



Agricultural Compliance Statement for the proposed Kotulo Tsatsi PV3 Project

Kenhardt, Northern Cape

December 2020 (Updated March 2023)

Client

savannah
environmental

Prepared by:

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Report Name	Agricultural Compliance Statement for the proposed Kotulo Tsatsi PV3 Project
Reference	PV3_Kotulo
Submitted to	
Report Reviewer	<p>Andrew Husted </p> <p>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 13 years' experience in the environmental consulting field.</p>
Report Reviewer	<p>Matthew Mamera </p> <p>Matthew Mamera is a Cand. Sci Nat registered (116356) in natural and agricultural sciences recognized in soil science. Matthew is a soil and hydropedology specialist with experience in soil, pedology, hydropedology, water and sanitation management and land contamination and has field experience and numerous peer reviewed scientific publications in international journals. He is a holder of a PhD in Soil Science, Soil hydropedology, water and sanitation management obtained at the University of the Free State, Bloemfontein Matthew completed his M.Sc. in Soil Science, Soil hydropedology and water management at the University of Fort Hare, Alice. Matthew is also a member of the Soil Science Society of South Africa (SSSSA).</p>
Report Writer and Fieldwork	<p>Ivan Baker </p> <p>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.</p>
Declaration	<p>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.</p>

Table of Contents

1. Introduction	1
1.1 Project	1
1.2 Background.....	2
1.3 Scope of Work	2
1.4 Limitations	3
2. Project Area	3
3. Expertise of the Specialists	6
3.1 Andrew Husted	6
3.2 Matthew Mamera	6
3.3 Ivan Baker	6
4. Methodology	6
4.1 Desktop Assessment	6
4.2 Baseline Findings	6
5. Project Area	7
5.1 Soils and Geology.....	7
5.2 Terrain	8
6. Results and Discussion.....	11
6.1 Sensitivity Verification	11
7. Impact Statement.....	13
8. Recommendations	13
8.1 Mitigation	13
9. Conclusion.....	13
10. References	14
11. Appendix A- Specialist CV	15

Figures

Figure 2-1 Locality map of the project area	4
Figure 2-2 Kotulo Tsatsi Solar PV3 layout.....	5
Figure 5-1 Land type present within the assessment corridor boundaries	7
Figure 5-2 Illustration of land type Fc 137 terrain unit (Land Type Survey Staff, 1972 - 2006)	8
Figure 5-3 Slope percentage map for the assessment corridor	9
Figure 5-4 Digital Elevation Model of the assessment corridor (metres above sea level) 10	

Figure 6-1 Land Capability Sensitivity (DAFF, 2017)..... 12

Tables

Table 5-1 Soils expected at the respective terrain units within the Fc 137 land type (Land Type Survey Staff, 1972 - 2006) 8

Document Guide

Kotulo Tsatsi PV3 Project

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 3
Sensitivity verification	Section 9.1
Acceptability of impacts towards agricultural production capability associated with proposed activities	Section 10
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 9.1
Confirmation from specialist that mitigation to avoid fragmentation has been considered	Section 10
Statement from specialist regarding the acceptability and approval of proposed activities	Section 10
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 11
Assumptions and uncertainties	Section 5

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

December 2020

1. Introduction

1.1 Project

Kotulo Tsatsi Energy (Pty) Ltd, is proposing the construction of a photovoltaic (PV) solar energy facility (known as the Kotulo Tsatsi Energy PV3) The solar energy facility will comprise several arrays of PV panels and associated infrastructure and will have a contracted capacity of up to 480MW. The facility will be located within the farm Portion 2 of Farm Styns Vley 280. The PV facility is planned to be located within an area previously authorised for CSP project infrastructure, which is adjacent to the authorised Kotulo Tsatsi Energy PV1 and PV2 Facilities as well as the authorised CSP3 facility and associated infrastructure.

A development area¹ of ~ 1840 ha was defined through the Scoping evaluation of the site and has now been assessed for the facility footprint. The development footprint 2 has an extent of ~1200 ha.

Infrastructure associated with the solar PV facility contracted capacity of up to 480MW will include the following (see Figure 2-2):

- Solar PV array comprising PV modules and mounting structures.
- Inverters and transformers.
- Cabling between the project components.
 - BESS, O&M and laydown area hubs, including: • Battery Energy Storage System (BESS).
 - Site offices and maintenance buildings, including workshop areas for maintenance and storage.
 - Laydown areas and temporary construction camp area.
- Access roads, internal distribution roads and fencing around the development area.
- On-site facility substations, switching substations and 132kV power line to facilitate the connection between the PV Facility and the authorised 400kV collector substation.

The Biodiversity Company was appointed to compile and Agricultural Compliance Statement for the proposed Kotulo Tsatsi Energy PV3 project.

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 the findings of this compliance statement by considering the assessment completed by Hydropedological Solutions in 2014 for the exact same project area. Given the fact that the associated soil forms, their erosion potential, erosion potential and climate potential were summarised within this report, it has been deemed adequate to make use of these findings to supplement the requirements of the Agricultural Compliance Statement.

1.2 Background

The following findings were presented by Hydropedological Solutions (2014);

- Soil forms identified include Augrabies, Clovelly, Mispah, Bare Rock and Prieska;
- The agricultural potential for the identified soils were determined to all be “Very Low”;
- The climate potential was determined to be very low; and
- The final impact statement concluded the following;
 - *The arid climate of the study area coupled with shallow soils limits the agricultural potential to low intensity grazing. The impact of the proposed development of CSP2 (in this case PV3) on agricultural resources is therefore considered to be small.*

Therefore, considering all these findings, it has been deemed feasible to use these findings as the baseline findings for this assessment.

1.3 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)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 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.

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).

1.4 Limitations

The following limitations are relevant to this agricultural potential assessment;

- A report has been provided pertaining to the 2014 Hydropedological Solutions assessment. However, no supporting shapefiles were provided. Due to this, soil delineations could be superimposed into a map for this report; and
- No site visit was completed considering the adequate findings of the Hydropedological Solutions (2014) report.

2. Project Area

The project area is located approximately 16 km west of the R27, approximately 120 km south of Kakamas, 130 km south-west of Keimoes and 170 km south-west of Upington within the Northern Cape Province. It is also found on a site located approximately 70km south-west of the town of Kenhardt and 60km northeast of Brandvlei. The project site falls under the Hantam Local Municipality which is part of Namakwa District Municipality. The surrounding land uses include farming (predominantly grazing), open veld and watercourses (mainly drainage features) (see Figure 2-1).

Kotulo Tsatsi PV3 Project

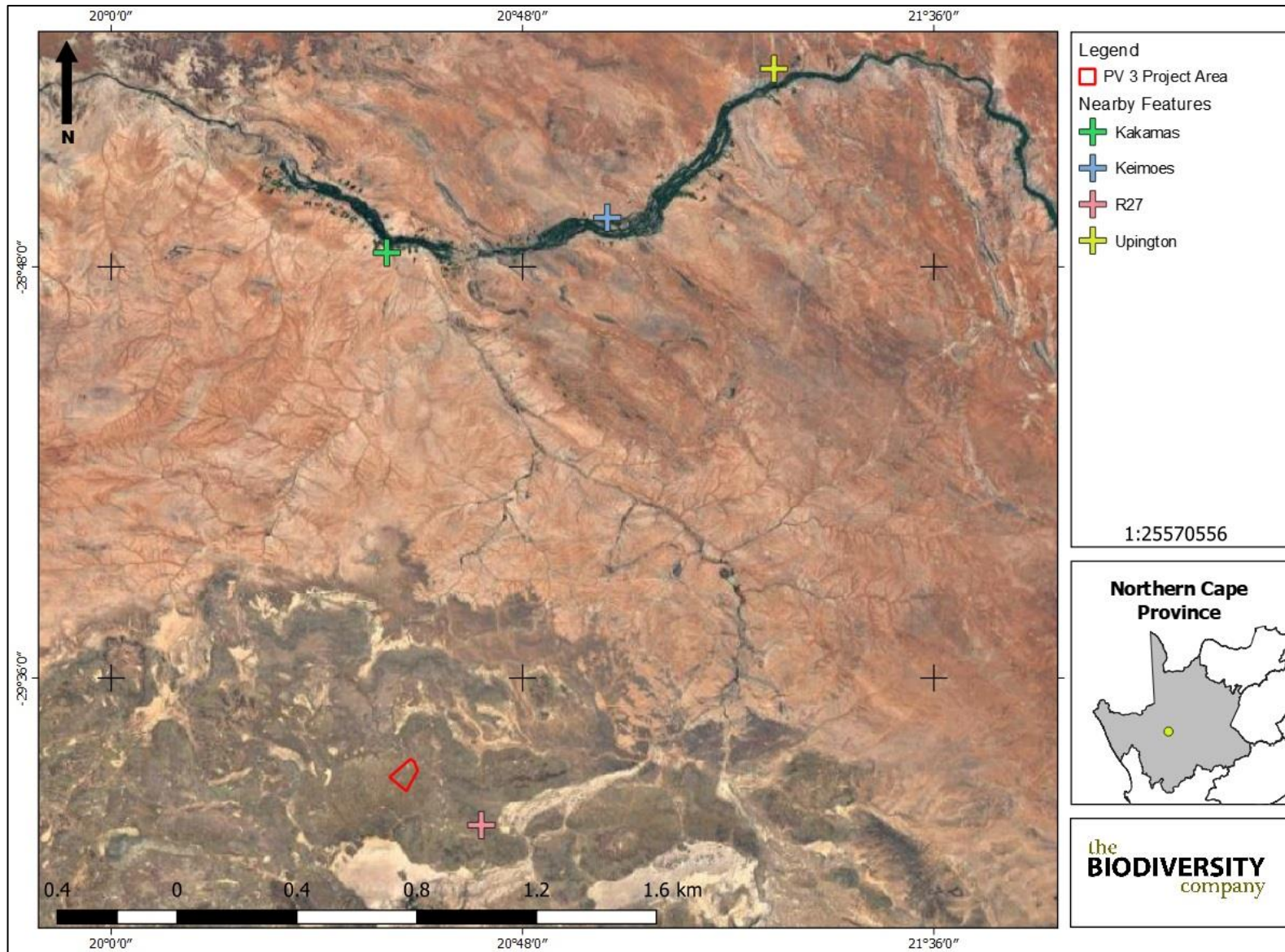


Figure 2-1 Locality map of the project area

Kotulo Tsatsi PV3 Project

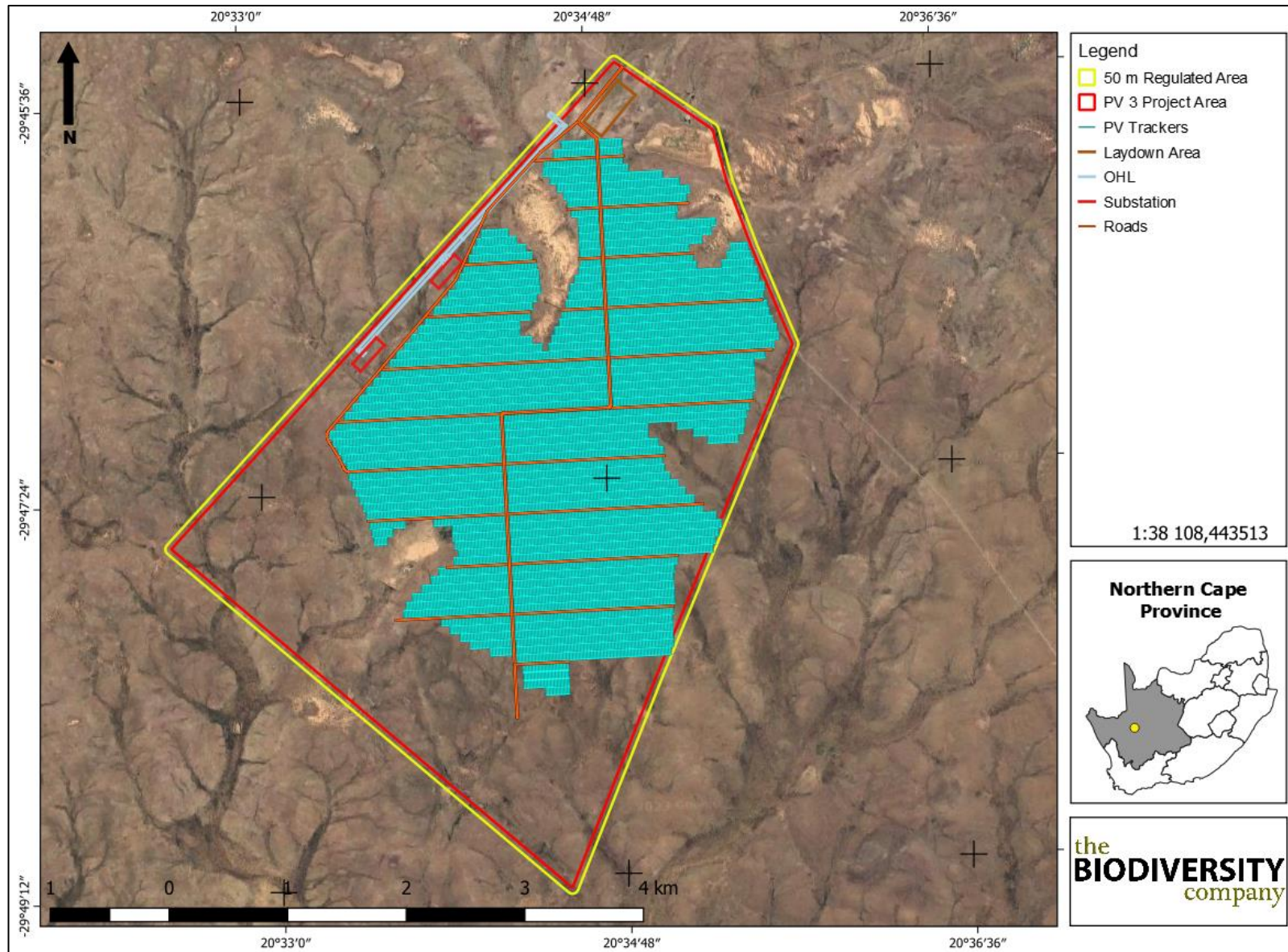


Figure 2-2 Kotulo Tsatsi Solar PV3 layout

3. Expertise of the Specialists

3.1 Andrew Husted

Mr. Andrew Husted is an aquatic ecologist, specializing in freshwater systems and wetlands, who graduated with a MSc in Zoology. He is Pr Sci Nat registered (400213/11) in the following fields of practice: Ecological Science, Environmental Science and Aquatic Science. Mr Husted is an Aquatic, Wetland and Biodiversity Specialist with 12 years' experience in the environmental consulting field. Andrew is an accredited wetland practitioner, recognised by the relevant South African authorities, and also the Mondi Wetlands programme as a competent wetland consultant.

3.2 Matthew Mamera

Matthew Mamera is a Cand. Sci Nat registered (116356) in natural and agricultural sciences recognized in soil science. Matthew is a soil and hydropedology specialist with experience in soil, pedology, hydropedology, water and sanitation management and land contamination and has field experience and numerous peer reviewed scientific publications in international journals. He is a holder of a PhD in Soil Science, Soil hydropedology, water and sanitation management obtained at the University of the Free State, Bloemfontein Matthew completed his M.Sc. in soil science, hydropedology and water management at the University of Fort Hare, Alice. Matthew is also a member of the Soil Science Society of South Africa (SSSSA).

3.3 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.

4. Methodology

4.1 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.

4.2 Baseline Findings

The baseline findings were sourced from Hydropedological Solutions (2014).

5. Project Area

5.1 Soils and Geology

According to the land type database (Land Type Survey Staff, 1972 - 2006) the assessment corridor to be focused on falls within the Fc137 land type (see Figure 5-1). 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.

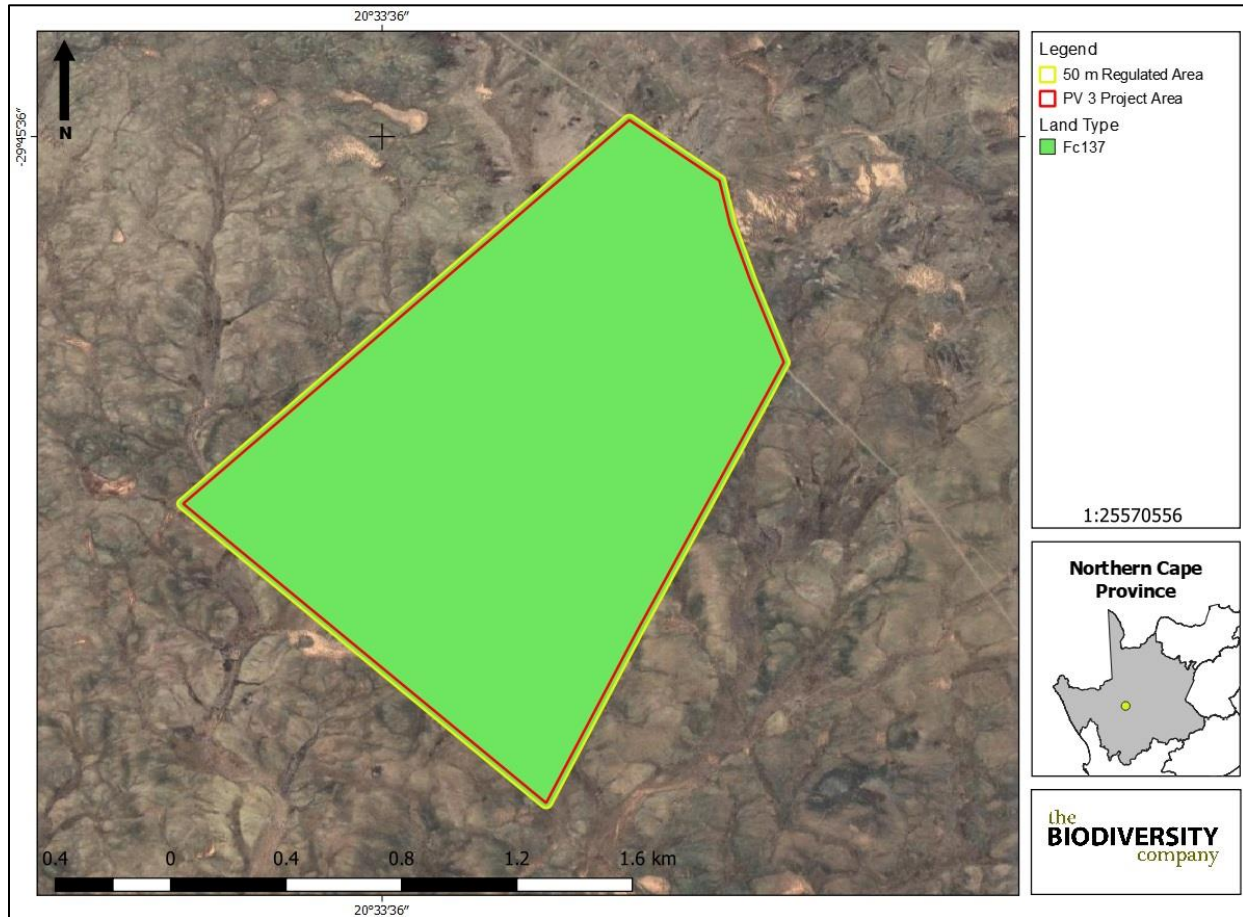


Figure 5-1 Land type present within the assessment corridor boundaries

The soils expected to occur with the respective terrain units for the Fc 137 land type is illustrated in Figure 5-2 and Table 5-1.

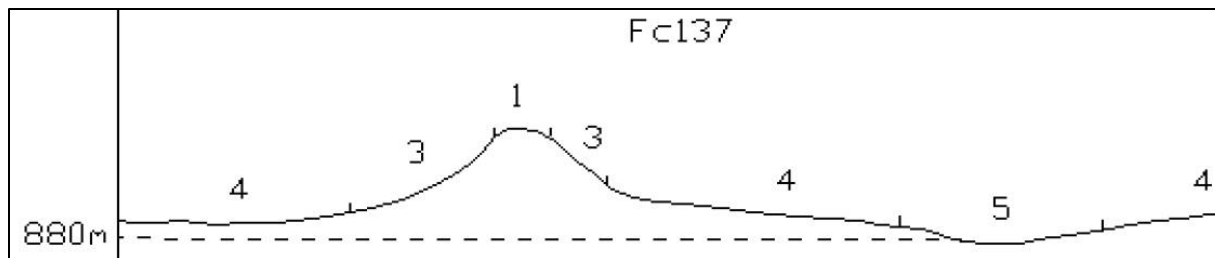


Figure 5-2 Illustration of land type Fc 137 terrain unit (Land Type Survey Staff, 1972 - 2006)

Table 5-1 Soils expected at the respective terrain units within the Fc 137 land type (Land Type Survey Staff, 1972 - 2006)

Terrain Units							
1 (12%)		3 (31%)		4 (55%)		5 (12%)	
Bare Rock	63%	Bare Rock	39%	Clovelly	46%	Clovelly	48%
Mispah	33%	Mispah	39%	Mispah	23%	Oakleaf	41%
Clovelly	3%	Clovelly	19%	Bare Rock	20%	Mispah	7%
Glenrosa	1%	Glenrosa	3%	Glenrosa	11%	Bare Rock	2%
						Glenrosa	2%

5.2 Terrain

The slope percentage of the project area has been calculated and is illustrated in Figure 5-3. The majority of the project area is characterised by a slope percentage between 0-3%, with some smaller patches within the project area characterised by a slope percentage up to 15%. This illustration indicates a uniform, flat topography with some undulating areas. The Digital Elevation Model (DEM) of the project area (Figure 5-4) indicates an elevation of 911 to 952 Metres Above Sea Level (MASL).

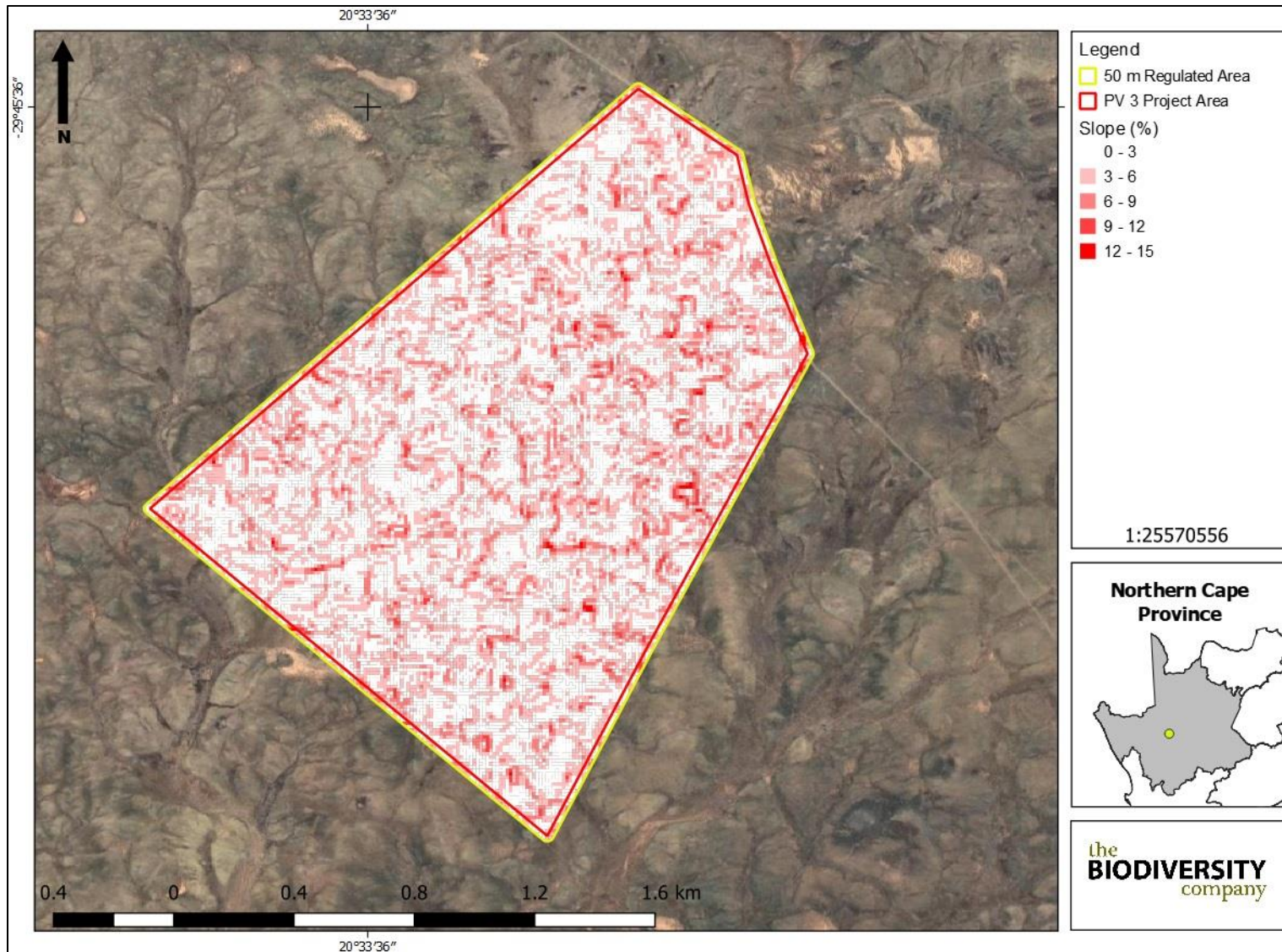


Figure 5-3 Slope percentage map for the assessment corridor

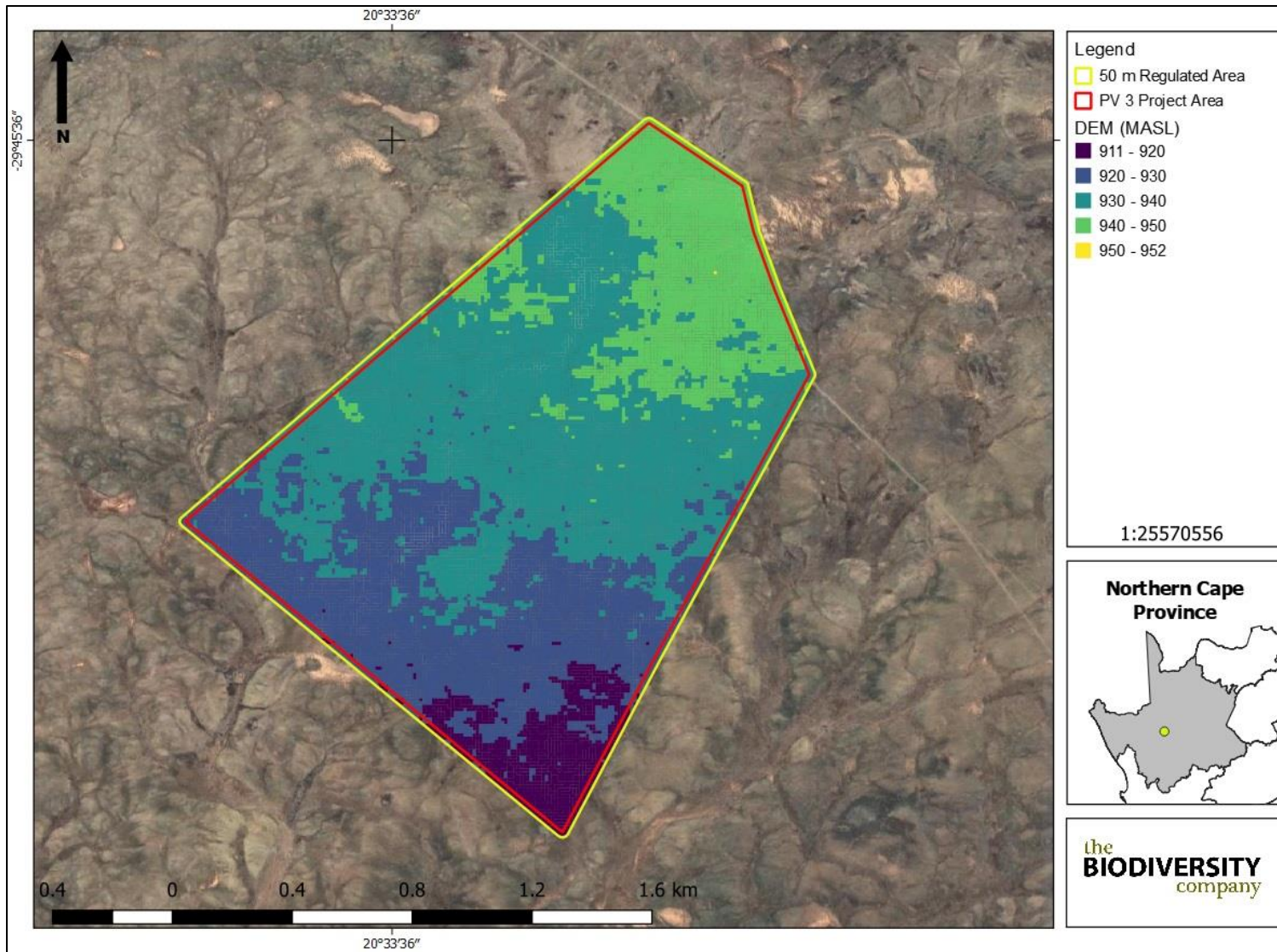


Figure 5-4 Digital Elevation Model of the assessment corridor (metres above sea level)

6. Results and Discussion

The results have been sourced from Hydropedological Solutions (2014), with the following conclusions being relevant to the pedology and agricultural potential of the project area;

- Soil forms identified include Augrabies, Clovelly, Mispah, Bare Rock and Prieska;
- The agricultural potential for the identified soils were determined to all be “Very Low”;
- The climate potential was determined to be very low; and
- The final impact statement concluded the following;
 - *The arid climate of the study area coupled with shallow soils limits the agricultural potential to low intensity grazing. The impact of the proposed development of CSP2 project on agricultural resources is therefore considered to be small.*

6.1 Sensitivity Verification

Fifteen land capabilities have been digitised by (DAFF, 2017) across South Africa, of which two are located within the proposed footprint area’s assessment corridor, 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 project area ranges from “Very Low” to “Moderate” (see Figure 6-1), which conforms to the requirements of an Agricultural Compliance Statement only.

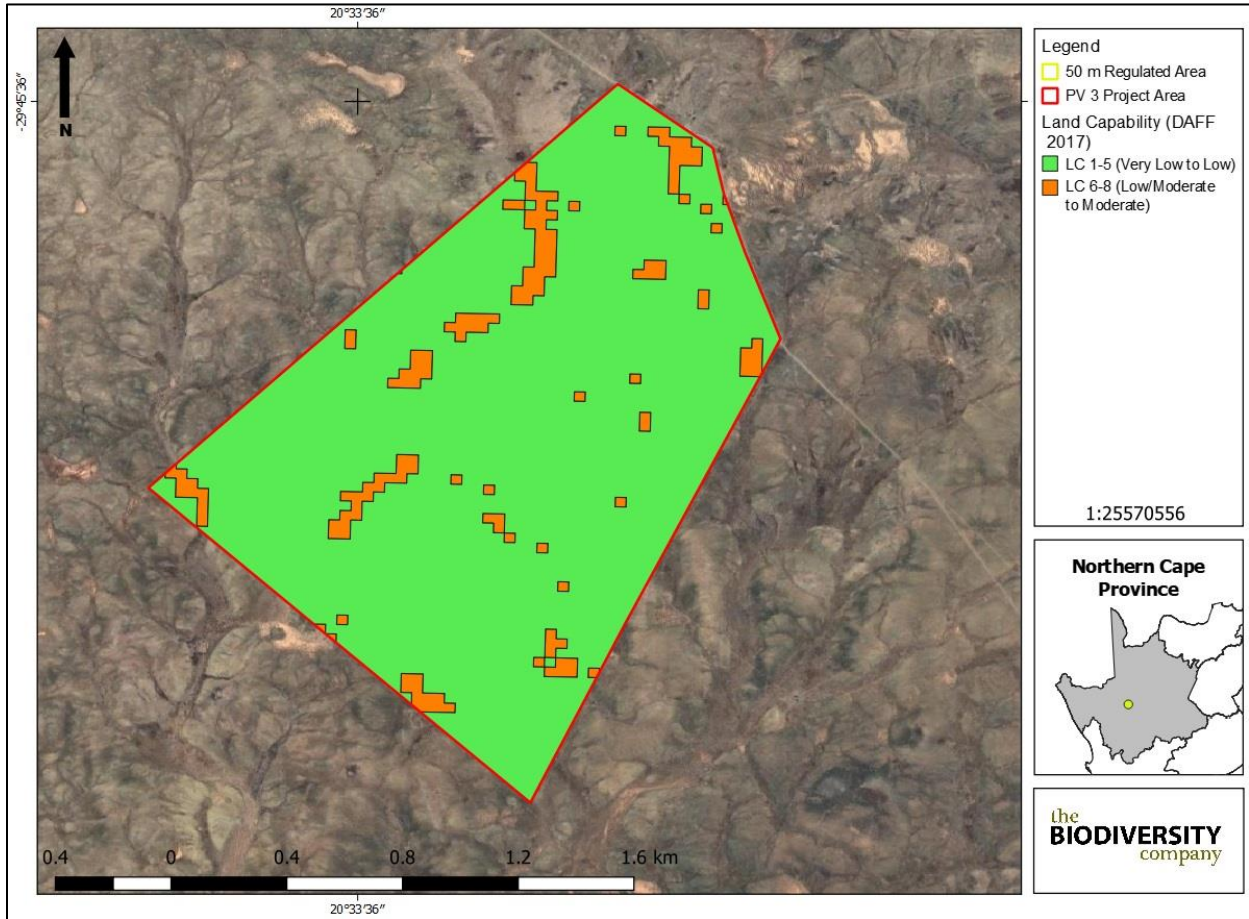


Figure 6-1 Land Capability Sensitivity (DAFF, 2017)

7. Impact Statement

It is the specialist's opinion that the baseline findings concur with the land capabilities identified by means of the DAFF (2017) desktop findings in regard to land capability sensitivities. No "High" land capability sensitivities were identified within the project area. Considering the relatively low sensitivities, it is the specialist's opinion that the proposed activities will have an acceptable impact on agricultural productivity. Furthermore, no measures in regard to moving components in their micro-setting are required to avoid or minimise fragmentation and disturbances of agricultural activities.

Therefore, it is the specialist's opinion that the proposed activities may proceed as have been planned without the concern of loss of high sensitivity land capabilities or agricultural productivity.

8. Recommendations

8.1 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;
- All laydown yards must be constructed within the shallow Augrabies, Mispah and bare rock areas;
- Prevent any spills from occurring. Machines must be parked within hard park areas and must be checked daily for fluid leaks; and
- If a spill occurs, it is to be cleaned up immediately and reported to the appropriate authorities.

9. Conclusion

Five soils forms were identified within the project area, including the Augrabies, Mispah, bare rock, Clovelly and Prieska soil form. 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 baseline findings concur with the land capabilities identified by means of the DAFF (2017) desktop findings in regard to land capability sensitivities. No "High" land capability sensitivities were identified within the project area. Considering the relatively low sensitivities, it is the specialist's opinion that the proposed activities will have an acceptable impact on agricultural productivity. Furthermore, no measures in regard to moving components in their micro-setting were required to avoid or minimise fragmentation and disturbances of agricultural activities.

Therefore, it is the specialist's opinion that the proposed activities may proceed as have been planned without the concern of loss of high sensitivity land capabilities or agricultural productivity.

10. References

Hydropedological Solutions. 2014. Report on Soil and Agricultural Potential of the Solar Reserve Kotulo Tsatsi Solar Park Concept and Associated Infrastructure, Northern Cape Province: Report on the Proposed CSP 2 Project.

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.


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

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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.

11. Appendix A- Specialist CV

<h3>Masters in Environmental Science and Hydropedology</h3> <p>Cell: +27 79 898 4056 Email: ivan@thebiodiversitycompany.com Identity Number: 9401105251087 Date of birth: 10 January 1994</p>							
<p>Profile Summary</p> <p>Working experience throughout Southern Africa</p> <p>Working experience in West-Africa</p> <p>Specialist experience with mining, construction and agriculture.</p> <p>Specialist expertise include hydropedology, pedology, land contamination, agricultural potential, land rehabilitation, rehabilitation management and wetlands resources.</p> <p>Experience hydropedological modelling (HYDRUS model)</p> <p>Areas of Interest</p> <p>Mining, Oil & Gas, Renewable Energy & Bulk Services Infrastructure Development, Farming, Land contamination, Sustainability and Conservation.</p>	<p>Key Experience</p> <ul style="list-style-type: none"> • 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) <p>Countries worked in</p> <table border="0"> <tr> <td>South Africa</td> <td>Mozambique</td> </tr> <tr> <td>Swaziland</td> <td>Zimbabwe</td> </tr> <tr> <td>Guinea</td> <td></td> </tr> </table>		South Africa	Mozambique	Swaziland	Zimbabwe	Guinea
South Africa	Mozambique						
Swaziland	Zimbabwe						
Guinea							
<p>SELECTED PROJECT EXPERIENCE</p> <p>Project Name: Environmental impact assessment for the construction of Road DR08606 leading to Mlamli Hospital, Sterkspruit</p> <p>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</p> <p>Project Name: Biodiversity Baseline & Impact Assessment Report for the proposed Nondvo Dam Project</p> <p>Personal position / role on project: Wetland ecologist Location: Mbabane, Swaziland</p>		<p>Nationality</p> <p>South African</p> <p>Languages</p> <p>English – Proficient Afrikaans – Proficient</p> <p>Qualifications</p> <ul style="list-style-type: none"> • 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 					

Kotulo Tsatsi PV3 Project

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 Teterane 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:

Kotulo Tsatsi PV3 Project

- 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