AGRICULTURAL COMPLIANCE STATEMENT FOR THE PROPOSED EXPANSION OF THE SPORTS AND RECREATIONAL FACILITIES AT THE COUNTRY CLUB JOHANNESBURG

Woodmead, Gauteng Province

February 2022

Client

Prepared by:

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Report Name	**AGRICULTURAL COMPLIANCE STATEMENT FOR THE PROPOSED EXPANSION OF THE SPORTS AND RECREATIONAL FACILITIES AT THE COUNTRY CLUB JOHANNESBURG**
Reference	**CCJ Sports and Recreational Facility**
Submitted to	savannah 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	**Michael Douglas**  Michael Douglas is a soil scientist with experience in soil classification. Michael completed his BSc Honours in environmental science and geological science at the North-West University of Potchefstroom. Michael has been part of various agricultural potential, land capability and pedology studies as part of Environmental Impact Assessments and Basic Assessments.
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.

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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 5.2
Acceptability of impacts towards agricultural production capability associated with proposed activities	Section 6
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 5.2
Confirmation from specialist that mitigation to avoid fragmentation has been considered	Section 6
Statement from specialist regarding the acceptability and approval of proposed activities	Section 6
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	N/A
Assumptions and uncertainties	Section 3.4

DECLARATION

I, **Michael Douglas** 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.

Michael Douglas

Soil Specialist

The Biodiversity Company

February 2022

1 Introduction

The Country Club Johannesburg (hereafter referred to as 'CCJ') is proposing to expand their sports and recreational facilities on Portion 433 of the Farm Rietfontein IR 2, located in Woodmead, Johannesburg, within jurisdiction of the City of Johannesburg Metropolitan Municipality in the Gauteng Province. This will entail the construction of additional tennis courts and new padel courts; upgrading the existing building at the facility to include a gym, changerooms and squash courts; expanding the parking area; and upgrading the restaurant and bar to provide a modern, multi-sport and family facility for members of the Country Club Johannesburg.

A development footprint of up ~1.3ha has been identified by CCJ for the expansion of the sports and recreational facilities.

The Biodiversity Company was appointed to conduct a pedological assessment for the proposed expansion of the sports and recreational facilities at CCJ.

The approach adopted for the assessment 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 the details of the soil resources identified within the 50 m regulated area, the agricultural and land potential of these soil resources, the land uses within the 50 m regulated area and the risk associated with the proposed expansion activities on these soils resources.

1.1 Scope of Work

According to the National Web based Environmental Screening Tool, the proposed development is located within a "Moderate" sensitivity land capability area. The protocols for minimum requirements (DEA, 2020)[1] 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 area, 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;

[1] A site identified by the screening tool as being of 'High" or "Very High" sensitivity for agricultural resources must submit a specialist assessment unless the impact on agricultural resources is from an electricity pylon (item 1.1.2).

- 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.

1.2 Expertise of the Specialists

1.2.1 Andrew Husted

Mr. Andrew Husted is an aquatic ecologist, specializing in freshwater systems and wetlands, who graduated with a MSc in Zoology. He is Pri Sci Nat registered (400213/11) in the following fields of practice: Ecological Science, Environmental Science and Aquatic Science.

1.2.2 Michael Douglas

Michael Douglas is a soil scientist with experience in soil classification. Michael completed his BSc Honours in environmental science and geological science at the North-West University of Potchefstroom. Michael has been part of various agricultural potential, land capability and pedology studies as part of Environmental Impact Assessments and Basic Assessments.

2 Project Area

The project area is located in Johannesburg, within the Woodmead suburb, approximately 7 km North of Sandton (see Figure 2-1). This area is in the Gauteng province. The surrounding land uses include a golf course, residential and commercial areas (see Figure 2-2).

Figure 2-1 Project area map

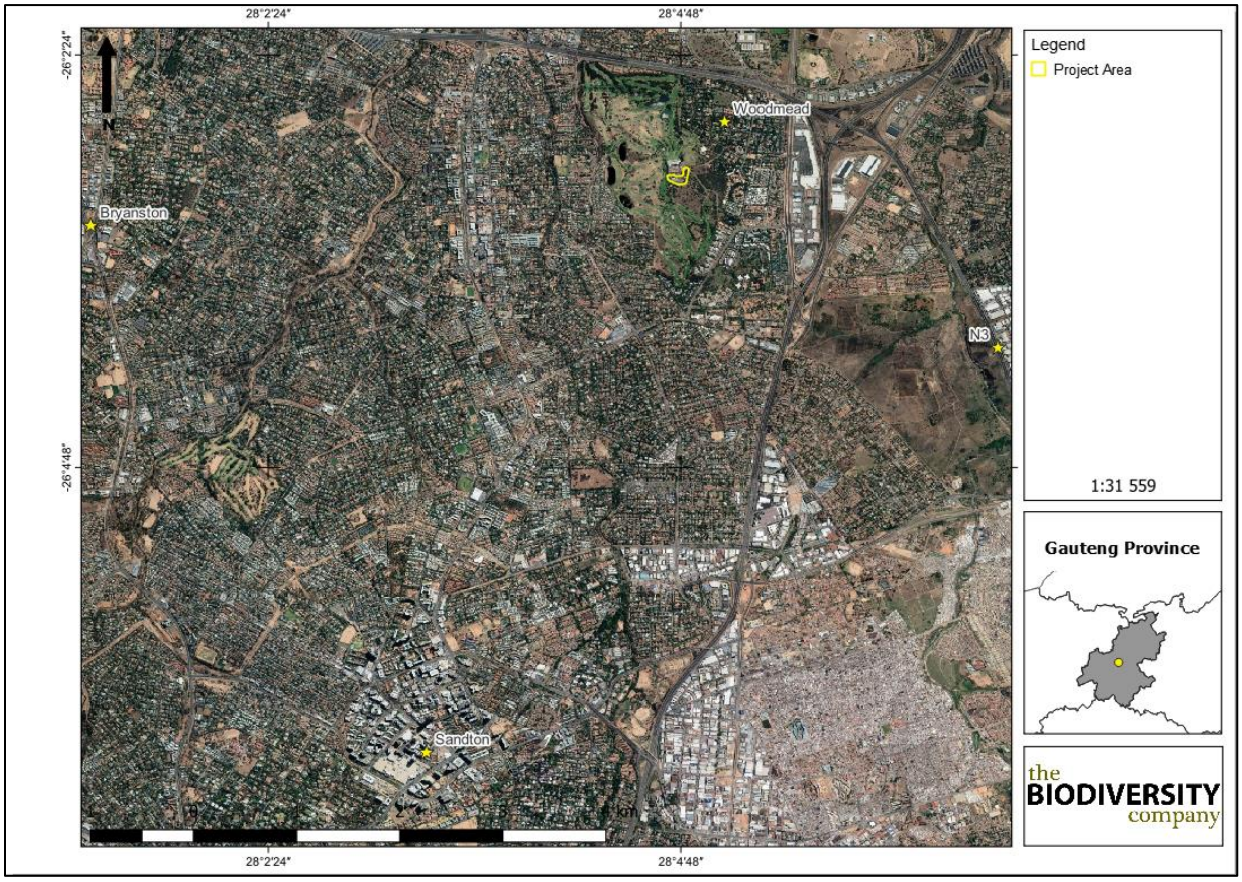

Figure 2-2 Locality map of the project area

3 Methodology

3.1 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.

3.2 Climate Capability

According to Smith (2006), climatic capability is determined by taking into consideration various steps pertaining to the temperature, rainfall and Class A-pan of a region. The first step in this methodology is to determine the Mean Annual Precipitation (MAP) to Class A-pan ratio.

Table 3-1 Climatic capability (step 1) (Smith, 2006)

Climatic Capability Class	Limitation Rating	Description	MAP: Class A-pan Class
C1	None to Slight	Local climate is favourable for good yields for a wide range of adapted crops throughout the year.	0.75-1.00

C2	Slight	Local climate is favourable for a wide range of adapted crops and a year-round growing season. Moisture stress and lower temperature increase risk and decrease yields relative to C1.	0.50-0.75
C3	Slight to Moderate	Slightly restricted growing season due to the occurrence of low temperatures and frost. Good yield potential for a moderate range of adapted crops.	0.47-0.50
C4	Moderate	Moderately restricted growing season due to the occurrence of low temperatures and severe frost. Good yield potential for a moderate range of adapted crops but planting date options more limited than C3.	0.44-0.47
C5	Moderate to Severe	Moderately restricted growing season due to low temperatures, frost and/or moisture stress. Suitable crops at risk of some yield loss.	0.41-0.44
C6	Severe	Moderately restricted growing season due to low temperatures, frost and/or moisture stress. Limited suitable crops that frequently experience yield loss.	0.38-0.41
C7	Severe to Very Severe	Severely restricted choice of crops due to heat and moisture stress.	0.34-0.38
C8	Very Severe	Very severely restricted choice of crops due to heat and moisture stress. Suitable crops at high risk of yield loss.	0.30-0.34

In the event that the MAP: Class A-pan ratio is calculated to fall within the C7 or C8 class, no further steps are required, and the climatic capability can therefore be determined to be C7 or C8. In cases where the above-mentioned ratio falls within C1-C6, steps 2 to 3 will be required to further refine the climatic capability.

Step 2

Mean September temperatures;

- <10℃ = C6;
- 10 - 11℃ = C5;
- 11 - 12℃ = C4;
- 12 - 13℃ = C3; and
- >13℃ = C1.

Step 3

Mean June temperatures;

- <9℃ = C5;
- 9 - 10℃ = C4;
- 10 - 11℃ = C3; and
- 11 - 12℃ = C2.

3.3 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 3-2 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 3-2 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 3-3. The final land potential results are then described in Table 3-4.

Table 3-3 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 3-4 The Land Potential Classes.

Land potential	Description of land potential class
L1	Very high potential: No limitations. Appropriate contour protection must be implemented and inspected.
L2	High 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

3.4 Limitations

The following limitations are relevant to this agricultural potential assessment;

- The handheld GPS used could potentially have inaccuracies up to 5 m. Any and all delineations therefore could be inaccurate within 5 m.

4 Project Area

4.1 Climate

The project area is characterised by seasonal summer rainfall with very dry winters. According to Mucina & Rutherford (2006), the mean annual precipitation (MAP) is about 620 to 800 mm. There are frequent incidences of frost occuring, more often in the south than in the north (see Figure 4-1.

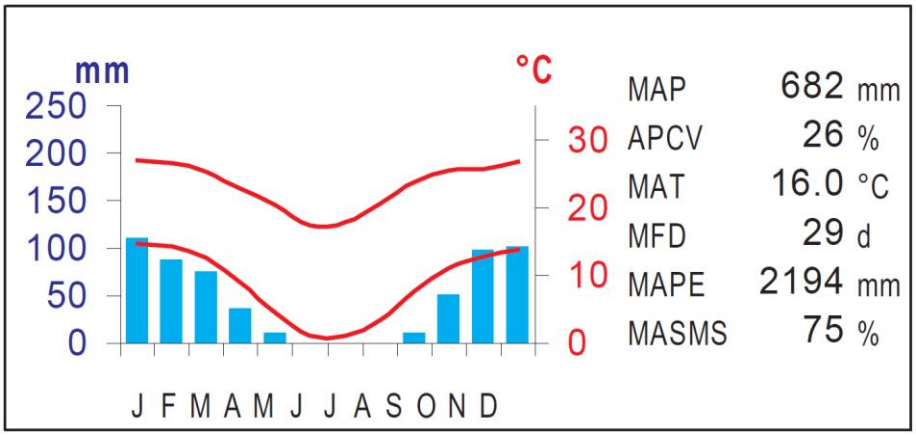

Figure 4-1 Climate diagram for the region, (Mucina & Rutherford, 2006).

4.2 Soils and Geology

According to the land type database (Land Type Survey Staff, 1972 - 2006), the project area is characterised by the Bb1 land type which is illustrated in Figure 4-2. The Bb land type consists of plinthic catena. Upland duplex and margalitic soils are rare and dystrophic and/or mesotrophic red soils are not widespread (Mucina & Rutherford, 2006). Many Glenrosa soil forms tend to dominate these areas.

Figure 4-2 The land types associated with the project area

The Bb1 land type terrain unit is illustrated in Figure 4-3. The various soil forms that are expected throughout this land type's terrain units are shown in Table 4-1.

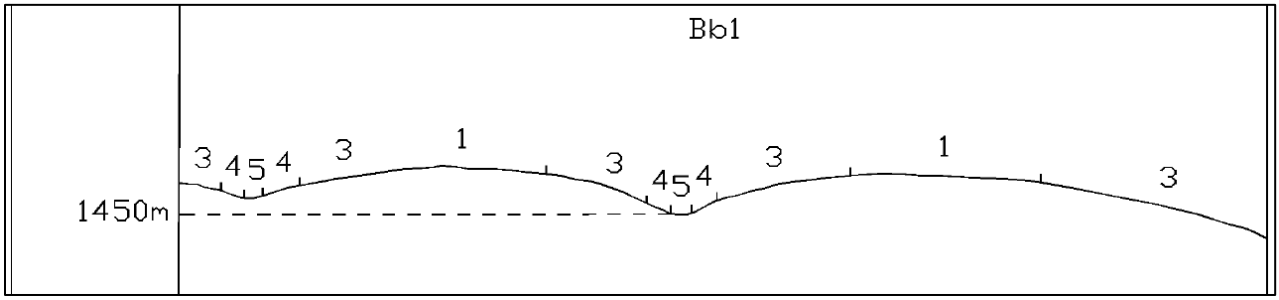

Figure 4-3 Illustration of the Bb1 land type terrain units (Land Type Survey Staff, 1972 - 2006)

Table 4-1 Soils expected at the respective terrain units within the Bb1 land type (Land Type Survey Staff, 1972 - 2006)

Terrain Units							
1 (40%)		**3 (55%)**		**4 (3%)**		**5 (2%)**	
Hutton	35%	Wasbank	25%	Longlands	40%	Kroonstad	50%
Avalon	35%	Avalon	20%	Wasbank	30%	Dundee	30%
Glenrosa	20%	Glenrosa	15%	Westleigh	20%	Westleigh	20%
Wasbank	10%	Hutton	10%	Kroonstad	10%		
Mispah	5%	Mispah	10%				
Glencoe	5%	Longlands	10%				
		Glencoe	5%				

This region is characterised by Archaean granites of the Halfway House and gneiss, which is located at the core of the Johannesburg Dome. These geological features support shallow, leached, coarsely grained, sandy soils that are nutrient poor and are commonly associated with the Glenrosa soil form. A small area within this region is characterised by ultramafic geology, which supports Ba and Bb land types, (Mucina & Rutherford, 2006).

4.3 Terrain

The slope percentage of the project area has been calculated and is illustrated in Figure 4-4. The majority of the regulated area is characterised by a slope percentage between 6% and 8%. A smaller part of the regulated area is characterised by a slope percentage between 2% and 6%, with some smaller patches within the project area characterised by a slope percentage up to 16%. This illustration indicates a non-uniform topography with gentle to steep slopes being present. The Digital Elevation Model (DEM) of the project area (Figure 4-5) indicates an elevation of 1 503 to 1 525 Metres Above Sea Level (MASL).

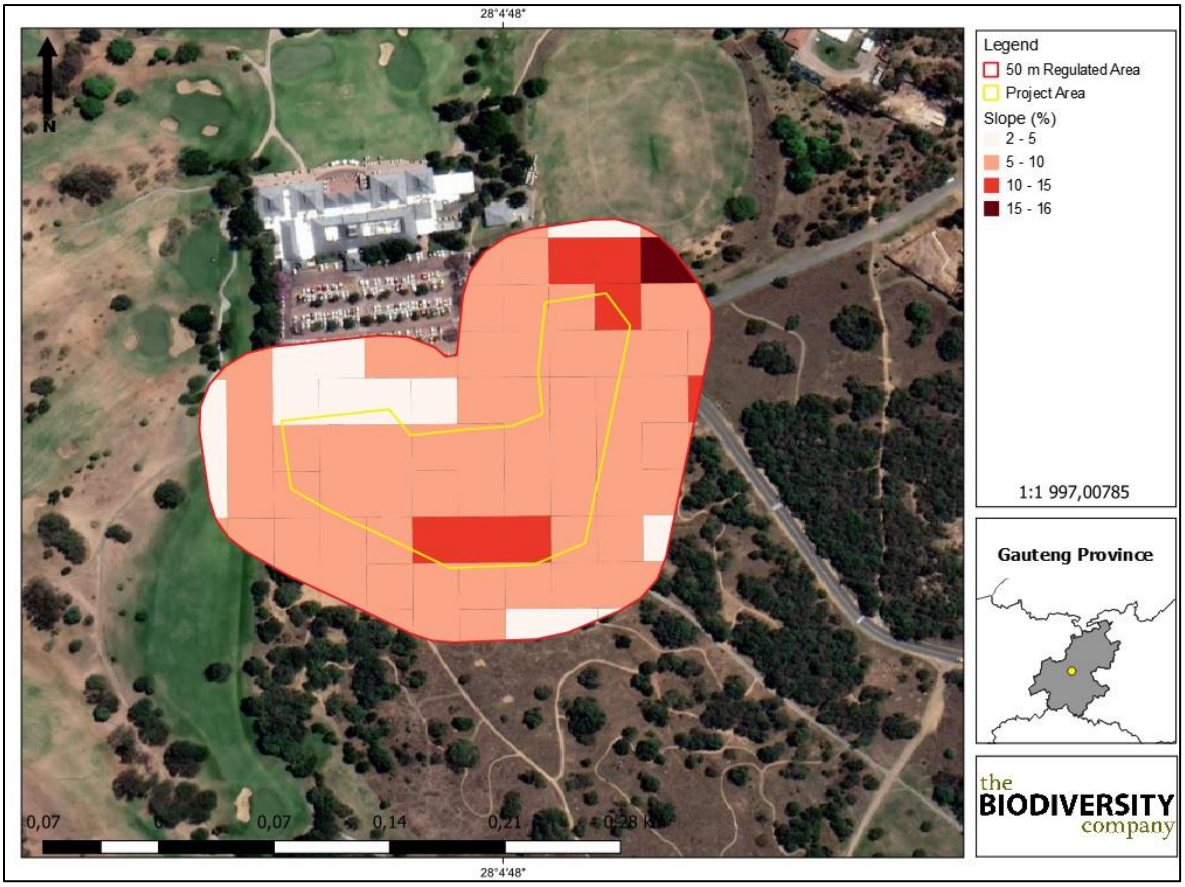

Figure 4-4 Slope percentage map for the regulated area

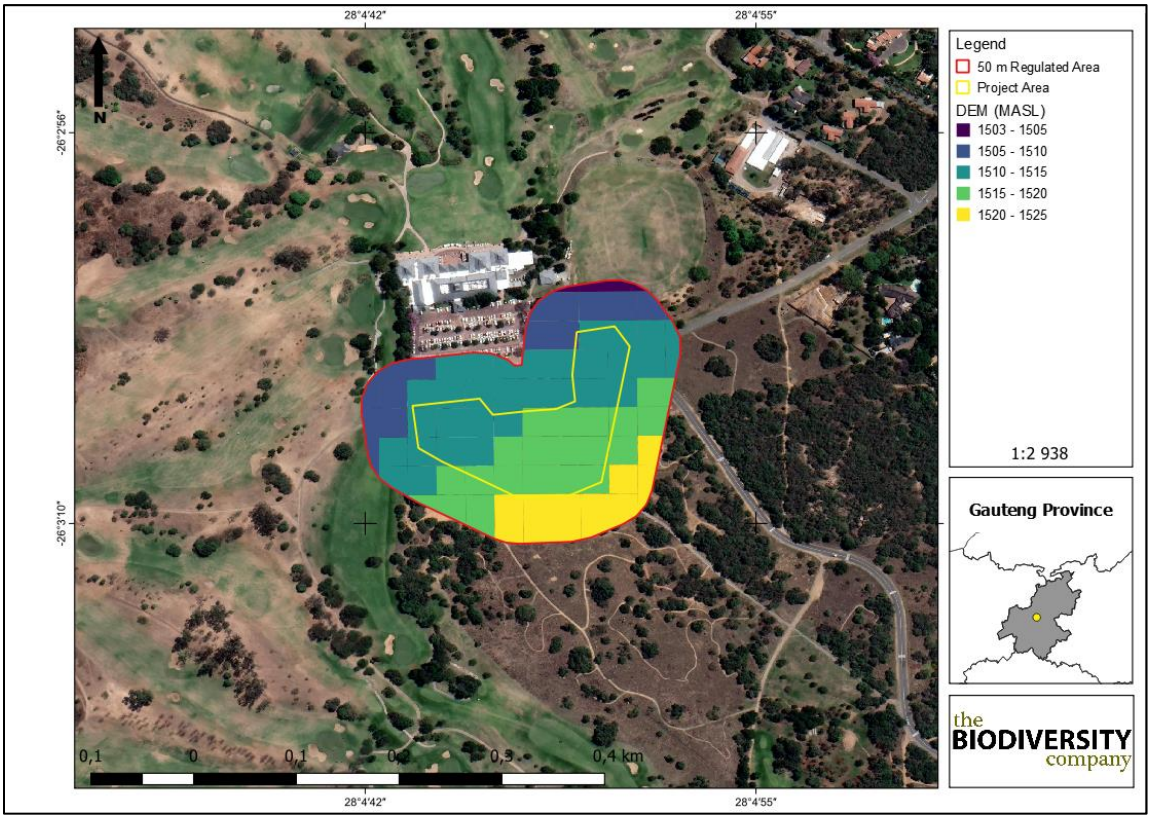

Figure 4-5 Digital Elevation Model of the regulated area (metres above sea level)

5 Results and Discussion

5.1 Baseline Findings

Two soil forms were identified within the 50 m regulated area, namely, Glenrosa and Avalon (see Figure 5-1). Of these soil forms, the Avalon soil form is most sensitive.

Figure 5-1 Soil forms delineated within the 50 m regulated area

The land capability of the Avalon soil has been determined to be class “II” and the land capability of the Glenrosa soil has been determined to a be class “VI”. The climate capability level is 8 given the low Mean Annual Precipitation and the high evaporation rates. The combination between the determined land capabilities and climate capabilities results in a land potential of “L5” and “L7”.

According to Smith (2006), the “L5” land potential is regarded to have restricted potential. It has regular and/or moderate to severe limitations due to soil, slope, temperatures or rainfall. Finally, Smith (2006) explains that the “L7” land potential is regarded to have low potential. It has severe limitations due to soil, slope, temperatures, or rainfall and is non-arable.

5.2 Sensitivity Verification

The following land potential level has been determined;

- Land potential 5 (this land potential level is characterised by restricted potential: Regular and/or severe to moderate limitations due to soil, slope, temperatures or rainfall); and

- Land potential 7 (this land potential level is characterised by low potential. Severe limitations due to soil, slope, temperatures or rainfall. Non-arable).

Fifteen land capabilities have been digitised by (DAFF, 2017) across South Africa, of which three potential land capability classes are located within the proposed development area's assessment corridor, namely land capability 6 to 8 (ranging from moderately low to moderate) (see Figure 5-2). The baseline findings and the sensitivities as per the Department of Agriculture, Forestry and Fisheries (DAFF, 2017) national raster concur with one another.

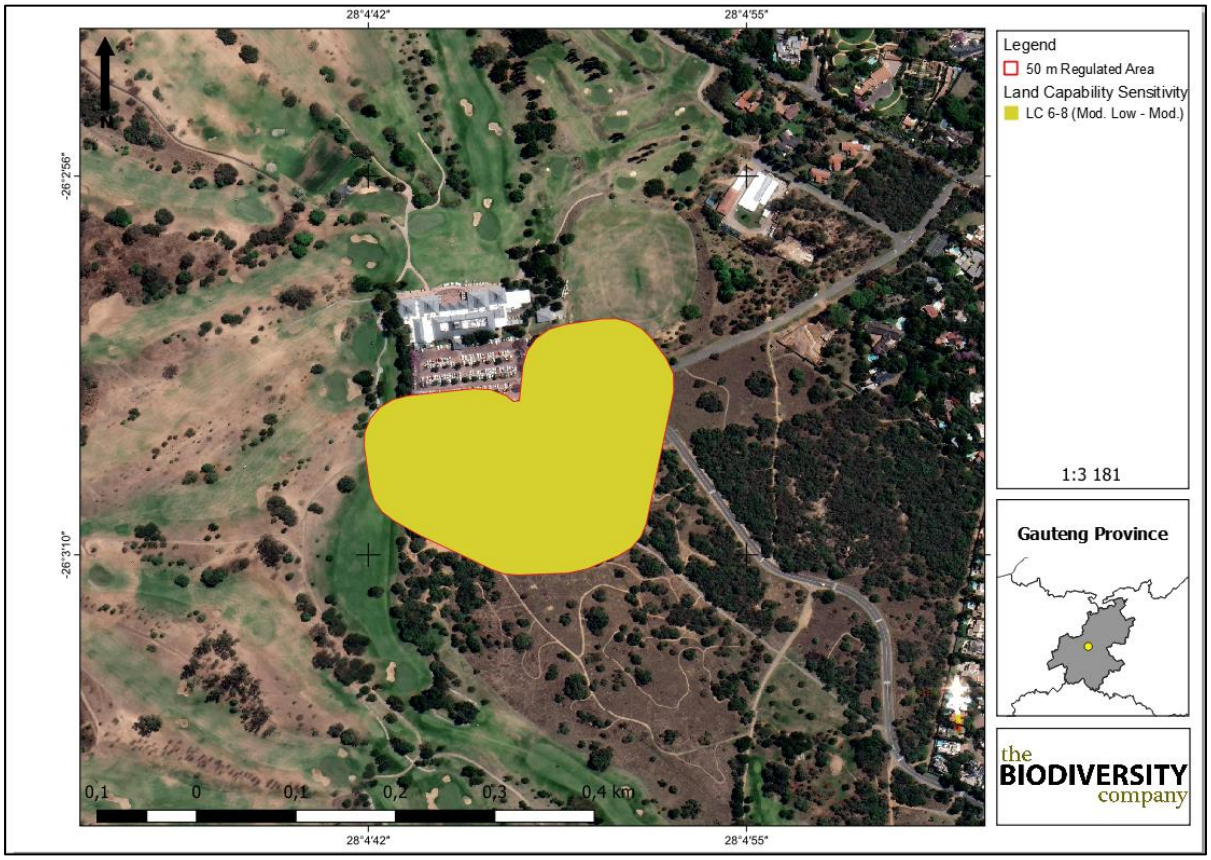

Figure 5-2 Land Capability Sensitivity (DAFF, 2017)

6 Conclusion

Two soil forms were identified within the 50 m regulated area, namely, Avalon and Glenrosa. The most sensitive of these soil forms, i.e., the Avalon soil form, which has been rated to be of 'Moderate' land capability sensitivity according to the DAFF national raster (2017), is characterised by a land potential of L5 as a result of the poor climatic conditions. According to the DAFF national raster (2017), land capability sensitivities within the development area, including the 50 m regulated area, are rated to be "Moderately low to Moderate", which correlates with the findings of the baseline assessment.

Considering the nature of the proposed activities and the low sensitivity of the soil resources identified within the 50 m regulated area, it is the specialist's opinion that no concernable loss of land capability is expected and that no segregation of high production agricultural land will occur. Therefore, it is recommended that the proposed activities proceed as have been planned.

7 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.

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