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Ecological Desktop Study

THE PROPOSED DEVELOPMENT OF A MINING RIGHT AND/OR BULK SAMPLING ACTIVITIES INCLUDING TRENCHING IN CASES OF ALLUVIAL DIAMOND PROSPECTING AT BOSHOF LOCATED AT TOKOLOGO LOCAL MUNICIPALITY, WITHIN THE LEJWELEPUTSWA DISTRICT MUNICIPALITY WITHIN THE FREE STATE PROVINCE

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LIST OF ACRONYMS:

ACRONYM: DESCRIPTION:

AEL	Air Emissions License in terms of NEM: AQA
A&IPs	Affected and Interested Parties
BA	Basic Assessment (process or report)
BID	Background Information Documents
CARA	Conservation of Agricultural Resources Act (Act 43 of 1983) as amended
COP	Codes of Practice
DWS	Department of Water Affairs and Sanitation
EA	Environmental Authorisation in terms of NEMA
EAP	Environmental Assessment Practitioner
ECA	Environmental Conservation Act (Act 73 of 1989) as amended
EIA	Environmental Impact Assessment (process or report)
EIA Regs.	Environmental Impact Assessment Regulation published under NEMA
EIS	Ecological Importance and Sensitivity
EMF	Environmental Management Framework
GDP	Gross Domestic Product
GIS	Geographical Information Systems
GN	General Notice (issued under an Act, providing notice or information)
GNR	General Notice Regulation (issued under an Act, providing instruction)
HA	Hectors
IAIA SA	International Association of Impact Assessment South Africa
IDP	Integrated Development Plan
IWUL	Integrated Water Use Licence

IWULA	Integrated Water Use Licence Application
IWWMP	Integrated Water and Waste Management Plan
LED	Local Economic Development
NAEIS	National Atmospheric Emissions Inventory System
NEA	National Energy Act, Act 34 of 2008
NEM: AQA	National Environmental Management: Air Quality Act (act 59 of 2008) as amended
NEM:BA	National Environmental Management: Biodiversity Act (Act 10 of 2004) as amended
NEM: PAA	National Environmental Management: Protected Areas Act (Act 57 of 2003) as amended
NEM: PAA	National Environmental Management: Protected Areas Act (Act 57 of 2003) as amended
NEM: WA	National Environmental Management: Waste Act (Act 39 of 2004) as amended
NEMA	National Environmental Management Act (Act 107 of 1998) as amended
NHRA	National Heritage Resources Act (Act No. 25 of 1999) as amended
NPAES	National Protected Area Expansion Strategy
NWA	National Water Act (Act 35 of 1998) as amended
PES	Present Ecological State (usually followed by category A-F)
PPP	Public Participation Process
Rod	Record of Decision (for specific application)
RWQO	Resource Water Quality Objectives
SACNASP	South African Council for Natural Scientific Professions
SAHRA	South African Heritage Resource Agency
SAMRAD	South African Mineral Resources Administration System



SANBI	South African National Biodiversity Institute
SANS	South African National Standard (followed by standard number)
SAWIS	South African Waste Information System
SDP	Spatial Development Plan
SEMA	Specific Environmental Management Acts
SOP	Standard Operating Procedure
SPLUMA	Spatial Planning and Land Use Management Act (Act No.16 of 2013)
StatsSA	Statistics South Africa
WMA	Water Management Area
WML	Waste Management Licence in terms of NEM: WA
WUL	Water Use Licence

1. Introduction

ENVIROMAX CONSULTING was contracted by Invest in property 126 (Pty) Ltd as the independent environmental consultant to undertake the Ecological Desktop Study for the Environmental Impact Assessment process for the proposed development of a mining right at Boshof on Farm Viljoenshof 1655 located within the Tokologo Local Municipality of Lejweleputswa District Municipality in the Free State Province which is situated approximately 27,9km north-east of the Kimberly and 120km west of Bloemfontein. The geographical coordinates for the proposed study area are shown on the locality map below.

ENVIROMAX CONSULTING is an environmental consulting firm with adequate experience in the environmental authorization and ecological impact assessment industry with an objective of achieving sustainable, reliable, accountable and pragmatic compliance as stipulated by the South African environmental legislation. ENVIROMAX CONSULTING has been actively involved in undertaking ecological studies for a wide variety of development related projects throughout South Africa. ENVIROMAX CONSULTING has considerable experience in ecological impact assessment and environmental management, especially in the development industry.

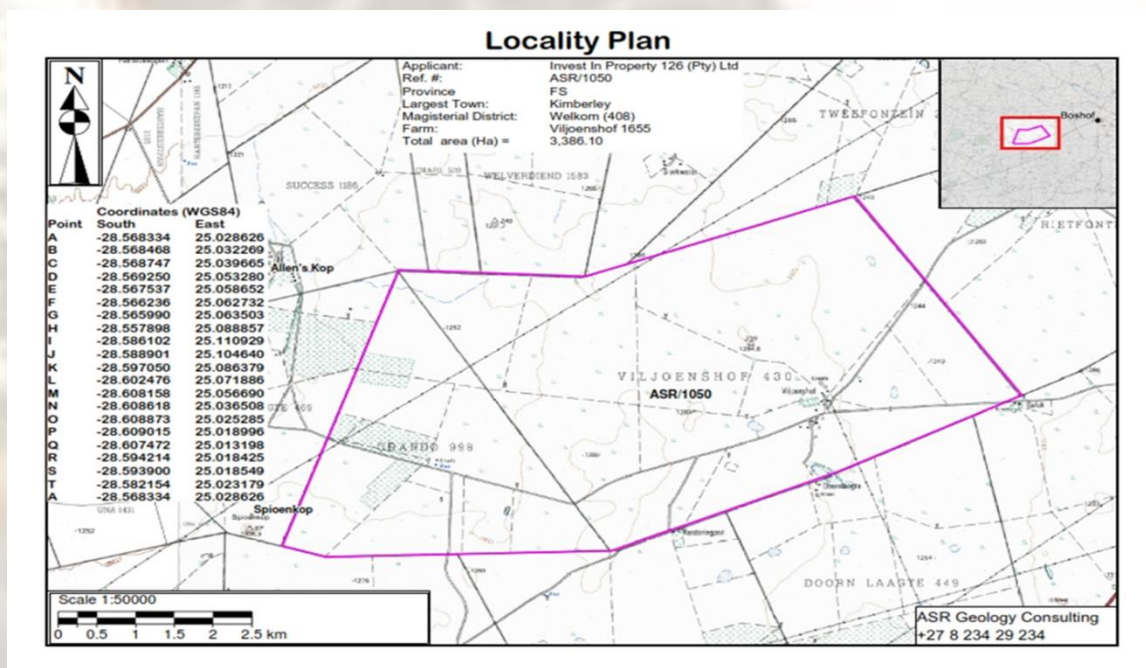
The EAP, Kuhlula Jeff Maluleke, which conducted the desktop study has experience in consulting in the environmental field. His key focuses are on environmental and ecological assessment, advice and management and ensuring compliance to legislation and environmental guidelines. He's key qualifications include:

- M.Sc. in Environmental Management (In Progress), University of South Africa.SA
- B.Sc. (Hons) in Environmental Management, University of South Africa. SA
- B.Sc. in Environmental Studies, University of Limpopo.SA
- EAPASA (Professional EAP) REG NO:2020/1091

The desktop study was edited by Rerani Ramaano who is a qualified ecologist with adequate experience in drafting and editing ecological impact assessment reports her key qualifications include:

- M.Sc. in Ecological Science (In Progress), University of Kwa Zulu-Natal.SA
- B.Sc. (Hons) in Ecological Science, University of Kwa Zulu-Natal. SA
- B.Sc. in Environmental Science, University of Kwa Zulu-Natal.SA
- SACNASP(Candidate Natural Scientist) Reg No: 119592

The Ecological habitat status of the proposed development area was determined by means of an overview site visit and a desktop study. In this document a brief description of the ecology, as stated by Mucina and Rutherford (2006), will be given. This information will be supported with detailed map illustrations.



Study area: Locality Map

2. Topography

The topography of the general region and study area is characterised by flat to slightly undulating plains, with a slight plateau occurrence. The site is situated on the Highveld of the inland plateau at an altitude of 1200m-1400m above sea level. The soil is made up fine-grained sediments of the Karoo Super Group with deep sandy to loamy soils of the Hutton soil form with slightly undulating sandy plains (*Nesbitt, 2014*).

3. Vegetation Data

South Africa is divided up into nine major Biomes. The study area and the surrounding area are found within the Savanna Biome, which is also known as the Bushveld Biome Savanna vegetation types (veldtypes) tend to have a mix of a lower grassy layer,

middle shrub layer and an upper woody layer. The mix and ratio of the three layers varies from veldtype to veldtype within the Savanna Biome. The Savanna Biome is subdivided into six bioregions, namely, Central Bushveld; Mopane; Lowveld; Sub-Escarpment Savanna; Eastern Kalahari Bushveld; and Kalahari Duneveld.

The coordinates of the proposed development area are plotted to determine the vegetation unit(s), in which the development activities will take place. The data used, is that provided by Mucina and Rutherford (2006). A vegetation unit is defined by Mucina and Rutherford (2006) as a complex of plant communities ecologically and historically occupying habitat complexes at the landscape scale. According to Mucina and Rutherford (2006) their vegetation units are the obvious vegetation complexes that share some general ecological properties such as position on major ecological gradients and nutrient levels and appear similar in vegetation structure and especially in floristic composition.

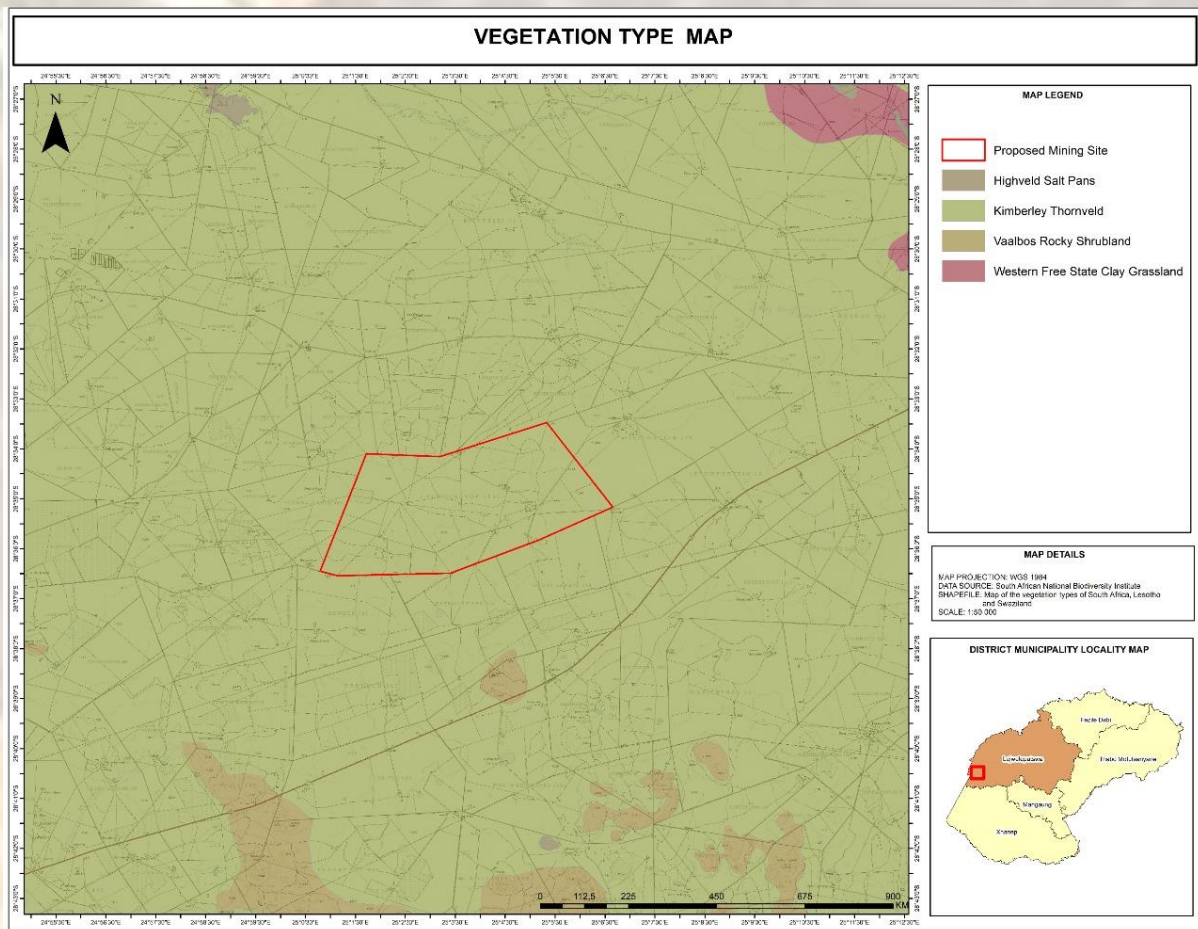


Figure 01: Vegetation Units Map

The coordinates of the development area were plotted, and the results obtained are as follows: The proposed development area is located within the SVk 4 vegetation unit. The SVk 4 is known as the Kimberly Thornveld. The Kimberly Thornveld is a sub-bioregion of the Eastern Kalahari Bushveld which is part of the Savanna biome.

4. Climate

The study location is approximately 1 km from the town of Boshof and shares the same climatic conditions with the town which normally has summers that are long and hot; the winters short, cold, and dry; and it is mostly clear year round. Over the course of the year, the temperature typically varies from 34°F to 88°F and is rarely below 27°F or above 96°F. The area receives about 300mm of rainfall in the southwest region to about 500mm in the northeast. Frost is very frequent in winter. (www.saexplorer.co.za).

5. Kimberly Thornveld

According to Mucina and Rutherford (2006:516), the Kimberly Thornveld is spread throughout North West, Free State, and Northern Cape provinces. Most of the vegetation unit is spread out in areas such as Kimberly, Hartswater, Bloemhof and Hoopstad districts as well as substantial parts of the Warrenon, Christiana, Taung, Boshof and to some extent the Barkly West Districts. Also including pediment areas in the Herbert and Jacobsdal Districts. The Kimberly Thornveld vegetation unit is located at an altitude of 1050-1400m with an average climate of 37.5 and -4.1°C for January and July respectively. The Kimberly Thornveld is characterised plains which are slightly irregular with well-developed tree layer with *Acacia eriobla*, *A tortilis*, *A.Karoo* and *Boscia albitrunca* and well developed shrub layer with occasional dense stands of *Tarchonanthus camphoratus* and *A.mellifera*, with an open grass layer with much uncovered soil

Some Important taxa found in the area

Tall Trees	<i>Acacia erioloba</i>
Small Trees	<i>Acacia Karoo, A tortilis subsp. Heteracantha, Rhus lancea</i>
Tall Shrubs	<i>Tarchonanthus camphorantus</i> , <i>Diospyros pallens</i> , <i>Ehretia rigida subsp.rigida</i> , <i>Euclea crispa subsp. Ovata</i> , <i>Grewia flava</i> , <i>Lycium arenicola</i> , <i>Rhus tridactyla</i>
Low Shrubs	<i>Acacia Hebeclada subsp hebeclada</i> , <i>Anthospermum rigidum subsp pumilum</i> , <i>Hermannia comosa</i> , <i>Lycium pilifolium</i> , <i>Pavonia burchellii</i>
Graminoids	<i>Eragrostis Lehmanniana</i> , <i>Aristida canescens</i> , <i>A. Congesta</i> , <i>Cymbopogon pospischilii</i> , <i>Eragrostis rigidor</i> , <i>Heteropogon contortus</i> , <i>Themeda trianda</i>
Herbs	<i>Barleria macrostegia</i> , <i>Dicoma schinzii</i> , <i>Aloe grandidentata</i> , <i>Piarranthus decipiens</i>

According to Mucina and Rutherford (2006:516) highlights that the conservation states of the Kimberly Lowveld is least threatened. With a target of 16% only 2% is conserved in Vaalbos National Park as well as Sandveld, Bloemhof dam and S.A. Lombard Nature Reserves. Erosion is very minimal and the vegetation unit is usually used for cattle farming and game ranching with an encroachment of *Acacia mellifera subsp. detinens* in overgrazed areas.

6. Priority Floral Species

No species found in the study area is listed in the 2009 Red Data Listing (RDL) nor has any threat status. No Orange Data species or species of conservation concern were observed during overview field investigations.

7. Protected Area status

According to the data for protected areas, no portions fall within a protected area.

8. Critical Biodiversity Areas

According to B-GIS "Critical biodiversity areas (CBAs) are areas of the landscape that need to be maintained in a natural or near-natural state in order to ensure the

continued existence and functioning of species and ecosystems and the delivery of ecosystem services”, therefore the purpose of CBA’s is simply to indicate spatially the location of critical or important areas for biodiversity in the landscape.

According to the data for Critical Biodiversity Areas, the area of the proposed development site falls within an Ecological Support Area (ESA).

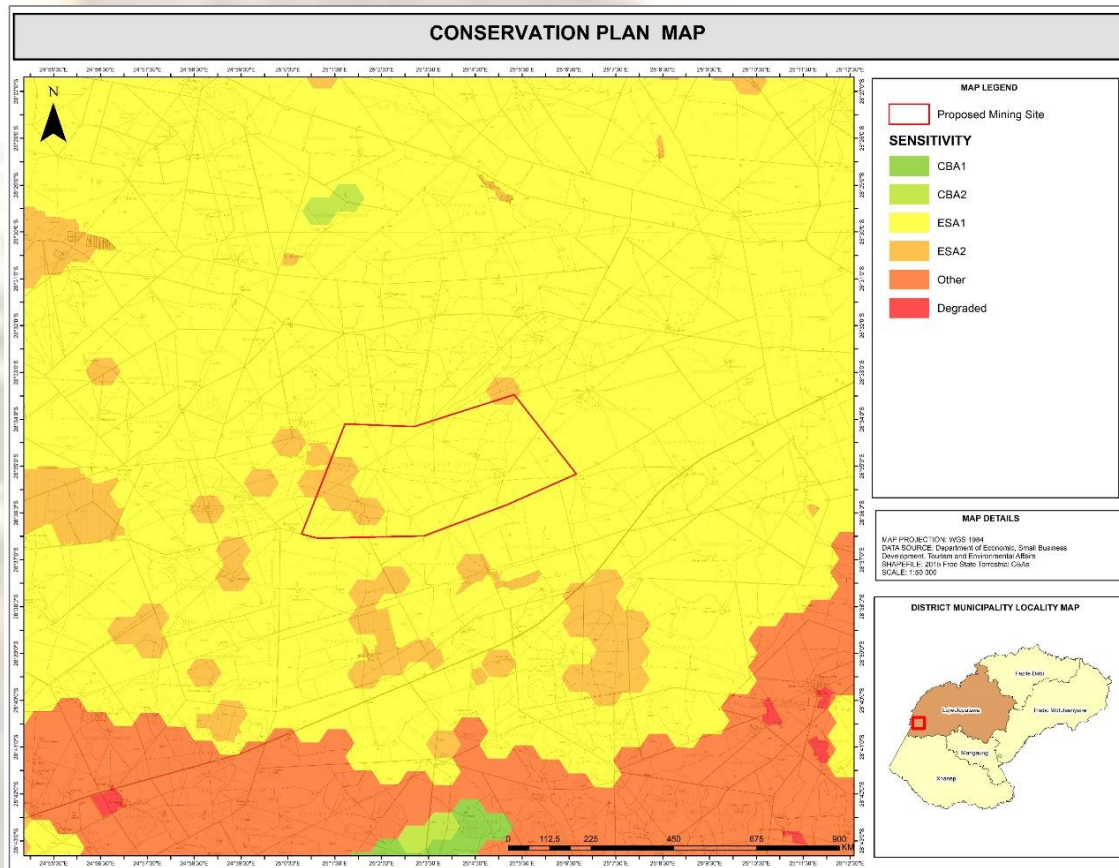


Figure 2: Critical Biodiversity Area Map

9. Sensitivity Area

Based on a desktop data analysis, the area of the proposed development site has a LOW SENSITIVITY RATING as it is characterised by low shrublands with a bare landscape. Furthermore the desktop analysis also confirms that the proposed development site sensitivity status is degraded due to impacts such as change in land use (Agriculture), overgrazing due to livestock farming, deforestation, uncontrolled

veld fires, settlement development and desertification (See Figure 3). Furthermore, the proposed development site is located more than 500m away from any river catchment buffer zone or any natural water body or feature.

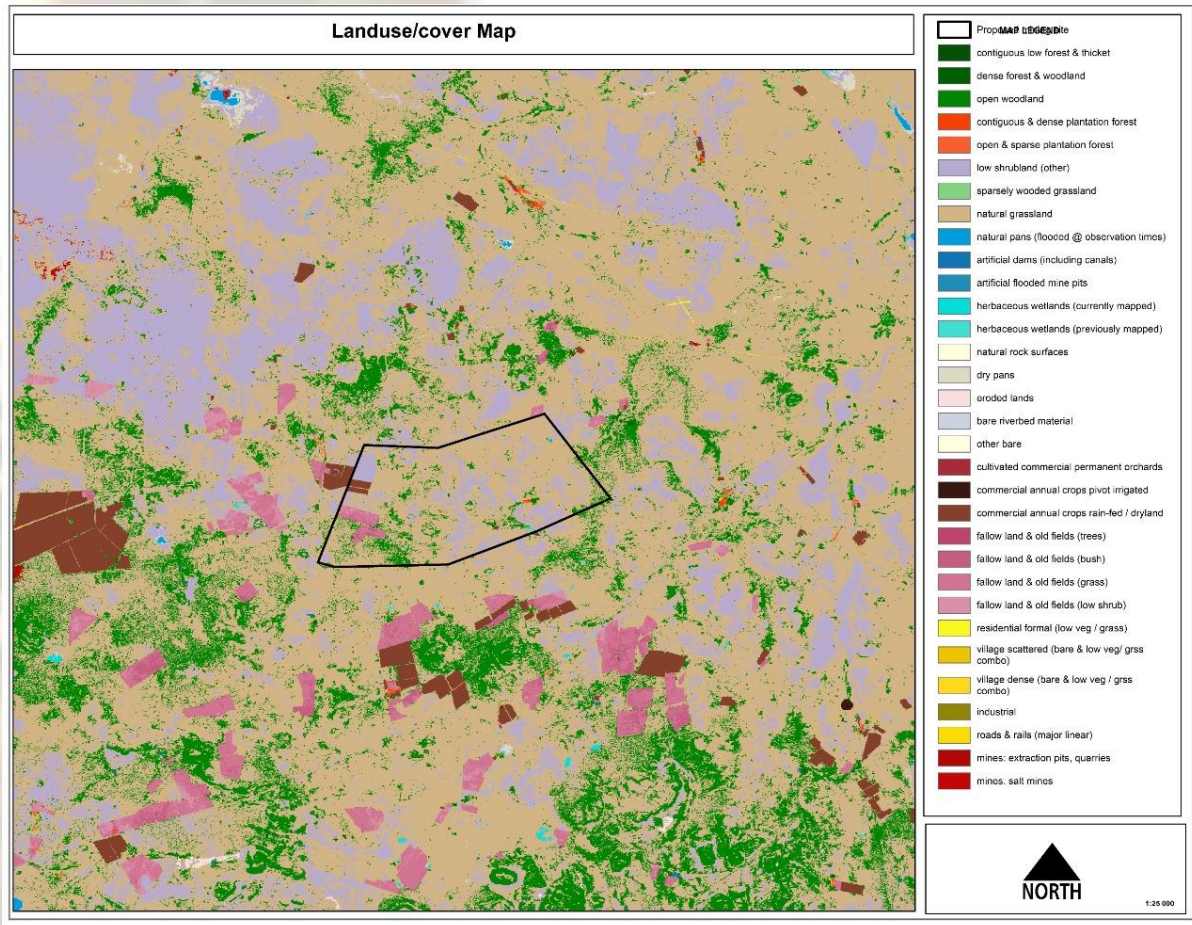


Figure 3: Sensitivity/Landcover Area Map

10. River Ecosystem Status

The status of the nearest river in question is largely modified (Class D) in this area. With only one NFEPA stream at the edge of the project area and a manmade dame that is being utilised for livestock purposes the figure below depicts the river ecosystem layout and river ecosystem.

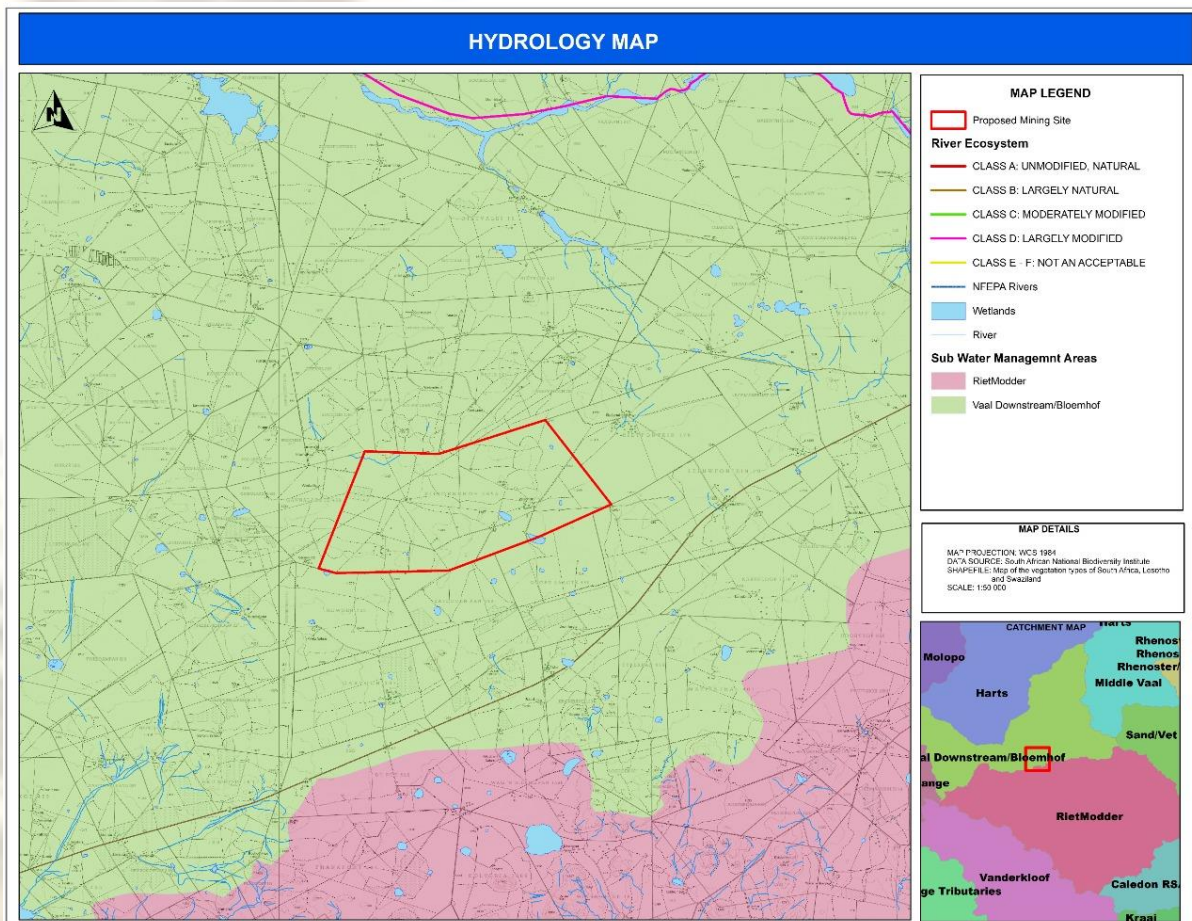


Figure 4: River Ecosystem Status

11. Recommendations

- The EAP shall be notified should the occurrence of an endangered vegetation or any other valuable Flora species be identified. If the EAP finds that the development activities will have an impact on such a flora species or that the flora specie needs to be removed, the needed permit will be applied for.
- Vegetation clearance, if any, should be kept to the minimum required for the operation.

12. Declaration

Role on Study Team	Declaration of independence
Report production	<ul style="list-style-type: none"> • I, Kuhlula Jeff Maluleke, declare that, in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Amended Environmental Impact Assessment Regulations, 2017; • I act as the independent specialist in this application; • I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant; • I declare that there are no circumstances that may compromise my objectivity in performing such work; • I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity; • I will comply with the Act, Regulations and all other applicable legislation;
	<ul style="list-style-type: none"> • I have no, and will not engage in, conflicting interests in the undertaking of the activity; • I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority; • All the particulars furnished by me in this report are true and correct; and • I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act. <p style="text-align: right;">08 November 2022</p> <p>Mr KJ MALULEKE SIGNED</p> <p style="text-align: right;">..... DATE</p>

<p>Report Reviewer & Final Sign-off</p>	<ul style="list-style-type: none"> • I, Rerani Ramaano, declare that, in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Amended Environmental Impact Assessment Regulations, 2017; • I act as the independent specialist in this application; • I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant; • I declare that there are no circumstances that may compromise my objectivity in performing such work; • I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity; • I will comply with the Act, Regulations and all other applicable legislation; • I have no, and will not engage in, conflicting interests in the undertaking of the activity; • I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority; • All the particulars furnished by me in this report are true and correct; and • I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act. <p style="text-align: center; margin-top: 20px;">Mrs R Ramaano</p> <p>.....</p> <p>SIGNED</p>
	<p>08 Novemeber 2022</p> <p>.....</p> <p>DATE</p>

13. References

Acocks, J.P.H. 1988. Veld types of South Africa. Mem.Bot.Surv.S.Afr.No 40:1-128

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