# 132kV Grid Connection for Hyperion Hybrid Facility – Agricultural Compliance Statement

## Kathu, Northern Cape

October 2020

**Client**

**Prepared by:**

**The Biodiversity Company**

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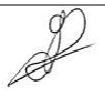
| | |
|---|---|
| Report Name | **132kV Grid Connection for Hyperion Hybrid Facility – Agricultural Compliance Statement** |
| Reference | **Hyperion Kalbas OHL** |
| Submitted to | savannah environmental |
| Report Reviewer | **Andrew Husted**  |
| | Andrew Husted is Pr Sci Nat registered (400213/11) 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 and Fieldwork | **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. |
| 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 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 considerred | 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 132 kV Overhead Line (OHL) associated with the Hyperion Hybrid Facility. The need for the OHL is to connect the Hyperion Hybrid Facility to the national grid via the existing Eskom Kalbas Substation. The proposed OHL is approximately 8 km long and includes a 300 m assessment corridor.

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 powerline development.

# 2 Project Area

The project area is located approximately 13 km north of Kathu and 8 km west of the N14 within the Northern Cape Province. The surrounding land uses include farming (predominantly grazing), mining, solar farms and watercourses (see Figure 2-1).

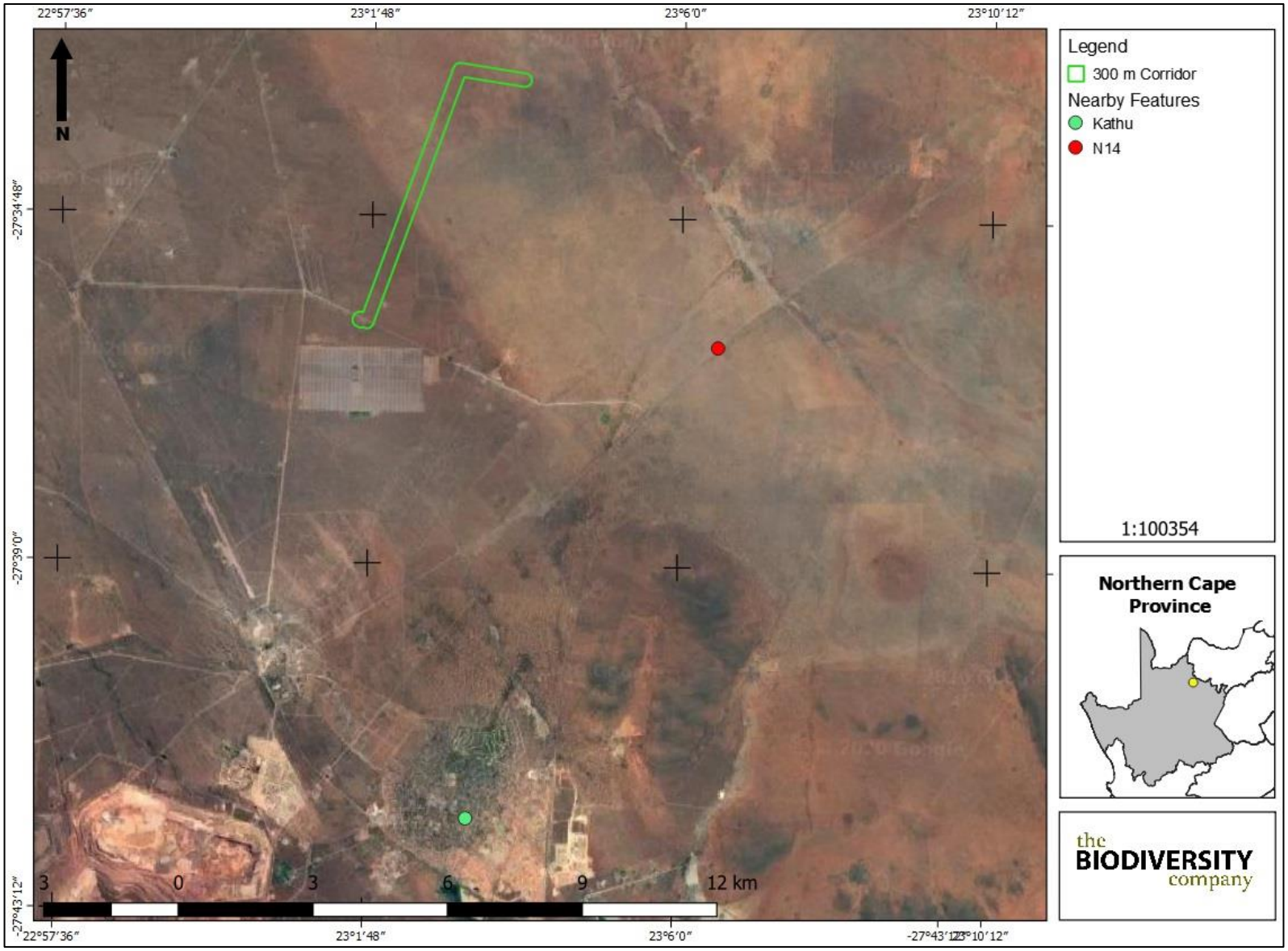


***Figure 2-1 Locality map of the project area***

# 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.

# 4 Limitations

The following limitations are relevant to this agricultural potential assessment;

- Given the size of the assessment corridor, some extrapolation has been made from groundtruthed areas and areas that were not accessed; 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 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. Mr Husted is an Aquatic, Wetland and Biodiversity Specialist with 12 years’ experience in the environmental

[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).

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.

### 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 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 |

# 7 Project Area

## 7.1 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 Ag110 and Ah9 land types (see Figure 7-1). The Ag land type is characterised by freely drained Red or Yellow-Brown Apedal soils with red soils being dominant. These soils are characterised by a high base status and is likely to be less than 300 mm deep. The Ah land type is characterised by freely drained Red and Yellow Apedal soils with a high base status. The soils within this land type is characterised by less than 15% clay.

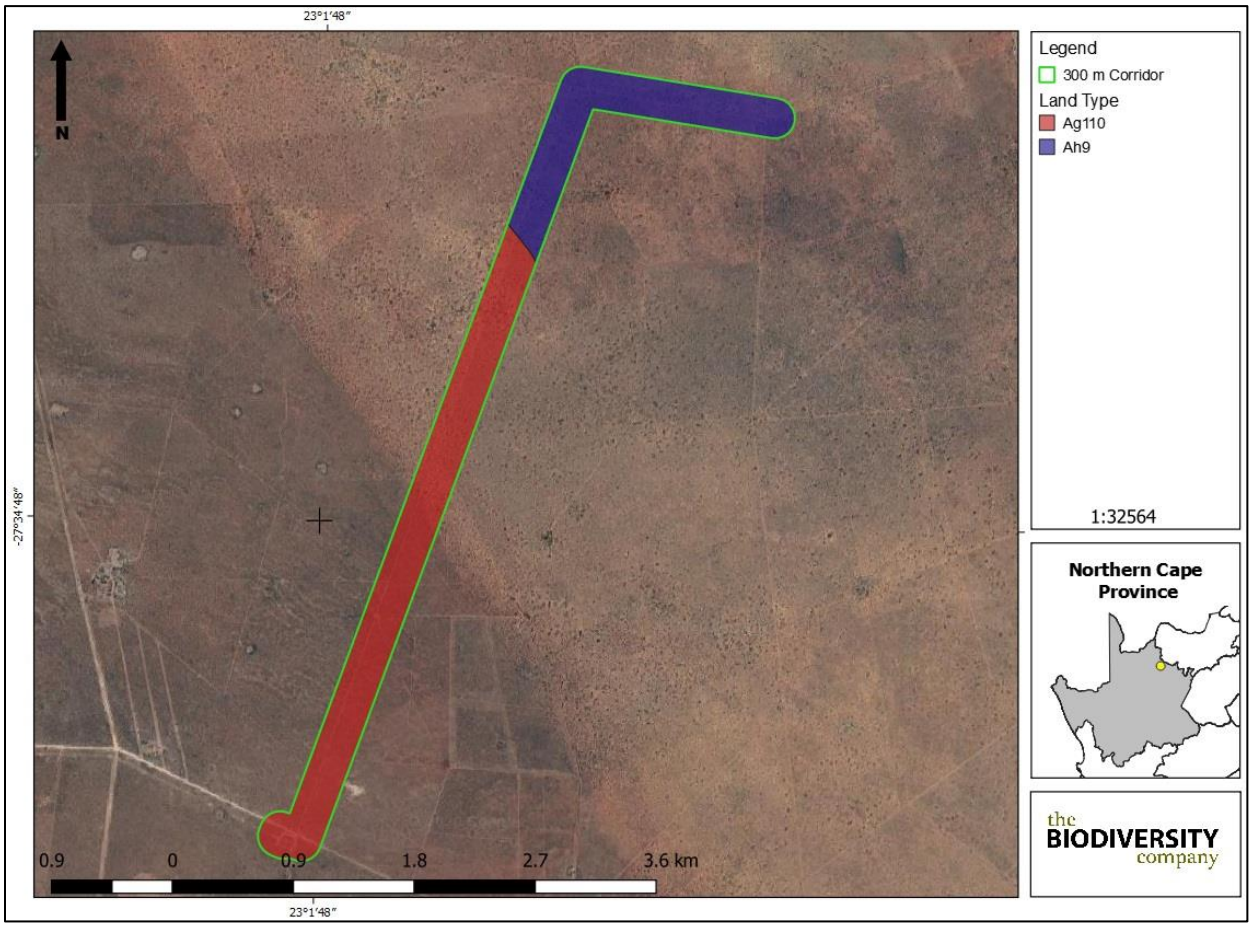


***Figure 7-1 Land Types present within the assessment corridor boundaries***

The soils expected to occur with the respective terrain units for the Ag110 land type is illustrated in Figure 7-2 and Table 7-1 with that of the Ah9 land type illustrated in Figure 7-3 and Table 7-2.

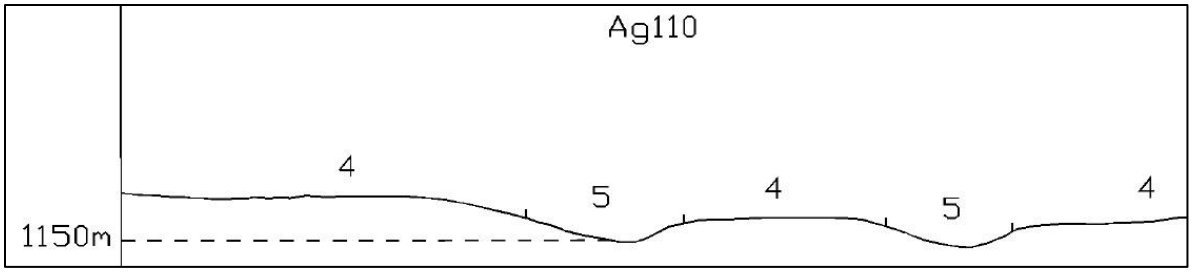


***Figure 7-2 Illustration of the Ag 110 land type terrain units (Land Type Survey Staff, 1972 - 2006)***

***Table 7-1 Soils expected at the respective terrain units within the Ag 110 land type (Land Type Survey Staff, 1972 - 2006)***

| Landscape Unit 4 (90%) | | Landscape Unit 5 (10%) | |
|---|---|---|---|
| Hutton | 75% | Hutton | 60% |
| Mispah | 25% | Mispah | 37% |
| | | Streambeds | 3% |

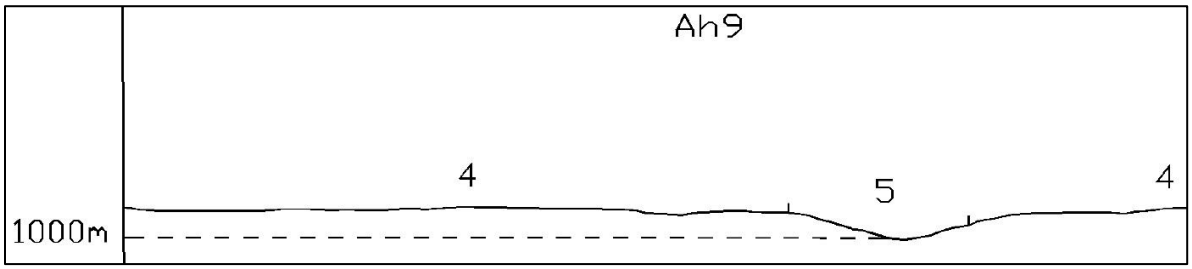


***Figure 7-3 Illustration of the Ah 9 land type terrain units (Land Type Survey Staff, 1972 - 2006)***

***Table 7-2 Soils expected at the respective terrain units within the Ah 9 land type (Land Type Survey Staff, 1972 - 2006)***

| Landscape Unit 4 (95%) | | Landscape Unit 5 (5%) | |
|---|---|---|---|
| Clovelly | 68% | Mispah | 50% |
| Hutton | 30% | Fernwood | 30% |
| Mispah | 1% | Hutton | 10% |
| Fernwood | 1% | Pans | 10% |

## 7.2 Terrain

The slope percentage of the project area has been calculated and is illustrated in Figure 7-4. The majority of the project area is characterised by a slope percentage between 0 and 1%, with some smaller patches within the project area characterised by a slope percentage up to 1,5%. This illustration indicates a uniform, flat topography with no slopes being present. The Digital Elevation Model (DEM) of the project area (Figure 7-5) indicates an elevation of 1 170 to 1 185 Metres Above Sea Level (MASL).


***Figure 7-4 Slope percentage map for the assessment corridor***

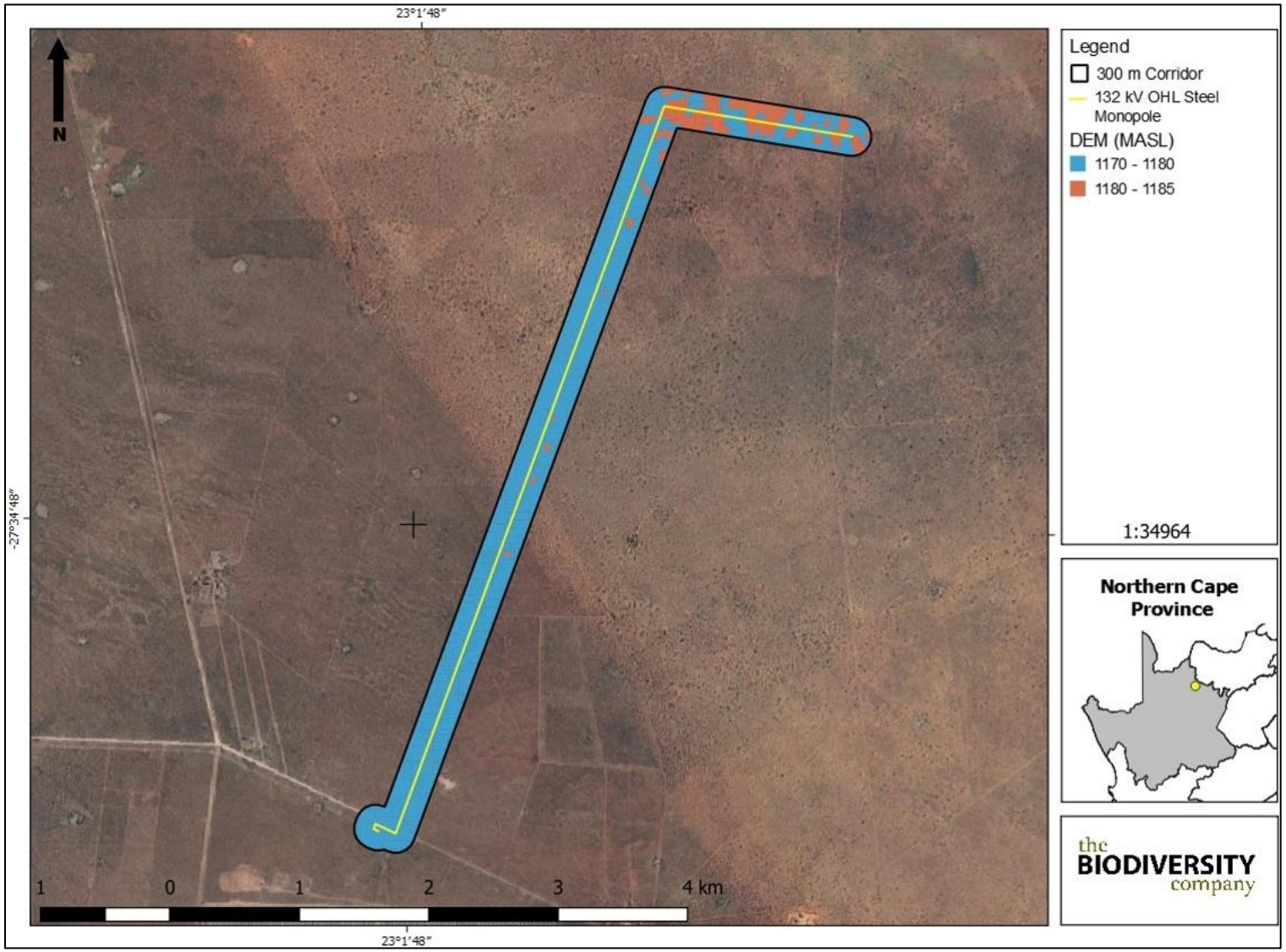


***Figure 7-5 Digital Elevation Model of the assessment corridor (metres above sea level)***

### 7.3 Current Land Use

The current land use is limited and restricted to natural veld and grazing. Additionally, a gravel road crosses the assessment corridor to the very south of the power line.

# 8 Results and Discussion

### 8.1 Baseline Findings

The following soil forms were identified within the portion of the coridor focussed on during the site visit (also see Figure 8-1 and Figure 8-2);

- Nkonkoni soil form (1122(15)) (Orthic topsoil above a Red Apedal horizon, which in turn is underlain by a Lithic horizon);
- Glenrosa soil form (1220(15)) (Orthic topsoil on top of a Lithic horizon);
- Ermelo soil form (1120(15)) (Orthic topsoil on top of a thick Yellow-Brown Apedal horizon); and
- Hutton soil form (1120(15)) (Orthic topsoil on top of a thick Red Apedal horizon);

The land capability of the abovementioned soils range from a land capability 3 to a land capability 7 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 “6” to “8”. These land potential levels are associated “Very Restricted Potential” and “Very Low Potential”.

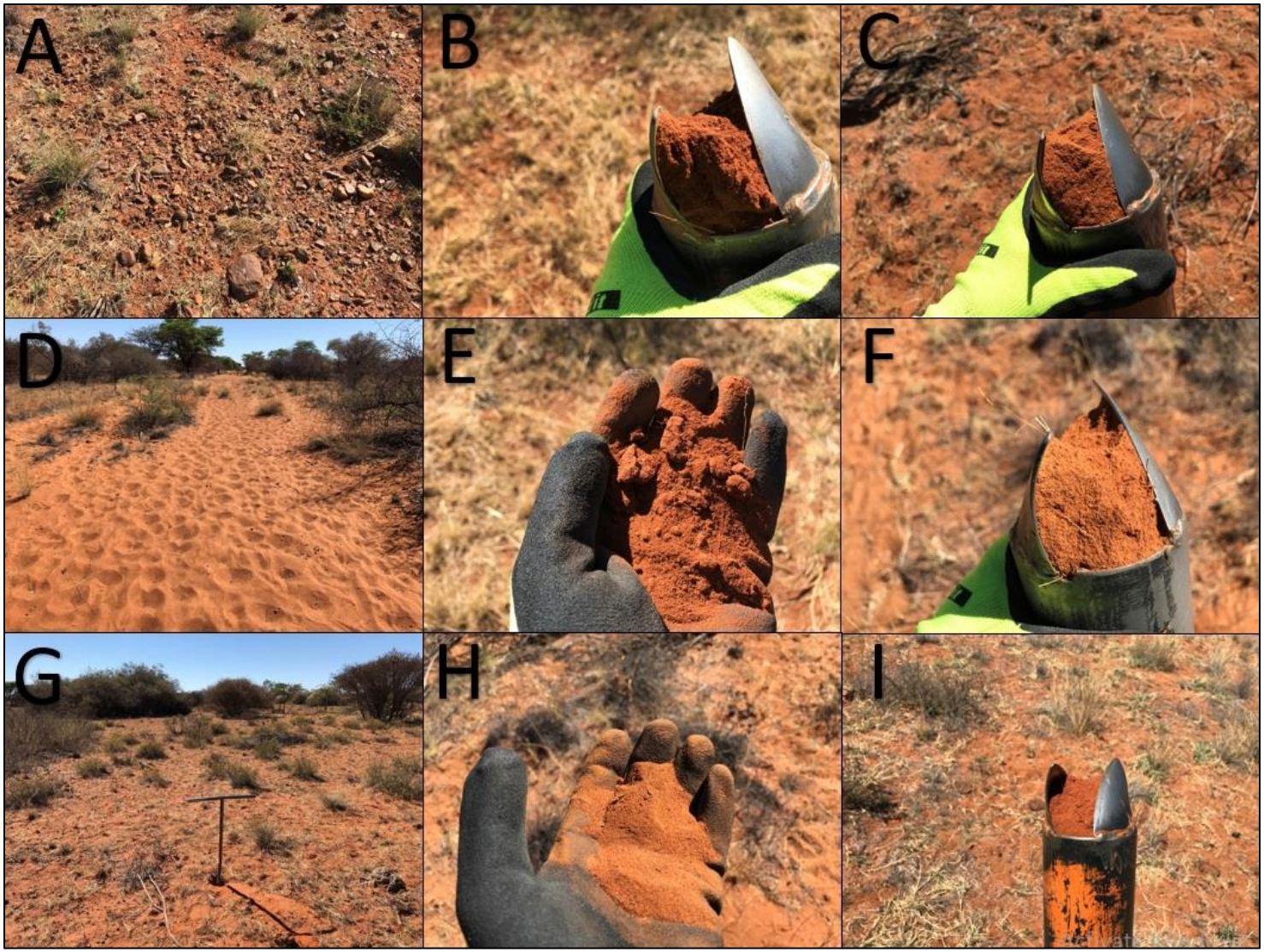


***Figure 8-1 Soil horizons identified within the assessment corridor. A) Glenrosa. B and E) Orthic topsoil. C and I) Red Apedal horizon. D, F and H) Yellow-Brown Apedal horizon. G) Soil observation (auger observation)***

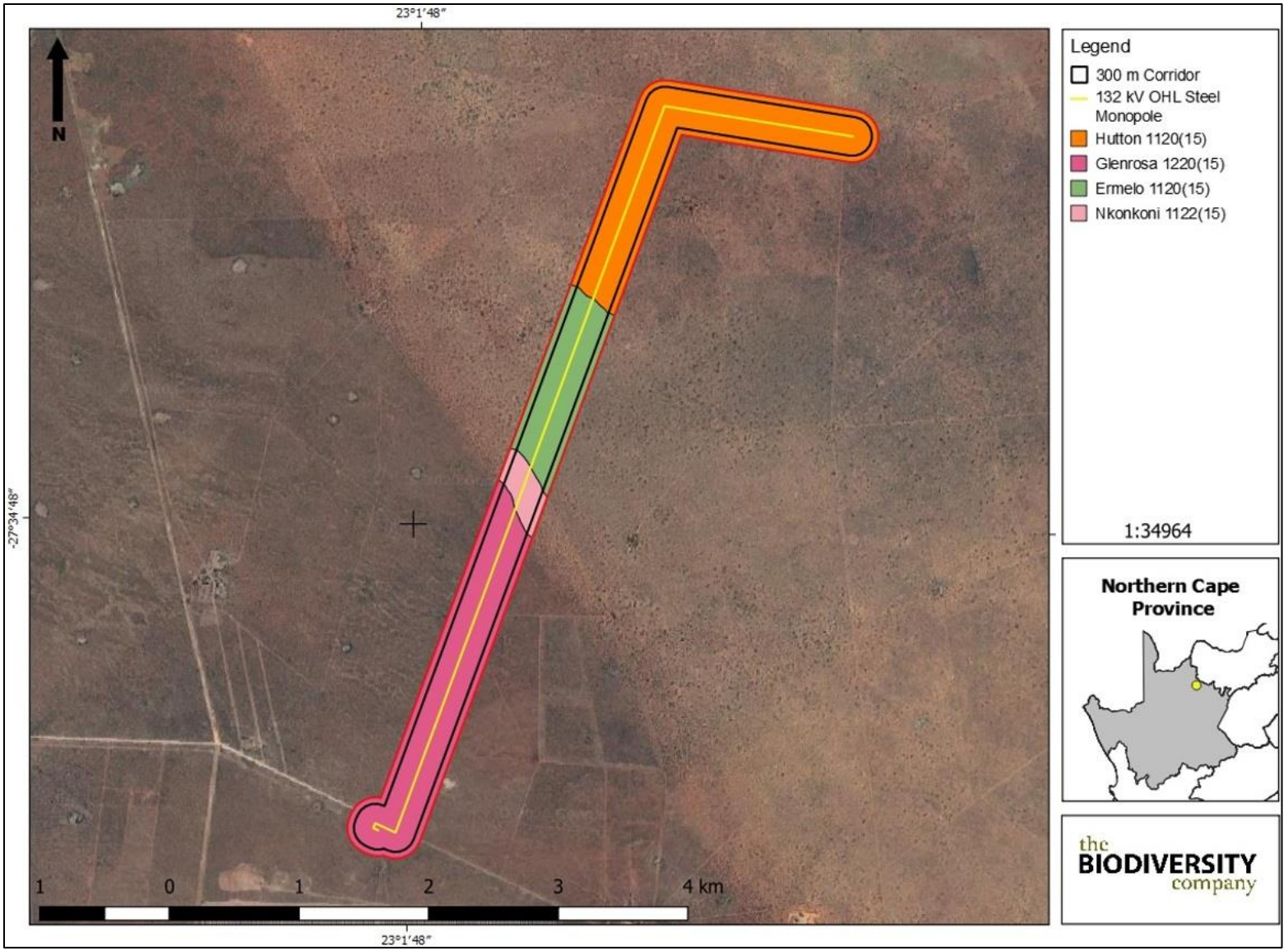


***Figure 8-2 Delineated soil forms***

## 8.2 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);
- 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); and
- Land potential level 8 (this land potential level is characterised by very 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 four 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 assessment corridor ranges from "Very Low" to "Moderate" (see Figure 8-3), which conforms to the requirements of an agricultural compliance statement only.

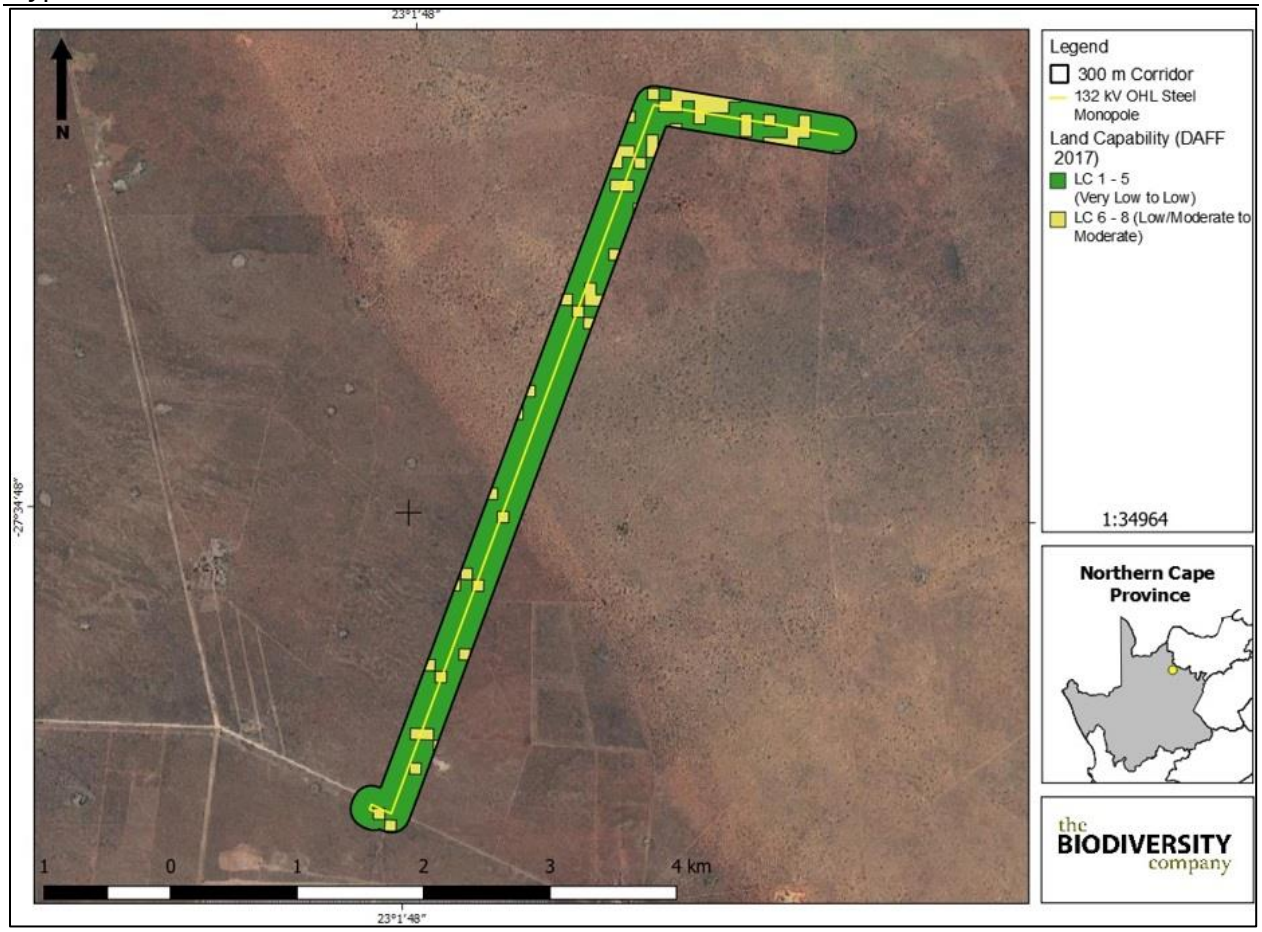


***Figure 8-3 Land Capability Sensitivity (DAFF, 2017)***

# 9 Impact Assessment

## 9.1 Loss of Land Capability

Even though the land potential of the assessment corridor has not been determined to be high, it is the specialist's opinion that land capability still will be affected by the proposed development to some extent.

### Construction Phase

During the construction phase, the proposed footprint areas will be cleared of vegetation and topsoil for the servitudes associated with the 132kV servitudes. Even though this phase is associated with a short duration, the intensity of activities will be rather high. The final significance of the construction phase has been determined to be "Medium" without the possibility of decreasing the significance by means of mitigation. The soil resources associated with the footprint area has been determined not to be irreplaceable given the fact that "Low" sensitivity soil resources are associated with the proposed development area. It is the specialist's opinion that these resources are not associated with land potentials suitable for high production agriculture.

***Table 9-1 Impact assessment related to loss of land capability during the construction phase of the proposed 132kV OHL***

| ***Nature: Loss of land capability during the construction of the proposed 132kV OHL*** | | |
|---|---|---|
| **Loss of land capability** | | |
| | **Without mitigation** | **With mitigation** |
| ***Extent*** | Low (2) | Low (2) |
| ***Duration*** | Short term (2) | Short term (2) |
| ***Magnitude*** | Moderate (6) | Moderate (6) |
| ***Probability*** | Probable (3) | Probable (3) |
| ***Significance*** | **Medium** | **Medium** |
| ***Status (positive or negative)*** | Negative | Negative |
| ***Reversibility*** | High | High |
| ***Irreplaceable loss of resources?*** | No | No |
| ***Can impacts be mitigated?*** | Yes | |
| ***Mitigation:*** | | |
| **Limited mitigation will be relevant to the conservation of soil resources during construction of the proposed linear activities' servitudes given the fact that topsoil and vegetation will be stripped for foundation purposes. General mitigation associated with the conservation of soil resources are prescribed in Section 10-Recommendations.** | | |
| ***Residual Impacts:*** | | |
| **The residual impacts related to the relevant activities during the construction phase will remain the same as prior to mitigation, given the fact that mitigation will not decrease the significance of these impacts. Additionally, the land potential in the area has not been determined to be high, therefore, reversibility will be practical.** | | |

### Operational Phase

During the operational phase, the impacts associated with the linear activity's servitudes will be easily managed by best "housekeeping" practices and alien invasive control. This phase will be permanent, which emphasises the need to conserve resources in the direct surroundings of the associated servitudes.

***Table 9-2 Impact assessment related to loss of land capability during the operational phase of the proposed 132kV OHL***

| *Nature: Loss of land capability during the operational of the proposed 132kV OHL* | | |
|---|---|---|
| **Loss of land capability** | | |
| | **Without mitigation** | **With mitigation** |
| ***Extent*** | Low (2) | Low (2) |
| ***Duration*** | Permanent (5) | Permanent (5) |
| ***Magnitude*** | Mlinor (2) | Mlinor (2) |
| ***Probability*** | Improbable (2) | Improbable (2) |
| ***Significance*** | **Low** | **Low** |
| ***Status (positive or negative)*** | Negative | Negative |
| ***Reversibility*** | High | High |
| ***Irreplaceable loss of resources?*** | No | No |
| ***Can impacts be mitigated?*** | Yes | |
| ***Mitigation:*** | | |
| **Limited mitigation will be relevant to the conservation of soil resources during operation of the linear activities given the fact that "Low" significance ratings have been calculated prior to mitigation. General mitigation associated with the conservation of soil resources are prescribed in Section 10-Recommendations.** | | |
| ***Residual Impacts:*** | | |
| **Limited residual impacts will be associated with these activities, assuming that all prescribed mitigation measures be strictly adhered to.** | | |

# 10 Recommendations

## 10.1 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 for the Hutton, Ermelo and Nkonkoni soil forms; W
- One main road extends from the dirt road crossing underneath the proposed power line, parallel with the proposed development, this road should be used as much as possible for the respective project phases (see Figure 10-1);
- All laydown yards must be constructed within the Glenrosa areas due to the fact that this soil form is characterised by a lower land capability and land potential than the other soil forms;
- 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.

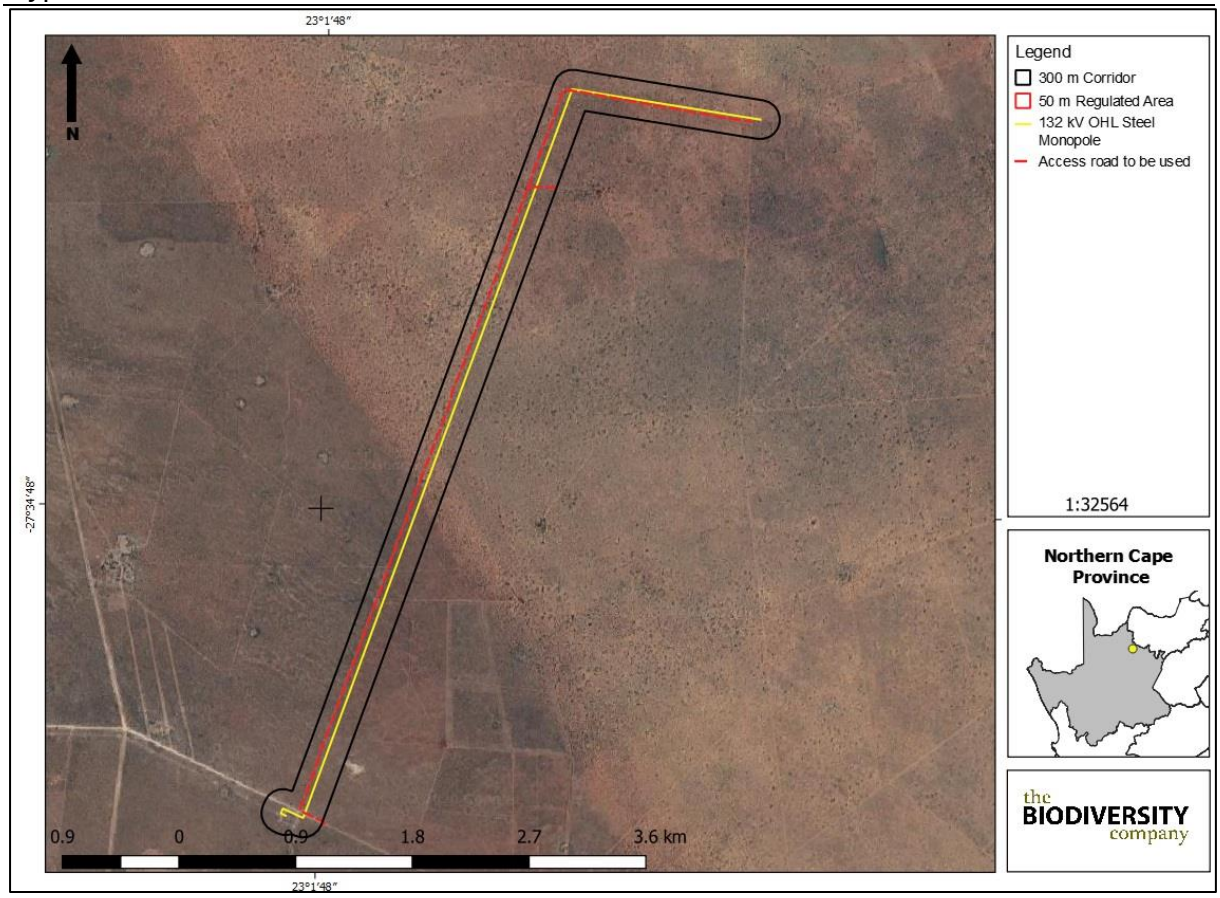


***Figure 10-1 Access road to be used***

## 10.2 Acceptability of Impacts

It is the specialist's opinion that the assessment corridor is not associated with any arable soils, predominantly due to the poor climate capability, which in itself limits crop production significantly. The land capabilities associated with the assessment corridor are only suitable for grazing, which ties in with the current land use.

It is the specialist's opinion that the proposed developments will have very little to no impact on the agricultural production ability of the land. Therefore, the proposed development of the powerline may be favourably considered. The above-mentioned mitigation measures must be considered by the issuing authority.

# 11 Conclusion

Four soils forms were identified within the assessment corridor, including the Ermelo, Hutton, Glenrosa and Nkonkoni 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 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

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## 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