Venetia Limpopo Nature Reserve (VLNR) Lodge – Agricultural Compliance Statement

Venetia, Limpopo Province

October 2020

Client

Prepared by:

The Biodiversity Company

Cell: +27 81 319 1225

Fax: +27 86 527 1965

info@thebiodiversitycompany.com

www.thebiodiversitycompany.com

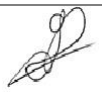
Report Name	**Venetia Limpopo Nature Reserve (VLNR) Lodge – Agricultural Compliance Statement**
Reference	**Venetia**
Submitted to	Alta van Dyk Environmental
Report Reviewer	**Andrew Husted** 
	Andrew Husted is Pr Sci Nat registered (400213/11) in the following fields of practice: Ecological Science, Environmental Science and Aquatic Science. Andrew is an Aquatic, Wetland and Biodiversity Specialist with more than 12 years' experience in the environmental consulting field.
Report Writer	**Ivan Baker** 
	Ivan Baker is Cand. Sci Nat registered (119315) in environmental science and geological science. Ivan is an experienced wetland and ecosystem service specialist, a hydropedologist and pedologist. He completed his MSc in environmental science and hydropedology at the North-West University of Potchefstroom.
Fieldwork	**Michael Ryan** 
	Michael Ryan is a registered Cand. Sci. Nat. (128125) professional. Michael received his B.Sc Honours degree (Geography) from the University of Witwatersrand.
Declaration	The Biodiversity Company and its associates operate as independent consultants under the auspice of the South African Council for Natural Scientific Professions. We declare that we have no affiliation with or vested financial interests in the proponent, other than for work performed under the Environmental Impact Assessment Regulations, 2017. We have no conflicting interests in the undertaking of this activity and have no interests in secondary developments resulting from the authorisation of this project. We have no vested interest in the project, other than to provide a professional service within the constraints of the project (timing, time and budget) based on the principals of science.

Table of Contents

Figures

Tables

Document Guide

According to the Government Notice 320 dated 20 March 2020 and the procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for environmental authorisation, the following criteria is applicable to that of an agricultural compliance statement;

Requirement	Reference
Specialist Details and CV	Appendix A
Locality of the proposed activity	Section 2
Sensitivity verification	Section 8.2
Acceptability of impacts towards agricultural production capability associated with proposed activities	Section 9
Declaration of specialist(s)	Page vi
Project components with 50 m regulated area superimposed to that of the agricultural sensitivities of the screening tool	Section 8.2
Confirmation from specialist that mitigation to avoid fragmentation has been considered	Section 9.1
Statement from specialist regarding the acceptability and approval of proposed activities	Section 9.2
Conditions to acceptability of proposed activities	
Probability of land being returned to current state after decommissioning	N/A
Monitoring requirements and/or any inclusions into EMPr	Section 9.1
Assumptions and uncertainties	Section 4

DECLARATION

I, **Ivan Baker** declare that:

- 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 form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of Section 24F of the Act.

Ivan Baker

Soil Specialist

The Biodiversity Company

October 2020

1 Introduction

The Biodiversity Company was appointed to conduct a pedological assessment for the proposed Venetia development, which includes the development of a lodge. The proposed development footprint area (lodge and top terrace) measuring approximately 6 ha in size, with an existing access road.

The approach adopted for the assessments has taken cognisance of the recently published Government Notice 320 in terms of NEMA dated 20 March 2020: “Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation”.

This report aims to present and discuss the findings from the soil resources identified within the assessment corridor, the agricultural and land potential of these resources, the land uses within the corridor and also the risk associated with the proposed development.

2 Project Area

The project area is located approximately 80 km west of Musina and 16 km south of the South Africa/Botswana border. The surrounding land uses predominantly include a game reserve and a dam (Lizzulea Dam) (see Figure 2-1).

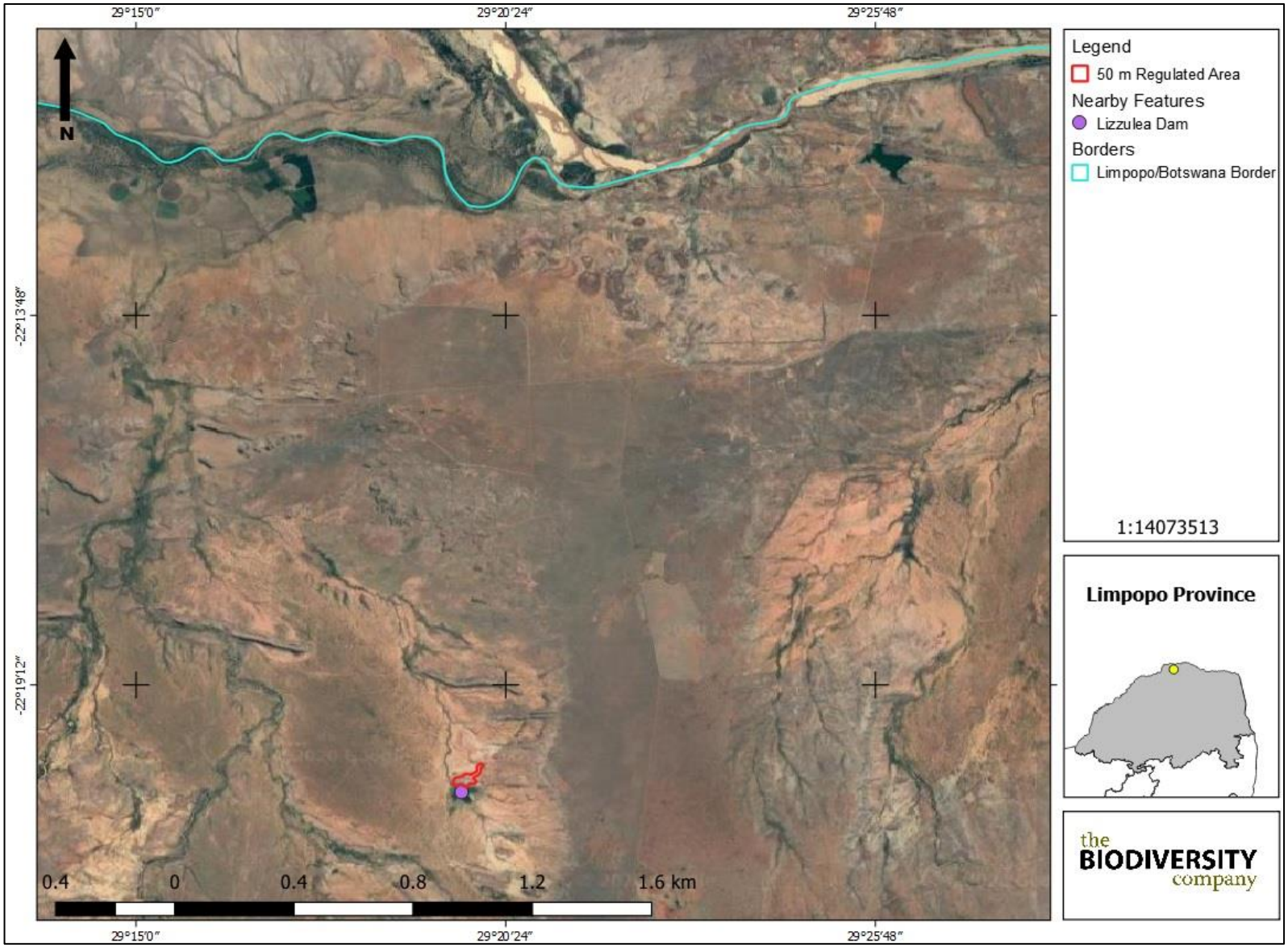


Figure 2-1 Locality map of the project area

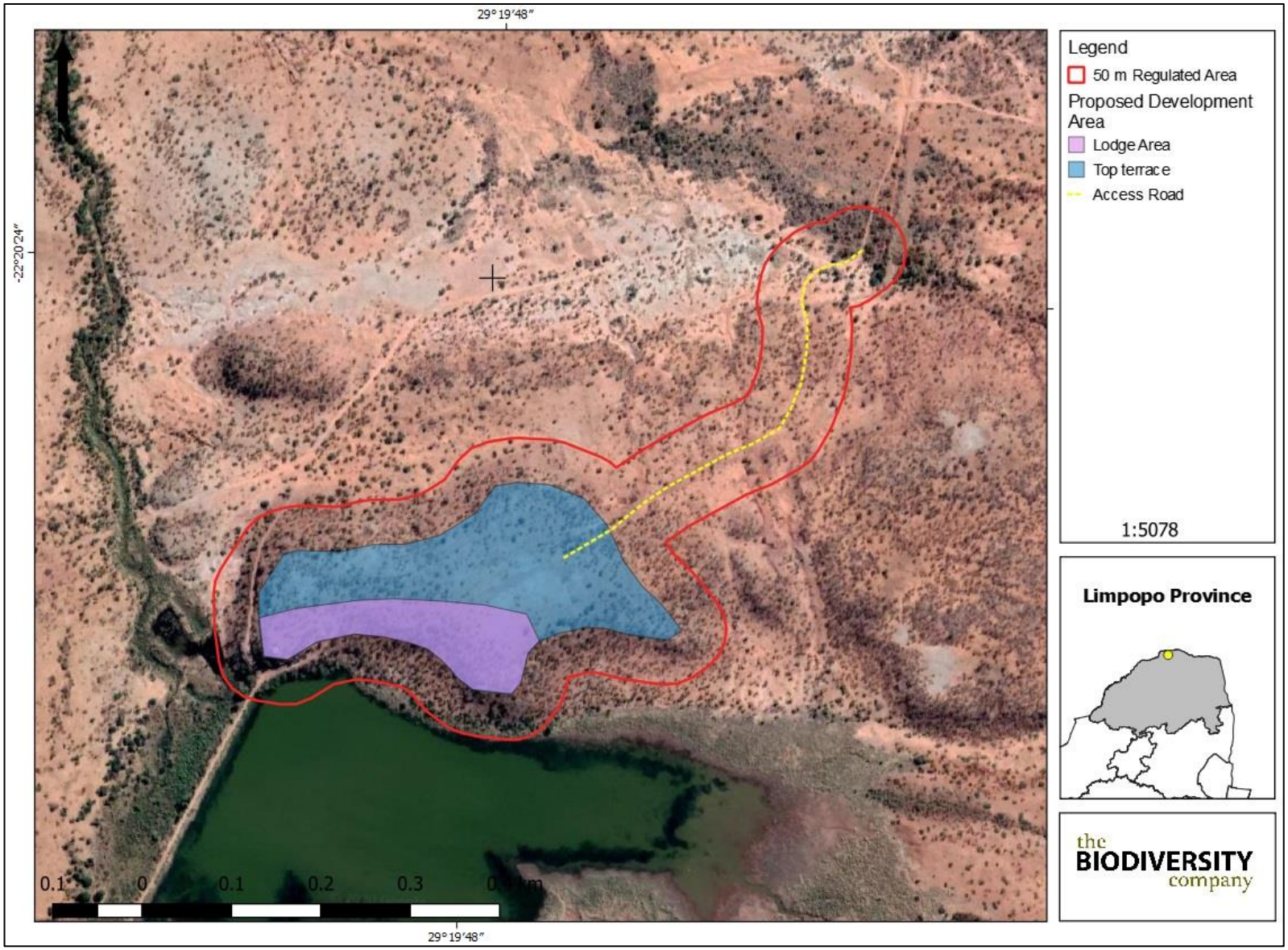


Figure 2-2 Locality of components relevant to the proposed development

3 Scope of Work

According to the National Web based Environmental Screening Tool, the proposed development is located within “Low” to “Medium” sensitivities. The protocols for minimum requirements (DEA, 2020) stipulates that in the event that a proposed development is located within “Low” or “Medium” sensitivities, an agricultural compliance statement will be sufficient. It is worth noting that according to these protocols, a site inspection will still need to be conducted to determine the accuracy of these sensitivities. After acquiring baseline information pertaining to soil resources within the 50 m regulated areas, it is the specialist’s opinion that the soil forms and associated land capabilities concur with the sensitivities stated by the screening tool. Therefore, only an agricultural compliance statement will be compiled. This includes:

- The feasibility of the proposed activities;
- Confirmation about the “Low” and “Medium” sensitivities;
- The effects that the proposed activities will have on agricultural production in the area;
- A map superimposing the proposed footprint areas, a 50 m regulated area as well as the sensitivities pertaining to the screening tool;
- Confirmation that no agricultural segregation will take place and that all options have been considered to avoid segregation;
- The specialist’s opinion regarding the approval of the proposed activities; and
- Any potential mitigation measures described by the specialist to be included in the EMPr.

4 Limitations

The following limitations are relevant to this agricultural potential assessment;

- No impact assessment has been completed given the requirements for an agricultural compliance statement; and
- The handheld GPS used potentially could have inaccuracies up to 5 m. Any and all delineations therefore could be inaccurate within 5 m.

5 Expertise of the Specialists

5.1 Andrew Husted

Mr. Andrew Husted is a Pr Sci Nat registered (400213/11) specialist in the following fields of practice: Ecological Science, Environmental Science and Aquatic Science. Mr Husted has in excess of 12 years’ experience in the environmental consulting field. This experience includes specialist freshwater ecology, with supporting services to pedology, hydrology and also hydropedological projects.

5.2 Ivan Baker

Ivan Baker is Cand Sci Nat registered (119315) in environmental science and geological science. Ivan is a wetland and ecosystem service specialist, a hydropedologist and pedologist that has completed numerous specialist studies ranging from basic assessments to EIAs. Ivan has carried out various international studies following FC standards. Ivan completed training in Tools for Wetland Assessments with a certificate of competence and completed his MSc in environmental science and hydropedology at the North-West University of Potchefstroom.

6 Methodology

6.1 Desktop Assessment

As part of the desktop assessment, baseline soil information was obtained using published South African Land Type Data. Land type data for the site was obtained from the Institute for Soil Climate and Water (ISCW) of the Agricultural Research Council (ARC) (Land Type Survey Staff, 1972 - 2006). The land type data is presented at a scale of 1:250 000 and comprises of the division of land into land types. In addition, a Digital Elevation Model (DEM) as well as the slope percentage of the area was calculated by means of the NASA Shuttle Radar Topography Mission Global 1 arc second digital elevation data by means of QGIS and SAGA software.

6.2 Field Survey

An assessment of the soils present within the project area was conducted during a field survey in September 2020. The site was traversed by vehicle and on foot. A soil auger was used to determine the soil form/family and depth. The soil was hand augured to the first restricting layer or 1,5 m. Soil survey positions were recorded as waypoints using a handheld GPS. Soils were identified to the soil family level as per the “Soil Classification: A Taxonomic System for South Africa” (Soil Classification Working Group, 2018). Landscape features such as existing open trenches were also helpful in determining soil types and depth.

6.3 Land Capability

Given the nature of the compliance statement and the fact that baseline findings correlate with the screening tool’s sensitivities, land capability was solely determined by means of the National Land Capability Evaluation Raster Data Layer (DAFF, 2017). Land capability and land potential will also briefly be calculated to match to that of the screening tool to ultimately determine the accuracy of the land capability sensitivity from (DAFF, 2017).

Land capability and agricultural potential will briefly be determined by a combination of soil, terrain and climate features. Land capability is defined by the most intensive long-term sustainable use of land under rain-fed conditions. At the same time an indication is given about the permanent limitations associated with the different land use classes.

Land capability is divided into eight classes and these may be divided into three capability groups.

Table 6-1 shows how the land classes and groups are arranged in order of decreasing capability and ranges of use. The risk of use increases from class I to class VIII (Smith, 2006).

Table 6-1 Land capability class and intensity of use (Smith, 2006)

Land Capability Class	Increased Intensity of Use									Land Capability Groups
I	W	F	LG	MG	IG	LC	MC	IC	VIC	Arable Land
II	W	F	LG	MG	IG	LC	MC	IC		
III	W	F	LG	MG	IG	LC	MC			
IV	W	F	LG	MG	IG	LC				
V	W	F	LG	MG						Grazing Land
VI	W	F	LG	MG						
VII	W	F	LG							
VIII	W									Wildlife
W - Wildlife		**MG - Moderate Grazing**			**MC - Moderate Cultivation**					
F- Forestry		**IG - Intensive Grazing**			**IC - Intensive Cultivation**					
LG - Light Grazing		**LC - Light Cultivation**			**VIC - Very Intensive Cultivation**					

The land potential classes are determined by combining the land capability results and the climate capability of a region as shown in Table 6-2. The final land potential results are then described in Table 6-3.

Table 6-2 The combination table for land potential classification

Land capability class	Climate capability class							
	C1	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**C8**
I	L1	L1	L2	L2	L3	L3	L4	L4
II	L1	L2	L2	L3	L3	L4	L4	L5
III	L2	L2	L3	L3	L4	L4	L5	L6
IV	L2	L3	L3	L4	L4	L5	L5	L6
V	Vlei	Vlei	Vlei	Vlei	Vlei	Vlei	Vlei	Vlei
VI	L4	L4	L5	L5	L5	L6	L6	L7
VII	L5	L5	L6	L6	L7	L7	L7	L8
VIII	L6	L6	L7	L7	L8	L8	L8	L8

Table 6-3 The Land Potential Classes

Land potential	Description of land potential class
L1	Very high land potential: No limitations. Appropriate contour protection must be implemented and inspected.
L2	High land potential: Very infrequent and/or minor limitations due to soil, slope, temperatures or rainfall. Appropriate contour protection must be implemented and inspected.

L3	Good potential: Infrequent and/or moderate limitations due to soil, slope, temperatures or rainfall. Appropriate contour protection must be implemented and inspected.
L4	Moderate potential: Moderately regular and/or severe to moderate limitations due to soil, slope, temperatures or rainfall. Appropriate permission is required before ploughing virgin land.
L5	Restricted potential: Regular and/or severe to moderate limitations due to soil, slope, temperatures or rainfall.
L6	Very restricted potential: Regular and/or severe limitations due to soil, slope, temperatures or rainfall. Non-arable
L7	Low potential: Severe limitations due to soil, slope, temperatures or rainfall. Non-arable
L8	Very low potential: Very severe limitations due to soil, slope, temperatures or rainfall. Non-arable

6.4 Erosion Potential

Erosion has been calculated by means of the (Russell, 1993) methodology. The steps in calculating the Fb ratings relevant to erosion potential is illustrated in Table 6-4 with the final erosion classes illustrated in Table 6-5.

Table 6-4 Fb ratings relevant to the calculating of erosion potential (Russell, 1993)

Step 1- Initial value, texture of topsoil horizon				
Light (0-15% clay)		**Medium (15-35% clay)**		**Heavy (>35% clay)**
Fine sand	Medium/coarse sand	Fine Sand	Medium/coarse sand	All sands
3.5	4.0	4.5	5.0	6.0
Step 2- Adjustment value (permeability of subsoil)				
Slightly restricted		Moderately restricted		Heavily restricted
-0.5		-1.0		-2.0
Step 3- Degree of leaching (excluding bottomlands)				
Dystrophic soils, medium and heavy textures		Mesotrophic soils		Eutrophic or calcareous soils, medium and heavy textures
+0.5		0		-0.5
Step 4- Organic Matter				
Organic topsoil			Humic Topsoil	
+0.5			+0.5	
Step 5- Topsoil limitations				
Surface crusting			Excessive sand/high swell-shrink/self-mulching	
-0.5			-0.5	
Step 6- Effective soil depth				
Very shallow (<250 mm)			Shallow (250-500 mm)	
-1.0			-0.5	

Table 6-5 Final erosion potential class

Erodibility	**Fb Rating (from calculation)**
Very Low	>6.0
Low	5.0 - 5.5

Moderate	3.5 – 4.5
High	2.5 – 3.0
Very High	<3.0

7 Project Area

7.1 Vegetation Type

The Limpopo Ridge Bushveld (SVmp 2) vegetation type is distributed throughout the Limpopo Province on ridges and hills, including Madiapala, the Pontdrif area, Tsolwe and Poortjieberg. This vegetation type also includes ridges and hills north of Soutpansberg and generally east of the Sand River and also includes northern sections of the Kruger National Park. The altitude of this vegetation type ranges from 300 to 700 Metres Above Sea Level (MASL) with some hills and crests reaching up to 1 000 MASL (Mucina and Rutherford, 2006).

The SVmp 2 vegetation type is characterised by irregular plains with ridges and hills as well as a moderately open savannah with poorly developed basal cover. Some ridges area characterised by umbrella-shaped canopies (*Kirkia acuminata*) These landscapes are particularly striking with rock walls and passages within areas of sandstone of the Clarens Formation (Mucina and Rutherford, 2006).

This vegetation type is least threatened with a target percentage of 19. Approximately 18% of this vegetation type is statutorily conserved which mainly include the Kruger and the Mapungubwe National Park. Approximately 1% of this vegetation type is transformed by cultivating or mining (Mucina and Rutherford, 2006).

7.2 Climate

The SVmp 2 vegetation type is characterised by a summer rainfall with dry winters and a Mean Annual Precipitation (MAP) of between 300 and 400 mm. Frost occurs infrequently within this region (also see Figure 7-1).

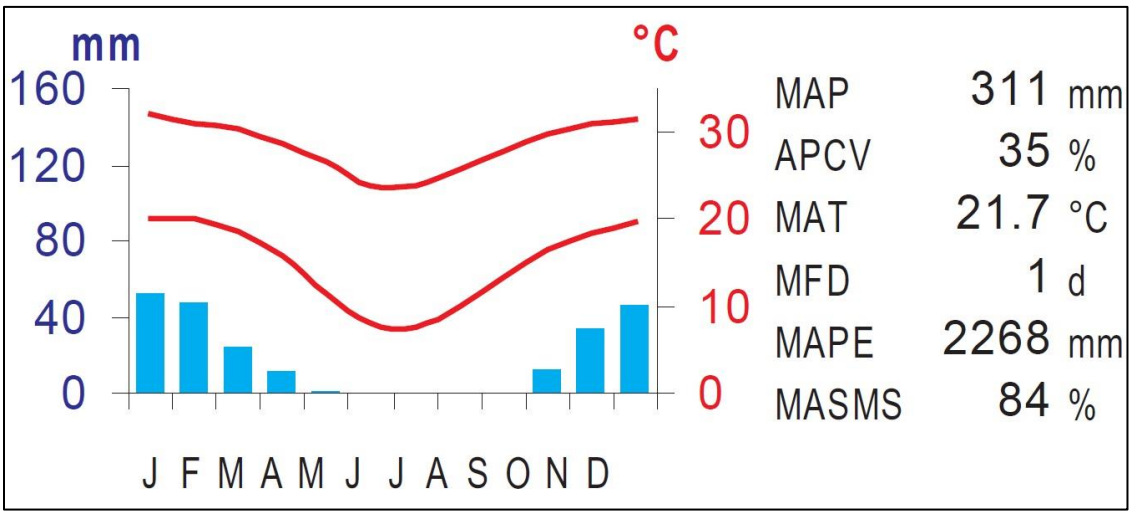


Figure 7-1 The climate summary for the SVmp 2 vegetation type (Mucina & Rutherford, 2006)

7.3 Soils

According to the land type database (Land Type Survey Staff, 1972 - 2006) the assessment corridor to be focused on falls within Fc 622 land type. The Fc land type consists of Glenrosa and/or Mispah soil forms with the possibility of other soils occurring throughout. Lime is rare or

absent within this land type in upland soils but generally present in low-lying areas. The soils expected to occur with the respective terrain units for the Fc 622 land type is illustrated in Figure 7-2 and Table 7-1.

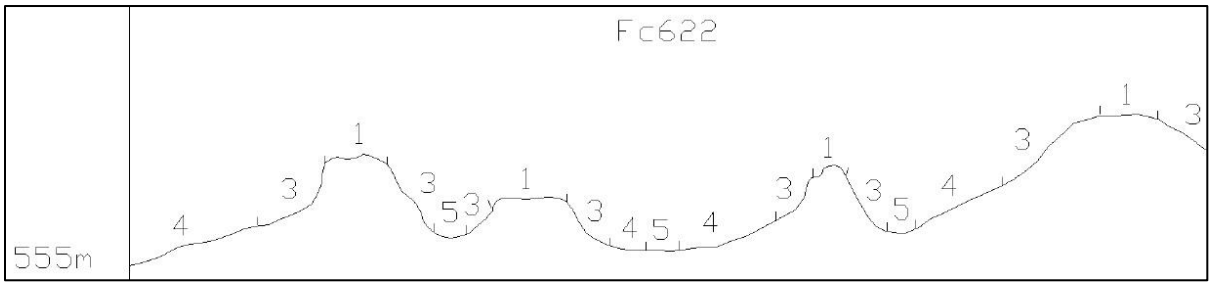


Figure 7-2 Illustration of land type Fc 622 terrain unit (Land Type Survey Staff, 1972 - 2006)

Table 7-1 Soils expected at the respective terrain units within the Fc 622 land type (Land Type Survey Staff, 1972 - 2006)

Terrain Units							
1 (20%)		**3 (30%)**		**4 (40%)**		**5 (10%)**	
Mispah	65%	Mispah	45%	Mispah	45%	Mispah	35%
Hutton	15%	Hutton	20%	Hutton	20%	Valsrivier	30%
Bare Rock	10%	Clovelly	20%	Clovelly	20%	Swartland	25%
Clovelly	10%	Swartland	10%	Swartland	10%	Bare Rock	5%
		Bare Rock	5%	Bare Rock	5%	Clovelly	5%

7.4 Terrain

The slope percentage of the project area has been calculated and is illustrated in Figure 7-3. The majority of the project area is characterised by a slope percentage between 0 and 10%, portions to the west being characterised by a slope percentage up to 31. This illustration indicates a non-uniform area with a high concentration of hills and ridges. The Digital Elevation Model (DEM) of the project area (Figure 7-4) indicates an elevation of 589 to 620 Metres Above Sea Level (MASL).

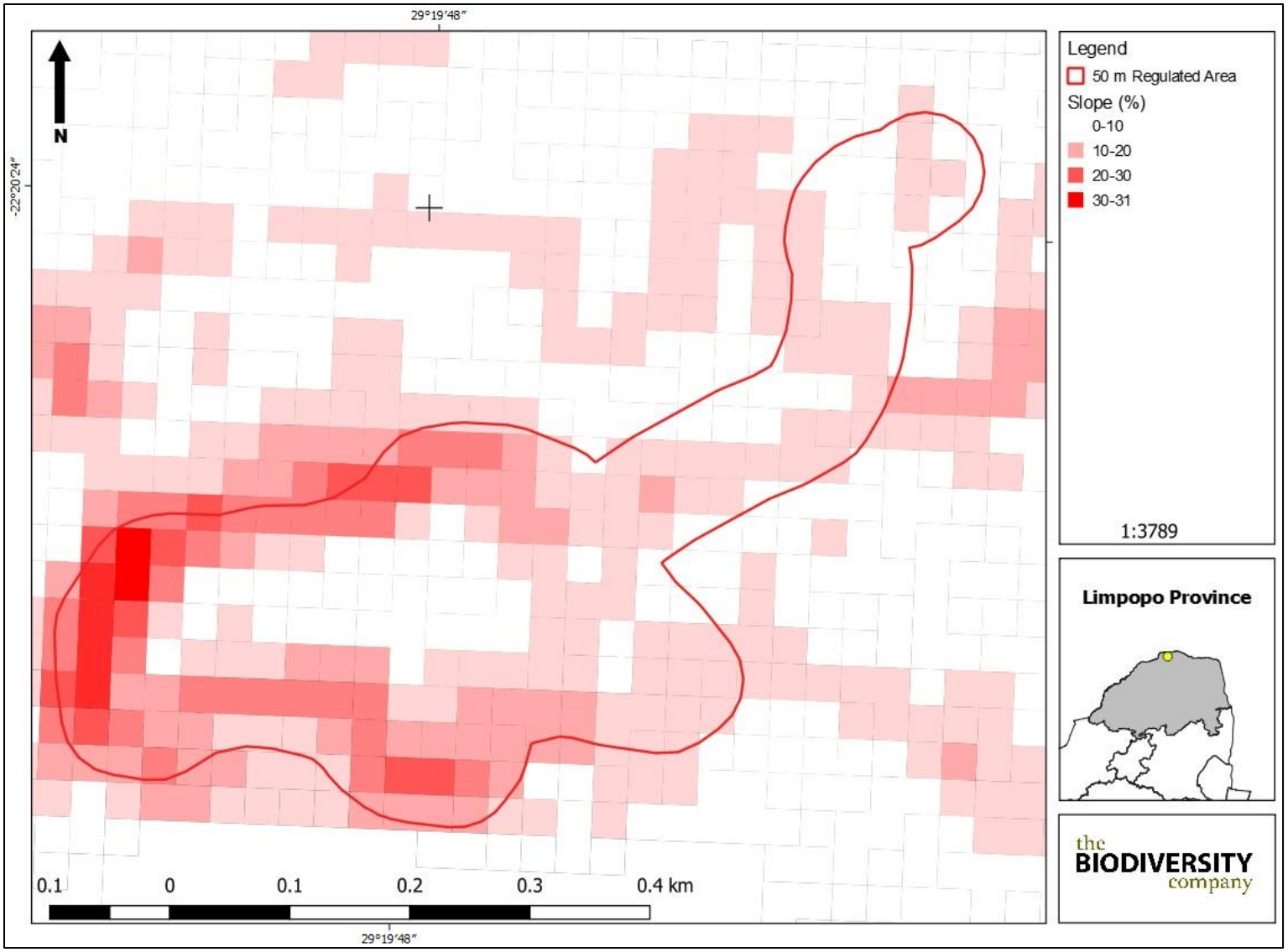


Figure 7-3 Slope percentage map for the regulated area

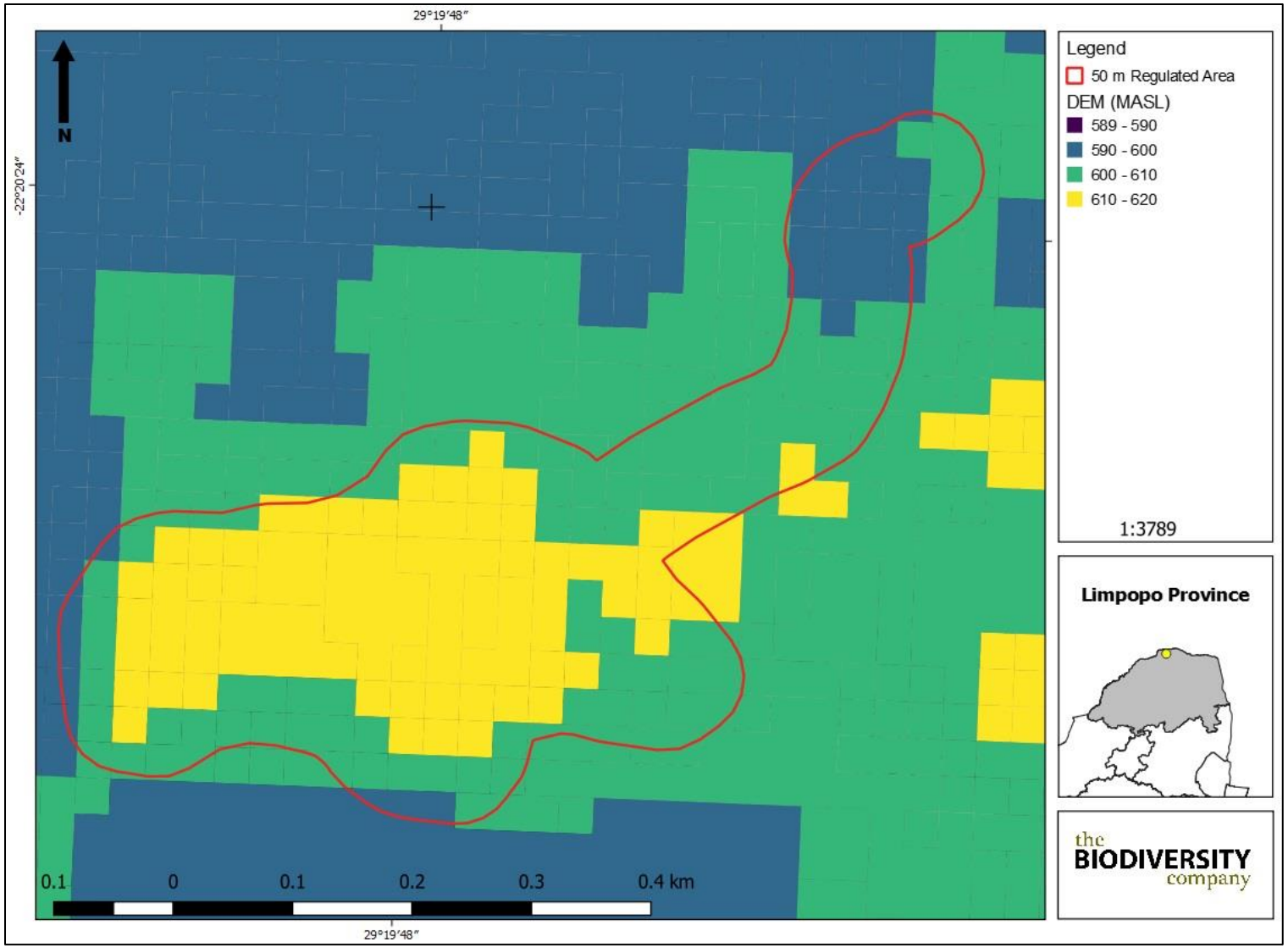


Figure 7-4 Digital Elevation Model of the regulated area (metres above sea level)

7.5 Current Land Use

The current land use is limited and restricted to a game reserve/bushveld and a dam to the south of the proposed development area.

8 Results and Discussion

8.1 Baseline Findings

The following soil forms were dominant within the portion of the assessment area focussed on during the site visit (also see Figure 8-1.

- Dundee soil form (1122(15)) (orthic topsoil above a thick alluvial deposit); and
- Glenrosa soil form (1220(15)) (orthic topsoil on top of a lithic horizon).

The land capability of the abovementioned soils range from a land capability IV to a land capability VI with the climate capability determined to be a climate capability level 8 given the low Mean Annual Precipitation (MAP) and the high Mean Annual Potential Evapotranspiration (MAPE) rates. The combination between the determined land capabilities and climate capabilities result in a land potential of “L6” to “L7”. These land potential levels are associated with “Very Restricted Potential”. This phenomenon indicates a poor suitability for crop production under natural conditions due to climatic conditions as well as the relevant soil parameters.

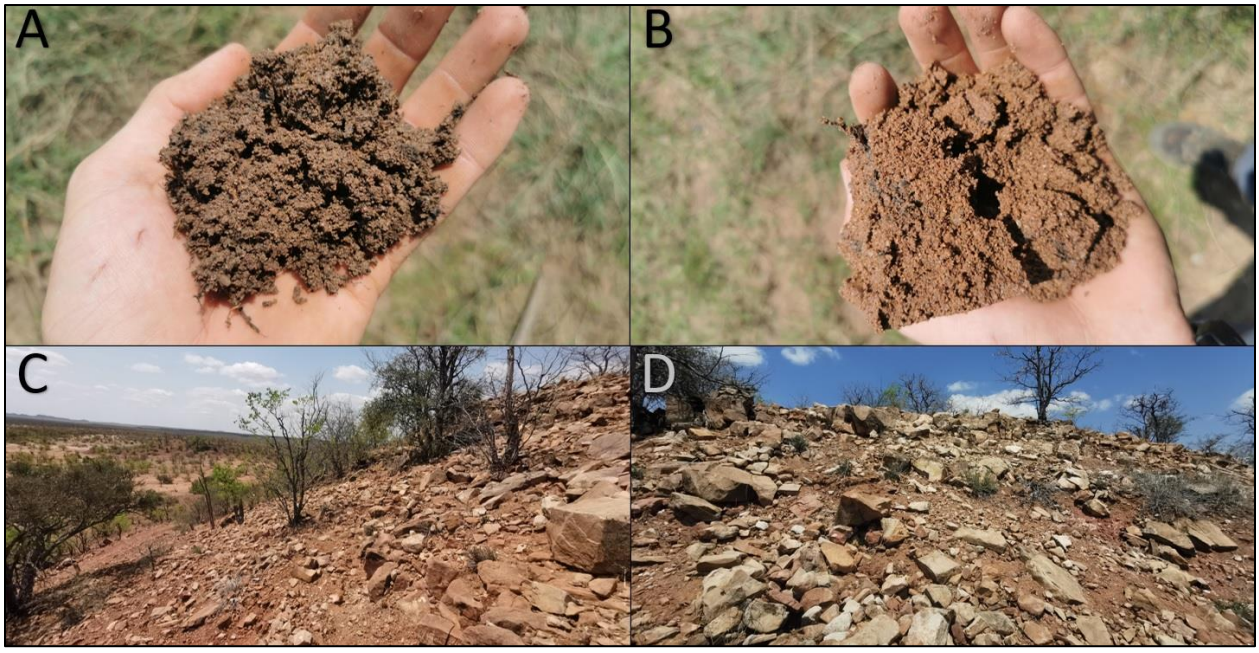


Figure 8-1 Soil horizons identified within the assessment corridor. A and B) Alluvial deposits. C and D) Glenrosa soil form with limited topsoil.

8.2 Erosion Potential of Soils

The erosion potential of the identified soil forms have been calculated by means of the (Russell, 1993) methodology. It is worth noting that the propose development is located within the Glenrosa soil form.

8.2.1 Dundee Soil Form

Table 8-1 illustrates the values relevant to the erosion potential of the Dundee soil form. In some cases, none of the parameters are applicable, in which case the step was skipped.

Table 8-1 Erosion potential calculation of the Dundee soil form

Step 1- Initial value, texture of topsoil horizon				
Light (0-15% clay)		**Medium (15-35% clay)**		**Heavy (>35% clay)**
Fine sand	Medium/coarse sand	Fine Sand	Medium/coarse sand	All sands
3.5	4.0	4.5	5.0	6.0
Step 2- Adjustment value (permeability of subsoil)				
Slightly restricted		Moderately restricted		Heavily restricted
-0.5		-1.0		-2.0
Step 3- Degree of leaching (excluding bottomlands)				
Dystrophic soils, medium and heavy textures		Mesotrophic soils		Eutrophic or calcareous soils, medium and heavy textures
+0.5		0		-0.5
Step 4- Organic Matter				
Organic topsoil			Humic Topsoil	
+0.5			+0.5	
Step 5- Topsoil limitations				
Surface crusting			Excessive sand/high swell-shrink/self-mulching	
-0.5			-0.5	
Step 6- Effective soil depth				
Very shallow (<250 mm)			Shallow (250-500 mm)	
-1.0			-0.5	

The final Fb value for the Dundee soil form is 3.5 due to the fine nature of the sand, the low clay percentage, the dystrophic nature of the soils as well as the excessive amounts of sand in the soil form (predominantly alluvial). Therefore, the Dundee soil form is characterised by a “Moderate” erosion potential class.

8.2.2 Glenrosa

Table 8-2 illustrates the values relevant to the erosion potential of the Glenrosa soil form. In some cases, none of the parameters are applicable, in which case the step was skipped.

Table 8-2 Erosion potential calculation of the Glenrosa soil form

Step 1- Initial value, texture of topsoil horizon				
Light (0-15% clay)		**Medium (15-35% clay)**		**Heavy (>35% clay)**
Fine sand	Medium/coarse sand	Fine Sand	Medium/coarse sand	All sands
3.5	4.0	4.5	5.0	6.0
Step 2- Adjustment value (permeability of subsoil)				
Slightly restricted		Moderately restricted		Heavily restricted
-0.5		-1.0		-2.0
Step 3- Degree of leaching (excluding bottomlands)				
Dystrophic soils, medium and heavy textures		Mesotrophic soils		Eutrophic or calcareous soils, medium and heavy textures
+0.5		0		-0.5
Step 4- Organic Matter				
Organic topsoil			Humic Topsoil	
+0.5			+0.5	
Step 5- Topsoil limitations				
Surface crusting			Excessive sand/high swell-shrink/self-mulching	
-0.5			-0.5	
Step 6- Effective soil depth				
Very shallow (<250 mm)			Shallow (250-500 mm)	
-1.0			-0.5	

The final Fb value for the Glenrosa soil form is 3.0 due to the medium nature of the sand, the low clay percentage, the mesotrophic nature of the soils as well as the shallow depth of the soil form (less than 250 mm). Therefore, the Glenrosa soil form is characterised by a “High” erosion potential class.

8.3 Sensitivity Verification

The following land potential levels have been determined;

- Land potential level 6 (this land potential level is characterised by regular or severe limitations due to soil, slope, temperatures or rainfall. This land potential level has been determined to be non-arable); and
- Land potential level 7 (this land potential level is characterised by severe limitations due to soil, slope, temperatures or rainfall. This land potential level has been determined to be non-arable).

Fifteen land capabilities have been digitised by (DAFF, 2017) across South Africa, of which two sensitivity groups (potentially eight land capabilities) are located within the proposed footprint area’s assessment area, including;

- Land Capability 1 to 5 (Very Low to Low Sensitivity); and
- Land Capability 6 to 8 (Low/Moderate to Moderate Sensitivity).

The baseline findings and the sensitivities as per the Department of Agriculture, Forestry and Fisheries (DAFF, 2017) national raster file concur with one another. It therefore is the specialist's opinion that the land capability and land potential of the resources in the assessment corridor ranges from "Very Low" to "Moderate" (see Figure 8-2), which conforms to the requirements of an agricultural compliance statement only.

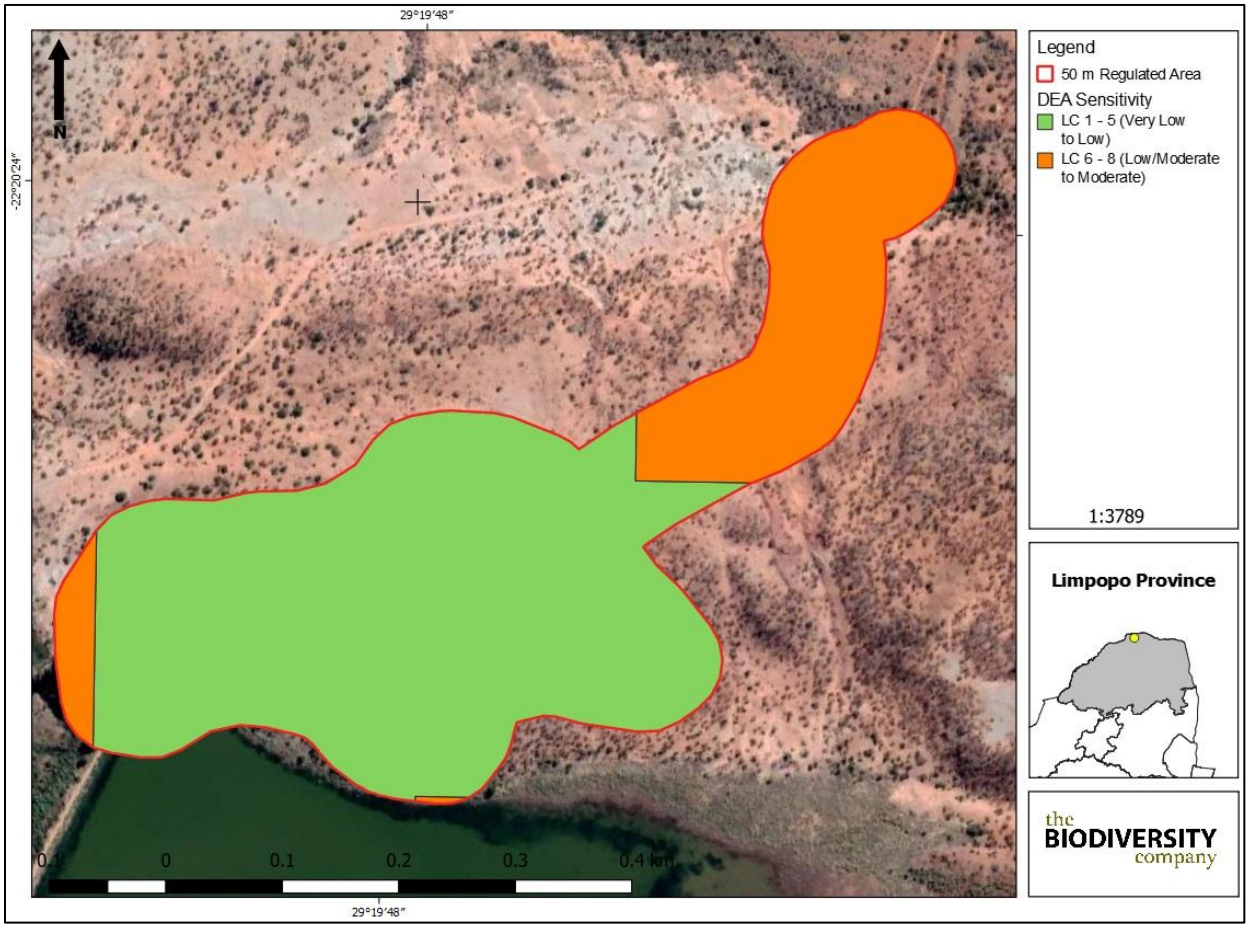


Figure 8-2 Land Capability Sensitivity (DAFF, 2017)

9 Recommendations

9.1 Mitigation

The following general mitigation measures have been prescribed. Even though the land potential and land capability in the area is of low sensitivity, the following measures will ensure the conservation of soil resources;

- Compacted areas are to be ripped to loosen the soil structure where necessary;
- Existing roads must be used as much as possible;
- Erosion mitigation strategies and proper stormwater management must be considered to limit erosion within the development footprint area;
- A rehabilitation strategy focussed on revegetation must be initiated after the construction phase; and
- Prevent any spills from occurring. Machines must be parked within hard park areas or dedicated storage areas and must be checked daily for fluid leaks. Contractors must have spill kits available to address any unlikely spillages.

9.2 Acceptability of Impacts

It is the specialist's opinion that the regulated area is not associated with any arable soils, predominantly due to the poor climate capability and the common occurrence of Glenrosa soil forms. The land capabilities associated with the regulated area are only suitable for grazing and wilderness, which ties in with the current land use. The proposed development will however take place within the Glenrosa soil form which have been calculated a "High" erosion potential. Therefore, erosion control must be carried out throughout the construction and operational phase.

It is the specialist's opinion that the proposed developments will have negligible to no impacts on the agricultural production ability of the land. Therefore, the proposed development may be favourably considered given that no impacts are foreseen and that no fragmentation of arable land is anticipated. The above-mentioned mitigation measures must be considered by the issuing authority.

10 Conclusion

Two soils forms were identified within the regulated area, including the Glenrosa and Dundee soil forms. The land capability sensitivities (DAFF, 2017) indicate land capabilities with “Very Low” to “Moderate” sensitivities, which correlates with the findings from the baseline assessment.

It is the specialist’s opinion that the agricultural production of the area will be negligibly impacted upon by the proposed project and therefore recommends that the proposed activities be favourably considered. The specialist is also of the opinion that no fragmentation of current agricultural activities will take place and that the general condition of the affected soil resources could be restored to a close to natural condition.

10 References

Land Type Survey Staff. 1972 - 2006. Land Types of South Africa: Digital Map (1:250 000 Scale) and Soil Inventory Databases. Pretoria: ARC-Institute for Soil, Climate, and Water.

Mucina, L., & Rutherford, M. C. 2006. The Vegetation of South Africa, Lesotho, and Swaziland. Strelitzia 19. Pretoria: National Biodiversity Institute.

Russell

SASA, S. A. 1999. Identification & management of the SOILS of the South African sugar industry. Mount Edgecombe: South African Sugar Association Experiment Station.

Smith, B. 2006. The Farming Handbook. Netherlands & South Africa: University of KwaZulu-Natal Press & CTA.

Soil Classification Working Group. 1991. Soil Classification A Taxonomic system for South Africa. Pretoria: The Department of Agricultural Development.

Soil Classification Working Group. 2018. Soil Classification A Taxonomic system for South Africa. Pretoria: The Department of Agricultural Development.

Appendix A- Specialist CV

Masters in Environmental Science and Hydropedology

Cell: +27 79 898 4056

Email: ivan@thebiodiversitycompany.com

Identity Number: 9401105251087

Date of birth: 10 January 1994

Profile Summary

Working experience throughout Southern Africa

Working experience in West-Africa

Specialist experience with mining, construction and agriculture.

Specialist expertise include hydropedology, pedology, land contamination, agricultural potential, land rehabilitation, rehabilitation management and wetlands resources.

Experience hydropedological modelling (HYDRUS model)

Areas of Interest

Mining, Oil & Gas, Renewable Energy & Bulk Services Infrastructure Development, Farming, Land contamination, Sustainability and Conservation.

Key Experience

- Environmental Impact Assessments (EIA)
- Environmental Management Programmes (EMP)
- Wetland delineations and ecological assessments
- Rehabilitation Plans and Monitoring
- Soil-and rock classification
- Level 1, 2 and 3 hydropedology assessments
- Agriculture potential assessments
- Land contamination assessments
- Modulation of surface- and subsurface flows (HYDRUS model)

Countries worked in

South Africa, Mozambique, Swaziland, Zimbabwe, Guinea

Nationality

South African

Languages

English – Proficient

Afrikaans – Proficient

Qualifications

- MSc (North-West University of Potchefstroom) – Hydropedology
- BSc Honours (North-West University of Potchefstroom) – Environmental geology-Pedology and rehabilitation
- BSc Environmental sciences
- Pr Sci Nat candidateship

SELECTED PROJECT EXPERIENCE

Project Name: Environmental impact assessment for the construction of Road DR08606 leading to Mlamli Hospital, Sterkspruit

Personal position / role on project: Wetland ecologist

Location: Sterkspruit, Eastern Cape Province, South Africa

Main project features: To conduct a wetland assessment, as a component of the environmental authorisation process and Water Use Licence Application (WULA) for the construction of Road DR08606 leading to Mlamli Hospital

Project Name: Biodiversity Baseline & Impact Assessment Report for the proposed Nondvo Dam Project

Personal position / role on project: Wetland ecologist

Location: Mbabane, Swaziland

Main project features: To conduct various assessments according to IFC standards in regard to delineation of wetlands and assessing ecosystem services.

Project Name: Agricultural Potential Assessment - Proposed Kalabasfontein Coal Mining Project Extension

Personal position / role on project: Project Manager and Soil Specialist.

Location: Bethal, Mpumalanga, South Africa

Main project features: To conduct a soil assessment to identify any sensitive resources that might be affected by the proposed mining activities and associated infrastructure as part of an environmental impact assessment.

Project Name: Soil assessment for the closure of the St Helena Shaft, Harmony

Personal position / role on project: Soil specialist

Location: Welkom, Free State, South Africa

Main project features: To conduct a thorough soil and fertility assessment to recommend relevant mitigation and rehabilitation measures to finalise closure at the relevant mine

Project Name: Wetland Functionality Assessment for the Environmental, Health and Socio-Economic Baseline Studies for Block 2 at Siguiri Gold Mine

Personal position / role on project: Wetland ecologist

Location: Siguiri, Guinea, West-Africa

Main project features: To conduct various assessments according to IUCN standards in regard to delineation of wetlands and assessing ecosystem services.

Project Name: Level 3 Hydropedological Assessment for the Sara Buffels Mining Project

Personal position / role on project: Hydropedologist

Location: Ermelo, Mpumalanga, South-Africa

Main project features: To conduct various assessments to determine the hillslope hydrology and to acquire information relevant to the vadose zone's hydraulic properties to quantify sub-surface flows by means of modelling.

Project Name: Level 3 Hydropedological Assessment for the Buffalo Coal Mining Project

Personal position / role on project: Hydropedologist

Location: Dundee, KwaZulu-Natal, South-Africa

Main project features: To conduct various assessments to determine the hillslope hydrology and to acquire information relevant to the vadose zone's hydraulic properties to quantify sub-surface flows by means of modelling

Project Name: Biodiversity Baseline & Impact Assessment for the proposed Tetereane 15MW Solar PV Plant

Personal position / role on project: Ecosystem Services Specialist

Location: Cuamba, Mozambique, Southern-Africa

Main project features: To conduct various assessments according to IUCN standards in regard to ecosystem services

Project Name: Land contamination assessment for the proposed Fleurhof Development

Personal position / role on project: Soil Specialist

Location: Fleurhof, South Africa

Main project features: To conduct assessments relevant to the determination of land contamination, including recommendations, mitigations and risk assessments.

OVERVIEW

An overview of the specialist technical expertise include the following:

- Ecological wetland assessment studies, including the integrity (health) and functioning of the wetland systems.
- Wetland offset strategy designs.
- Wetland rehabilitation plans.
- Monitoring plans for wetland systems.
- Soil classification and agricultural assessments.
- Stripping and stockpiling guidelines.
- Soil rehabilitation plans.
- Soil and stockpile monitoring plans.
- Hydropedological assessments.

TRAINING

Some of the more pertinent training undergone includes the following:

- Tools for a Wetland Assessment (Certificate of Competence) – Rhodes University 2018; and
- Workshop on digital soil mapping.

EMPLOYMENT EXPERIENCE

Internship at SRK consulting (January 2017-August 2017)

- **Field assistant** for SRK consulting during 2017 included the sampling of surface and groundwater as well as on site tests, the accumulation of various different data sets from field loggers, presenting and arranging the relevant data and ultimately using it for my own personal post-graduate studies.

Internship at The Biodiversity Company (August 2017-December 2017)

Employed as an intern (wetland and soil scientist) during the last few months of 2017. During this period, I was part of a variety of soil- and wetland projects, both as report writer and/or field assistant.

CURRENT EMPLOYMENT: The Biodiversity Company (January 2018 – Present)

- **Scientific report writing** to ensure that the relevant standards and requirements have been attained, namely local country legislation, as well as WB, EP and IFC requirements.

ACADEMIC QUALIFICATIONS

North-West University of Potchefstroom: MAGISTER SCIENTIAE (MSc) - Hydropedology:

Title: *Characterisation of vadose zone processes in a tailings facility*

North-West University of Potchefstroom (2016): BACCALAUREUS SCIENTIAE HONORIBUS (Hons) – Environmental Geology- Pedology and rehabilitation

North-West University of Potchefstroom (2015): BACCALAUREUS SCIENTIAE IN NATURAL AND ENVIRONMENTAL SCIENCES. Majors: Geology and Geography