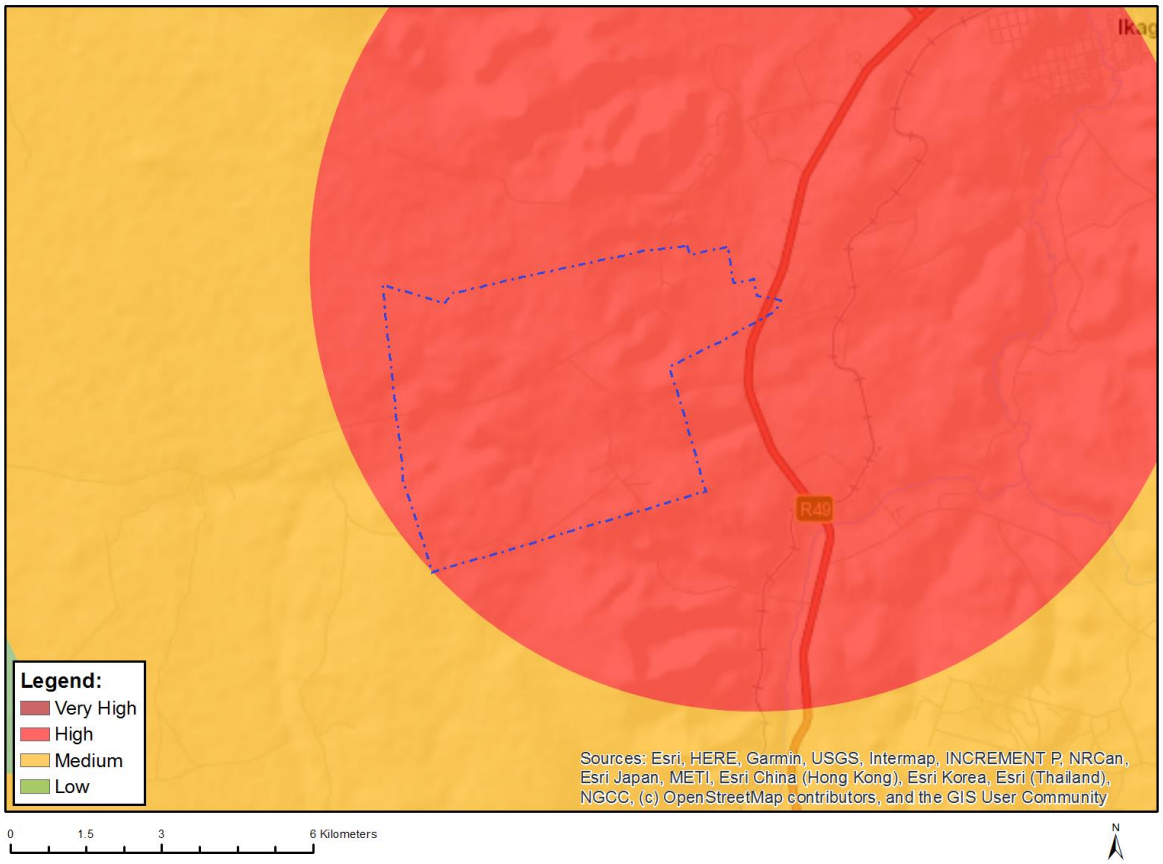


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

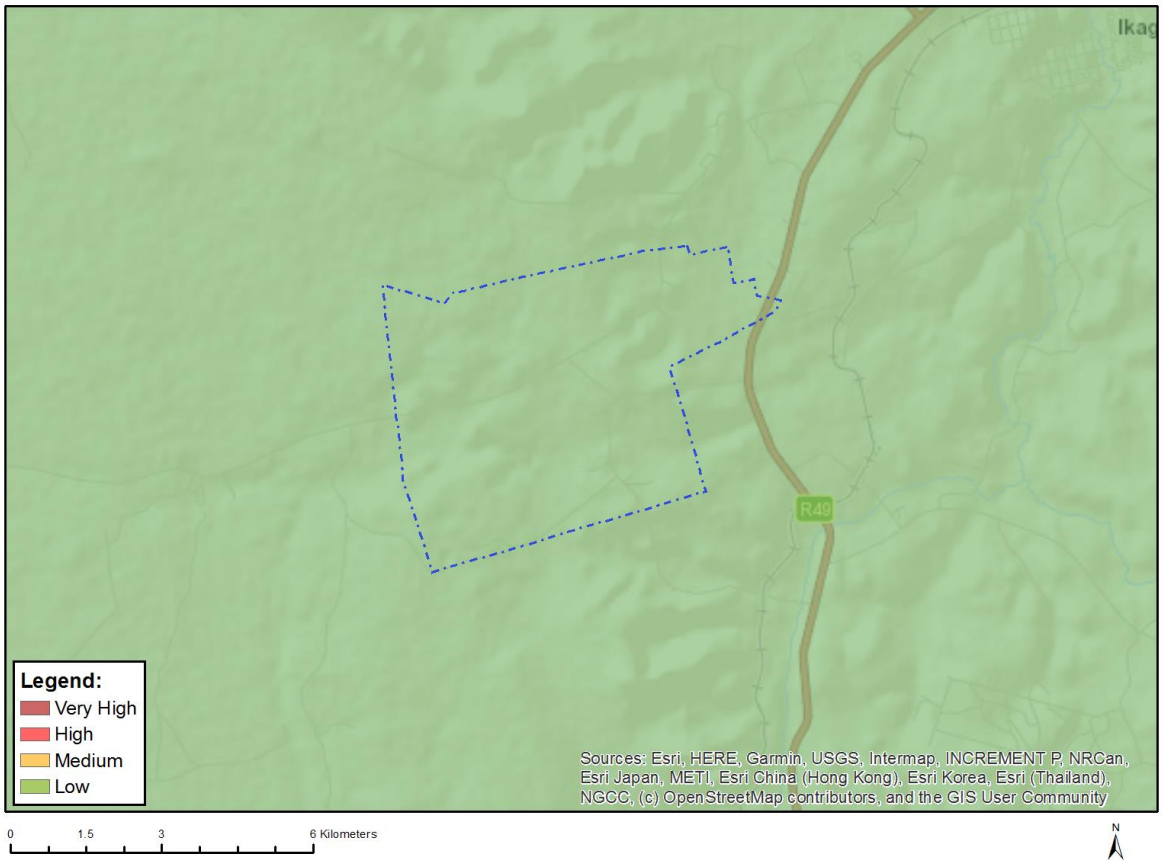


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Within 8 km of other civil aviation aerodrome
Medium	Between 8 and 15 km of other civil aviation aerodrome

MAP OF RELATIVE DEFENCE THEME SENSITIVITY

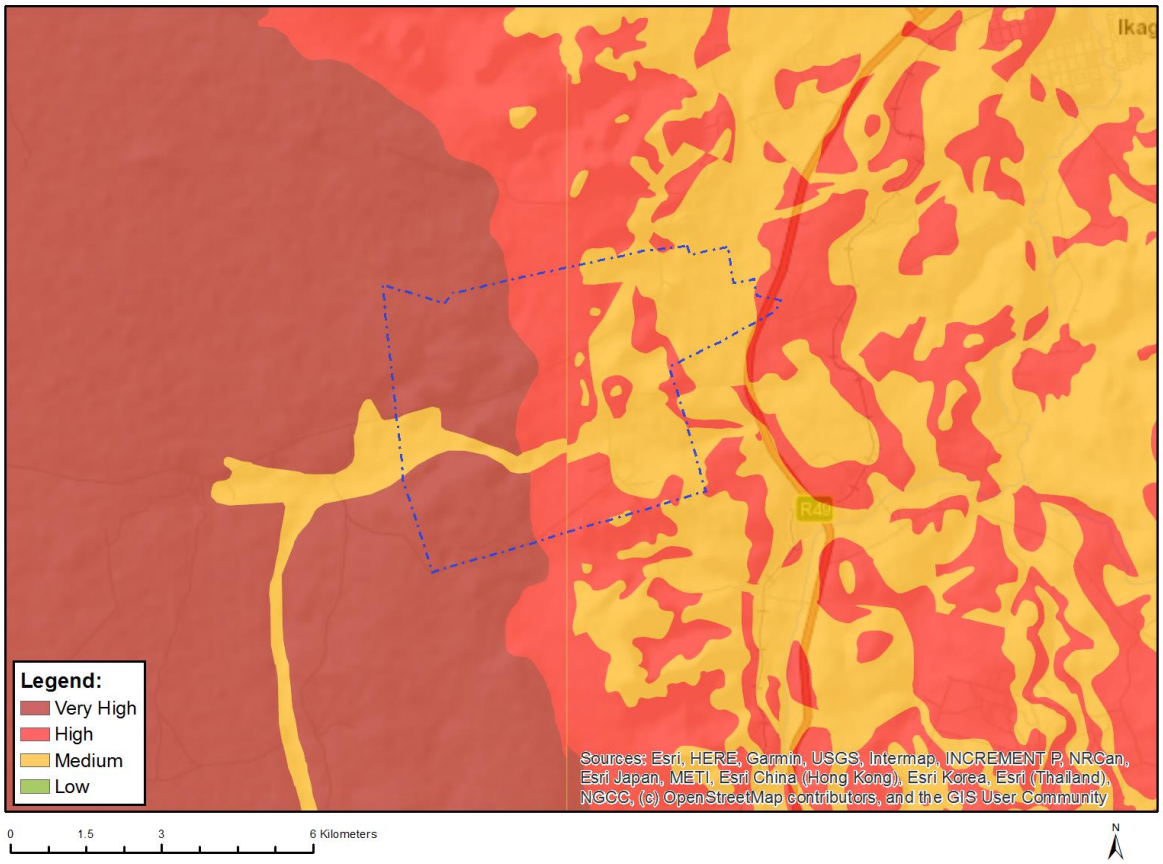


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY

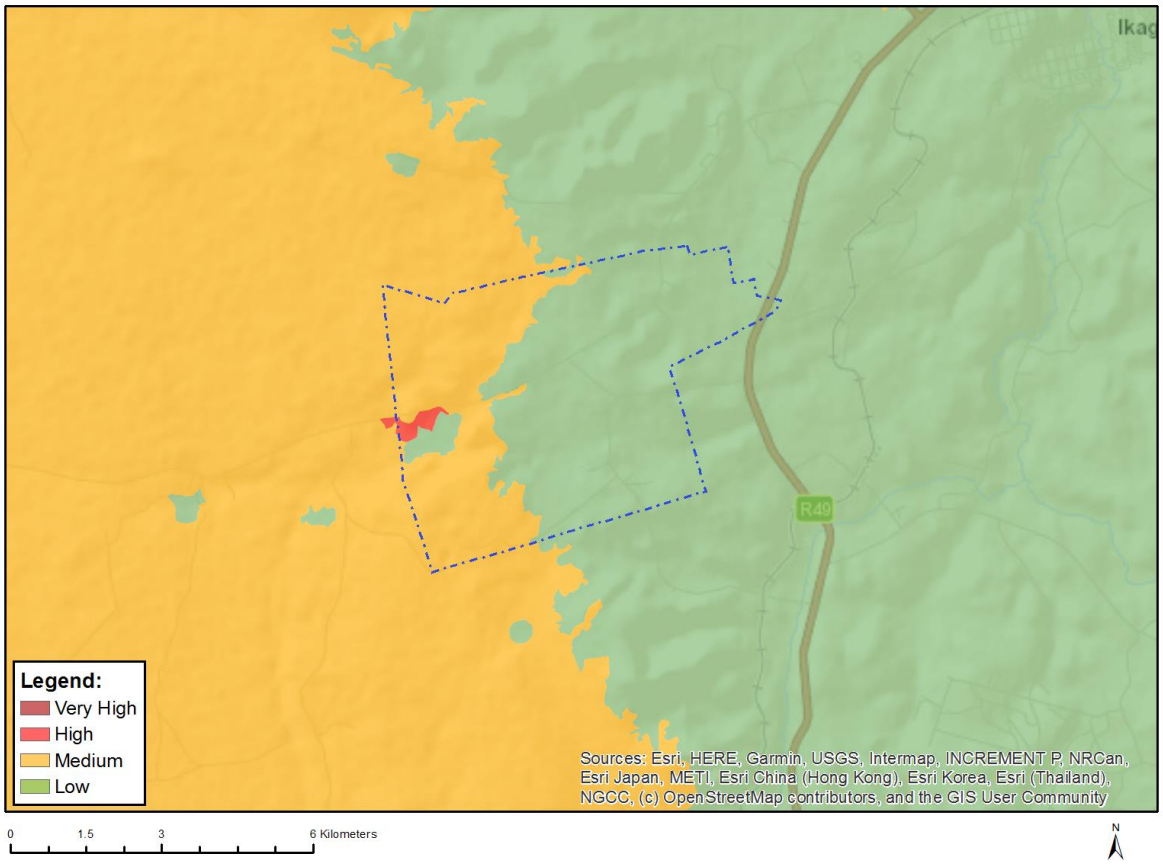


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

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

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



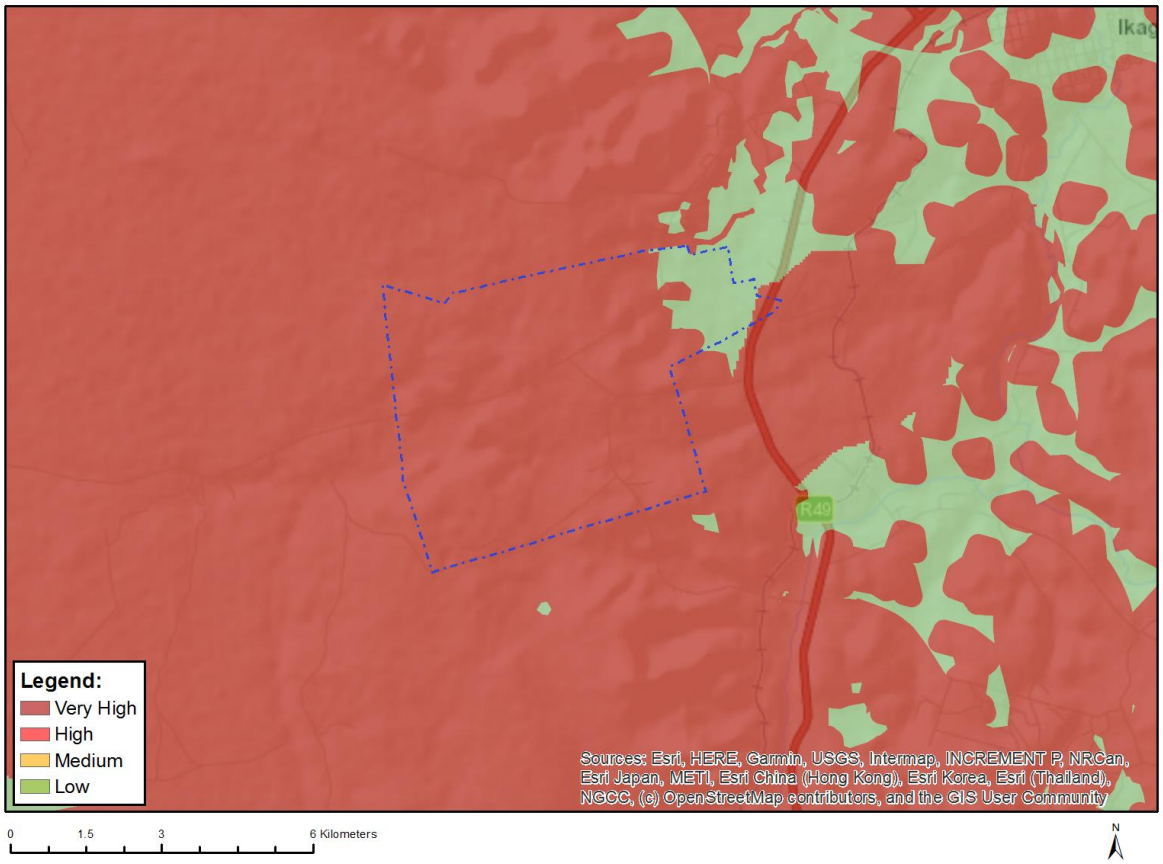
Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Searsia maricoana
Low	Low Sensitivity
Medium	Searsia maricoana

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Very High	Critical biodiveristy area 2
Very High	Ecological support area 1
Very High	Ecological support area 2
Very High	FEPA Subcatchments
Very High	Protected Areas Expansion Strategy