

3 SITE SENSITIVITY VERIFICATION

3.1 Screening Report

As mentioned previously, there is a direct correlation between land capability rating and the National Web-based Environmental Screening Tool's (screening tool's) agricultural sensitivity.

The information in Figure 10 was received from the screening tool, which rates the Agricultural Sensitivity theme as 'Very High' citing *i.a.*: "Pivot Irrigation; Land capability;09. Moderate-High/10. Moderate-High".

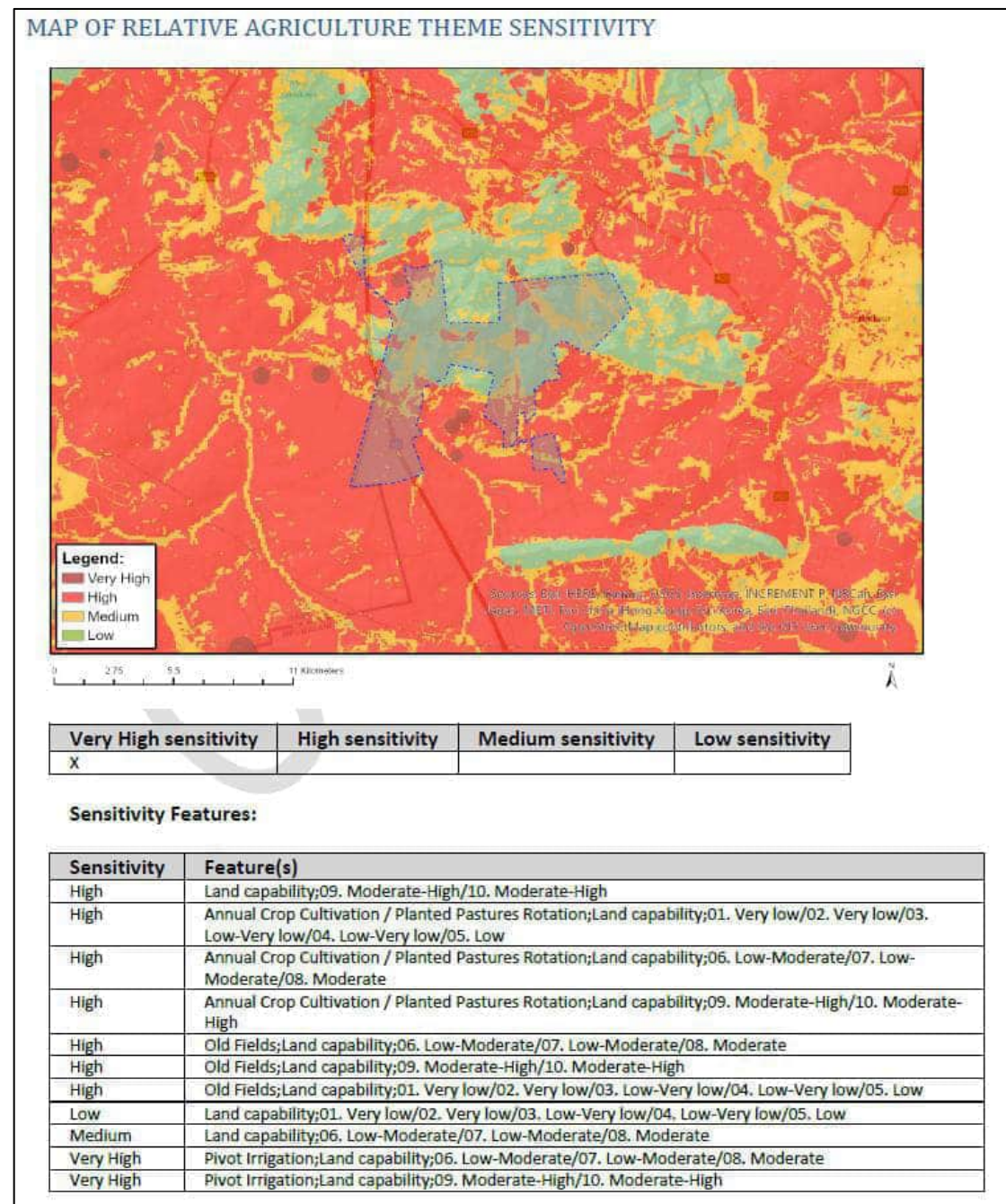


Figure 10: Information obtained from the National Web-based Environmental Screening Tool for the ABO Uvemvane WEF 1 project area.

3.2 Sensitivity verification

From an Agricultural Theme Sensitivity point of view, the very high sensitivity classification is disputed by this assessment for the whole site. No Pivot irrigation was recorded in the proposed ABO Uvemvane WEF 1 project area. Generally, areas of Category 1 soils are rated as high sensitivity by this assessment and do coincide with areas rated the same by the screening tool, however, most areas of high sensitivity according to the screening tool are also disputed due to soil potential restrictions as noted in the previous section for category 2, 3 and 4 soils. The central section of the project area is rated as medium to low by the screening tool, which is mostly disputed from a medium sensitivity perspective and validated as low for most of that area.

Table 5 summarizes the conclusions of this sensitivity assessment, which are visually presented in Figure 11.

Table 5: Summary of the screening tool vs specialist verified sensitivities.

Theme	Screening Tool	Soil Category	Specialist	Tool Validated or Disputed by Specialist - Reasoning
Agricultural Theme	Very High	all	High	Disputed – no irrigation cultivation was recorded in the proposed project area of ABO Uvemvane WEF 1, although such activities were noticed in neighboring areas.
	High	1	High	Validated – areas of category 1 soils that are rated as high sensitivity by the screening tool were found to be well suited for economically viable rainfed crop production.
	High	2	Medium	Disputed – category 2 soils have moderate restrictions in terms of soil depth and water holding capacity and will yield relatively good crops in average to above average rainfall seasons, which will not be sustained in below average seasons.
	High	3 & 4	Low	Disputed – category 3 & 4 soils have severe restrictions on water infiltration and crop available water and will not sustainably produce economically viable crops over the long term.
	Medium	2	Medium	Validated – category 2 soils have moderate restrictions in terms of soil depth and water holding capacity and will yield relatively good crops in average to above average rainfall seasons.
	Medium	3, 4 & 5	Low	Disputed – category 3, 4 & 5 soils have severe restrictions on water infiltration, crop available water and soil depth for root growth and will not sustainably produce economically viable crops over the long term.
	Low	3, 4 & 5	Low	Validated – no cultivation possible due to severe restrictions on water infiltration, crop available water and soil depth.

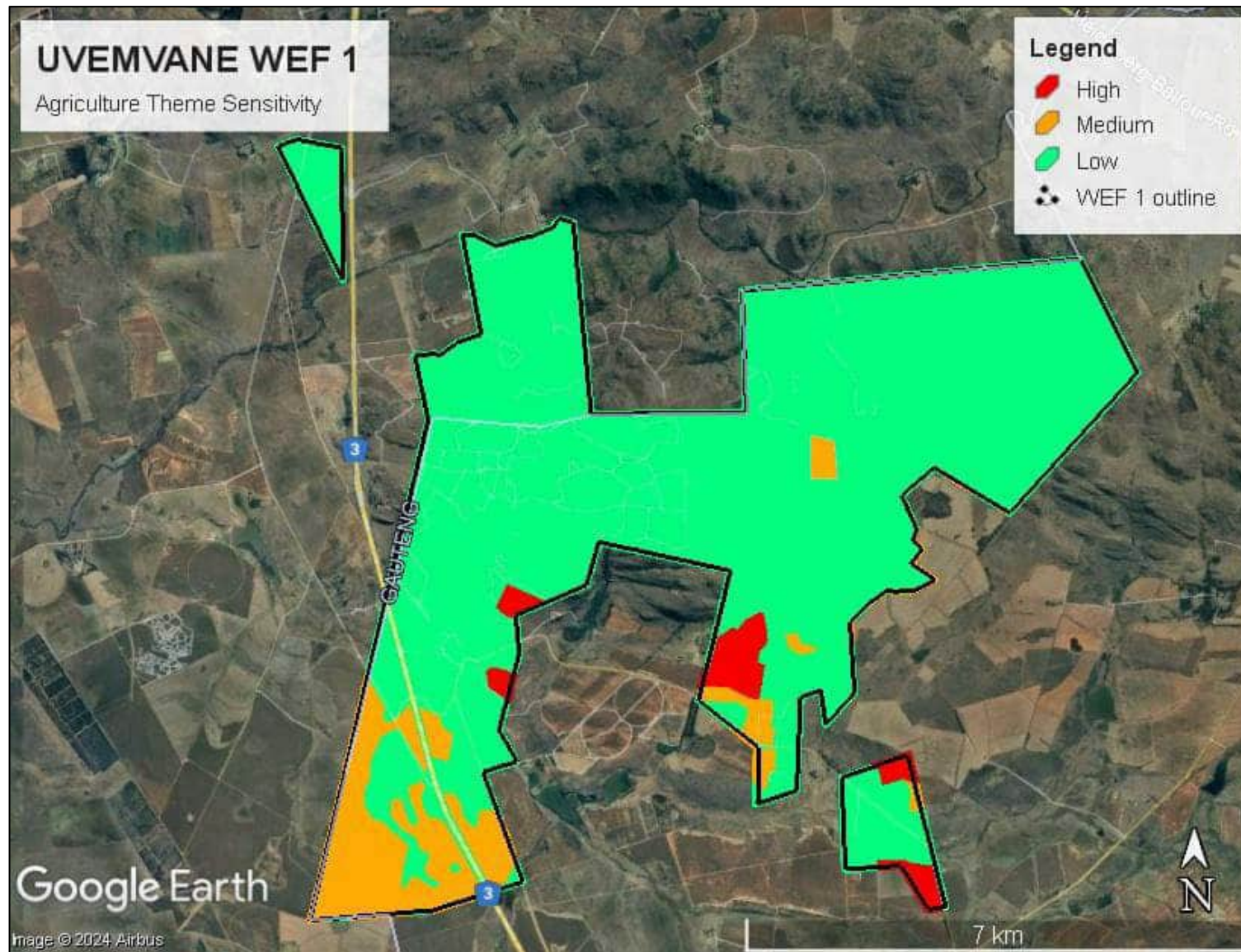


Figure 11: Sensitivity rating as assigned by this assessment on the agricultural sensitivity theme for the project area.

3.3 Consideration of Cumulative Impacts

It is recognised that the combined, incremental effects of human activity, referred to as cumulative impacts, pose a serious threat to the environment. Cumulative effects are commonly understood as the impacts which combine from different projects/developments, and which result in significant change, which is larger than the sum of all the impacts. The complicating factor is that the projects/developments that need to be considered are from past, present and reasonably foreseeable future (DEAT, 2004).

From an agricultural potential point of view, the potential cumulative agricultural impact of importance is a regional loss (including by resource degradation) of future agricultural production potential relating to regional and even national food security. The defining question, therefore, for assessing the cumulative impact is this: What loss of future agricultural production potential is acceptable in the area, and will the loss associated with the proposed development, when considered in the context of all past, present, or reasonably foreseeable future impacts, cause that level in the area to be exceeded? According to the South African Renewable Energy EIA Application Database (REEA, 2024) there is an approved renewable energy project, a solar PV facility, south the proposed ABO Uvemvane WEF 1 project area (Figure 12) but no others within a 30 km radius.

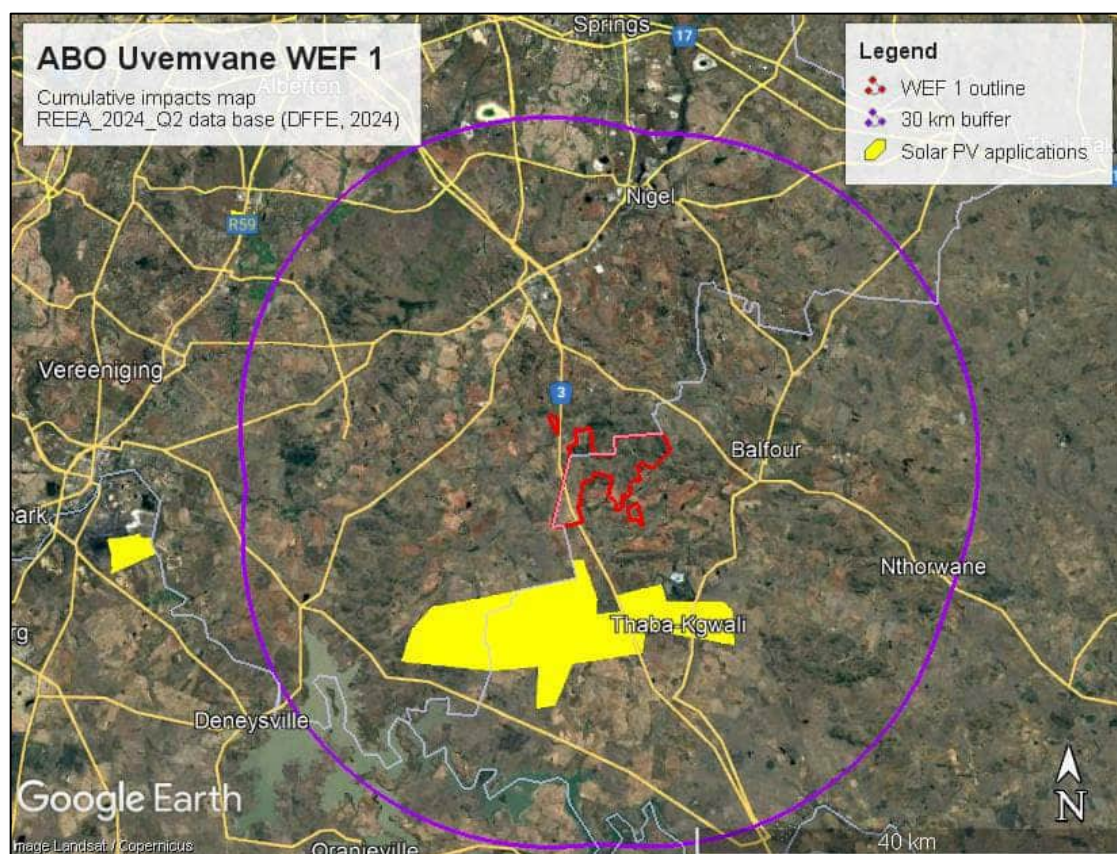


Figure 12: Cumulative impacts map for renewable energy projects within a 30 km radius from the proposed project site.

Taking into consideration the fact that the ABO Uvemvane WEF 1 project area is large enough that agricultural land of high sensitivity can be easily avoided with some careful infrastructure placement planning, it is the specialist's opinion that the proposed project should not contribute to a regional loss of future agricultural production potential. **The cumulative impact for this proposed development, therefore, is expected to be low.**

3.4 Consideration of Other Impacts

An agricultural impact is a change to the future agricultural production potential of agricultural land, which is primarily caused by the exclusion of agriculture production activities from the footprint of a development. This SSVR does not include a full impact assessment with mitigation measures, Table 6 presents a summary of impacts that may be expected.

Table 6: Summary of possible impacts and mitigation measures.

Activities	Possible impacts
Land clearing & construction. Operation of WEF.	Direct impacts: Soil erosion Soil compaction Chemical soil pollution
	Indirect impacts: Change in grazing land use and veld condition.
	Cumulative impacts: Broad scale degradation or loss of agricultural land through soil erosion, soil compaction and chemical soil pollution due to the poor implementation or mismanagement of mitigation measures on this and similar neighbouring developments.

4 SUMMARY & CONCLUSIONS

Five broad soil categories were described in the ABO Uvemvane WEF 1 project area:

- Category 1: deep to moderately deep, well drained, massive or weakly structured soils – good to moderate cropping potential.
- Category 2: moderately deep to shallow well drained, massive or weakly structured soils with a plinthic horizon – moderate to poor cropping potential.
- Category 3: heavy clay soils and soils with a strong texture contrast between the A- and B-horizons (duplex soils) – moderate to poor cropping potential.
- Category 4: gley soils – poor or no cropping potential.
- Category 5: shallow lithic/rocky soils – no cropping potential.

Category 1 soils are in general found to be land with good to moderate cropping potential, which make these areas important to produce grain crops. The cropping potential of category 2 to 5 soils in the ABO Uvemvane WEF 1 project area are all limited by the combination of climate and various soil constraints. Category 2 soils have moderate soil depth with potentially poor draining sub-soils that may also restrict the growth of plant roots beyond the plinthic layer. Category 3 and 4 soils have moderate to severe water infiltration restrictions which may cause waterlogging in very wet seasons and provide insufficient moisture (essentially drought conditions) in below average rainfall seasons. Category 5 soils are severely restricted in soil depth and provide poor to no water retention potential to produce a crop through the season and therefore limits the potential of these sections of land to grazing only.

Some cultivated lands in the project area have been abandoned as croplands or are utilized only as planted pastures in some instances. These are mostly on marginal soils that may have been economically cultivated in the past but have been abandoned as they are no longer suitable for economically viable crop production in a more challenging agricultural economy, with increased input costs, and in changing/fluctuating climate conditions.

The information received from the screening tool rates the Agricultural Sensitivity theme as 'Very High' citing "Pivot Irrigation; Land capability;09. Moderate-High/10. Moderate-High" as the main reason for the very high sensitivity. This rating is disputed by this assessment due to no evidence of pivot irrigation directly in the proposed ABO Uvemvane WEF 1 project area. Such cultivation does, however, occur in areas adjacent to the ABO Uvemvane WEF 1 area.

Areas of high sensitivity rating by the screening tool are validated for category 1 soils but disputed for the other categories due to the mentioned restrictions to sustainable crop cultivation. The low sensitivity of the mountainous terrain in the central to northern parts of the project area is validated.

According to REEA (2024) there is an approved renewable energy project, a solar PV facility, south the proposed ABO Uvemvane WEF 1 project area but no others within a 30 km radius. Taking into consideration the fact that the ABO Uvemvane WEF 1 project area is large enough that agricultural land of high sensitivity can be easily avoided with careful placement of wind turbines, it is the specialist's opinion that the proposed project will not contribute to a regional loss of future agricultural production potential and that the cumulative impact for this study, therefore, is expected to be low and should be acceptable for the ABO Uvemvane WEF 1 project to proceed.

Agricultural impacts cause changes to the future agricultural production potential of the land. This is primarily caused by the cessation of agriculture production from the footprint of developments. In the case of the ABO Uvemvane WEF 1 project, there is enough land surfaces deemed as low sensitivity (categories 3 to 5) from an agriculture production potential point of view that there is no need for overall conservation of the area as agricultural production land because of the mentioned cropping limitations. The use of land in the category 3 to 5 soils for non-agricultural purposes will cause insignificant loss of agricultural production potential in terms of regional and national food security.

At the farm level, the development may provide a positive economic impetus that is likely to increase financial security and cash flow for landowners and may improve farming operations and productivity on other parts of the farm or other agricultural operations elsewhere, through re-investment into agricultural production.

Due to the facts that the proposed development will not occupy scarce, viable, arable land, that the land can potentially still be used to graze livestock, and that its negative impact is offset by economic benefits to farming, the overall negative agricultural impact of the development (loss of future agricultural production potential) is assessed here as being of low significance and as acceptable.

Furthermore, the proposed development offers valuable opportunities for the integration of renewable energy with active agricultural production in the area in a way that provides benefits to agriculture and, with careful placement of wind turbines, leads to no loss of economically viable arable land and subsequently insignificant loss of future agricultural production potential of the area.

Based on the findings of this assessment, it is the specialist's opinion that the proposed development is may be favourably considered from an agricultural potential point of view if high sensitivity areas as indicated by this assessment are avoided. Final conclusions in this regard will, however, be drawn in the EIA phase and will depend on the proposed ABO Uvemvane WEF1 infrastructure layout.

The Protocol for the specialist assessment and minimum report requirements of environmental impacts on agricultural resources by onshore wind and / or solar photovoltaic energy facilities where the electricity output is 20 MW or more, indicates under sections 1.3 to 1.5 in Table 2 of the protocol, the following as presented in the text box below:

1.3. An applicant intending to undertake an activity identified in the scope of this protocol on a site identified by the screening tool as being of “medium” or “low” sensitivity for agricultural resources must submit an **Agricultural Compliance Statement** unless:

1.3.1. the information gathered from the site sensitivity verification differs from that identified as having a “medium” or “low” agricultural sensitivity and it is found to be of a “very high” or “high” sensitivity; or

1.3.2. where the development footprint deviates from any of the allowable development limits contained in Table 1 above. In the context of this protocol, development footprint means the area on which the proposed development will take place and includes any area that will be disturbed.

1.4. Should either paragraphs 1.3.1 or 1.3.2 apply, an Agricultural Agro-Ecosystem Specialist Assessment is to be undertaken, and a report prepared in accordance with the requirements of an Agro-Ecosystem Specialist Assessment.

1.5. If any part of the proposed development footprint falls within an area of “very high” or “high” sensitivity, the assessment and reporting requirements prescribed for the “very high” or “high” sensitivity apply to the entire footprint.

This section of the protocol, therefore, suggests that if verified ‘very high’ and ‘high’ sensitivity areas are excluded from the development footprint, an Agricultural Compliance Statement will suffice as the report type submitted for the EIA phase. If not, an Agro-Ecosystem Specialist Assessment Report, which typically includes a full impact assessment with mitigation will have to be submitted, which will involve further assessment from a specialist investigator.

In conclusion, therefore, it is the recommendation of the specialist that agricultural areas of ‘high’ sensitivity be excluded from the ABO Uvemvane WEF 1 infrastructure planning. This will allow for the conservation of higher value land with high cropping potential and allow for development on less sensitive areas, which, although still developed on agricultural land, allow for diversification of income for land owners, while serving the purpose of developing renewable energy sources, which South Africa is also in need of.

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6 APPENDIX A: SPECIALIST INVESTIGATOR

6.1 Details

Specialist investigator: Albert Richardt Götze (*Pr.Sci.Nat.*)
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Highest tertiary qualifications: B.Sc. (Hons) – Botany and Soil Science:
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M.Sc. Botany: Phytosociology & Restoration Ecology (NWU, Potchefstroom).

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- South African Association of Botanists (SAAB) – membership no: 813
- South African Wetland Society – membership ID: 2164640
- Soil Science Society of South Africa (SSSSA) – membership ID: 2371575

Contact details:

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6.2 Vocational Experience

In 2002, during my post graduate studies, I started consulting in the fields of botany and soil science part time. In 2003 I started out as full time, independent, environmental consulting specialist under the name Environment Research Consulting (ERC) as sole proprietor. In the years since, I have gained experience in terrestrial and aquatic biodiversity assessments and soil work in the grassland and savannah biomes of South Africa as well as occasional work in the Nama Karoo, Indian Ocean Coastal Belt and Albany Thicket biomes. I have also on occasion conducted specialist studies in Eswatini (Swaziland).

Although botany, soil science and wetland delineations were my primary specialties for many years, I gradually gained experience in the assessment of terrestrial fauna. I have experience in live small mammal trapping and identification in the grassland and savannah biomes. I participated in several small mammal monitoring and research projects between 2002 and 2014 under the mentorship of Mr. Koos Kotze who, at the time of his passing at the end of 2014, was a full-time lecturer in animal studies at the Tshwane University of Technology's Nature Conservation Faculty. During the same period, I gained knowledge and experience in the assessment of other fauna fields of practice i.e. large mammals and herpetofauna.

Between 2008 and 2014, I held a part-time position at Northwest University as a research assistant, at the School for Environmental Sciences and Development, to post-graduate students in the fields of Botany and Resource Development & Utilization. I also similarly assisted pre-graduate nature conservation, and game ranch

management students at Tshwane University of Technology between 2009 and 2012, and on one occasion for the University of Venda, on a consultation basis. I have authored two and co-authored four scientific papers and research notes for various local scientific publications since 2004.

Past projects of a similar nature:

- 2014: Soil, land capability and agricultural potential assessment for: the proposed Tiger Kloof Solar Photovoltaic Energy Facility on portions 3 & 4 of the farm Waterloo 730 IN, Naledi Local Municipality, North West Province (*Kabi Solar (Pty) Ltd*).
- 2015: Soil, land capability and agricultural potential study on portion 1 of the farm Grootpoort 168 RD, Free State Province (*Solis Environmental*).
- 2023: Soil, land capability and agricultural potential SSVR for the proposed development of the Abo Mopane Solar PV facility near Steelpoort, Limpopo Province (*Blue Crane Environmental*).
- 2024: Soil, land capability and agricultural potential SSVR for the proposed development of the Dinaledi Solar PV Between Dealesville and Bultfontein, Free State Province (*Blue Crane Environmental*).
- 2024: Soil, land capability and agricultural potential SSVR for the proposed development of four borrow pits for the upgrade of the R34 road between Welkom and Kroonstad, Free State Province (*KSEMS Environmental Consulting*).

6.3 Professional Declaration

I, Albert Richardt Götze, as the appointed specialist, hereby declare/affirm the correctness of the information provided in this Site Sensitivity Verification Report, and that I:

- meet the general requirements to be independent and have no business, financial, personal or other interest in the proposed development and that no circumstances have occurred that may have compromised my objectivity; and
- am aware that a false declaration is an offence in terms of regulation 48 of the EIA Regulations (2014).
- I realize that a false declaration is an offence in terms of Regulation 71 of NEMA and is punishable in terms of section 24F of the Act.


A.R. Götze (M.Sc.; *Pr.Sci.Nat.*)

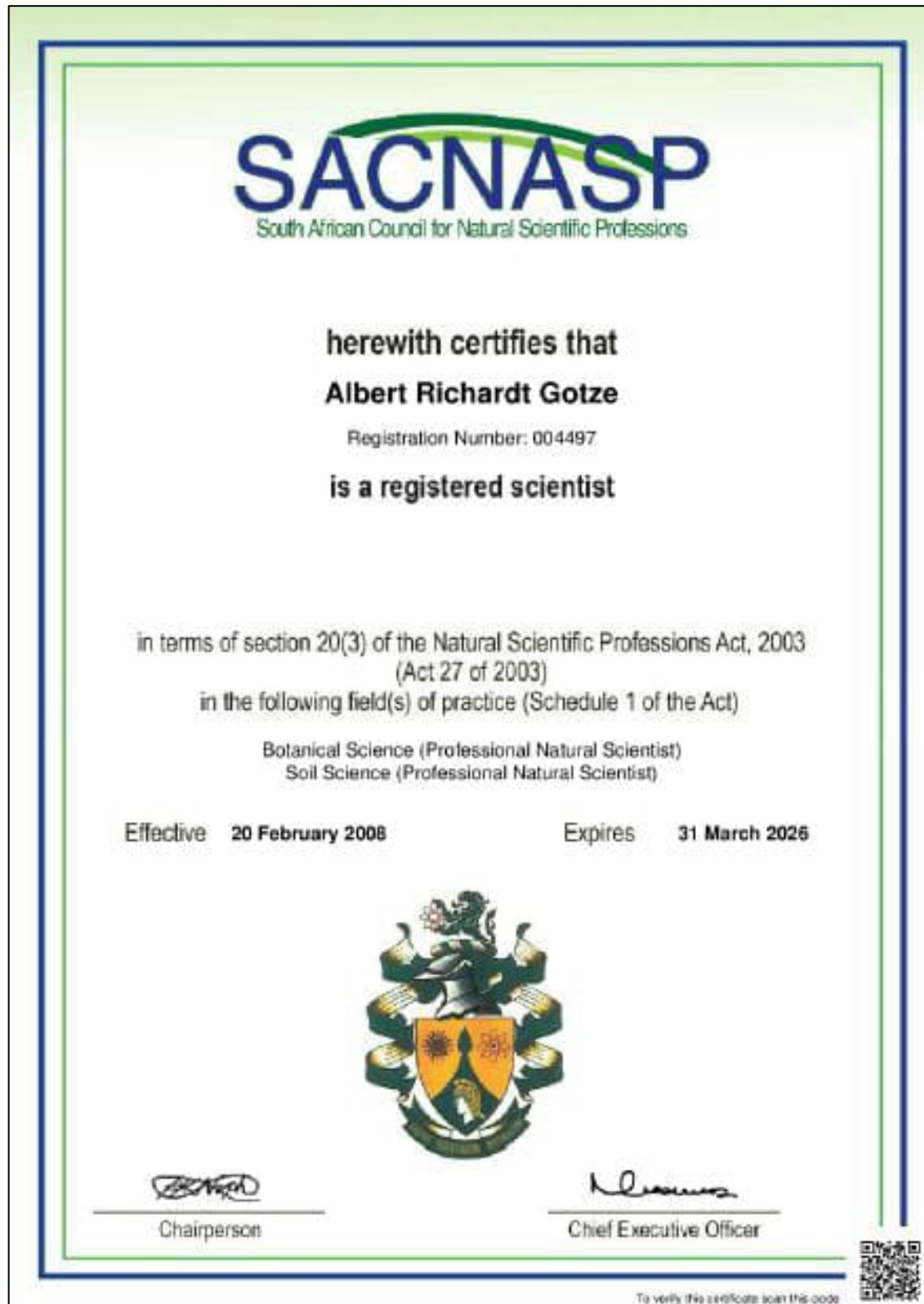


Figure 13: SACNASP registration certificate of the specialist that conducted the assessment.

7 APPENDIX B: MAP OF SITE VISIT TRACKS

Figure 14 presents GPS tracks that were traversed in and around the study area and captured on the Gaia GPS mobile app (<https://www.gaiagps.com>).

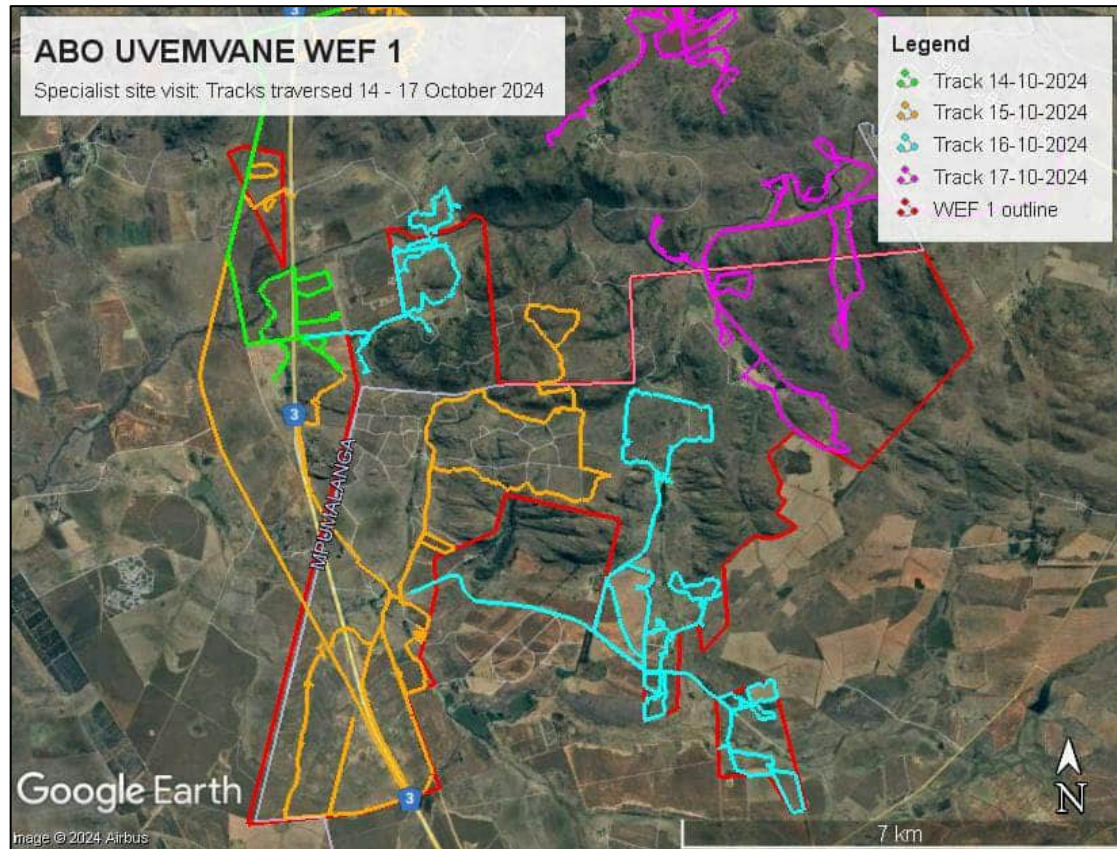


Figure 14: Google earth image presenting tracks that were followed during site visits to the project area.

**ABO UVEMVANE WIND ENERGY FACILITY 2
NEAR HEIDELBERG, GAUTENG PROVINCE**

***SOIL, LAND CAPABILITY AND
AGRICULTURAL POTENTIAL***

SITE SENSITIVITY VERIFICATION REPORT

NOVEMBER 2024

Specialist report prepared by:

ENVIRONMENT **R**ESearch **C**ONSULTING

Prepared for:



&



Report Name	ABO UMEMVANE WIND ENERGY FACILITY 2 NEAR HEIDELBERG, GAUTENG PROVINCE: SOIL, LAND CAPABILITY AND AGRICULTURAL POTENTIAL SITE SENSITIVITY VERIFICATION REPORT
Specialist Theme	Agriculture
Project Reference	SSVR: ABO Uvemvane Wind Energy Facility 2
Report Version	Draft 1 / 2026/03/11
Environmental Assessment Practitioner	WSP
Specialist investigation by	ENVIRONMENT RESEARCH CONSULTING
Fieldwork & Report Writer	Albie Götze (SACNASP 004497) * 
Declaration	I, the above signed, operate as an independent consultant under the auspice of the South African Council for Natural Scientific Professions. I declare that I have no affiliation with or vested financial interests in the proponent, other than for work performed under the Environmental Impact Assessment Regulations, 2017. I have no conflicting interests in the undertaking of this activity and have no interests in secondary developments resulting from the authorisation of this project. I 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.

* SACNASP certificate & CV included in report appendices.

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1 INTRODUCTION

1.1 Project Background

ERC was appointed by ABO Energy South Africa (Pty) Ltd to undertake a Site Sensitivity Verification of the Soil and Agricultural theme as part of the environmental authorisation application process for the proposed development of the ABO Uvemvane Wind Energy Facility 2 and associated infrastructure (from here on forward referred to as the ABO Uvemvane WEF 2 project), located about 10 km south-east of the town of Heidelberg in the Gauteng Province in the Lesedi Local Municipality / Midvaal Local Municipality within the Sedibeng District Municipality (Figure 1). The site visit and field surveys were conducted between 14 and 17 October 2024. A map indicating tracks traversed by the specialist during the site visit is included in the appendices of this report together with professional information about the specialist that conducted this investigation.

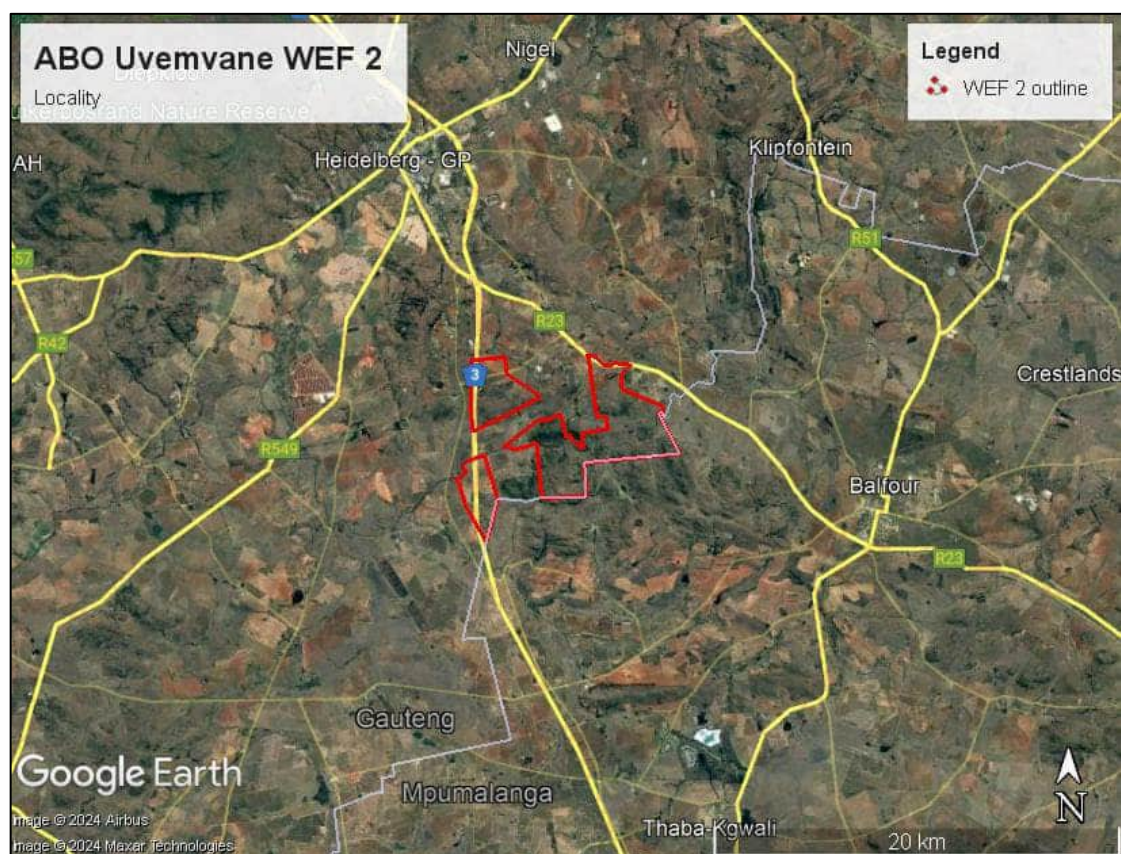


Figure 1: The locality of the proposed ABO Uvemvane WEF 2 project area near Balfour and Heidelberg.

1.2 Project Details

The Applicant, ABO Uvemvane Wind Energy Facility 2 (Pty) Ltd proposes the development of the ABO Uvemvane WEF 2 project, a commercial wind energy generation facility that covers a project area of about 3400 ha, comprising up to 25 turbines and with a total generation capacity of up to 180 MWac in capacity, as well as associated infrastructure.

It is important to note at the outset that the exact specifications of the proposed project components will be determined during the detailed engineering design phase prior to construction (after the issuing of an EA, should such an authorisation be granted), but that the information provided below is seen as the maximum development scenario for the proposed development of ABO Uvemvane WEF 2.

The proposed facility would comprise the following (to be located within the proposed development footprint):

- Up to 25 turbines with the following maximum specifications:
 - Maximum hub height 180 m;
 - Maximum blade length 100 m;
 - Maximum rotor diameter 200 m;
 - Maximum capacity per turbine 10 MW;
 - A transformer at the base of each turbine;
 - Concrete turbine foundations up to 1 ha each;
 - Turbine, crane, and blade hardstands (included in the abovementioned 1 ha).
- Primary/main access roads as well as internal road reticulation (note that existing roads/disturbed areas would be used as far as possible, and for the proposed roads, a corridor of up to 12 m wide may be temporarily impacted upon during construction and be rehabilitated to up to 10 m wide after construction), inclusive of stormwater infrastructure where relevant.
- Several temporary laydown areas / construction compounds (includes concrete batching areas), totalling up to 25 ha, would be fenced with access control; and/or
- A Battery Energy Storage System (BESS) to be located within the electrical infrastructure hub described under “associated infrastructure” below.

Associated infrastructure would include the following (to be located within the proposed development footprint):

- Associated internal electrical reticulation/ cabling (i.e., low- and medium voltage powerlines), underground as far as is feasible, and to run within

the proposed road footprint/route as far as possible as well as cabling in areas beyond the proposed roads (length yet to be determined); and

- On-site electrical infrastructure hub (several alternative locations to be assessed, with one preferred option) consisting of:
 - An on-site substation and associated infrastructure,
 - Additional step-up / transformation / collector / switchyard infrastructure,
 - Auxiliary buildings (including, but not limited to, Operation and Maintenance (O&M) building/s, admin building/s, workshop/s, gatehouse/s, security building/s, control centre/s, office/s, visitor centre/s, warehouse/s, etc.),
 - May also include the installation of a communications tower and lighting mast on site with a maximum height of 32 m and 25m respectively, and/or
 - A BESS as described above

Access points are still to be determined, the details of which will be as per the recommendations in the Transport Impact Assessment. Access roads would be developed both to the site and within the site (i.e., between project components).

The operations of the proposed facility would require some servicing, noting that the operational electrical requirements would be nominal and would be supplied by the facility on site. Water would be required for sanitation use by operational staff (drinking and washing hands, food, etc) as well as for cleaning of equipment, and scheduled internal cleaning of building, and dust control on internal roads (where needed). Water would ideally be sourced from the local municipality, in terms of a Service Level Agreement established between the Municipality and the Proponent. If this is not possible, then further options, such as sourcing water from a private services provider, will be investigated. Where required, a storage tank (i.e., Jo-Jo tank) of up to approximately 10,000L may be used on site for temporary water storage. Sanitation requirements would be minimal, given that there would not be many operational staff. Sanitation for auxiliary buildings would be connected to the existing municipal sewage system. If the Municipality does not approve, or have capacity for, such a connection, sewage would be stored in the conservancy tank and collected either by a honey-sucker truck or by a service provider (Contractor) for treatment at a licensed disposal site. Alternatively, a standalone system would be used (i.e., porta-loos) which would be regularly serviced by an independent contractor. Note that it is **not** intended to make use of soakaways or on-site treatment solutions. Refuse/solid waste produced would also be nominal (approximately two wheelie bins per week) and would ideally be removed by the Municipality, however, if this is not possible, the Operator would employ private contractors to remove the refuse and dispose of it appropriately.

The construction phase would also require water and sanitation, with these aspects being the primary responsibility of the Contractor. However, it would be

preferable for water to be sourced from the local Municipality (where available), with alternative arrangements (for example, bringing water in with trucks) being made where necessary. Solid waste would also be produced and would be managed in accordance with the requirements in the Environmental Management Programme (EMPr).

Stormwater drainage systems are to be constructed on site where relevant to ensure that stormwater run-off from site is appropriately managed. Water from these systems is not likely to contain any chemicals or hazardous substances and would be released into the surrounding environment based on the natural drainage contours.

Temporary water pipelines may be installed on site during construction for water supply to *inter alia* the concrete batching plant and the O&M building complex for domestic use and sanitation. Possible groundwater abstraction on site for purposes of the batching plant could be considered, if required, considering any necessary and relevant legal requirements. There would be no other specific stormwater and/or landscaping initiatives undertaken as part of the proposed ABO Uvemvane WEF 2, other than any interventions prescribed by the relevant specialist/s through the S&EIA process.

The connection for either project within the cluster could occur at these via a new loop-in-loop-out connection or via a direct connection to one of the two nearby substations. Various Electrical Grid Infrastructure (EGI) routes in this regard will be assessed and further detail will be provided at Scoping Phase. Note that the EGI component of ABO Uvemvane WEF 2 will be subject to a separate environmental impact assessment.

The proposed development as described above has been assessed with the following alternatives:

- 1) Layout: several on-site electrical infrastructure hub location alternatives have been assessed. Presently, there is one preferred option.
- 2) BESS Technology: Regarding the proposed BESS, the technology thereof is dynamic and so the specific type/technology to be developed would be selected based on market demands and technology availability at the time of construction. Therefore, both Lithium-ion and redox-flow are assessed as technology alternatives, with Lithium-ion being the current preferred technology.
- 3) The No-go alternative has also been assessed, noting that the property does hold existing development rights (i.e. Agriculture) and so, not developing the proposed development does not necessarily mean that there would be no changes or impacts on the site.

1.3 Scope and purpose of the study

This assessment takes the form of a Site Sensitivity Verification (SSV) to assess the sensitivity of the proposed development footprint from a Soil, Land Capability and Agriculture point of view.

This assessment entailed the following aspects:

- A desktop review of existing land type maps and spatial distribution of various soil types and other agricultural related aspects to establish broad baseline conditions and possible areas of agricultural sensitivity;
- Assess the soil potential and land capability of croplands and conduct a survey to ground-truth cropland status and the agricultural sensitivity of such areas in the project area;
- Assess the overall agricultural production potential across all land surfaces in the project site;
- Base soil classifications on the latest South African Soil Classification System (Soil Classification Working Group, 2018);
- Subsurface soil observations to be done by means of a manual hand auger;
- Compile a report presenting the results of the desktop study and a description of the findings during the field assessment; and
- Assess and compare/verify the sensitivity findings of this assessment against that of a screening report generated using the National Screening Tool of the Department of Environmental Affairs (DEA) for the proposed project area.

1.4 Assumptions and Limitations

the following assumptions and limitations are applicable to this assessment:

- The soil survey conducted as part of the land capability assessment was conducted within the proposed project area and includes a 50 m buffer, which is considered adequate for the purpose of this study.
- Land Capability was classified according to prevailing climatic conditions and current soil restrictions on site.
- Since soils naturally occur in a continuum with infinite variances, it is often problematic to classify any given soil as one form, or another. For this reason, the classifications presented in this report are based on a "closest fit" basis to the latest soil classification system of South Africa (Soil Classification Working Group, 2018).
- During the sampling process, not all areas were assessed in comprehensively. Some terrain types (e.g. mountainous and hilly terrain) that generally have relatively homogenous soils and have little relevance to the crop production capabilities of the area were extrapolated.
- Some aspects of soil and land capability may therefore have been overlooked. However, it is the opinion of the specialist that sufficient sampling was done to present sufficient detail in this report to enable the Environmental Assessment Practitioner (EAP) and the regulating authorities to make a well-informed decision regarding the proposed

activities on the site. The confidence rating in the result of this assessment is high.

- Soil fertility was not considered a limitation to crop production because nutrient deficiencies and/or toxicities could be rectified by appropriate organic or inorganic rectifications during cultivation. No soil samples were analysed for soil fertility during this investigation.
- No scientific data was collected or analyzed for the calculation of ecological veld condition or grazing capacity. Any comments or observations made in this regard are based on observations, the expert knowledge, and relevant professional experience of the specialist investigator.
- Affected properties were considered in their entirety. However, currently cultivated and other potentially arable areas were considered as a priority for this assessment.
- The assessment was done over four days from 14 to 17 October 2024. Given the size of the site, and the area of cultivated and potentially arable land, is deemed adequate for this SSVR and the nature of the proposed development.
- The time of the year in which the assessment was done is deemed acceptable since seasonality has no bearing on the accuracy of land use and land capability assessments.

1.5 Relevant Legislation & General Regulatory Requirements

High potential agricultural land is defined as having: *“the soil and terrain quality, growing season and adequate available moisture supply to sustain crop production when treated and managed according to best possible farming practices”* (Land Capability report, ARC, 2006). High agricultural potential land is a scarce non-renewable resource, which necessitates an Agricultural Potential assessment prior to land development, particularly for purposes other than agricultural land use which will affect extensive tracts of land, as per Conservation of Agricultural Resources Act (Act No. 43 of 1983) (CARA, 1983).

The legislation, policies and guidelines listed in Table 1 below are in general applicable to the current project. Although the list is extensive, it may not be complete.

Table 1: A list of key legislation, policies, and guidelines relevant to agricultural resources in the study area.

Relevance	Legislation / Policy / Guideline
National	Constitution of the Republic of South Africa (Act No. 108 of 1996).
	The National Environmental Management Act (NEMA) (Act No. 107 of 1998). - <i>Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and</i>

Relevance	Legislation / Policy / Guideline
	44, GNR 320 of Government Gazette 43110 (March 2020); and GNR 1150 of Government Gazette 43855 (October 2020).
	Preservation and Development of Agricultural Land Act (Act No. 39 of 2024).
	Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) (CARA, 1983).
	Natural Scientific Professions Act (Act No. 27 of 2003).

This assessment was guided by the protocol published in Government Notice No. 320, Government Gazette 43110 of 20 March 2020: *Protocol for the specialist assessment and minimum report requirements of environmental impacts on agricultural resources by onshore wind and / or solar photovoltaic energy facilities where the electricity output is 20 MW or more.*

1.6 Methodology

1.6.1 Desktop assessment

A desktop assessment was compiled from various data sources, including but not limited to the Agricultural Geo-Referenced Information System (AGIS) and Cape Farm Mapper 3. From these and other data bases and literature, soil- and land capability data in the vicinity of the study area was collected and assessed for relevance. Soil patterns as well as land capability data within the proposed development area was reviewed on AGIS and/or Agricultural Research Council Institute for Soil Climate and Water (ARC-ISCW) databases.

Existing desktop sources were investigated for:

- General soil data
- Land type data
- Geological data
- Land capability data
- Mean annual rainfall & evaporation data
- Grazing capacity data
- Potential crop yield data
- Protected Agricultural Areas
- Current and historical satellite imagery

1.6.2 Field survey

An on-site field survey of the soils and agricultural conditions of the proposed development site was conducted from 14 to 17 October 2024.

The aim of the field survey was to:

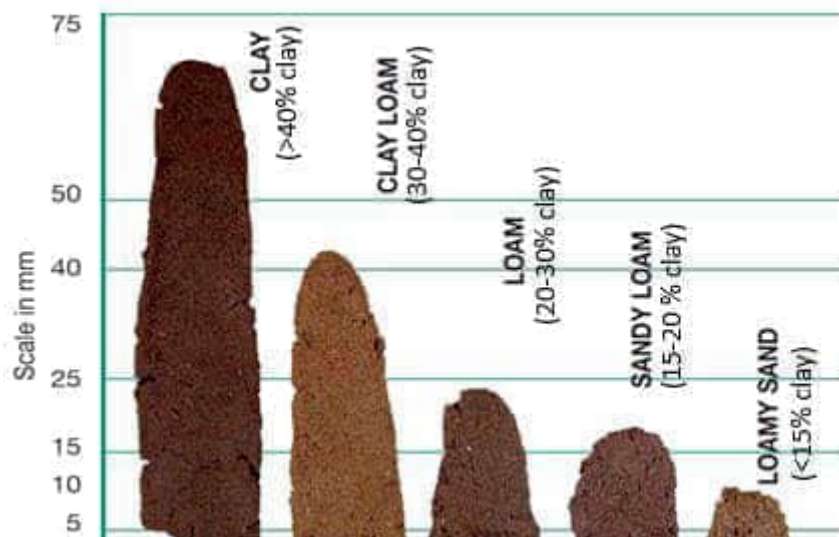
- Ground-truth cropland status and subsequent agricultural sensitivity.
- To visually assess the overall soil- and agricultural production potential on the site.

Subsurface soil observations were made by means of a manual hand auger (bucket and/or Edelman-type) to a depth of 150 cm, which is a practical, cost-effective technique and deemed adequate for the broad identification and description of soils in this type of assessment. No soil profiles were excavated as it was not deemed necessary at the time of this assessment. Soil types were classified according to the latest classification of the Soil Classification Working Group (SCWG, 2018). Soil data was subsequently analysed to assess the impacts of the proposed project under current site conditions. Furthermore:

- Soil observation points were recorded with a handheld GPS.
- The following physical soil properties were recorded for each soil observation point:
 - Terrain morphological unit (landscape position);
 - Terrain slope;
 - Diagnostic soil horizons and their respective sequence and depth;
 - Approximate clay percentage of the top and sub-soil;
 - Soil form (SCWG, 2018).

The ribbon technique (Giddings, 2014) is used to estimate soil texture and the estimated clay percentage in the soil:

- In this test a small handful of soil is placed in the palm of the hand and stones and gravel are removed while also breaking down lumps in the soil, making it easier to work with.
- Enough water is added to make a bolus or ball, which is kneaded for 1 to 2 minutes, adding more water or soil until it just stops sticking to the fingers. Note how the soil feels when kneading it: gritty (sandy), silky (silty) or plastic/sticky (clay). If a bolus cannot be formed, the soil is very sandy.
- The soil is rolled into a cigar shape with about 1 to 2 cm in diameter and placed between the thumb and forefinger and gently pressing form it into a flat ribbon shape.
- The ribbon should only be 2 to 3 mm thick. The more clay you have in your soil, the longer your ribbon will be. As the ribbon develops, it is extended over the forefinger until it breaks from its own weight.



1.6.3 Land Capability Classification

Land capability is defined as the combination of soil, climate, and terrain suitability factors for supporting rain-fed agricultural production (DALRRD, 2021). The Department of Agriculture's (2016) updated and refined land capability mapping defines land capability values of 1 to 15, where values of 8 to 15 indicate land that is suitable or likely suitable as arable land, while values of 1 to 7 is indicative of land that is likely to be suitable only as non-arable grazing land.

1.6.4 Sensitivity Verification

The National Web-based Environmental Screening Tool (screening tool) (Regulation 16(1)(v) of the Environmental Impact Assessment Regulations 2014, as amended) classifies agricultural sensitivity according to two independent criteria, from two independent data sets, which may be indicators

of the land's agricultural production potential but are somewhat limited in that it is based on fairly coarse data. The two criteria are:

- whether the land is classified as cropland or not on the most recent field crop boundary data set (Crop Estimates Consortium, 2023), and
- its land capability rating on the land capability data set (DAFF, 2017).

All classified cropland is, by definition, either high or very high sensitivity. There is a direct relationship between the land capability rating and the screening tool's agricultural sensitivity rating (Table 2).

Table 2: Relationship between land capability and the screening tool's agricultural sensitivity rating.

Land capability value	Agricultural sensitivity (screening tool)
1 – 5	Low
6 – 8	Medium
9 – 10	High
11 – 15	Very High

During sensitivity verification this knowledge is used and compared to the findings of the data collected (desktop and field data) during this investigation.

2 RESULTS

2.1 Desktop assessment

2.1.1 Natural environment

The proposed ABO Uvemvane WEF 2 project area is situated in hilly terrain with broad foot slopes with grassland and woody vegetation on hill slopes and along streams. The Suikerbosrand River drains the area from east to west.

According to Mucina & Rutherford (2006) and SANBI (2018), the study area falls in two biomes over three different vegetation types that have the following relevant descriptive characteristics:

Savannah biome:

- Gold Reef Mountain Bushveld (SVcb 9):
 - Characterized by rocky hills and ridges, which are often east-west trending, covered by woody vegetation, which is generally denser on south-facing slopes of the ridges and hills and more variable elsewhere. Tree and shrub layers are often continuous, and the herbaceous layer is dominated by grasses.
 - The geology mainly consists of quartzites, conglomerates and some shale horizons of the Magaliesberg, Daspoort and Silverton Formations of the Vaalian Pretoria Group as well as the Hospital Hill, Turffontein and Government Subgroups of the Randian Witwatersrand Supergroup.
 - Soils are mostly shallow, gravel lithosols of the Mispah and Glenrosa forms mostly associated with Ib and Fb land types.
- Andesite Mountain Bushveld (SVcb 11):
 - Characterised by dense, medium-tall thorny bushveld with a well-developed grass layer on hill slopes and valleys with an undulating landscape.
 - The geology is made up of Tholeitic basalt of the Kliprivierberg Group, also dark shale, micaceous sandstone and siltstone and thin coal seams of the Madzaringwe Formation, and Andesite and conglomerate of the Pretoria Group.
 - Weathering of these rocks gives rise to shallow rocky, clayey soils of mainly Mispah and Glenrosa soil forms.

Grassland biome:

- Soweto Highveld Grassland (Gm 8):
 - The landscape occurs gently to moderately undulating on the Highveld plateau supporting short to medium-high, dense, tufted grassland. Generally, in undisturbed places, only scattered small wetlands, narrow streams, pans and occasional ridges or rocky outcrops interrupt the continuous grassland cover.

- The geology is made up of shale, sandstone, or mudstone of the Madzaringwe Formation (Karoo Supergroup) or the intrusive Karoo Suite dolerites, which feature prominently in the area. In the south the Volksrust Formation (Karoo Supergroup) is found and in the west, the older Transvaal, Ventersdorp, and Witwatersrand Supergroups are most significant.
- Soils are generally deep and reddish in colour and the dominant land types include Ea, Ba and Bb.

Climatically the area receives summer-rainfall with Mean Annual Precipitation (MAP) of about 665 mm. Frost is frequently received in the winter.

2.1.2 Agricultural environment

Land capability information for the ABO Uvemvane WEF 2 project area, as accessed on the Cape Farm Mapper 3 website is presented in Figure 2. These vary between classes 2 (Very Low) to 10 (Moderate-High).

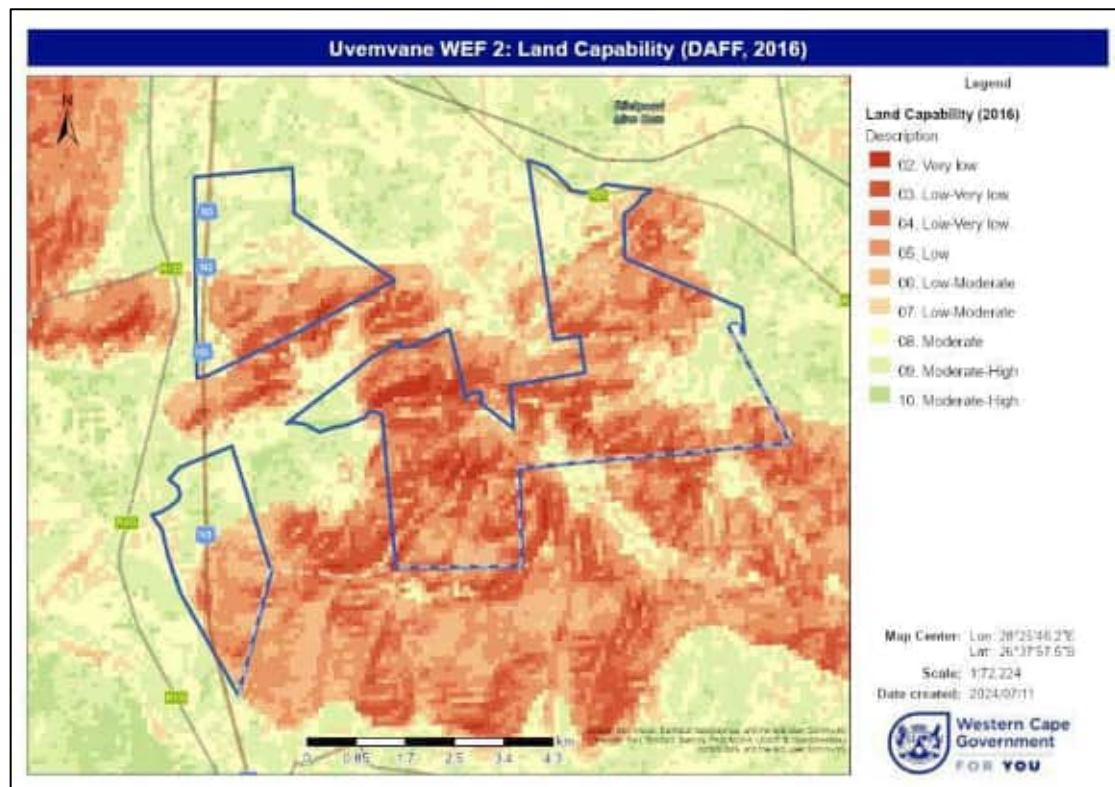


Figure 2: Land capability in the proposed project area and surroundings.

Table 3 presents a summary of data applicable to the study area, according to various data sources:

Table 3: Summary of the results of the desktop assessment

Main Aspect	Descriptor	Value / description
Climate	Mean Annual Rainfall (mm) (Schulze, 2009)	600 – 700 (Schulze, 2009)
	Total annual evaporation (mm) (Schulze, 2009)	2000 - 2200
	Climate capability classification (out of 9) (DAFF, 2017)	5 (moderate) to 6 (moderate high)
	Köppen-Geiger Climate Zones (Beck <i>et al</i> , 2018)	BSh (Dry, semi-arid, hot); Cwa (Temperate, dry winter, hot summer).
Terrain	Terrain type	Open high hills or ridges; plains with open low hills or ridges
	Terrain morphological units	Crest, mid-slope, foot slope & valley bottom
	Slope gradients (%)	wide range from 0 to >35%
	Altitude (m)	1500 - 1800
	Terrain capability classification (out of 9) (DAFF, 2017)	2 (low-very low) to 07 (High)
Soil	Geology	Klipriviersberg Group; Turffontein Subgroup; Jeppestown Subgroup
	Land type(s)	Ba1, Ba29, Ib42, Ib43 & Ib44
	General description of soils in the wider area	Red-yellow well drained massive or weakly structured soils, soils with a plinthic horizon; soils with a strong texture contrast between A and B-horizon; rocky areas.
	Dominant soil forms	Hutton, Ermelo, Clovelly, Bainsvlei, Westleigh, Sepane, Valsrivier, Sterkspruit, Rensburg, Bonheim, Swartland, Glenrosa, Mispah.
	Soil capability classification (out of 8) (DAFF, 2017)	2 (low-very low) to 08 (High-very high)
	Water erosion susceptibility	4 (moderate-high) to 7 (Low)
	Wind erosion susceptibility	1 (Very high) to 6 (Moderate-low)
Land use	Agricultural land use in the surrounding area	Cultivation (rain-fed & irrigation), natural grazing (livestock & game)

Main Aspect	Descriptor	Value / description
	Agricultural land use on the site	Cultivation (rain-fed & irrigation), natural grazing (livestock & game)
	Irrigation suitability (out of 5)	1 (unsuitable) to 4 (good)
General	Long-term grazing capacity (ha per Large Stock Unit) (DAFF, 2018)	5 to 8
	Land capability classification (out of 15) (DAFF, 2017)	2 (Low) to 10 (Moderate-high)
	Within Protected Agricultural Area (DALRRD, 2020)	Yes partially, rainfed Grootvlei - Balfour PAA ('C' priority rating)

The study area is partially situated in a rainfed Protected Agricultural Area (PAA) with a priority rating of 'C' (moderate-high priority) as defined by the Department of Agriculture, Land Reform and Rural Development (DALRRD, 2020) and recently enacted in the Preservation and Development of Agricultural Land Act (Act No. 39 of 2024) (PDALA). According to DALRRD (2020) a PAA is a demarcated area in which the climate, terrain, and soil are generally conducive for agricultural production and which, historically, has made important contributions to the production of the various crops that are grown across South Africa.

According to the PDALA, in section 11 (2)(a) the aim of a PAA is to:

“protect high value agricultural land capable of producing significantly higher levels of agricultural goods or best suited to produce acceptable levels of high value agricultural goods within a defined geographical area, in a sustainable manner, and includes:

- (i) an agricultural land capability rating of above moderate;*
- (ii) agricultural land with an agricultural potential of above moderate;*
- (iii) unique agricultural land; and*
- (iv) irrigated agricultural land.”*

Within PAA's, the protection, particularly of arable land, is considered a priority for the protection of food security in South Africa. However, there may be much variation within a PAA and all land within it is not necessarily of sufficient agricultural potential to be suitable for crop production, due to site-specific terrain, soil, and other constraints. All land within a PAA is therefore not necessarily worthy of prioritised protection as agricultural production land.

According to DALRRD (2020), the approach for the demarcation of the PAA's was based on a *spatial evaluation exercise through the assessment and classification of the mentioned data layers and verified through workshops with*

the provincial Departments of Agriculture. Where needed it was supported by in field verifications. It also strongly recommends that in-field verification and local level assessments are conducted before using the PAA data for detail planning purposes, which forms part of the results of this SSVR.

The southern half and the extreme north-western parts of the proposed ABO Uvemvane WEF 1 project area is situated in the Grootlvlei - Balfour rainfed PAA with a 'C' priority rating (Figure 3) on land that has varying potential for rainfed crop production.

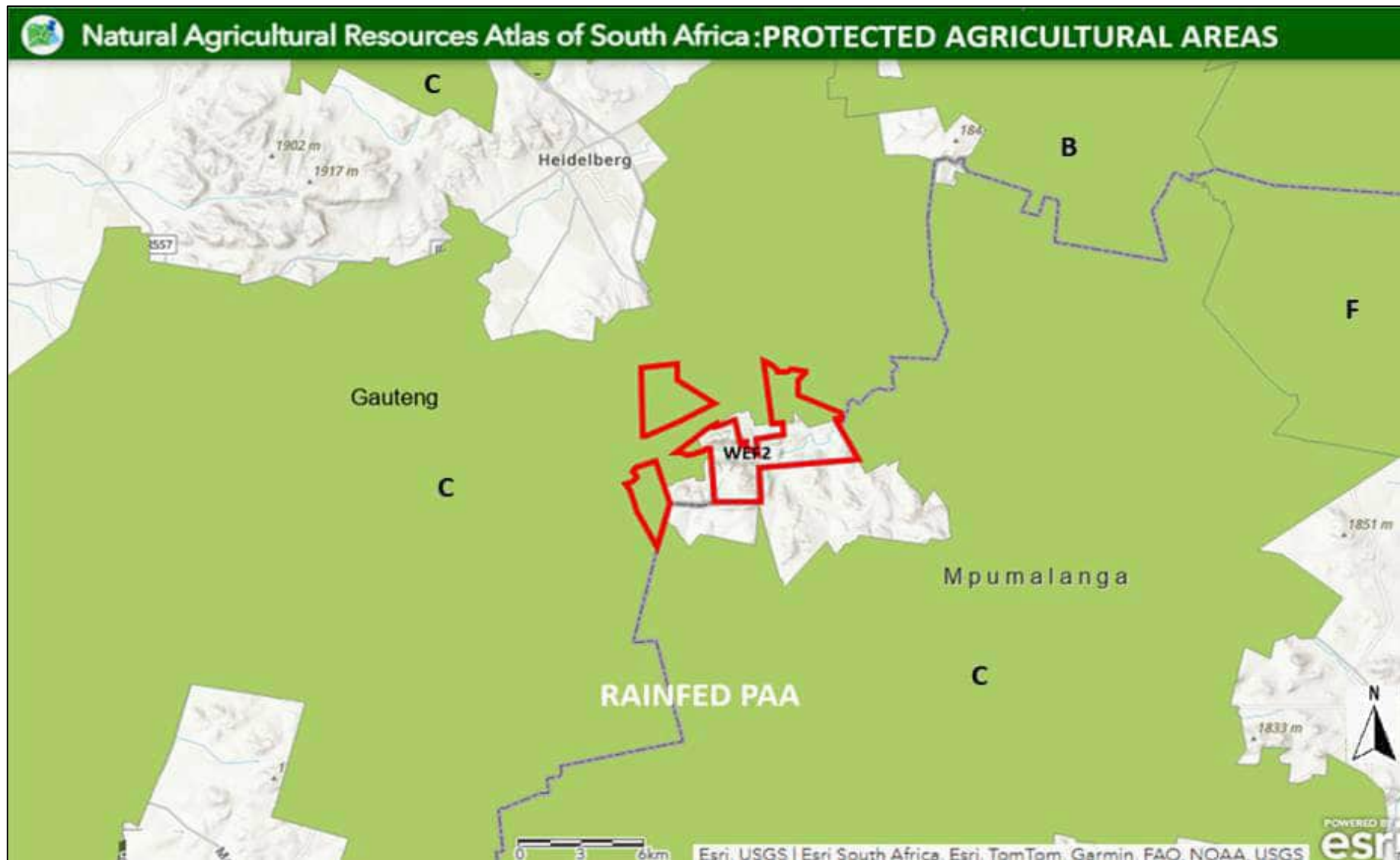


Figure 3: Protected Agricultural Areas (in green) in relation to the ABO Uvemvane WEF 2 project area.

2.2 Field survey findings

2.2.1 Description of agricultural resources in the project area

Soil sampling (using soil auger) was concentrated in current and previously cultivated croplands to determine the soil potential of these areas and to determine if they have potential for sustainable crop production. Figure 4 below presents the soil assessment points that were surveyed during the fieldwork phase.

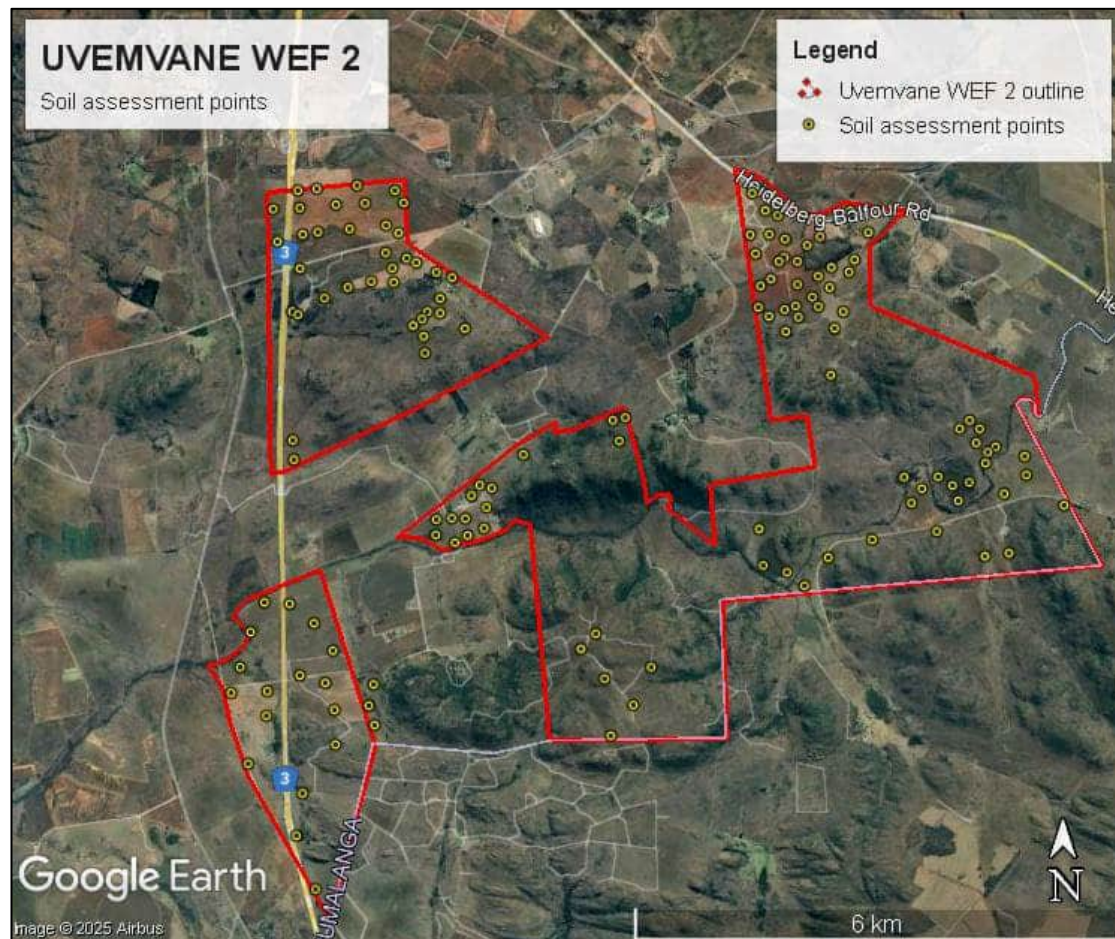


Figure 4: Soil assessment points surveyed in the ABO Uvemvane WEF 2 project area.

Three categories of cultivated land were recorded in the proposed ABO Uvemvane WEF 2 project area of which Figure 5 shows the extent. Cultivated land is divided into currently cultivated (mainly maize and soya beans) under mostly rainfed cultivation (Figure 6) and limited irrigation cultivation (Figure 7) and previously cultivated areas (not cultivated in the last 10 years) (Figure 8). Natural veld where no cultivation has taken place (Figure 9) covers about two thirds of the land surface in the project area.

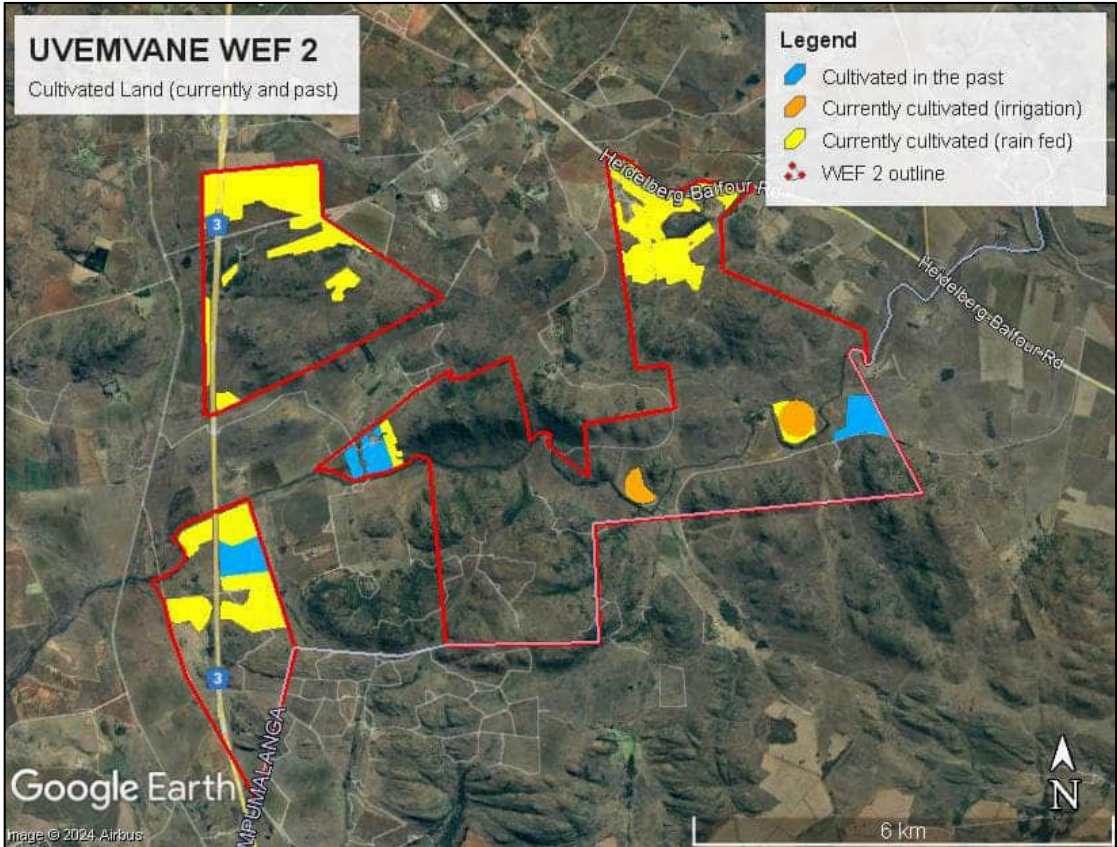


Figure 5: Areas of current and past cultivation in the proposed ABO Uvemvane WEF 2 project area.



Figure 6: A currently cultivated (rainfed) land where a crop of maize was recently harvested.



Figure 7: A currently irrigation cultivated land (center pivot – last cultivated in 2023).



Figure 8: An abandoned cultivated area where no cultivation has taken place for an extended period (> 10 years).



Figure 9: Natural grazing where no cultivation has taken place in the past.

Soils were classified according to the latest South African soil classification system (Soil Classification Working Group, 2018) and interviews were conducted with landowners/users to gain an understanding of farming practices on the land.

Broad soil categories were formulated for this report by grouping soil forms with similar characteristics and potential for crop cultivation. Five such categories, in respect of agricultural cropping production potential, were recorded in the ABO Uvemvane WEF 2 project area and are shortly described:

- Category 1: deep to moderately deep, well drained, massive or weakly structured soils – good to moderate cropping potential.
 - Dominant soil forms are:
 - Hutton
 - Ermelo
 - Clovelly (lithic horizon > 1.0 m deep)
 - Nkonkoni (lithic horizon > 1.0 m deep)
 - Dominant agricultural land use: currently cultivated (rainfed or irrigation), Previously cultivated.
 - Underlies approximately 8 % of the ABO Uvemvane WEF 2 project area.
- Category 2: moderately deep to shallow well drained, massive or weakly structured soils with a plinthic horizon – moderate to poor cropping potential.

- Dominant soil forms are:
 - Bainsvlei
 - Avalon
 - Westleigh
- Dominant agricultural land use: currently cultivated (rainfed or irrigation), Previously cultivated, natural grazing.
- Underlies approximately 15 % of the ABO Uvemvane WEF 2 project area.

- Category 3: heavy clay soils and soils with a strong texture contrast between the A- and B-horizons (duplex soils) – moderate to poor cropping potential.
 - Dominant soil forms are:
 - Pinedene
 - Sterkspruit
 - Valsrivier
 - Dominant agricultural land use: currently cultivated (rainfed), Previously cultivated, planted pastures, natural grazing.
 - Underlies approximately 10 % of the ABO Uvemvane WEF 2 project area.

- Category 4: gley soils – poor or no cropping potential.
 - Dominant soil forms are:
 - Rensburg
 - Bonheim
 - Sepane
 - Katspruit
 - Dominant agricultural land use: natural grazing.
 - Underlies approximately 11 % of the ABO Uvemvane WEF 2 project area.

- Category 5: shallow lithic/rocky soils – no cropping potential.
 - Dominant soil forms are:
 - Mispah
 - Glenrosa
 - Swartland

- Dresden
- Clovelly (lithic horizon < 0.8 m deep)
- Nkonkoni (lithic horizon < 0.8 m deep)
- Dominant agricultural land use: natural grazing.
- Underlies approximately 56 % of the ABO Uvemvane WEF 2 project area.

Photographic examples of the dominant soil forms recorded in the general area of the ABO Uvemvane WEF 2 project area are presented in Table 4 below.

Table 4: Spatially representative soil form sample examples.

Soil Category & sample location	Description	Photographs
<p>Category 1 Date: 16-10-2024</p> <p>Coordinates: 26°36'28.74"S 28°24'22.83"E</p> <p>Portion 17 of the Farm Lagerspoort Number 406</p>	<p>Hutton A-horizon: 0 – 35 cm B-horizon: 35 – 150+ cm</p>	
<p>Category 1 Date: 15-10-2024</p> <p>Coordinates: 26°36'06.56"S 28°24'20.01"E</p> <p>Portion 17 of the Farm Lagerspoort Number 406</p>	<p>Ermelo A-horizon: 0 – 25 cm B-horizon: 25 – 150+ cm</p>	
<p>Category 1 Date: 16-10-2024</p> <p>Coordinates: 26°41'34.71"S 28°26'43.71"E</p> <p>Portion 13 (a Ptn of Ptn 2) of the Farm Malanskraal Number 407</p>	<p>Clovelly A-horizon: 0 – 30 cm B-horizon: 30 – 85 cm</p>	

Soil Category & sample location	Description	Photographs
<p>Category 2 Date: 15-10-2024</p> <p>Coordinates: 26°35'52.84"S 28°23'50.38"E</p> <p>The Remaining Extent of Portion 2 of the Farm Lagerspoort No 406</p>	<p>Bainsvlei A-horizon: 0 – 25 cm B-horizon: 25 – 60 cm</p>	
<p>Category 2 Date: 15-10-2024</p> <p>Coordinates: 26°35'49.24"S 28°23'26.81"E</p> <p>The Remaining Extent of Portion 2 of the Farm Lagerspoort No 406</p>	<p>Westleigh A-horizon: 0 – 40 cm</p>	
<p>Category 3 Date: 15-10-2024</p> <p>Coordinates: 26°42'56.97"S 28°24'03.73"E</p> <p>Remainder of Portion 18 (a Ptn of Ptn 3) of the Farm Malanskraal Number 407</p>	<p>Pinedene A-horizon: 0 – 20 cm B-horizon: 20 – 55 cm</p>	
<p>Category 3 Date: 16-10-2024</p> <p>Coordinates: 26°37'56.87"S 28°24'42.31"E</p> <p>Portion 7 of the Farm Lagerspoort Number 406</p>	<p>Sterkspruit A-horizon: 0 – 20 cm B-horizon: 20 – 120+ cm</p>	

Soil Category & sample location	Description	Photographs
<p>Category 4 Date: 17-10-2024</p> <p>Coordinates: 26°39'19.95"S 28°28'11.68"E</p> <p>Remaining Extent of Portion 1 of the Farm Driefontein 405</p>	<p>Rensburg A-horizon: 0 – 30 cm</p>	
<p>Category 4 Date: 14-10-2024</p> <p>Coordinates: 26°38'33.65"S 28°23'06.14"E</p> <p>Remaining Extent of Portion 2 of the Farm Modderfontein Number 410</p>	<p>Sepane A-horizon: 0 – 40 cm B-horizon: 40 – 80 cm</p>	
<p>Category 5 Date: 15-10-2024</p> <p>Coordinates: 26°38'38.01"S 28°24'30.02"E</p> <p>The Farm Orion Number 413</p>	<p>Mispah A-horizon: 0 – 10 cm</p>	
<p>Category 5 Date: 17-10-2024</p> <p>Coordinates: 26°36'19.82"S 28°27'16.71"E</p> <p>Remaining Extent of Portion 4 of the Farm Steynskraal Number 399</p>	<p>Glenrosa A-horizon: 0 – 35 cm</p>	

Soil Category & sample location	Description	Photographs
Category 5 Date: 16-10-2024 Coordinates: 26°38'06.27"S 28°24'40.05"E The Farm Orion Number 413	Nkonkoni A-horizon: 0 – 20 cm B-horizon: 20 – 55 cm	

From an ecological carrying capacity point of view, the grazing capacity varies from farm to farm. Some areas have been overgrazed in the past while others have not been heavily exploited. The overall grass layer seems to be in a fair condition with many climax grasses occurring in the area and many shrubs and trees that supply a generous amount of browse for game species that are also stocked on some farms. It is the specialist's opinion that the natural grazing in the area varies between 7 to 10 hectares per large stock unit (ha/LSU), which is in line with the long-term average values of 5 to 8 ha/LSU given by DAFF (2018) for the area.

2.2.2 Assessment of the agricultural production potential of the project area

The assessment of the soil and agricultural production potential of the project area is based on information gained during the desktop assessment (summarized in Table 4 previously), as well as different parameters of which information was gathered during the field assessments, which included:

- Topography (terrain unit),
- Slope (%),
- Clay percentages of different soil horizons (estimated using the ribbon technique),
- Depth of different soil horizons, and
- Any notable impacts.

Category 1 soils are in general found to be land with good to moderate cropping potential, which make these areas important to produce grain crops. The cropping potential of category 3 to 5 soils in the ABO Uvemvane WEF 2 project

area are all limited by the combination of climate and various soil constraints. Category 2 soils have moderate soil depth with potentially poor draining sub-soils that may also restrict the growth of plant roots beyond the plinthic layer. Category 3 and 4 soils have moderate to severe water infiltration restrictions which may cause waterlogging in very wet seasons and provide insufficient moisture in below average rainfall seasons. Category 5 soils are severely restricted in soil depth and provide poor to no water retention potential to produce a crop through the season and therefore limits the potential of these sections of land to grazing only.

Some cultivated lands in the project area have been abandoned as croplands or are utilized only as planted pastures in some instances. It should be noted that the cropping potential of land changes over time as the agricultural economy changes. Marginal soils that may have been economically cultivated in the past, are abandoned as they are no longer suitable as economically viable crop production in a more challenging agricultural economy, with increased input costs, and as climate conditions change and fluctuate from one extreme to another.

3 SITE SENSITIVITY VERIFICATION

3.1 Screening Report

As mentioned previously, there is a direct correlation between land capability rating and the National Web-based Environmental Screening Tool's (screening tool's) agricultural sensitivity.

The information in Figure 10 was received from the screening tool, which rates the Agricultural Sensitivity theme as 'Very High' citing *i.a.*: "Pivot Irrigation; Land capability;09. Moderate-High/10. Moderate-High".

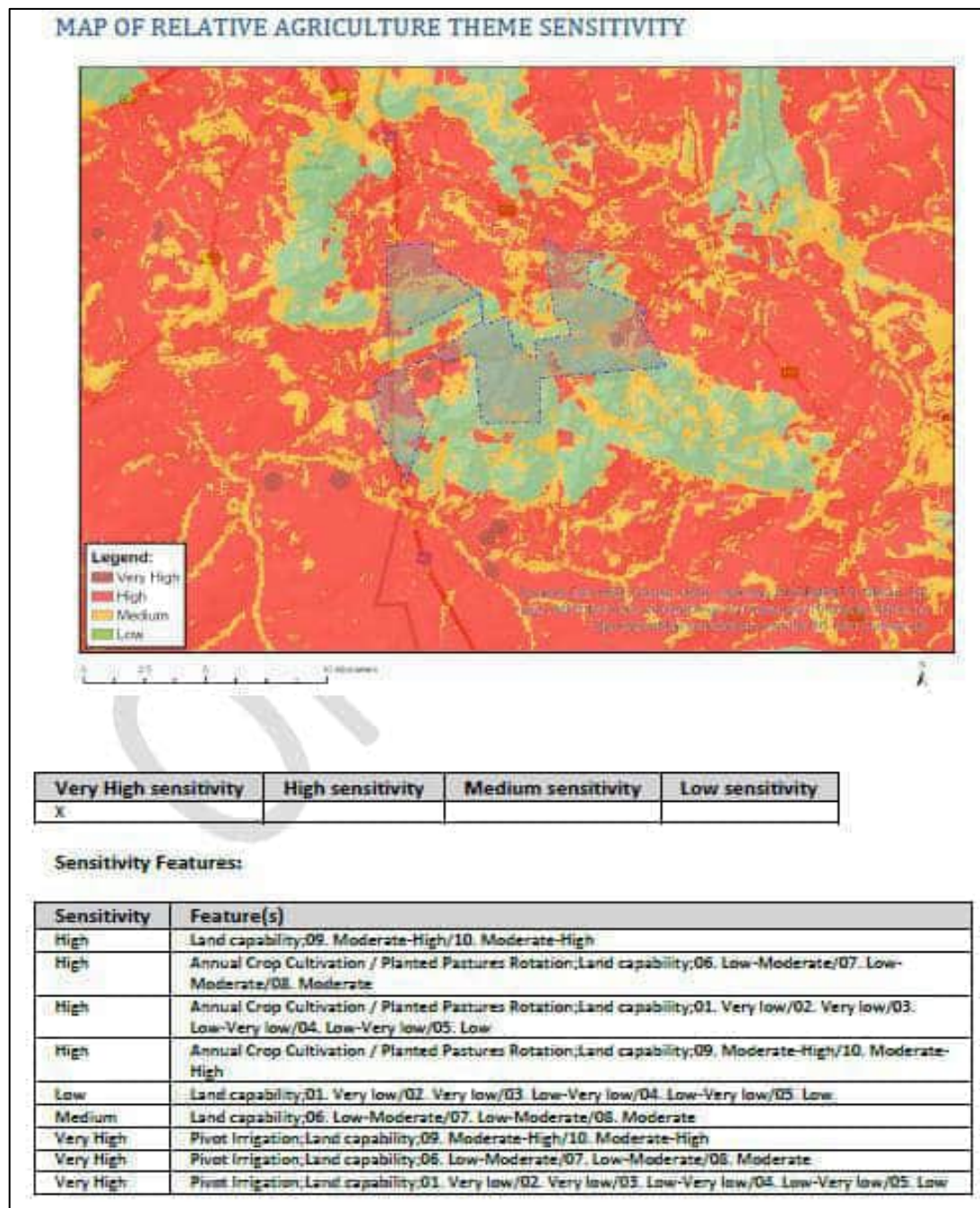


Figure 10: Information obtained from the National Web-based Environmental Screening Tool for the ABO Uvemvane WEF 2 project area.

3.2 Sensitivity verification

From an Agricultural Theme Sensitivity point of view, the very high sensitivity classification is disputed by this assessment for all non-irrigated lands in the project area. Pivot irrigation was recorded in the proposed ABO Uvemvane WEF 2 project area on the Farm Steynskraal (Remaining Extent of Portion 1) on two center pivots of 20 and 12 ha respectively, which are irrigated from the Suikerbosrand River that drains past them. The 20-ha pivot (pivot 1), located east of the other (pivot 2), is situated on deep well drained Hutton soils (>1.8 m deep) that are ideal for irrigation cultivation. Pivot 2, on the other hand, is situated on shallower Bainsvlei (85 – 100 cm deep) and Avalon (50 – 100 cm) soils. The northern extremity of this pivot terminates against a hill where shallow Glenrosa soils (30 – 50 cm) were recorded. In conclusion, pivot 1 can be validated as having very high sensitivity but pivot 2 has medium sensitivity at best.

Generally, the rest of Category 1 soils are rated as high sensitivity by this assessment and do coincide with areas rated the same by the screening tool, however, most areas of high sensitivity according to the screening tool are also disputed due to soil potential restrictions as noted in the previous section for Category 2, 3 and 4 soils. The central and southern sections of the project area are rated as medium to low by the screening tool, which is mostly disputed from a medium sensitivity perspective and validated as low for most of that area.

Table 5 summarizes the conclusions of this sensitivity assessment, which are visually presented in Figure 11.

Table 5: Summary of the screening tool vs specialist verified sensitivities.

Theme	Screening Tool	Soil Category	Specialist	Tool Validated or Disputed by Specialist - Reasoning
Agricultural Theme	Very High	Pivot 1	Very High	Validated – Pivot 1 as described in the report is a high value irrigated land on deep, well-drained Hutton soils.
	Very High	Pivot 2	Medium	Disputed – Pivot 2 is situated on moderately deep to shallow plinthic and lithic soils, which are not ideal for economic irrigation crop production.
	High	1	High	Validated – areas of category 1 soils that are rated as high sensitivity by the screening tool were found to be well suited for economically viable rainfed crop production.
	High	2	Medium	Disputed – category 2 soils have moderate restrictions in terms of soil depth and water holding capacity and will yield relatively good crops in average to above average rainfall seasons, which will not be sustained in below average seasons.
	High	3 & 4	Low	Disputed – category 3 & 4 soils have severe restrictions on water infiltration and crop available water and will not sustainably produce economically viable crops over the long term.
	Medium	2	Medium	Validated – category 2 soils have moderate restrictions in terms of soil depth and water holding capacity and will yield relatively good crops in average to above average rainfall seasons.

Theme	Screening Tool	Soil Category	Specialist	Tool Validated or Disputed by Specialist - Reasoning
	Medium	3, 4 & 5	Low	Disputed – category 3, 4 & 5 soils have severe restrictions on water infiltration, crop available water and soil depth for root growth and will not sustainably produce economically viable crops over the long term.
	Low	3, 4 & 5	Low	Validated – no cultivation possible due to severe restrictions on water infiltration, crop available water and soil depth.

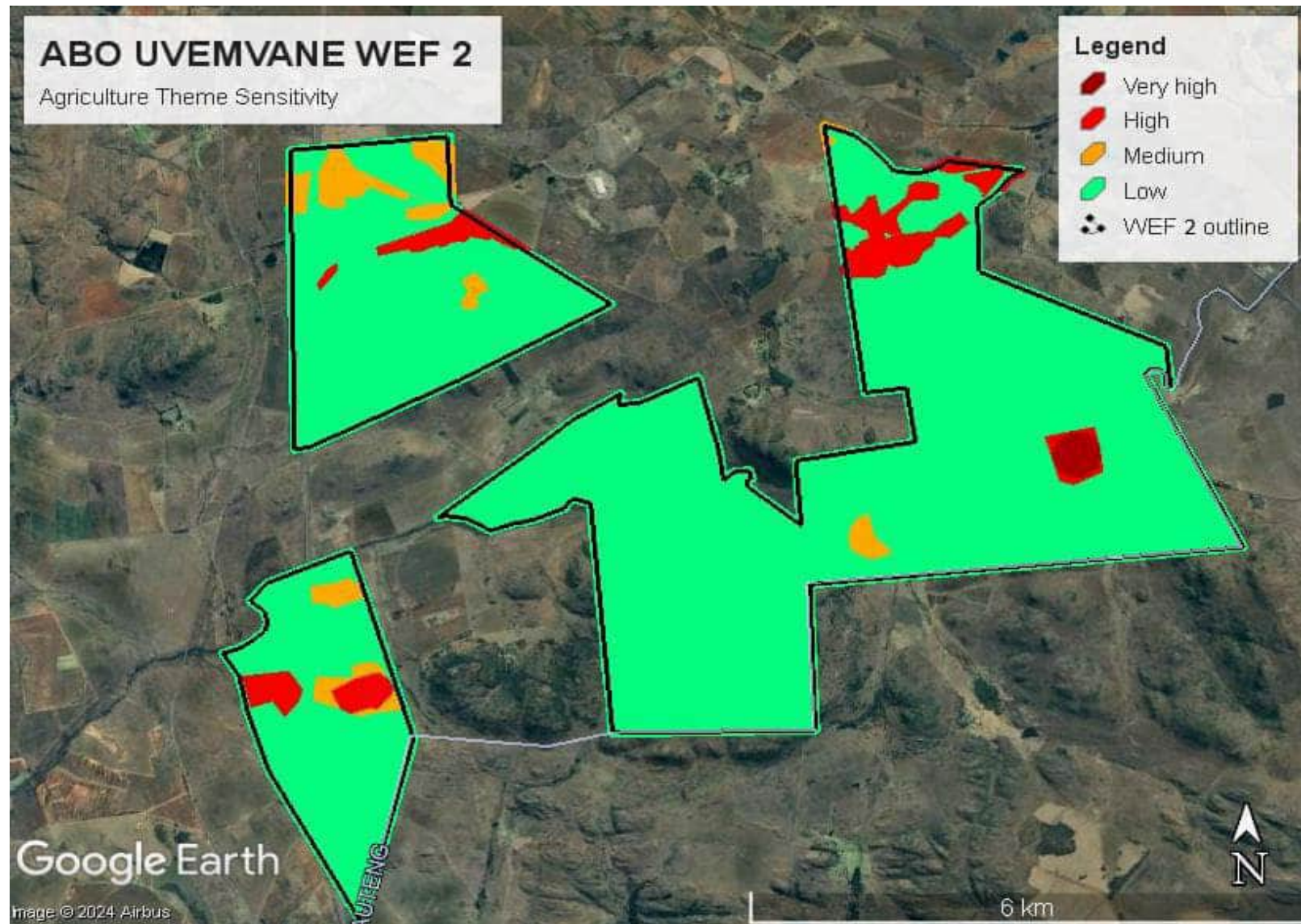


Figure 11: Sensitivity rating as assigned by this assessment on the agricultural sensitivity theme for the project area.

3.3 Consideration of Cumulative Impacts

It is recognised that the combined, incremental effects of human activity, referred to as cumulative impacts, pose a serious threat to the environment. Cumulative effects are commonly understood as the impacts which combine from different projects/developments, and which result in significant change, which is larger than the sum of all the impacts. The complicating factor is that the projects/developments that need to be considered are from past, present and reasonably foreseeable future (DEAT, 2004).

From an agricultural potential point of view, the potential cumulative agricultural impact of importance is a regional loss (including by resource degradation) of future agricultural production potential relating to regional and even national food security. The defining question, therefore, for assessing the cumulative impact is this: What loss of future agricultural production potential is acceptable in the area, and will the loss associated with the proposed development, when considered in the context of all past, present, or reasonably foreseeable future impacts, cause that level in the area to be exceeded? According to the South African Renewable Energy EIA Application Database (REEA, 2024) there is an approved renewable energy project, a solar PV facility, south the proposed ABO Uvemvane WEF 2 project area (Figure 12) but no others within a 30 km radius.

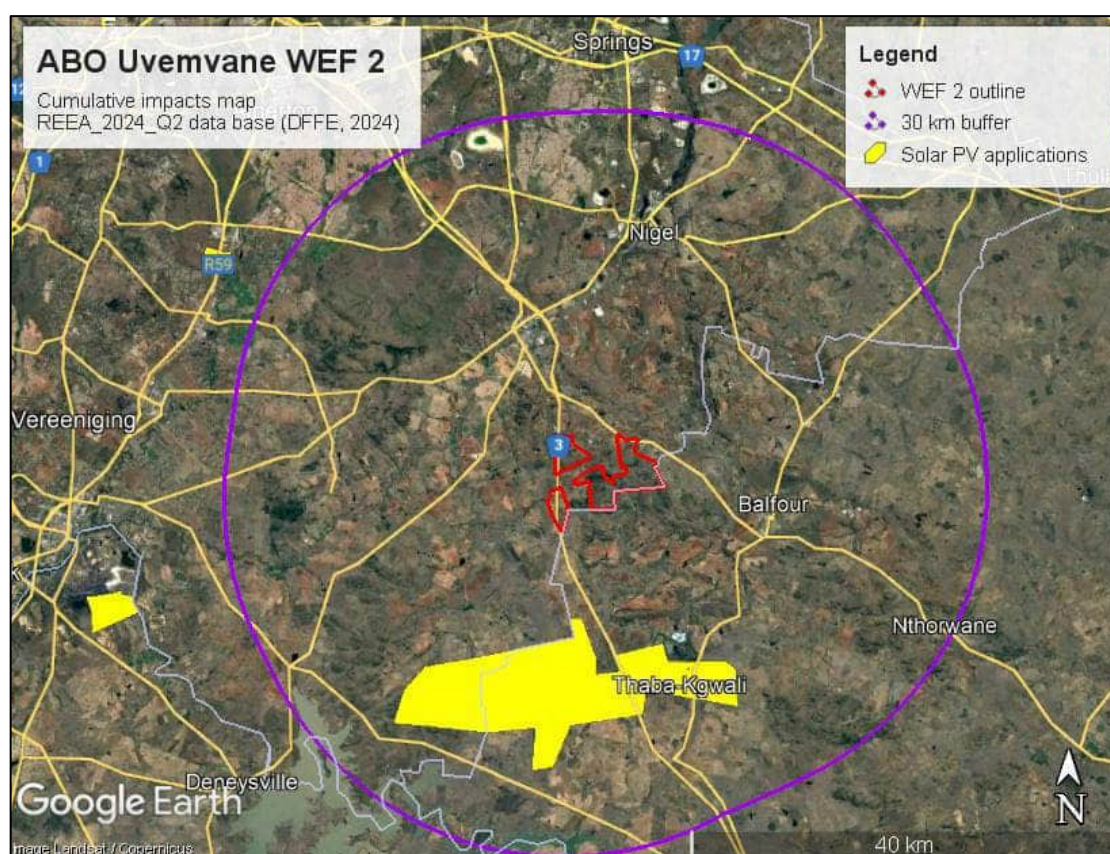


Figure 12: Cumulative impacts map for renewable energy projects within a 30 km radius from the proposed project site.

Taking into consideration the fact that the ABO Uvemvane WEF 2 project area is large enough that agricultural land of high sensitivity can be easily avoided with some careful planning, it is the specialist's opinion that the proposed

project should not contribute to a regional loss of future agricultural production potential. **The cumulative impact for this proposed development, therefore, is expected to be low.**

3.4 Consideration of Other Impacts

An agricultural impact is a change to the future agricultural production potential of agricultural land, which is primarily caused by the exclusion of agriculture production activities from the footprint of a development. Although this SSVR does not include a full impact assessment and mitigation measures, Table 6 presents a summary of impacts that may be expected and basic measures for impact mitigation from an agricultural potential point of view.

Note: this aspect will be given in more detail in full assessment reports that will follow in the next reporting stages of the project.

Table 6: Summary of possible impacts and mitigation measures.

Activities	Possible impacts
Land clearing & construction. Operation of WEF.	Direct impacts: Soil erosion Soil compaction Chemical soil pollution
	Indirect impacts: Change in grazing land use and veld condition.
	Cumulative impacts: Broad scale degradation or loss of agricultural land through soil erosion, soil compaction and chemical soil pollution due to the poor implementation or mismanagement of mitigation measures on this and similar neighbouring developments.

4 SUMMARY & CONCLUSIONS

Five broad soil categories were described in the ABO Uvemvane WEF 2 project area:

- Category 1: deep to moderately deep, well drained, massive or weakly structured soils – good to moderate cropping potential.
- Category 2: moderately deep to shallow well drained, massive or weakly structured soils with a plinthic horizon – moderate to poor cropping potential.
- Category 3: heavy clay soils and soils with a strong texture contrast between the A- and B-horizons (duplex soils) – moderate to poor cropping potential.
- Category 4: gley soils – poor or no cropping potential.
- Category 5: shallow lithic/rocky soils – no cropping potential.

Category 1 soils are in general found to be land with good to moderate cropping potential, which make these areas important to produce grain crops. The cropping potential of category 2 to 5 soils in the ABO Uvemvane WEF 2 project area are all limited by the combination of climate and various soil constraints. Category 2 soils have moderate soil depth with potentially poor draining sub-soils that may also restrict the growth of plant roots beyond the plinthic layer. Category 3 and 4 soils have moderate to severe water infiltration restrictions which may cause waterlogging in very wet seasons and provide insufficient moisture (essentially drought conditions) in below average rainfall seasons. Category 5 soils are severely restricted in soil depth and provide poor to no water retention potential to produce a crop through the season and therefore limits the potential of these sections of land to grazing only.

Some cultivated lands in the project area have been abandoned as croplands as they are mostly on marginal soils that may have been economically cultivated in the past but have been abandoned as they are no longer suitable for economically viable crop production in a more challenging agricultural economy, with increased input costs, and in changing/fluctuating climate conditions.

The information received from the screening tool rates the Agricultural Sensitivity theme as 'Very High' citing "Pivot Irrigation; Land capability;09. Moderate-High/10. Moderate-High" as the main reason for the very high sensitivity. Two center pivots were indeed recorded in the proposed ABO Uvemvane WEF 2 project area on the farm Steynskraal on the banks of the Suikerbosrand River from which they are irrigated. One of these, is situated on deep well-drained Hutton soils, which is ideal for irrigation cultivation and is validated at a very high sensitivity rating. The second, however, lays on moderately deep to shallow plinthic and lithic soils and the cultivated area of this second pivot has medium sensitivity at best.

Areas of high sensitivity rating by the screening tool are validated for most areas of Category 1 soils but disputed for the other categories due to the mentioned restrictions to sustainable crop cultivation. The low sensitivity of the mountainous terrain in the central to northern parts of the project area is validated.

According to REEA (2024) there is an approved renewable energy project, a solar PV facility, south the proposed ABO Uvemvane WEF 2 project area but no others within a 30 km radius. Taking into consideration the fact that the ABO Uvemvane WEF 2 project area is large enough that agricultural land of high sensitivity can be easily avoided with careful placement of wind turbines, it is the specialist's opinion that the proposed project will not contribute to a regional loss of future agricultural production potential and that the cumulative impact for this study, therefore, is low and is deemed acceptable for the ABO Uvemvane WEF 2 project.

Agricultural impacts cause changes to the future agricultural production potential of the land. This is primarily caused by the cessation of agriculture production from the footprint of developments. In the case of the ABO Uvemvane WEF 2 project, there is enough land surfaces deemed as low sensitivity (categories 3 to 5) from an agriculture production potential point of view that there is no need for overall conservation of the area as agricultural production land because of the mentioned cropping limitations. The use of land in the category 3 to 5 soils for non-agricultural purposes will cause insignificant loss of agricultural production potential in terms of regional and national food security.

At the farm level, the development may provide a positive economic impetus that is likely to increase financial security and cash flow for land owners and may improve farming operations and productivity on other parts of the farm or other agricultural operations elsewhere, through re-investment into agricultural production.

Due to the facts that the proposed development will not occupy scarce, viable, arable land, that the land can potentially still be used to graze livestock, and that its negative impact is offset by economic benefits to farming, the overall negative agricultural impact of the development (loss of future agricultural production potential) is assessed here as being of low significance and as acceptable.

Furthermore, the proposed development offers valuable opportunities for the integration of renewable energy with active agricultural production in the area in a way that provides benefits to agriculture and, with careful placement of wind turbines, leads to no loss of economically viable arable land and subsequently insignificant loss of future agricultural production potential of the area.

Based on the findings of this assessment, it is the specialist's opinion that the proposed development is may be favourably considered from an agricultural potential point of view if high sensitivity areas as indicated by this assessment are avoided. Final conclusions in this regard will, however, be drawn in the EIA phase and will depend on the proposed ABO Uvemvane WEF1 infrastructure layout.

The *Protocol for the specialist assessment and minimum report requirements of environmental impacts on agricultural resources by onshore wind and / or solar photovoltaic energy facilities where the electricity output is 20 MW or more*, indicates under sections 1.3 to 1.5 in Table 2 of the protocol, the following as presented in the text box below:

1.3. An applicant intending to undertake an activity identified in the scope of this protocol on a site identified by the screening tool as being of “medium” or “low” sensitivity for agricultural resources must submit an **Agricultural Compliance Statement** unless:

1.3.1. the information gathered from the site sensitivity verification differs from that identified as having a “medium” or “low” agricultural sensitivity and it is found to be of a “very high” or “high” sensitivity; or

1.3.2. where the development footprint deviates from any of the allowable development limits contained in Table 1 above. In the context of this protocol, development footprint means the area on which the proposed development will take place and includes any area that will be disturbed.

1.4. Should either paragraphs 1.3.1 or 1.3.2 apply, an Agricultural Agro-Ecosystem Specialist Assessment is to be undertaken, and a report prepared in accordance with the requirements of an Agro-Ecosystem Specialist Assessment.

1.5. If any part of the proposed development footprint falls within an area of “very high” or “high” sensitivity, the assessment and reporting requirements prescribed for the “very high” or “high” sensitivity apply to the entire footprint.

This section of the protocol, therefore, suggests that if verified ‘very high’ and ‘high’ sensitivity areas are excluded from the development footprint, an Agricultural Compliance Statement will suffice as the report type submitted for the EIA phase. If not, an Agro-Ecosystem Specialist Assessment Report, which typically includes a full impact assessment with mitigation will have to be submitted, which will involve further assessment from a specialist investigator.

In conclusion, therefore, it is the recommendation of the specialist that agricultural areas of ‘high’ sensitivity be excluded from the ABO Uvemvane WEF 1 infrastructure planning. This will allow for the conservation of higher value land with high cropping potential and allow for development on less sensitive areas, which, although still developed on agricultural land, allow for diversification of income for land owners, while serving the purpose of developing renewable energy sources, which South Africa is also in need of.

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6 APPENDIX A: SPECIALIST INVESTIGATOR

6.1 Details

Specialist investigator: Albert Richardt Götze (*Pr.Sci.Nat.*)
ID: 7405275082083
Highest tertiary qualifications: B.Sc. (Hons) – Botany and Soil Science:
Resource Development and Utilization (NWU, Potchefstroom).
M.Sc. Botany: Phytosociology & Restoration Ecology (NWU, Potchefstroom).

Professional affiliations:

- SACNASP – membership nr: 004497; current expiry date: 31 March 2026
- South African Association of Botanists (SAAB) – membership no: 813
- South African Wetland Society – membership ID: 2164640
- Soil Science Society of South Africa (SSSSA) – membership ID: 2371575

Contact details:

- Mobile: 078 096 8415
- e-mail: albie.erc@gmail.com

6.2 Vocational Experience

In 2002, during my post graduate studies, I started consulting in the fields of botany and soil science part time. In 2003 I started out as full time, independent, environmental consulting specialist under the name Environment Research Consulting (ERC) as sole proprietor. In the years since, I have gained experience in terrestrial and aquatic biodiversity assessments and soil work in the grassland and savannah biomes of South Africa as well as occasional work in the Nama Karoo, Indian Ocean Coastal Belt and Albany Thicket biomes. I have also on occasion conducted specialist studies in Eswatini (Swaziland).

Although botany, soil science and wetland delineations were my primary specialties for many years, I gradually gained experience in the assessment of terrestrial fauna. I have experience in live small mammal trapping and identification in the grassland and savannah biomes. I participated in several small mammal monitoring and research projects between 2002 and 2014 under the mentorship of Mr. Koos Kotze who, at the time of his passing at the end of 2014, was a full-time lecturer in animal studies at the Tshwane University of Technology's Nature Conservation Faculty. During the same period, I gained knowledge and experience in the assessment of other fauna fields of practice i.e. large mammals and herpetofauna.

Between 2008 and 2014, I held a part-time position at Northwest University as a research assistant, at the School for Environmental Sciences and Development, to post-graduate students in the fields of Botany and Resource Development & Utilization. I also similarly assisted pre-graduate nature conservation, and game ranch

management students at Tshwane University of Technology between 2009 and 2012, and on one occasion for the University of Venda, on a consultation basis. I have authored two and co-authored four scientific papers and research notes for various local scientific publications since 2004.

Past projects of a similar nature:

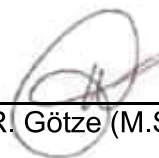
- 2014: Soil, land capability and agricultural potential assessment for: the proposed Tiger Kloof Solar Photovoltaic Energy Facility on portions 3 & 4 of the farm Waterloo 730 IN, Naledi Local Municipality, North West Province (*Kabi Solar (Pty) Ltd*).
- 2015: Soil, land capability and agricultural potential study on portion 1 of the farm Grootpoort 168 RD, Free State Province (*Solis Environmental*).
- 2023: Soil, land capability and agricultural potential SSVR for the proposed development of the Abo Mopane Solar PV facility near Steelpoort, Limpopo Province (*Blue Crane Environmental*).
- 2024: Soil, land capability and agricultural potential SSVR for the proposed development of the Dinaledi Solar PV Between Dealesville and Bultfontein, Free State Province (*Blue Crane Environmental*).
- 2024: Soil, land capability and agricultural potential SSVR for the proposed development of four borrow pits for the upgrade of the R34 road between Welkom and Kroonstad, Free State Province (*KSEMS Environmental Consulting*).

6.3 Professional Declaration

I, Albert Richardt Götze, as the appointed specialist, hereby declare/affirm the correctness of the information provided in this Site Sensitivity Verification Report, and that I:

- meet the general requirements to be independent and have no business, financial, personal or other interest in the proposed development and that no circumstances have occurred that may have compromised my objectivity; and
- am aware that a false declaration is an offence in terms of regulation 48 of the EIA Regulations (2014).

I realize that a false declaration is an offence in terms of Regulation 71 of NEMA and is punishable in terms of section 24F of the Act.



A.R. Götze (M.Sc.; *Pr.Sci.Nat.*)

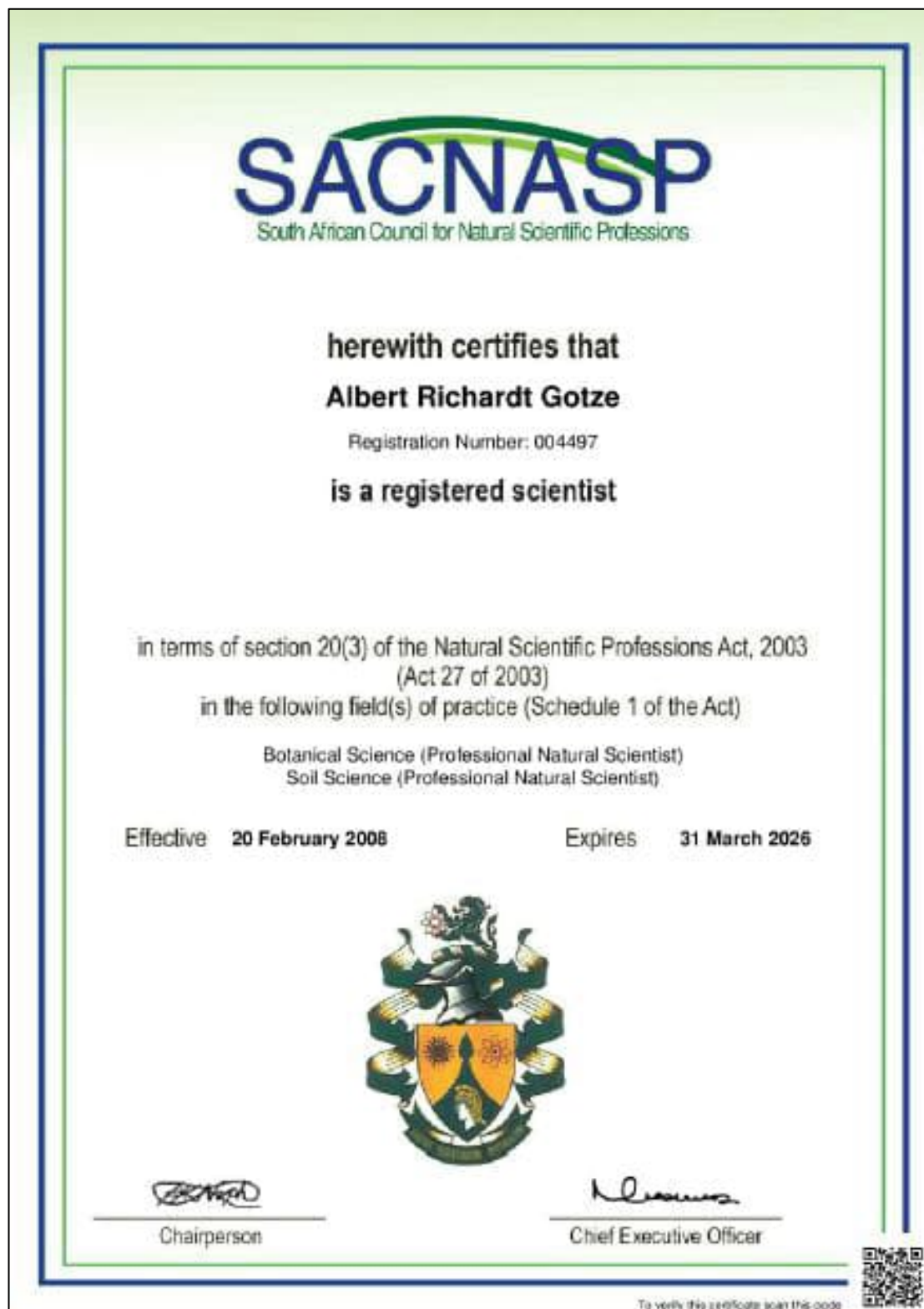


Figure 13: SACNASP registration certificate of the specialist that conducted the assessment.

7 APPENDIX B: MAP OF SITE VISIT TRACKS

Figure 14 presents GPS tracks that were traversed in and around the study area and captured on the Gaia GPS mobile app (<https://www.gaiagps.com>).

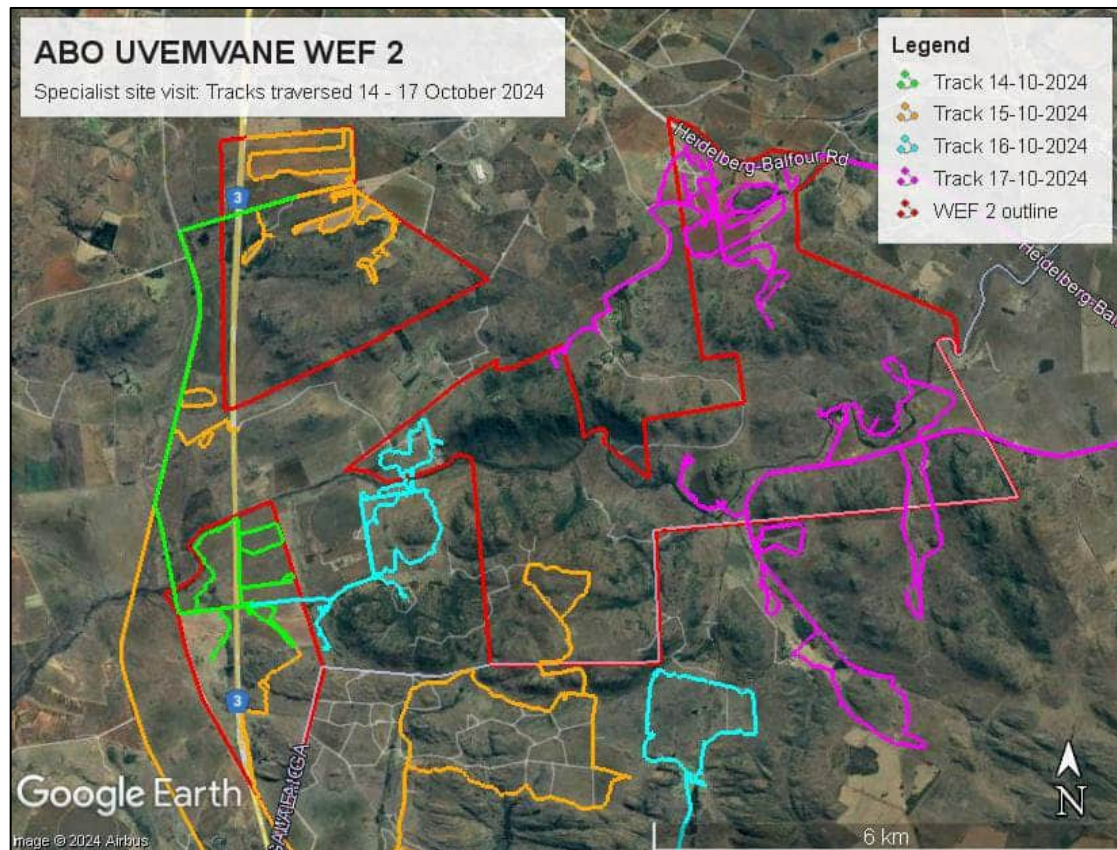


Figure 14: Google earth image presenting tracks that were followed during site visits to the project area.

Appendix C.2

TERRESTRIAL BIODIVERSITY SSVR (INCLUDING PLANT AND ANIMAL SPECIES THEMES)





TERRESTRIAL BIODIVERSITY SITE SENSITIVITY VERIFICATION REPORT – ABO UVEMVANE WEF 1 PROJECT

Hawkhead Consulting was appointed by WSP Group Africa (Pty) Ltd. to conduct the Terrestrial Biodiversity (incl. Plant Species and Animal Species) Assessment to inform a Scoping and Environmental Impact Assessment (EIA) (S&EIA) process for the proposed ABO Uvemvane Wind Energy Facility (WEF) 1 Project, near Heidelberg in Gauteng and Mpumalanga Provinces, South Africa.

This Terrestrial Biodiversity Site Sensitivity Verification Report (SSVR) is prepared pursuant to the results of a DFFE Screening Tool Report completed in July 2025 for the proposed Project. It addresses the Terrestrial Biodiversity, Plant Species, and Animal Species themes as prescribed in the relevant protocols (Please note that a separate bird specialist study is being conducted for the project; therefore, bird species were not evaluated in this SSVR).

Verification field visits comprising both dry season (29th July to 3rd August 2024) and wet season (20th to 24th January 2025) surveys were conducted by Hawkhead Consulting to collect biodiversity data and confirm the proposed Project sites' ecological sensitivity. The field surveys focused on the proposed ABO Uvemvane WEF 1 site (hereafter referred to as the 'Project site'), as well as the adjacent proposed ABO Uvemvane WEF 2 site, which is part of a separate authorisation process.

The table below provides a summary of the outcome of the DFFE Screening Tool sensitivity rating for the Terrestrial Biodiversity, Animal Species and Plant Species themes and the outcome of the sensitivity verification process for the ABO Uvemvane WEF 1 Project site. Additional discussion is presented in the sections below.

Table 1 Terrestrial Biodiversity, Animal Species and Plant Species theme sensitivities for the proposed ABO Uvemvane WEF 1 Project.

ENVIRONMENTAL THEME	DFFE SCREENING TOOL SENSITIVITY	APPLICABLE PROTOCOL	SPECIALIST SENSITIVITY VERIFICATION
Terrestrial Biodiversity	Very High	Protocol for the specialist assessment and minimum report content requirements for environmental impacts on Terrestrial Biodiversity	Large areas of natural habitat are present on-site, and these maintain important ecosystem processes and support many indigenous flora and fauna species. For natural habitat patches, the 'Very High' sensitivity rating for Terrestrial Biodiversity therefore is confirmed. For patches of modified habitat (cultivated fields and stands of alien trees), the sensitivity rating is considered Low

ENVIRONMENTAL THEME	DFFE SCREENING TOOL SENSITIVITY	APPLICABLE PROTOCOL	SPECIALIST SENSITIVITY VERIFICATION
Plant Species	Medium	Protocol for the specialist assessment and minimum report content requirements for environmental impacts on Plant Species	Medium in areas of undisturbed natural habitat. Low in areas of modified habitat (e.g., cultivated fields and stands of alien trees).
Animal Species	High	Protocol for the specialist assessment and minimum report content requirements for environmental impacts on Animal Species	High in areas of undisturbed natural habitat. Low in areas of modified habitat (e.g., cultivated fields and stands of alien trees).

DFFE SCREENING TOOL OUTPUT

The **Terrestrial Biodiversity** Theme for the Project site is rated 'Very High' sensitivity (Figure 1) due to the following features:

- Critical Biodiversity Area (CBA) 1;
- CBA 2;
- CBA Irreplaceable;
- CBA Optimal;
- Ecological Support Areas (ESA) 1;
- ESA 2;
- ESA: Landscape corridor;
- ESA: Local corridor;
- National Protected Area Expansion Strategy (NPAES);
- Soweto Highveld Grassland – Vulnerable; and
- Tsakane Clay Grassland – Endangered.



Figure 1: Terrestrial Biodiversity sensitivity mapping of the Project site, as per the DFFE online environmental screening tool.

The **Plant Species** Theme is rated 'Medium' sensitivity (Figure 2) due to the potential presence of the following flora species of conservation concern (SCC):

- *Khadia beswickii*;
- Sensitive species 1252;
- *Delosperma macellum*;
- *Cineraria longipes*;
- Sensitive species 691;
- *Brachycorythis conica* subsp. *transvaalensis*;
- Sensitive species 1248; and
- *Prunus africana*.

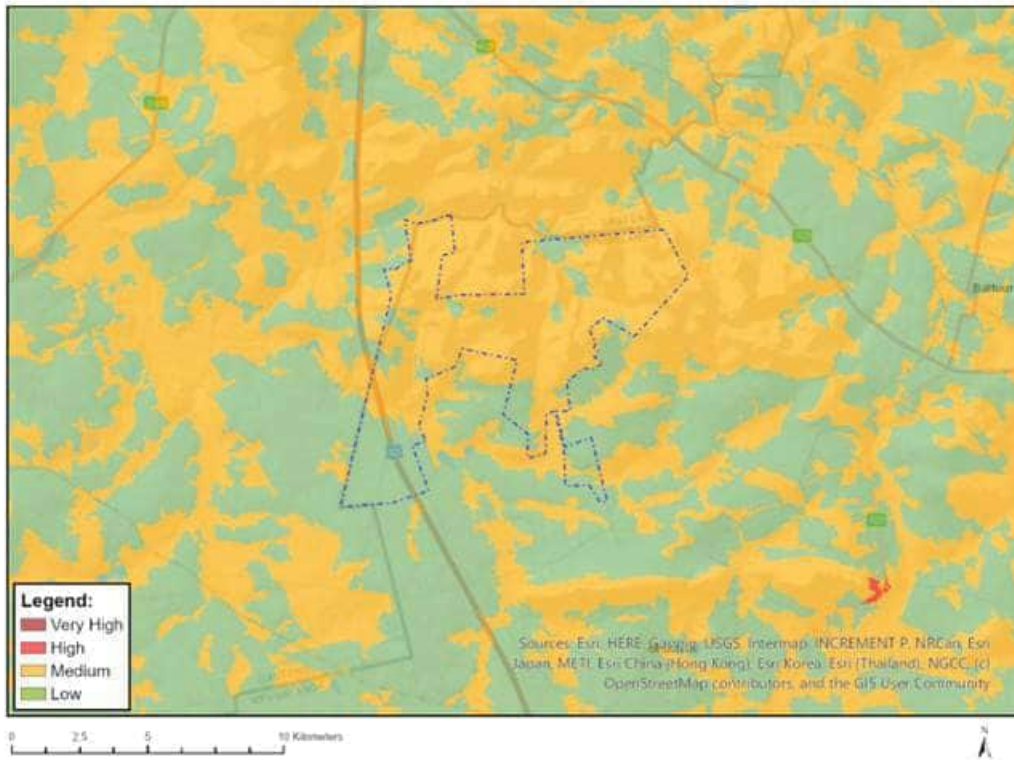


Figure 2: Plant Species sensitivity mapping of the Project site, as per the DFFE online environmental screening tool.

The **Animal Species** Theme is rated 'High' sensitivity due to the potential presence of the following fauna SCC;

- Three mammal species:
 - Spotted-necked Otter (*Hydricotis maculicollis*);
 - Maquassie Musk Shrew (*Crocidura maquassiensis*);
 - Oribi (*Ourebia ourebi ourebi*);
- Four bird species¹:
 - White-bellied Bustard (*Eupodotis senegalensis*);
 - African Marsh Harrier (*Circus ranivorus*);
 - Secretarybird (*Sagittarius serpentarius*);
 - Caspian Tern (*Hydroprogne caspia*);
- Two invertebrate species:
 - Potchefstroom Blue (*Lepidochrysops procera*); and
 - Highveld Golden Opal (*Chrysoritis aureus*).

Of these, *Circus ranivorus* and *Sagittarius serpentarius* are rated 'High' sensitivity. The remaining species are listed as 'Medium' sensitivity.

¹ Bird species were assessed as part of a separate sensitivity verification process, and are therefore not considered further in this report.



Figure 3: Animal Species sensitivity mapping of the Project site, as per the DFFE online environmental screening tool.

FINDINGS OF THE SITE SENSITIVITY VERIFICATION FIELD VISIT

The topography of the Project site is complex and dominated by mountainous terrain, embedded with flat/undulating open plains and incised river valleys and drainage lines. Most of the Project site comprises natural habitat, although small patches and larger areas of modified habitat originating from current- and past anthropogenic disturbances are also present. Prominent habitats recognised in the Project site during the field surveys are briefly described below:

- Rocky mountain bushveld and shrubland dominates the hills and mountains across most of the Project site. These areas are often remote, with limited signs of anthropogenic disturbance outside of game fencing and 4X4 vehicle tracks;
- Natural dry grassland characterises the broad open mountain plateaus and undulating plains located between hills and mountains, and in low-lying areas;
- Riparian and wetland habitats associated with Suikerbosrand River, and various smaller watercourses and drainage features. Vegetation ranges from closed riparian woodland, to open moist grassland habitat;
- Secondary grasslands are associated with old lands (former cultivated fields) that are located between hills and mountains, and along drainage features in the Project site;
- Cultivated fields, under dryland cropping or pivot irrigation. At the time of the field visits, these were lying fallow or planted with maize; and
- Stands of alien trees (e.g., *Populus x canescens* and *Eucalyptus* spp.) are present in the Project site, but these are comparatively rare and mostly associated with farm residences or windrows.

Refer to Appendix A for photographs and brief descriptors of the main habitat types documented at several reference points across both the ABO Uvemvane WEF 1 and ABO Uvemvane WEF 2 sites.

Natural habitat in the Project site is extensive and provides a heterogeneous and functional habitat network, with a high degree of landscape connectivity. Areas of natural habitat thus support various ecological processes, local metapopulation dynamics, and diverse fauna and flora communities (including many SCC).

It was noted that a number of individual farms in the Project site are managed as game farms, and these support multiple free-roaming and actively-managed indigenous mammal taxa, with 43 mammal species documented during the field visit. Nine herpetofauna species were also documented for the Project site, based principally of anecdotal evidence from local farmers. Recorded fauna are listed in Appendix C, along with select photographs.

Terrestrial Biodiversity Theme

The DFFE Screening Tool's sensitivity rating for Terrestrial Biodiversity for the Project site is 'Very High'. This is predicated on several conservation features, including the presence of CBAs and ESAs, Priority Focus Areas for protected area expansion, and the presence of threatened vegetation types, namely Tsakane Clay Grassland (Endangered) and Soweto Highveld Grassland (Vulnerable). Maps showing the delineation of these conservation planning features relative to the Uvemvane WEF 1 project site are shown in Figure 4 to Figure 7.

It is also noted that the Mpumalanga Climate Change Corridor Network shows a Climate Change Focal (Refugia) Area along the Gauteng-Mpumalanga border within the proposed Project site. Large portions in the west of proposed Project site are also designated as a Critical Link Corridor, with smaller sections identified as Core Corridors and Supporting Corridors (Figure 8). These corridors are provincially recognized as crucial connections between identified Refugia, allowing species and ecosystems to adapt to climate change.

As discussed above, the findings of the verification field visit indicate that the Project site comprises large tracts of undisturbed natural habitat that support various ecosystem processes and diverse flora and fauna assemblages. On-site natural habitat is thus of biodiversity conservation importance, in accordance with the DFFE listed sensitivity features.

The 'Very High' sensitivity rating for Terrestrial Biodiversity is therefore confirmed for patches of natural habitat. In patches of modified habitat (actively cultivated fields and alien tree stands) it is considered low. A Terrestrial Biodiversity Specialist Assessment Report will therefore be compiled for the proposed Project, as per the applicable protocol.

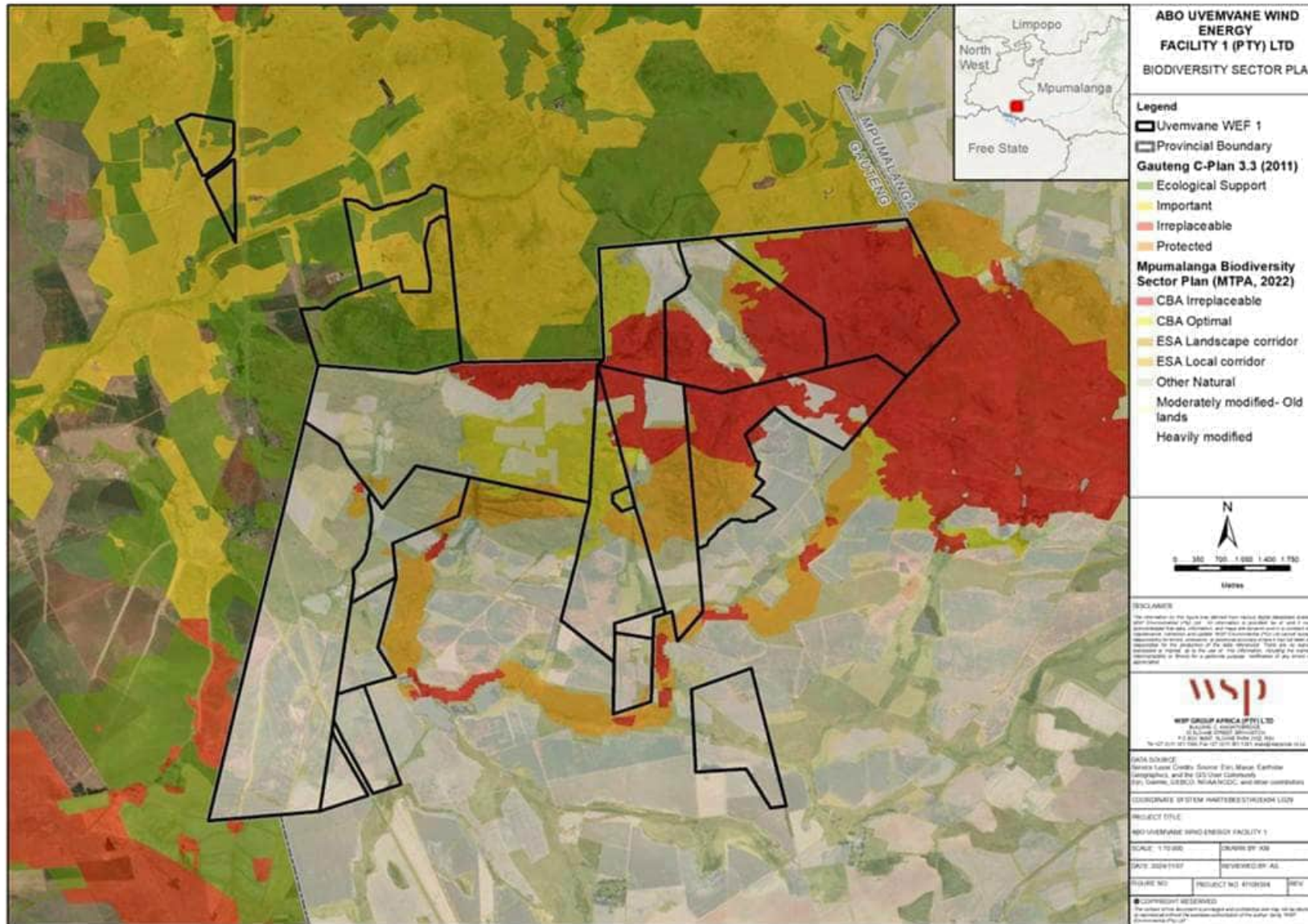


Figure 4: Uvemvane WEF 1 in relation to the Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) of the Gauteng C-Plan (2011) and the MBSP (2022).

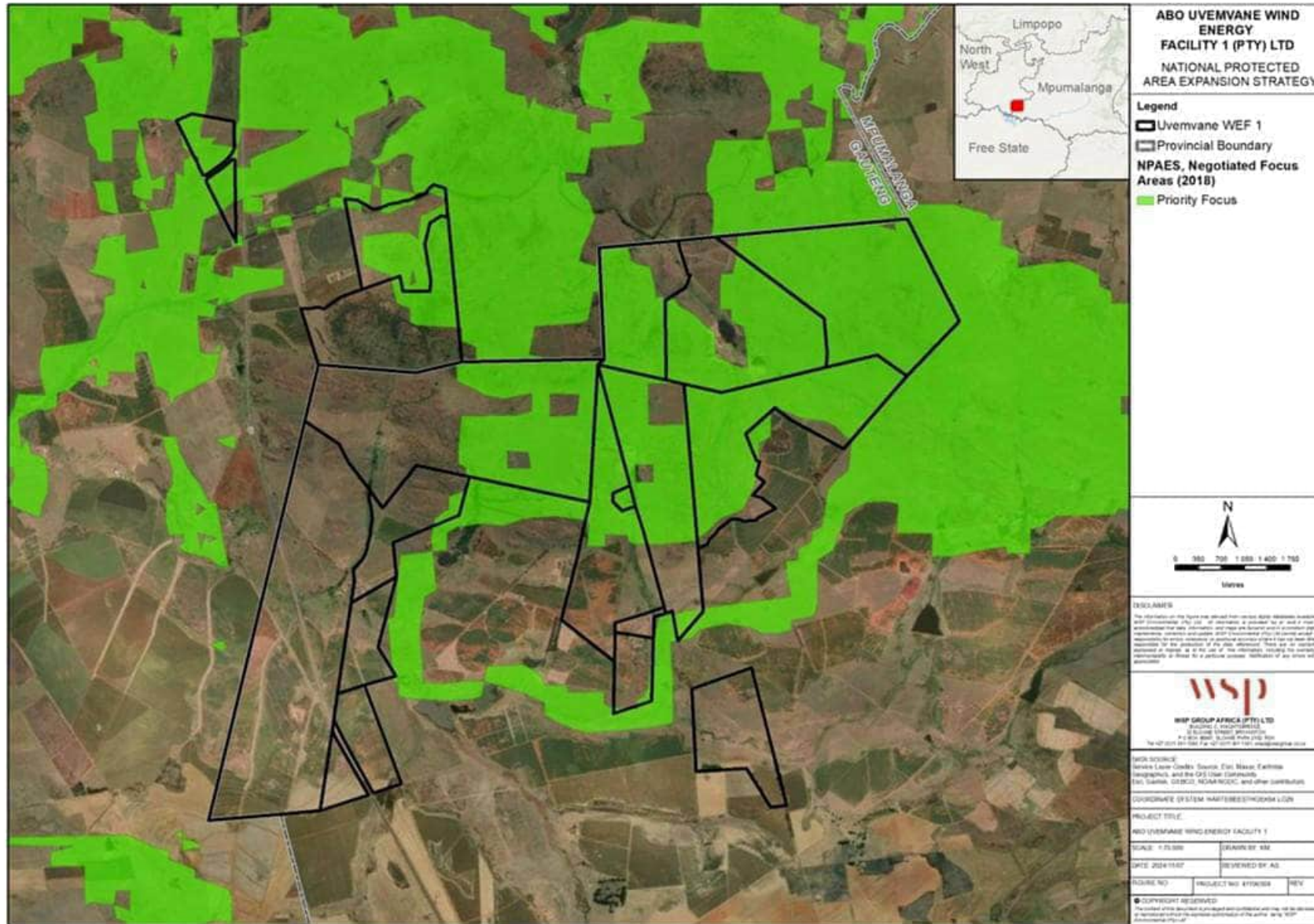


Figure 5: Uvemvane WEF 1 in relation to the Priority Focus Areas of the National Protected Area Expansion Strategy (2018).

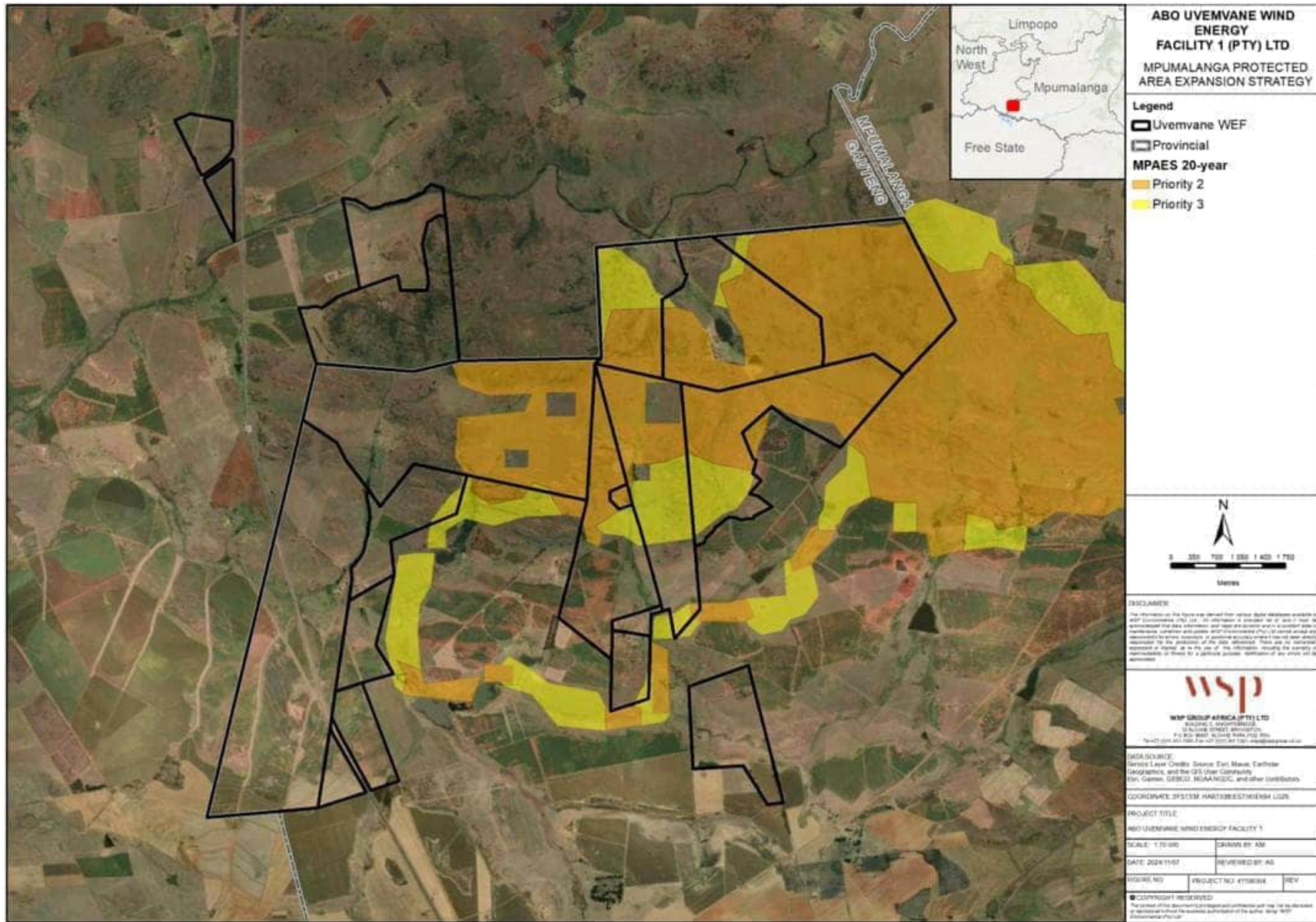


Figure 6: Uvemvane WEF 1 in relation to the Priority Focus Areas of the Mpumalanga Protected Area Expansion Strategy – 20 Year Plan.

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Plant Species Theme

No flora SCC were recorded on-site during the field surveys. This notwithstanding, considering the extent and diversity of natural habitat across the Project site, it is possible that several SCC may be present, including those taxa highlighted by DFFE Screening Tool. Species like *Khadia beswickii* (Vulnerable), *Brachycorythis conica* subsp. *transvaalensis* (Critically Endangered), *Cineraria longipes* (Vulnerable), *Delosperma macellum* (Endangered), Sensitive species 1252 (Vulnerable) and Sensitive species 1248 (Vulnerable) are commonly found in diverse wooded grassland and bushveld habitats, often in rocky mountainous areas. Sensitive species 691 (Vulnerable) favours undulating grasslands in damp areas. These habitats are present in the Project site and accordingly these flora SCC either possibly or probably occur in the Project site. All flora SCC that potentially occur in the Project site are listed in Appendix B, along with a 'probability of occurrence', based on habitat suitability assessments.

The 'Medium' sensitivity rating for the Plant Species theme is therefore confirmed for patches of natural habitat across the Project site. A Plant Species Specialist Assessment Report will be compiled for the proposed Project, as per the applicable protocol.

Animal Species Theme

Fauna species recorded during the field surveys are listed in Appendix C, along with their conservation statuses, as per regional Red Lists and national/provincial legislation.

Free-roaming fauna SCC recorded for the proposed Project site included Mountain Reedbuck (*Redunca fulvorufula fulvorufula*) - Endangered, Serval (*Leptailurus serval*) – Near Threatened, Cape-clawless Otter (*Aonyx capensis*) – Near Threatened, Southern African Hedgehog (*Atelerix frontalis*) – Near Threatened, Grey Rhebok (*Pelea capreolus*) – Near Threatened and Vlei Rat (*Otomys cf. auratus*) – Near Threatened. Considering the extent and diversity of natural habitat across the Project site, it is possible that several other fauna SCC may be present, including some of those taxa highlighted by the DFFE Screening Tool. Discussion on the habitat preferences and a 'probability of occurrence' for the fauna SCC that are listed by the DFFE Screening Tool (excl. birds) is presented below:

The Spotted-necked Otter (Vulnerable) prefers permanent, large open-water bodies (Ponsoby, *et al.*, 2016), while the Maquassie Musk Shrew (Vulnerable) favours moist habitats (Taylor, *et al.*, 2016). Open water pools characterise a number of stretches of the Suikerbosrand River, and numerous other smaller water courses and drainage features are also present on-site. It is therefore 'probable' that Spotted-necked Otter present in the Project site. Although some suitable habitat is present for Maquassie Musk Shrew, there are no post-2000 records of this species in either Gauteng or Mpumalanga Provinces. It is therefore unlikely that Maquassie Musk Shrew is present. Oribi (Endangered) typically occur in areas with a mix of tall- and short-grassland (Shrader, *et al.*, 2016). This habitat is present in the Project site, although during informal interviews, local game farmers indicated that they were not aware of the presence of Oribi in the Project site. It is therefore 'unlikely' that Oribi is present.

With respect to the three butterfly species highlighted by the DFFE Screening Tool (*viz. Lepidochrysops procera* and *Chrysoritis aureus*), it is noted that the Project site is located 13 km from Suikerbosrand Nature Reserve and 3.2 km from Alice Glockner Nature Reserve, which are both recognised as butterfly hotspots.

Chrysoritis aureus (Endangered) is known from only six confirmed localities (Henning, 2018), including the farm Malanskraal 47 IR, which is located in the Project site (Mpumalanga Parks and Tourism Agency, 2024²); and in both Alice Glockner Nature Reserve and Suikerbosrand Nature Reserve (Terblanche, *et al.*, 2003). This species should therefore be regarded as 'Recorded/Confirmed' in the Project site. Habitat preferences include hills and ridges with

² Species status report for 2628CB received from M. Lötter.

south-facing slopes, the presence of large rocks, the host plant *Clutia pulchella*. Figure 9 shows the location of the farm Malanskraal 47 IR in relation to Uvemvane WEF 1.

Lepidochrysops procera (Rare) is known from only a few locations, and favours rocky areas in grassland, where it is dependent on the presence of the larval host plant *Ocimum obovatum* (Dobson and Dobson, 2018a). Although *Ocimum obovatum* was not recorded on-site during the field surveys it is likely to be present on-site. Suitable habitat for *Lepidochrysops procera* is present in the Project site, and considering the Project site's relatively close proximity to Alice Glockner Nature Reserve and Suikerbosrand Nature Reserve, it is 'possible' that this species is present.

A table presenting a summary of this information is presented in Appendix D.

The 'High' sensitivity rating for the Animal Species theme is therefore confirmed for patches of natural habitat. An Animal Species Specialist Assessment Report will be compiled for the proposed Project, as per the applicable protocol.

To mitigate potential risks to Red List butterfly species, it is strongly recommended that a butterfly specialist should be appointed to survey the Project site, and provide a specialist butterfly assessment report for the proposed Project.

Figure 9: The farm Malanskraal 47 IR where *Chrysoritis aureus* (Endangered) has previously been recorded in relation to Uvemvane WEF 1.



This site sensitivity verification was undertaken by *Andrew Zinn* from *Hawkhead Consulting*

A handwritten signature in blue ink, appearing to be 'A. Zinn', positioned above a horizontal line.

Andrew Zinn

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APPENDIX A: REFERENCE POINT PHOTOGRAPHS

Co-ordinates	Habitat Descriptor	Photograph
S26 38.189 E28 26.741	View across the Suikerbosrand River. Well-wooded savanna habitat dominates the mountain slopes in the background.	
S26 37.855 E28 25.982	Large, open-water pool along a reach of the Suikerbosrand River.	
26° 39.498'S 28° 25.907'E	Secondary grassland associated with an abandoned cultivated field (old land).	
S26 39.309 E28 26.331	Rocky grassland occurring on a mountain plateau.	

Co-ordinates	Habitat Descriptor	Photograph
S26 39.403 E28 26.266	View south across the Project site showing low-lying areas of natural- and secondary grasslands.	
S26 38.962 E28 27.097	Dense, closed-canopy woodland occurring in a drainage valley.	
S26 38.782 E28 27.185	Recently ploughed cultivated field.	
S26 38.608 E28 27.408	Moist grassland/wetland associated with a drainage area that feeds into the Suikerbosrand River.	

Co-ordinates	Habitat Descriptor	Photograph
26° 39.001'S 28° 27.832'E	Dense stand of alien <i>Populus x canescens</i> trees	
S26 39.953 E28 27.616	Open mountain shrubland.	



APPENDIX B: FLORA OF CONSERVATION CONCERN THAT POTENTIALLY OCCUR IN THE PROJECT SITE

Family	Scientific Name [#]	National Red List Status	Mpumalanga Red List Status	Mpumalanga Protected Status	Gauteng Protected Status	Habitat Preferences	Probability of Occurrence
Aizoaceae	<i>Khadia beswickii</i>	Vulnerable	Vulnerable	-	-	Species has an EOO of only 475 km ² and an AOO of 3-7 km ² . It is known from only ten locations, mostly across Gauteng Province, but also scattered sites in Mpumalanga. Favours open shallow soils, over rocks in grassland (Victor and Pfab, 2005a).	Probable – suitable habitat present and previously recorded in close proximity to the Project site.
Aizoaceae	<i>Delosperma macellum</i>	Endangered	Endangered	-	-	Known from only two locations, with a total population estimated at 68 mature individuals. Occurs in open areas, near trees and favours loose gravel habitats (Victor and Pfab, 2005b).	Possible – suitable habitat present.
Aizoaceae	<i>Delosperma leendertziae</i>	Near Threatened	-	-	-	Has an EOO of 8658 km ² and an AOO of 4-13 km ² . Known from 10 locations, where it favours steep south-facing quartzite slopes in mountain grassland (Victor and Pfab, 2005c).	Possible – suitable habitat present.
Aizoaceae	<i>Lithops lesliei</i> subsp. <i>lesliei</i>	Vulnerable	Near Threatened	-	Protected	Rocky habitats in arid grassland (Mtshali, <i>et al.</i> , 2023).	Probable – suitable habitat present and previously recorded in close proximity to the Project site.
Asteraceae	<i>Cineraria longipes</i>	Vulnerable	-	-	-	Known from six subpopulations, with an AOO estimated at 5-14 km ² (Pfab and Victor, 2005a). Occurs on south-facing slopes of basalt hills, where it favours grassland habitats, where it grows amongst rocks and seepage lines (Pfab and Victor, 2005a).	Probable – suitable habitat present and previously recorded in close proximity to the Project site.

Family	Scientific Name [#]	National Red List Status	Mpumalanga Red List Status	Mpumalanga Protected Status	Gauteng Protected Status	Habitat Preferences	Probability of Occurrence
Brassicaceae	<i>Cleome conrathii</i>	Near Threatened	-	-	-	Occurs in grassland or deciduous woodland, where it favours stony quartzite slopes, with red sandy soils (Pfab, <i>et al.</i> , 2005)	Probable – suitable habitat present.
Crassulaceae	<i>Adromischus umbraticola</i> subsp. <i>umbraticola</i>	Near Threatened	-	-	-	Species has an EOO of 14 600 km ² and is known from 14 locations. Grows in rock crevices on south-facing slope ridges. (Helme and Raimondo, 2006).	Probable – suitable habitat present and previously recorded in close proximity to the Project site.
Orchidaceae	<i>Eulophia coddii</i>	Vulnerable	-	Protected	Protected	A range-restricted species, with an EOO of 7000-9000 km ² . Known from five locations, with an estimated population size of 240-1000 individuals (Pfab and Victor, 2005b). Occurs in bushveld and grassland, where it prefers sandstone-derived soils on steep slopes (Pfab and Victor, 2005b).	Probable – suitable habitat present.
Orchidaceae	<i>Brachycorythis conica</i> subsp. <i>transvaalensis</i>	Critically Endangered	Critically Endangered	Protected	Protected	Three small subpopulations of this species remain in Mpumalanga, all with populations of <10 individual plants (Van Staden <i>et al.</i> , 2015). One other subpopulation is known in Gauteng and numbers about 117 plants (Van Staden <i>et al.</i> , 2015). Favours short open grassland and wooded grassland, on sandy gravel overlying dolomite and occasionally quartzite. Occurs at an altitude of between 1000-1705 m (Van Staden <i>et al.</i> , 2015).	Possible – suitable habitat present.
Orchidaceae	<i>Habenaria barbertoni</i>	Near Threatened	Near Threatened	Protected	Protected	Favours rocky hillsides in Acacia savanna, at altitudes between 1000 - 1500 m (Victor, <i>et al.</i> , 2005).	Unlikely – no suitable habitat.

Family	Scientific Name [#]	National Red List Status	Mpumalanga Red List Status	Mpumalanga Protected Status	Gauteng Protected Status	Habitat Preferences	Probability of Occurrence
Rosaceae	<i>Prunus africana</i>	Vulnerable	Vulnerable	-	-	Forest species, favouring inter alia, inland mistbelt and afro-montane forests up to 2100 m. Population estimated at 10 000 mature trees (Williams <i>et al.</i> , 2008)	Unlikely – limited suitable habitat.
-	Sensitive species 1248	Vulnerable	Vulnerable	Protected	-	Found in open woodland and steep rocky hills in shady situations at low- and medium altitudes. No EOO for this species is listed, but its AOO is estimated at 30.70 km ² (SANBI, 2020).	Possible – suitable habitat present.
-	Sensitive species 1252	Vulnerable	Vulnerable	Protected	Protected	Moist bushveld habitats, including wooded mountain kloofs. AOO estimated at 73.01 km ² (SANBI, 2020).	Possible – suitable habitat present.
-	Sensitive species 691	Vulnerable	Near Threatened	-	Protected	EOO is between 455 and 11 158 km ² , and thought to occur at less than 10 locations, with an AOO estimated at 3.06 km ² (SANBI, 2020). Prefers moist areas in undulating grassland.	Possible – suitable habitat present.

[#]The names of specific taxa that are regarded as being susceptible to overexploitation have been redacted and are not presented in this report. These species are referred to by their assigned 'sensitive species number', as per the species assessment guidelines (SANBI, 2020).

Source: List based on data from GDARD, MPTA, BODATSA and Environmental Screening Report Output.



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APPENDIX C: DRY AND WET SEASON SURVEY - FAUNA SPECIES LIST

Family	Scientific Name	Common Name	Regional Red List Status	NEMBA ToPS List (2007)	Gauteng Status	Mpumalanga Status	Dry Season Field Survey	Wet Season Field Survey
Mammals								
Bovidae	<i>Hippotragus niger</i> [#]	Sable Antelope	Vulnerable		Protected		x	x
Bovidae	<i>Tragelaphus angasi</i> [#]	Nyala	Least Concern		Protected	Protected	x	
Bovidae	<i>Tragelaphus strepsiceros</i>	Greater Kudu	Least Concern				x	x
Bovidae	<i>Kobus ellipsiprymnus</i> [#]	Waterbuck	Least Concern				x	x
Bovidae	<i>Alcelaphus buselaphus caama</i> [#]	Red Hartebeest	Least Concern		Protected		x	x
Bovidae	<i>Aepyceros melampus</i> [#]	Impala	Least Concern				x	x
Bovidae	<i>Pelea capreolus</i>	Grey Rhebok	Near Threatened		Protected	Protected	x	
Bovidae	<i>Taurotragus oryx</i> [#]	Eland	Least Concern		Protected	Protected	x	x
Bovidae	<i>Hippotragus equinus</i> [#]	Roan Antelope	Endangered	Vulnerable	Protected	Protected	x	x
Bovidae	<i>Sylvicapra grimmia</i>	Common Duiker	Least Concern				x	x
Bovidae	<i>Connochaetes gnou</i> [#]	Black Wildebeest	Least Concern	Protected	Protected	Protected	x	x
Bovidae	<i>Connochaetes taurinus</i> [#]	Blue Wildebeest	Least Concern	Protected	Protected	Protected		x
Bovidae	<i>Antidorcas marsupialis</i> [#]	Springbok	Least Concern				x	x
Bovidae	<i>Redunca fulvorufula fulvorufula</i>	Mountain Reedbuck	Endangered		Protected	Protected	x	x

Family	Scientific Name	Common Name	Regional Red List Status	NEMBA ToPS List (2007)	Gauteng Status	Mpumalanga Status	Dry Season Field Survey	Wet Season Field Survey
Mammals								
Bovidae	<i>Raphicerus campestris</i>	Steenbok	Least Concern		Protected	Protected	x	x
Canidae	<i>Canis mesomelas</i>	Black-backed Jackal	Least Concern				x	x
Canidae	<i>Otocyon megalotis</i>	Bat-eared Fox	Least Concern				x	
Cercopithecidae	<i>Papio ursinus</i>	Chacma Baboon	Least Concern				x	
Equidae	<i>Equus quagga</i> [#]	Plains Zebra	Least Concern		Protected		x	x
Erinaceidae	<i>Atelerix frontalis</i>	South African Hedgehog	Near Threatened	Protected	Protected	Near Threatened / Protected	x	
Felidae	<i>Leptailurus serval</i>	Serval	Near Threatened	Protected		Near Threatened	x	
Felidae	<i>Caracal caracal</i>	Caracal					x	
Giraffidae	<i>Giraffa camelopardalis giraffa</i> [#]	Giraffe	Least Concern		Protected	Protected	x	x
Herpestidae	<i>Atilax paludinosus</i>	Water Mongoose	Least Concern				x	x
Herpestidae	<i>Cynictis penicillata</i>	Yellow Mongoose	Least Concern				x	
Herpestidae	<i>Herpestes sanguineus</i>	Large Grey Mongoose	Least Concern				x	x
Herpestidae	<i>Herpestes ichneumon</i>	Slender Mongoose	Least Concern					
Herpestidae	<i>Suricata suricatta</i>	Suricate	Least Concern				x	
Hyaenidae	<i>Parahyaena brunnea</i>	Brown Hyaena	Near Threatened	Protected	Protected	Near Threatened / Protected	x	
Hystriidae	<i>Hystrix africaeaustralis</i>	Cape Porcupine	Least Concern				x	x
Leporidae	<i>Lepus saxatilis</i>	Scrub Hare	Least Concern				x	
Leporidae	<i>Pronolagus randensis</i>	Jameson's Red Rock Rabbit	Least Concern				x	x

Family	Scientific Name	Common Name	Regional Red List Status	NEMBA ToPS List (2007)	Gauteng Status	Mpumalanga Status	Dry Season Field Survey	Wet Season Field Survey
Mammals								
Macroscelididae	<i>Elephantus myurus</i>	Eastern Rock Sengi	Least Concern				x	x
Muridae	<i>Otomys cf. auratus</i> [%]	Vlei Rat	Near Threatened				x	
Muridae	<i>Mastomys</i> spp.	Multi-mammate Mouse	Least Concern				x	
Muridae	<i>Rhabdomys</i> species	Xeric Four-stripped Mouse	Least Concern				x	
Mustelidae	<i>Aonyx capensis</i>	Cape Clawless Otter	Near Threatened	Protected	Protected	Protected	x	
Orycteropodidae	<i>Orycteropus afer</i>	Aardvark	Least Concern		Protected	Protected	x	
Procaviidae	<i>Procavia capensis</i>	Rocky Hyrax	Least Concern				x	
Sciuridae	<i>Xerus inauris</i>	Ground Squirrel	Least Concern				x	x
Suidae	<i>Phacochoerus africanus</i>	Warthog	Least Concern				x	x
Suidae	<i>Potamochoerus larvatus</i>	Bushpig	Least Concern				x	
Viverridae	<i>Genetta maculata</i>	Large-spotted Genet	Least Concern				x	x
Herpetofauna								
Agamidae	<i>Agama atra</i>	Southern Rock Agama	Least Concern				x	
Elapidae	<i>Hemachatus heamachatus</i>	Rinkhals	Least Concern				x	
Lamprophiidae	<i>Pseudaspis cana</i>	Mole snake	Least Concern				x	
Pelomedusidae	<i>Pelomedusa subrufa</i>	Marsh Terrapin	Least Concern				x	
Varanidae	<i>Varanus niloticus</i>	Water Monitor	Least Concern				x	x
Viperidae	<i>Bitis arietans</i>	Puffadder	Least Concern				x	
Ranidae	<i>Amieta dealandii</i>	Common River Frog	Least Concern					x
Hyperoliidae	<i>Kassina senegalensis</i>	Bubbling Kassina	Least Concern					x

[illegible]



Water Mongoose (*Atilax paludinosus*)



Black-backed Jackal (*Canis mesomelas*)



Slender Mongoose (*Herpestes sanguineus*)



Large-spotted Genet (*Genetta maculata*)



Serval (*Leptailurus serval*)



Porcupine (*Hystrix africaeaustralis*)



Warthog (*Phacochoerus africanus*)



Bushpig (*Potamochoerus larvatus*)



Xeric Four-striped Mouse (*Rhabdomys* species)



Vlei Rat (*Otomys* cf. *auratus*)



Eastern Rock Sengi (*Elephantus myurus*)



Rock Hyrax (*Procavia capensis*)



Giraffe (*Giraffa camelopardalis giraffa*)



Red Hartebeest (*Alcelaphus buselaphus caama*)



Sable Antelope (*Hippotragus niger*)



Mountain Reedbuck (*Redunca fulvorufula fulvorufula*)



Water Monitor (*Varanus niloticus*)



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APPENDIX D: SUMMARY OF FAUNA SCC HIGHLIGHTED BY THE DFFE ENVIRONMENTAL SCREENING TOOL

Family	Scientific Name	Common Name	Regional Red List Status (2016)	NEMBA ToPS List (2007)	Gauteng Status	Mpumalanga Status	Habitat Preferences	Probability of Occurrence
Mammal								
Mustelidae	<i>Hydrictis maculicollis</i>	Spotted-necked Otter	Vulnerable	Protected	Protected	Near Threatened / Protected	Riparian habitats, favouring large, open water bodies.	Probable - Suitable habitat present
Soricidae	<i>Crocidura maquassiensis</i>	Maquassie Musk Shrew	Vulnerable	-	-	Vulnerable	Little is known of habitat preferences. Thought to favour rocky or montane grasslands.	Unlikely - Suitable habitat present, but no post-2000 records of this species in this area of Gauteng and Mpumalanga Provinces.
Bovidae	<i>Ourebia ourebi ourebi</i>	Oribi	Endangered	Endangered	Protected	Endangered / Protected	Short open grassland, with patches of taller grass.	Unlikely - Suitable habitat is present. However, none of the game farmers interviewed during the field surveys indicated that they were aware of Oribi in the area.
Invertebrates								
Lycaenidae	<i>Lepidochrysops procera</i>	Potchefstroom Blue	Rare	-	-	-	Favours rocky areas in grassland. Dependent on the presence of the larval host plant <i>Ocimum obovatum</i> .	Possible - Suitable habitat present.
Lycaenidae	<i>Chrysoritis aureus</i>	Highveld Golden Opal	Endangered	-	-	Endangered	Hills and ridges with south-facing slopes, the presence of large rocks, the host plant <i>Clutia pulchella</i> .	Recorded/ Confirmed (MPTA)

Family	Scientific Name	Common Name	Regional Red List Status (2016)	NEMBA ToPS List (2007)	Gauteng Status	Mpumalanga Status	Habitat Preferences	Probability of Occurrence
Lycaenidae	<i>Orachrysops mijburghi</i>	Mijburgh's Blue	Endangered	-	-	-	Moist habitats, along temporary streams in undulating low-lying areas.	Possible - Suitable habitat present.



TERRESTRIAL BIODIVERSITY SITE SENSITIVITY VERIFICATION REPORT – ABO UVMERVANE WEF 2 PROJECT

Hawkhead Consulting was appointed by WSP Group Africa (Pty) Ltd. to conduct the Terrestrial Biodiversity (incl. Plant Species and Animal Species) Assessment to inform a Scoping and Environmental Impact Assessment (EIA) (S&EIA) process for the proposed ABO Uvemvane Wind Energy Facility (WEF) 2 Project, near Heidelberg in Gauteng and Mpumalanga Provinces, South Africa.

This Terrestrial Biodiversity Site Sensitivity Verification Report (SSVR) is prepared pursuant to the results of a DFFE Screening Tool Report completed in July 2025 for the proposed Project. It addresses the Terrestrial Biodiversity, Plant Species, and Animal Species themes as prescribed in the relevant protocols (Please note that a separate bird specialist study is being conducted for the project; therefore, bird species were not evaluated in this SSVR).

Verification field visits comprising both dry season (29th July to 3rd August 2024) and wet season (20th to 24th January 2025) surveys were conducted by Hawkhead Consulting to collect biodiversity data and confirm the proposed Project sites' ecological sensitivity. The field surveys focused on the proposed ABO Uvemvane WEF 2 site (hereafter referred to as the 'Project site'), as well as the adjacent proposed ABO Uvemvane WEF 1 site, which is located to the immediate south of the proposed WEF 2 site and is part of a separate authorisation process.

The table below provides a summary of the outcome of the DFFE Screening Tool sensitivity rating for the Terrestrial Biodiversity, Animal Species and Plant Species themes and the outcome of the sensitivity verification process for the ABO Uvemvane WEF 2 Project site. Additional discussion is presented in the sections below.

Table 1 Terrestrial Biodiversity, Animal Species and Plant Species theme sensitivities for the proposed ABO Uvemvane WEF 2 Project.

ENVIRONMENTAL THEME	DFFE SCREENING TOOL SENSITIVITY	APPLICABLE PROTOCOL	SPECIALIST SENSITIVITY VERIFICATION
Terrestrial Biodiversity	Very High	Protocol for the specialist assessment and minimum report content requirements for environmental impacts on Terrestrial Biodiversity	Large areas of natural habitat are present on-site, and these maintain important ecosystem processes and support many indigenous flora and fauna species. For natural habitat patches, the 'Very High' sensitivity rating for Terrestrial Biodiversity therefore is confirmed. For patches of modified habitat (cultivated fields and stands of alien trees), the sensitivity rating is considered Low

ENVIRONMENTAL THEME	DFFE SCREENING TOOL SENSITIVITY	APPLICABLE PROTOCOL	SPECIALIST SENSITIVITY VERIFICATION
Plant Species	Medium	Protocol for the specialist assessment and minimum report content requirements for environmental impacts on Plant Species	Medium in areas of undisturbed natural habitat. Low in areas of modified habitat (e.g., cultivated fields and stands of alien trees).
Animal Species	High	Protocol for the specialist assessment and minimum report content requirements for environmental impacts on Animal Species	High in areas of undisturbed natural habitat. Low in areas of modified habitat (e.g., cultivated fields and stands of alien trees).

DFFE SCREENING TOOL OUTPUT

The **Terrestrial Biodiversity** Theme for the Project site is rated 'Very High' sensitivity (Figure 1) due to the following features:

- Critical Biodiversity Area (CBA) 1;
- CBA 2;
- CBA Irreplaceable;
- CBA Optimal;
- Ecological Support Areas (ESA) 1;
- ESA 2;
- National Protected Area Expansion Strategy (NPAES); and
- Soweto Highveld Grassland – Vulnerable.



Figure 1: Terrestrial Biodiversity sensitivity mapping of the Project site, as per the DFFE online environmental screening tool.

The **Plant Species** Theme is rated 'Medium' sensitivity (Figure 2) due to the potential presence of the following flora species of conservation concern (SCC):

- *Khadia beswickii*;
- Sensitive species 1252;
- *Delosperma macellum*;
- *Cineraria longipes*;
- Sensitive species 691;
- *Brachycorythis conica* subsp. *transvaalensis*;
- Sensitive species 1248; and
- *Prunus africana*.



Figure 2: Plant Species sensitivity mapping of the Project site, as per the DFFE online environmental screening tool.

The **Animal Species** Theme is rated 'High' sensitivity due to the potential presence of the following fauna SCC;

- Three mammal species:
 - Spotted-necked Otter (*Hydrictis maculicollis*);
 - Maquassie Musk Shrew (*Crocidura maquassiensis*);
 - Oribi (*Ourebia ourebi ourebi*);
- Four bird species¹:
 - White-bellied Bustard (*Eupodotis senegalensis*);
 - African Marsh Harrier (*Circus ranivorus*);
 - Secretarybird (*Sagittarius serpentarius*);
 - Yellow-billed Stork (*Mycteria ibis*);
 - Caspian Tern (*Hydroprogne caspia*);
- Two invertebrate species:
 - Potchefstroom Blue (*Lepidochrysops procera*);
 - Mijburgh's Blue (*Orachrysops mijburghi*); and
 - Highveld Golden Opal (*Chrysoritis aureus*).

Of these, *Circus ranivorus*, *Mycteria ibis* and *Sagittarius serpentarius* are rated 'High' sensitivity. The remaining species are listed as 'Medium' sensitivity.

¹ Bird species were assessed as part of a separate sensitivity verification process, and are therefore not considered further in this report.

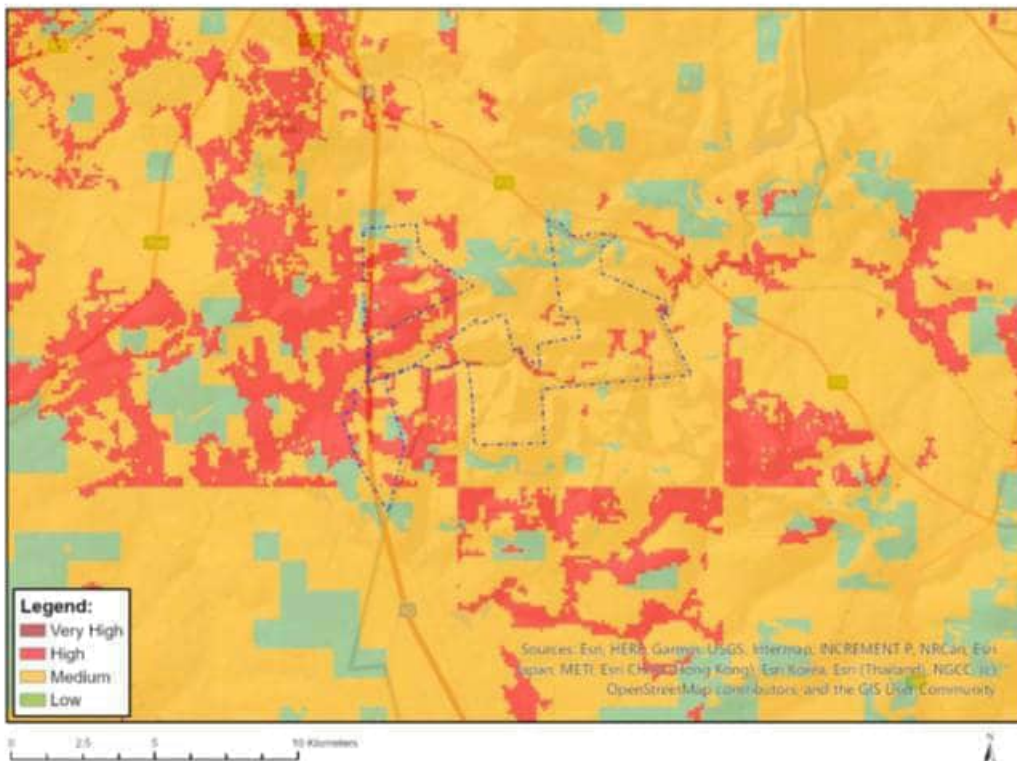


Figure 3: Animal Species sensitivity mapping of the Project site, as per the DFFE online environmental screening tool.

FINDINGS OF THE SITE SENSITIVITY VERIFICATION FIELD VISIT

The topography of the Project site is complex and dominated by mountainous terrain, embedded with flat/undulating open plains and incised river valleys and drainage lines. Most of the Project site comprises natural habitat, although small patches and larger areas of modified habitat originating from current- and past anthropogenic disturbances are also present. Prominent habitats recognised in the Project site during the field surveys are briefly described below:

- Rocky mountain bushveld and shrubland dominates the hills and mountains across most of the Project site. These areas are often remote, with limited signs of anthropogenic disturbance outside of game fencing and 4X4 vehicle tracks;
- Natural dry grassland characterises the broad open mountain plateaus and undulating plains located between hills and mountains, and in low-lying areas;
- Riparian and wetland habitats associated with Suikerbosrand River, and various smaller watercourses and drainage features. Vegetation ranges from closed riparian woodland, to open moist grassland habitat;
- Secondary grasslands are associated with old lands (former cultivated fields) that are located between hills and mountains, and along drainage features in the Project site;
- Cultivated fields, under dryland cropping or pivot irrigation. At the time of the field visits, these were lying fallow or planted with maize; and
- Stands of alien trees (e.g., *Populus x canescens* and *Eucalyptus* spp.) are present in the Project site, but these are comparatively rare and mostly associated with farm residences or windrows.

Refer to Appendix A for photographs and brief descriptors of the main habitat types documented at several reference points across both the ABO Uvemvane WEF 2 and ABO Uvemvane WEF 1 sites.



Natural habitat in the Project site is extensive and provides a heterogeneous and functional habitat network, with a high degree of landscape connectivity. Areas of natural habitat thus support various ecological processes, local metapopulation dynamics, and diverse fauna and flora communities (including many SCC).

It was noted that a number of individual farms in the Project site are managed as game farms, and these support multiple free-roaming and actively-managed indigenous mammal taxa, with 43 mammal species documented during the field visit. Nine herpetofauna species were also documented for the Project site, based principally of anecdotal evidence from local farmers. Recorded fauna are listed in Appendix C, along with select photographs.

Terrestrial Biodiversity Theme

The DFFE Screening Tool's sensitivity rating for Terrestrial Biodiversity for the Project site is 'Very High'. This is predicated on several conservation features, including the presence of CBAs and ESAs, Priority Focus Areas for protected area expansion, and the presence of a threatened vegetation type, namely Soweto Highveld Grassland (Vulnerable). Maps showing the delineation of these conservation planning features relative to the Uvemvane WEF 2 project site are shown in Figure 4 to Figure 6.

As discussed above, the findings of the verification field visit indicate that the Project site comprises large tracts of undisturbed natural habitat that support various ecosystem processes and diverse flora and fauna assemblages. On-site natural habitat is thus of biodiversity conservation importance, in accordance with the DFFE listed sensitivity features.

The 'Very High' sensitivity rating for Terrestrial Biodiversity is therefore confirmed for patches of natural habitat. In patches of modified habitat (actively cultivated fields and alien tree stands) it is considered low. A Terrestrial Biodiversity Specialist Assessment Report will therefore be compiled for the proposed Project, as per the applicable protocol.

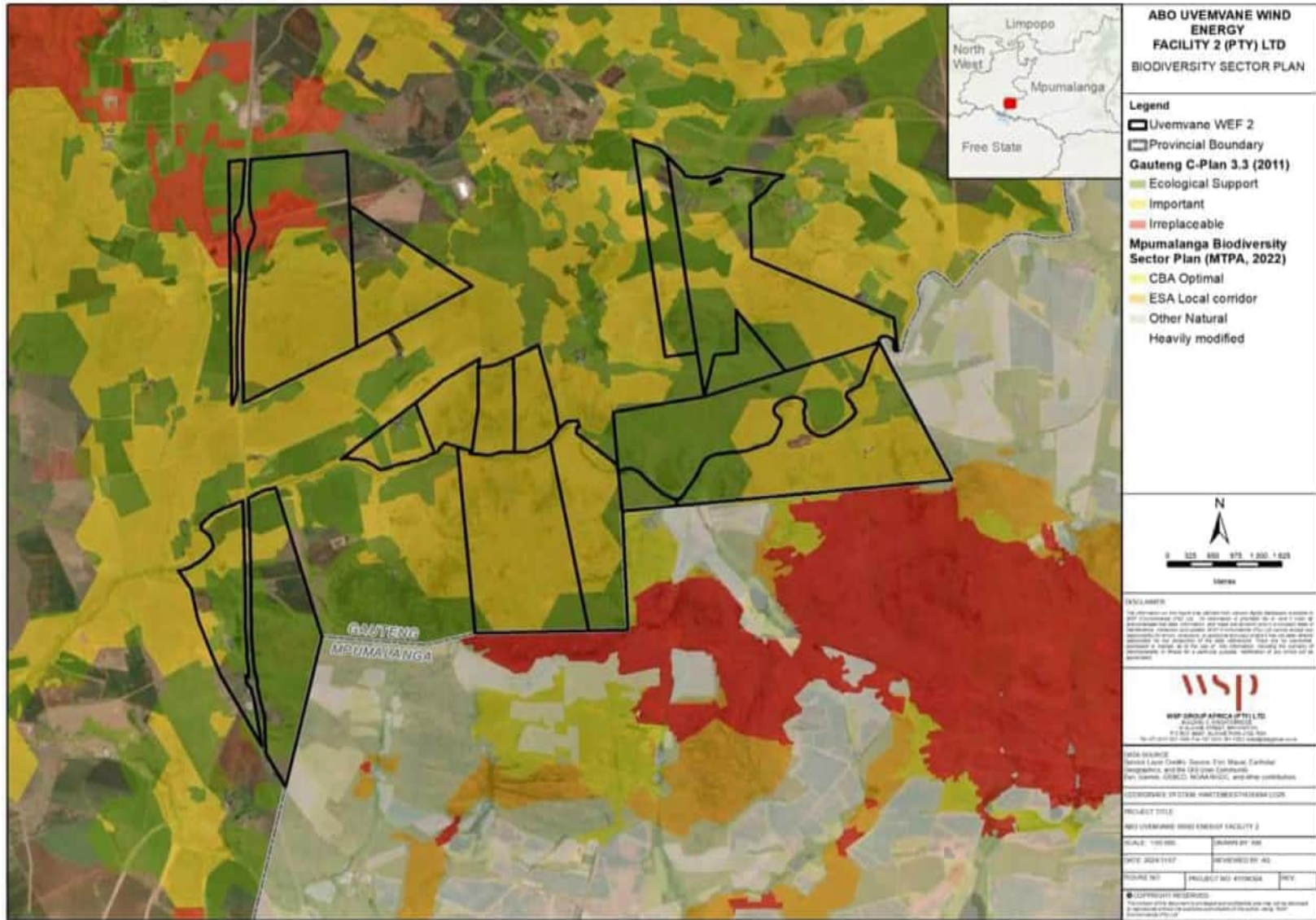


Figure 4: Uvempvane WEF 2 in relation to the Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) of the Gauteng C-Plan (2011) and the adjacent MBSP (2022).

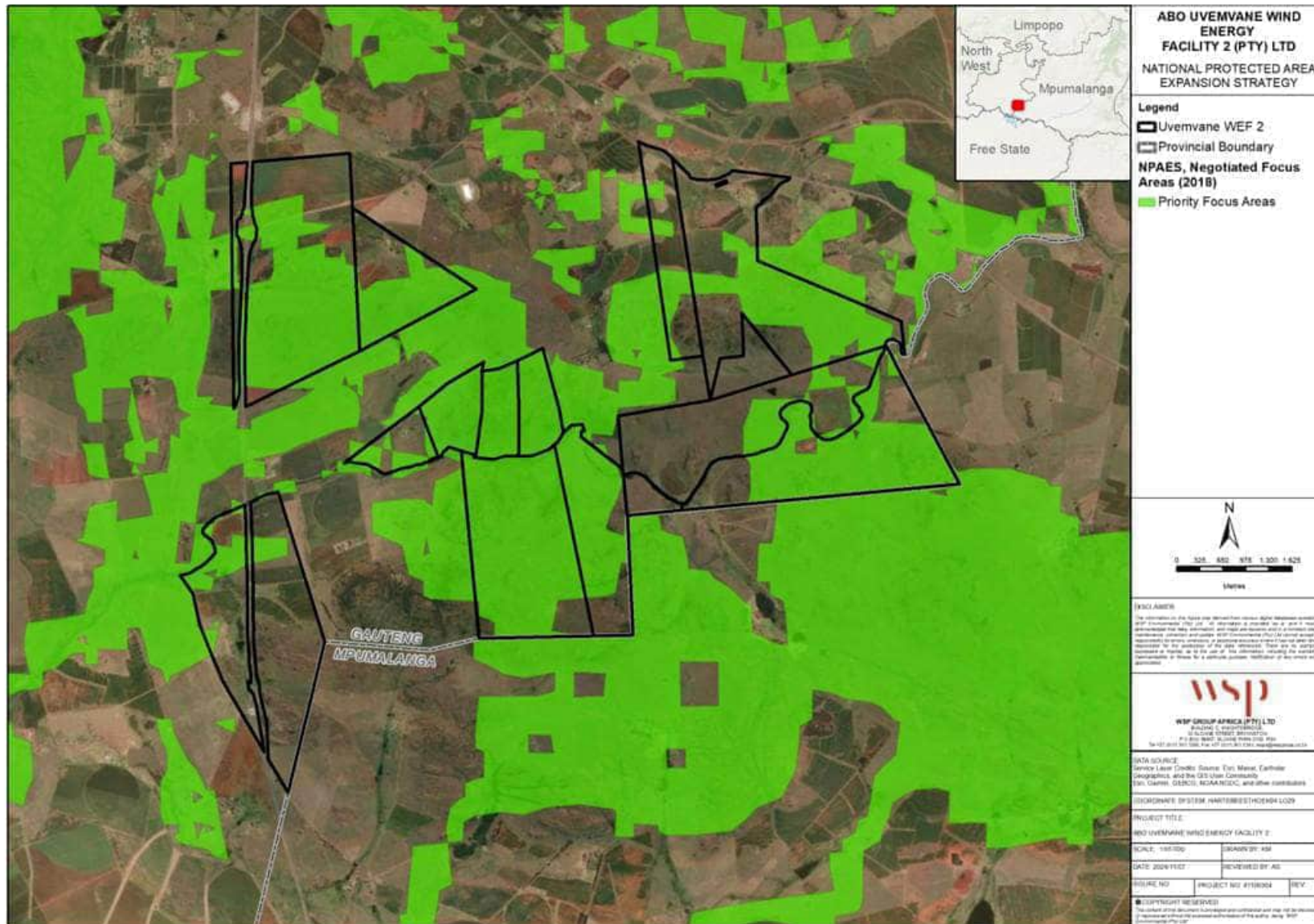


Figure 5: Uvemvane WEF 2 in relation to the Priority Focus Areas of the National Protected Area Expansion Strategy (2018).



Figure 6: Uvemvane WEF 2 in relation to the Red List of Threatened Ecosystems (SANBI 2021).

Plant Species Theme

No flora SCC were recorded on-site during the field surveys. This notwithstanding, considering the extent and diversity of natural habitat across the Project site, it is possible that several SCC may be present, including those taxa highlighted by DFFE Screening Tool. Species like *Khadia beswickii* (Vulnerable), *Brachycorythis conica* subsp. *transvaalensis* (Critically Endangered), *Cineraria longipes* (Vulnerable), *Delosperma macellum* (Endangered), Sensitive species 1252 (Vulnerable) and Sensitive species 1248 (Vulnerable) are commonly found in diverse wooded grassland and bushveld habitats, often in rocky mountainous areas. Sensitive species 691 (Vulnerable) favours undulating grasslands in damp areas. These habitats are present in the Project site and accordingly a number of these SCC either possibly or probably occur in the Project site. All flora SCC that potentially occur in the Project site are listed in Appendix B, along with a 'probability of occurrence', based on habitat suitability assessments.

The 'Medium' sensitivity rating for the Plant Species theme is therefore confirmed for patches of natural habitat across the Project site. A Plant Species Specialist Assessment Report will be compiled for the proposed Project, as per the applicable protocol.

Animal Species Theme

Fauna species recorded during the field surveys are listed in Appendix C, along with their conservation statuses, as per regional Red Lists and national/provincial legislation.

Free-roaming fauna SCC recorded for the proposed Project site included Mountain Reedbuck (*Redunca fulvorufula fulvorufula*) - Endangered, Serval (*Leptailurus serval*) – Near Threatened, Cape-clawless Otter (*Aonyx capensis*) – Near Threatened, Southern African Hedgehog (*Atelerix frontalis*) – Near Threatened, Grey Rhebok (*Pelea capreolus*) – Near Threatened and Vlei Rat (*Otomys cf. auratus*) – Near Threatened. Considering the extent and diversity of natural habitat across the Project site, it is possible that several other fauna SCC may be present, including some of those taxa highlighted by the DFFE Screening Tool. Discussion on the habitat preferences and a 'probability of occurrence' for the fauna SCC that are listed by the DFFE Screening Tool (excl. birds) is presented below:

The Spotted-necked Otter (Vulnerable) prefers permanent, large open-water bodies (Ponsoby, *et al.*, 2016), while the Maquassie Musk Shrew (Vulnerable) favours moist habitats (Taylor, *et al.*, 2016). Open water pools characterise a number of stretches of the Suikerbosrand River, and numerous other smaller water courses and drainage features are also present on-site. It is therefore 'probable' that Spotted-necked Otter present in the Project site. Although some suitable habitat is present for Maquassie Musk Shrew, there are no post-2000 records of this species in either Gauteng or Mpumalanga Provinces. It is therefore unlikely that Maquassie Musk Shrew is present. Oribi (Endangered) typically occur in areas with a mix of tall- and short-grassland (Shrader, *et al.*, 2016). This habitat is present in the Project site, although during informal interviews, local game farmers indicated that they were not aware of the presence of Oribi in the Project site. It is therefore 'unlikely' that Oribi is present.

With respect to the three butterfly species highlighted by the DFFE Screening Tool (*viz.* *Orachrysops mijburghii*, *Lepidochrysops procera* and *Chrysoritis aureus*), it is noted that the Project site is located 13 km from Suikerbosrand Nature Reserve and 3.2 km from Alice Glockner Nature Reserve, which are both recognised as butterfly hotspots.

Chrysoritis aureus (Endangered) is known from only six confirmed localities (Henning, 2018), including the farm Malanskraal 47 IR, which is located adjacent to the Project site (within the neighbouring WEF 1 Project site) (Mpumalanga Parks and Tourism Agency, 2024²); and in both Alice Glockner Nature Reserve and Suikerbosrand Nature Reserve (Terblanche, *et al.*, 2003). Habitat preferences include hills and ridges with south-facing slopes, the

² Species status report for 2628CB received from M. Lötter.

presence of large rocks, the host plant *Clutia pulchella*. Considering the proximity of a known location of this species and the suitability of on-site habitat with the presence of the host plant recorded, as a precaution, *Chrysoritis aureus* should be regarded as 'Recorded/Confirmed' for the proposed WEF 2 Project site.

Lepidochrysops procera (Rare) is known from only a few locations, and favours rocky areas in grassland, where it is dependent on the presence of the larval host plant *Ocimum obovatum* (Dobson and Dobson, 2018a). *Orachrysops mijburghii* (Endangered) is a butterfly species that is endemic to Gauteng and has been recorded in Suikerbosrand Nature Reserve. The preferred habitat of this species is moist habitats, along temporary streams in undulating low-lying areas (Dobson and Dobson, 2018b). These habitats are present in the Project site and considering the Project site's relatively close proximity to Alice Glockner Nature Reserve and Suikerbosrand Nature Reserve, it is 'possible' that both *Lepidochrysops procera* and *Orachrysops mijburghii* are present.

A table presenting a summary of this information is presented in Appendix D.

The 'High' sensitivity rating for the Animal Species theme is therefore confirmed for patches of natural habitat. An Animal Species Specialist Assessment Report will be compiled for the proposed Project, as per the applicable protocol.

To mitigate potential risks to Red List butterfly species, it is strongly recommended that a butterfly specialist should be appointed to survey the Project site, and provide a specialist butterfly assessment report for the proposed Project.



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This site sensitivity verification was undertaken by *Andrew Zinn* from *Hawkhead Consulting*

A handwritten signature in blue ink, appearing to be 'A. Zinn'.

Andrew Zinn

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APPENDIX A: REFERENCE POINT PHOTOGRAPHS

Co-ordinates	Habitat Descriptor	Photograph
S26 38.189 E28 26.741	View across the Suikerbosrand River. Well-wooded savanna habitat dominates the mountain slopes in the background.	
S26 37.855 E28 25.982	Large, open-water pool along a reach of the Suikerbosrand River.	
26° 39.498'S 28° 25.907'E	Secondary grassland associated with an abandoned cultivated field (old land).	
S26 39.309 E28 26.331	Rocky grassland occurring on a mountain plateau.	

Co-ordinates	Habitat Descriptor	Photograph
S26 39.403 E28 26.266	View south across the Project site showing low-lying areas of natural- and secondary grasslands.	
S26 38.962 E28 27.097	Dense, closed-canopy woodland occurring in a drainage valley.	
S26 38.782 E28 27.185	Recently ploughed cultivated field.	
S26 38.608 E28 27.408	Moist grassland/wetland associated with a drainage area that feeds into the Suikerbosrand River.	

Co-ordinates	Habitat Descriptor	Photograph
26° 39.001'S 28° 27.832'E	Dense stand of alien <i>Populus x canescens</i> trees	
S26 39.953 E28 27.616	Open mountain shrubland.	



APPENDIX B: FLORA OF CONSERVATION CONCERN THAT POTENTIALLY OCCUR IN THE PROJECT SITE

Family	Scientific Name [#]	National Red List Status	Mpumalanga Red List Status	Mpumalanga Protected Status	Gauteng Protected Status	Habitat Preferences	Probability of Occurrence
Aizoaceae	<i>Khadia beswickii</i>	Vulnerable	Vulnerable	-	-	Species has an EOO of only 475 km ² and an AOO of 3-7 km ² . It is known from only ten locations, mostly across Gauteng Province, but also scattered sites in Mpumalanga. Favours open shallow soils, over rocks in grassland (Victor and Pfab, 2005a).	Probable – suitable habitat present and previously recorded in close proximity to the Project site.
Aizoaceae	<i>Delosperma macellum</i>	Endangered	Endangered	-	-	Known from only two locations, with a total population estimated at 68 mature individuals. Occurs in open areas, near trees and favours loose gravel habitats (Victor and Pfab, 2005b).	Possible – suitable habitat present.
Aizoaceae	<i>Delosperma leendertziae</i>	Near Threatened	-	-	-	Has an EOO of 8658 km ² and an AOO of 4-13 km ² . Known from 10 locations, where it favours steep south-facing quartzite slopes in mountain grassland (Victor and Pfab, 2005c).	Possible – suitable habitat present.
Aizoaceae	<i>Lithops lesliei</i> subsp. <i>lesliei</i>	Vulnerable	Near Threatened	-	Protected	Rocky habitats in arid grassland (Mtshali, <i>et al.</i> , 2023).	Probable – suitable habitat present and previously recorded in close proximity to the Project site.
Asteraceae	<i>Cineraria longipes</i>	Vulnerable	-	-	-	Known from six subpopulations, with an AOO estimated at 5-14 km ² (Pfab and Victor, 2005a). Occurs on south-facing slopes of basalt hills, where it favours grassland habitats, where it grows amongst rocks and seepage lines (Pfab and Victor, 2005a).	Probable – suitable habitat present and previously recorded in close proximity to the Project site.

Family	Scientific Name [#]	National Red List Status	Mpumalanga Red List Status	Mpumalanga Protected Status	Gauteng Protected Status	Habitat Preferences	Probability of Occurrence
Brassicaceae	<i>Cleome conrathii</i>	Near Threatened	-	-	-	Occurs in grassland or deciduous woodland, where it favours stony quartzite slopes, with red sandy soils (Pfab, <i>et al.</i> , 2005)	Probable – suitable habitat present.
Crassulaceae	<i>Adromischus umbraticola</i> subsp. <i>umbraticola</i>	Near Threatened	-	-	-	Species has an EOO of 14 600 km ² and is known from 14 locations. Grows in rock crevices on south-facing slope ridges. (Helme and Raimondo, 2006).	Probable – suitable habitat present and previously recorded in close proximity to the Project site.
Orchidaceae	<i>Eulophia coddii</i>	Vulnerable	-	Protected	Protected	A range-restricted species, with an EOO of 7000-9000 km ² . Known from five locations, with an estimated population size of 240-1000 individuals (Pfab and Victor, 2005b). Occurs in bushveld and grassland, where it prefers sandstone-derived soils on steep slopes (Pfab and Victor, 2005b).	Probable – suitable habitat present.
Orchidaceae	<i>Brachycorythis conica</i> subsp. <i>transvaalensis</i>	Critically Endangered	Critically Endangered	Protected	Protected	Three small subpopulations of this species remain in Mpumalanga, all with populations of <10 individual plants (Van Staden <i>et al.</i> , 2015). One other subpopulation is known in Gauteng and numbers about 117 plants (Van Staden <i>et al.</i> , 2015). Favours short open grassland and wooded grassland, on sandy gravel overlying dolomite and occasionally quartzite. Occurs at an altitude of between 1000-1705 m (Van Staden <i>et al.</i> , 2015).	Possible – suitable habitat present.
Orchidaceae	<i>Habenaria barbertoni</i>	Near Threatened	Near Threatened	Protected	Protected	Favours rocky hillsides in Acacia savanna, at altitudes between 1000 - 1500 m (Victor, <i>et al.</i> , 2005).	Unlikely – no suitable habitat.

Family	Scientific Name [#]	National Red List Status	Mpumalanga Red List Status	Mpumalanga Protected Status	Gauteng Protected Status	Habitat Preferences	Probability of Occurrence
Rosaceae	<i>Prunus africana</i>	Vulnerable	Vulnerable	-	-	Forest species, favouring inter alia, inland mistbelt and afro-montane forests up to 2100 m. Population estimated at 10 000 mature trees (Williams <i>et al.</i> , 2008)	Unlikely – limited suitable habitat.
-	Sensitive species 1248	Vulnerable	Vulnerable	Protected	-	Found in open woodland and steep rocky hills in shady situations at low- and medium altitudes. No EOO for this species is listed, but its AOO is estimated at 30.70 km ² (SANBI, 2020).	Possible – suitable habitat present.
-	Sensitive species 1252	Vulnerable	Vulnerable	Protected	Protected	Moist bushveld habitats, including wooded mountain kloofs. AOO estimated at 73.01 km ² (SANBI, 2020).	Possible – suitable habitat present.
-	Sensitive species 691	Vulnerable	Near Threatened	-	Protected	EOO is between 455 and 11 158 km ² , and thought to occur at less than 10 locations, with an AOO estimated at 3.06 km ² (SANBI, 2020). Prefers moist areas in undulating grassland.	Possible – suitable habitat present.

[#]The names of specific taxa that are regarded as being susceptible to overexploitation have been redacted and are not presented in this report. These species are referred to by their assigned 'sensitive species number', as per the species assessment guidelines (SANBI, 2020).

Source: List based on data from GDARD, MPTA, BODATSA and Environmental Screening Report Output.



APPENDIX C: DRY AND WET SEASON SURVEY - FAUNA SPECIES LIST

Family	Scientific Name	Common Name	Regional Red List Status	NEMBA ToPS List (2007)	Gauteng Status	Mpumalanga Status	Dry Season Field Survey	Wet Season Field Survey
Mammals								
Bovidae	<i>Hippotragus niger</i> [#]	Sable Antelope	Vulnerable		Protected		x	x
Bovidae	<i>Tragelaphus angasi</i> [#]	Nyala	Least Concern		Protected	Protected	x	
Bovidae	<i>Tragelaphus strepsiceros</i>	Greater Kudu	Least Concern				x	x
Bovidae	<i>Kobus ellipsiprymnus</i> [#]	Waterbuck	Least Concern				x	x
Bovidae	<i>Alcelaphus buselaphus caama</i> [#]	Red Hartebeest	Least Concern		Protected		x	x
Bovidae	<i>Aepyceros melampus</i> [#]	Impala	Least Concern				x	x
Bovidae	<i>Pelea capreolus</i>	Grey Rhebok	Near Threatened		Protected	Protected	x	
Bovidae	<i>Taurotragus oryx</i> [#]	Eland	Least Concern		Protected	Protected	x	x
Bovidae	<i>Hippotragus equinus</i> [#]	Roan Antelope	Endangered	Vulnerable	Protected	Protected	x	x
Bovidae	<i>Sylvicapra grimmia</i>	Common Duiker	Least Concern				x	x
Bovidae	<i>Connochaetes gnou</i> [#]	Black Wildebeest	Least Concern	Protected	Protected	Protected	x	x
Bovidae	<i>Connochaetes taurinus</i> [#]	Blue Wildebeest	Least Concern	Protected	Protected	Protected		x
Bovidae	<i>Antidorcas marsupialis</i> [#]	Springbok	Least Concern				x	x
Bovidae	<i>Redunca fulvorufula fulvorufula</i>	Mountain Reedbuck	Endangered		Protected	Protected	x	x
Bovidae	<i>Raphicerus campestris</i>	Steenbok	Least Concern		Protected	Protected	x	x
Canidae	<i>Canis mesomelas</i>	Black-backed Jackal	Least Concern				x	x

Family	Scientific Name	Common Name	Regional Red List Status	NEMBA ToPS List (2007)	Gauteng Status	Mpumalanga Status	Dry Season Field Survey	Wet Season Field Survey
Mammals								
Canidae	<i>Otocyon megalotis</i>	Bat-eared Fox	Least Concern				x	
Cercopithecidae	<i>Papio ursinus</i>	Chacma Baboon	Least Concern				x	
Equidae	<i>Equus quagga</i> [#]	Plains Zebra	Least Concern		Protected		x	x
Erinaceidae	<i>Atelerix frontalis</i>	South African Hedgehog	Near Threatened	Protected	Protected	Near Threatened / Protected	x	
Felidae	<i>Leptailurus serval</i>	Serval	Near Threatened	Protected		Near Threatened	x	
Felidae	<i>Caracal caracal</i>	Caracal					x	
Giraffidae	<i>Giraffa camelopardalis giraffa</i> [#]	Giraffe	Least Concern		Protected	Protected	x	x
Herpestidae	<i>Atilax paludinosus</i>	Water Mongoose	Least Concern				x	x
Herpestidae	<i>Cynictis penicillata</i>	Yellow Mongoose	Least Concern				x	
Herpestidae	<i>Herpestes sanguineus</i>	Large Grey Mongoose	Least Concern				x	x
Herpestidae	<i>Herpestes ichneumon</i>	Slender Mongoose	Least Concern					
Herpestidae	<i>Suricata suricatta</i>	Suricate	Least Concern				x	
Hyaenidae	<i>Parahyaena brunnea</i>	Brown Hyaena	Near Threatened	Protected	Protected	Near Threatened / Protected	x	
Hystriidae	<i>Hystrix africaeaustralis</i>	Cape Porcupine	Least Concern				x	x
Leporidae	<i>Lepus saxatilis</i>	Scrub Hare	Least Concern				x	
Leporidae	<i>Pronolagus randensis</i>	Jameson's Red Rock Rabbit	Least Concern				x	x
Macroscelididae	<i>Elephantus myurus</i>	Eastern Rock Sengi	Least Concern				x	x
Muridae	<i>Otomys cf. auratus</i> [%]	Vlei Rat	Near Threatened				x	

#Actively managed/farmed taxon.

%Can only be identified to species-level based on skull measurements.



Water Mongoose (*Atilax paludinosus*)



Black-backed Jackal (*Canis mesomelas*)



Slender Mongoose (*Herpestes sanguineus*)



Large-spotted Genet (*Genetta maculata*)



Serval (*Leptailurus serval*)



Porcupine (*Hystrix africaeaustralis*)



Warthog (*Phacochoerus africanus*)



Bushpig (*Potamochoerus larvatus*)



Xeric Four-striped Mouse (*Rhabdomys* species)



Vlei Rat (*Otomys* cf. *auratus*)



Eastern Rock Sengi (*Elephantus myurus*)



Rock Hyrax (*Procavia capensis*)



Giraffe (*Giraffa camelopardalis giraffa*)



Red Hartebeest (*Alcelaphus buselaphus caama*)



Sable Antelope (*Hippotragus niger*)



Mountain Reedbuck (*Redunca fulvorufula fulvorufula*)



Water Monitor (*Varanus niloticus*)



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APPENDIX D: SUMMARY OF FAUNA SCC HIGHLIGHTED BY THE DFFE ENVIRONMENTAL SCREENING TOOL

Family	Scientific Name	Common Name	Regional Red List Status (2016)	NEMBA ToPS List (2007)	Gauteng Status	Mpumalanga Status	Habitat Preferences	Probability of Occurrence
Mammal								
Mustelidae	<i>Hydrictis maculicollis</i>	Spotted-necked Otter	Vulnerable	Protected	Protected	Near Threatened / Protected	Riparian habitats, favouring large, open water bodies.	Probable - Suitable habitat present
Soricidae	<i>Crocidura maquassiensis</i>	Maquassie Musk Shrew	Vulnerable	-	-	Vulnerable	Little is known of habitat preferences. Thought to favour rocky or montane grasslands.	Unlikely - Suitable habitat present, but no post-2000 records of this species in this area of Gauteng and Mpumalanga Provinces.
Bovidae	<i>Ourebia ourebi ourebi</i>	Oribi	Endangered	Endangered	Protected	Endangered / Protected	Short open grassland, with patches of taller grass.	Unlikely - Suitable habitat is present. However, none of the game farmers interviewed during the field surveys indicated that they were aware of Oribi in the area.
Invertebrates								
Lycaenidae	<i>Lepidochrysops procera</i>	Potchefstroom Blue	Rare	-	-	-	Favours rocky areas in grassland. Dependent on the presence of the larval host plant <i>Ocimum obovatum</i> .	Possible - Suitable habitat present.
Lycaenidae	<i>Chrysoritis aureus</i>	Highveld Golden Opal	Endangered	-	-	Endangered	Hills and ridges with south-facing slopes, the presence of large rocks, the host plant <i>Clutia pulchella</i> .	Recorded/ Confirmed (MPTA)

Family	Scientific Name	Common Name	Regional Red List Status (2016)	NEMBA ToPS List (2007)	Gauteng Status	Mpumalanga Status	Habitat Preferences	Probability of Occurrence
Lycaenidae	<i>Orachrysops mijburghi</i>	Mijburgh's Blue	Endangered	-	-	-	Moist habitats, along temporary streams in undulating low-lying areas.	Possible - Suitable habitat present.

Appendix C.3

AQUATIC BIODIVERSITY SSVR



AQUATIC SITE SENSITIVITY ANALYSIS REPORT FOR THE PROPOSED ABO UVEMVANE WIND ENERGY FACILITY 1 (WEF1) AND ASSOCIATED GRID CONNECTION NEAR HEIDELBERG IN THE GAUTENG AND MPUMALANGA PROVINCES

DECEMBER 2024



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1. SPECIALIST DETAILS, EXPERTISE AND DECLARATION

1.1. QUALIFICATIONS OF SPECIALIST CONSULTANT

Name: Antonia Belcher
Contact details: 53 Dummer St, Somerset West, 7130; Phone: 082 883 8055;
 Email: toni@bluescience.co.za
Profession: Aquatic Scientist (P. Sci. Nat. 400040/10)
Fields of Expertise: Specialist in freshwater assessments, monitoring and reporting
Years in Profession: 30+ years

Toni Belcher worked for the Department of Water Affairs and Forestry for more than 17 years. During this period she worked for the Directorate Water Quality Management, the Institute for Water Quality Studies and the Western Cape Regional Office and has built up a wide skills base on water resource management and water resource quality for rivers, estuaries and the coastal marine environment. Since leaving the Department in 2007, she has been working in her private capacity and was co-owner of BlueScience (Pty) Ltd, working in the field of water resource management and has been involved in more than 500 aquatic ecosystem assessments for environmental impact assessment and water use authorisation purposes. In 2006 she was awarded a Woman in Water award for Environmental Education and was a runner up for the Woman in Water prize for Water Research.

Professional Qualifications:

1984 Matriculation Lawson Brown High School
 1987 B.Sc. – Mathematics, Applied Mathematics University of Port Elizabeth
 1989 B.Sc. (Hons) – Oceanography University of Port Elizabeth
 1998 M.Sc. – Environmental Management (cum laude) Potchefstroom University

Key Skills: Areas of specialisation: Aquatic ecosystem assessments, Monitoring and evaluation of water resources, Water resource legislation and authorisations, River classification and Resource Quality Objectives, River Reserve determination and implementation, Water Quality Assessments, Biomonitoring, River and Wetland Rehabilitation Plans, Catchment management, River maintenance management, Water education.

Summary of Experience:

1987 – 1988	Part-time field researcher, Department of Oceanography, University of Port Elizabeth
1989 – 1990	Mathematics tutor and administrator, Master Maths, Randburg and Braamfontein Colleges, Johannesburg
1991 – 1995	Water Pollution Control Officer, Water Quality Management, Department of Water Affairs, Pretoria
1995 – 1999	Hydrologist and Assistant Director, Institute for Water Quality Studies, Department of Water Affairs and Forestry, Pretoria
1999 – 2007	Assistant and Deputy Director, Water Resource Protection, Western Cape Regional Office, Department of Water Affairs, Cape Town
2007 – 2012	Self-employed – Aquatic Specialist
2013 – 2020	Senior Aquatic Specialist and part-owner, BlueScience
2020 – present	Self-employed – Aquatic Specialist

1.2. DECLARATION OF INDEPENDENCE

I, **Antonia Belcher**, as the appointed specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that I:

- in terms of the general requirement to be independent:
 - other than fair remuneration for work performed/to be performed in terms of this application, have no business, financial, personal or other interest in the activity or application and that there are no circumstances that may compromise my objectivity; or
 - ~~am not independent, but another specialist that meets the general requirements set out in Regulation 13 of GN No. 326 have been appointed to review my work (Note: a declaration by the review specialist must be submitted);~~
- in terms of the remainder of the general requirements for a specialist, am fully aware of and meet all of the requirements and that failure to comply with any the requirements may result in disqualification;
- have disclosed/will disclose, to the Applicant, the Department and registered interested and affected parties, all material information that have or may have the potential to influence the decision of the Department or the objectivity of any report, plan or document prepared or to be prepared as part of the application;
- have ensured/will ensure that information containing all relevant facts in respect of the application was/will be distributed or was/will be made available to interested and affected parties and the public and that participation was/will be facilitated in such a manner that all interested and affected parties were/will be provided with a reasonable opportunity to participate and to provide comments;
- have ensured/will ensure that the comments of all interested and affected parties were/will be considered, recorded and submitted to the Department in respect of the application; and
- am aware that a false declaration is an offence in terms of Regulation 48 of the NEMA EIA Regulations, 2014 (as amended).

Date: 2 December 2024

Name of company: -

Signature of the specialists:



2. INTRODUCTION

2.1. SCOPE OF STUDY

This aquatic site sensitivity verification report comprises an aquatic ecosystem constraints assessment of the proposed wind energy farm and associated infrastructure referred to as the ABO Uvemvane Wind Energy Facility 1 (WEF1). The assessment is based on a desktop analysis of existing data and mapping available for the area as well as a site visit and field assessment undertaken on 26 January 2024. The development is proposed to consist of a WEF of up to 240 MWc and its associated grid connection. The entire site's extent of approximately 4900ha was included in this assessment. The properties are located approximately 16 km to the southeast of the town of Heidelberg and 10km west of Balfour.

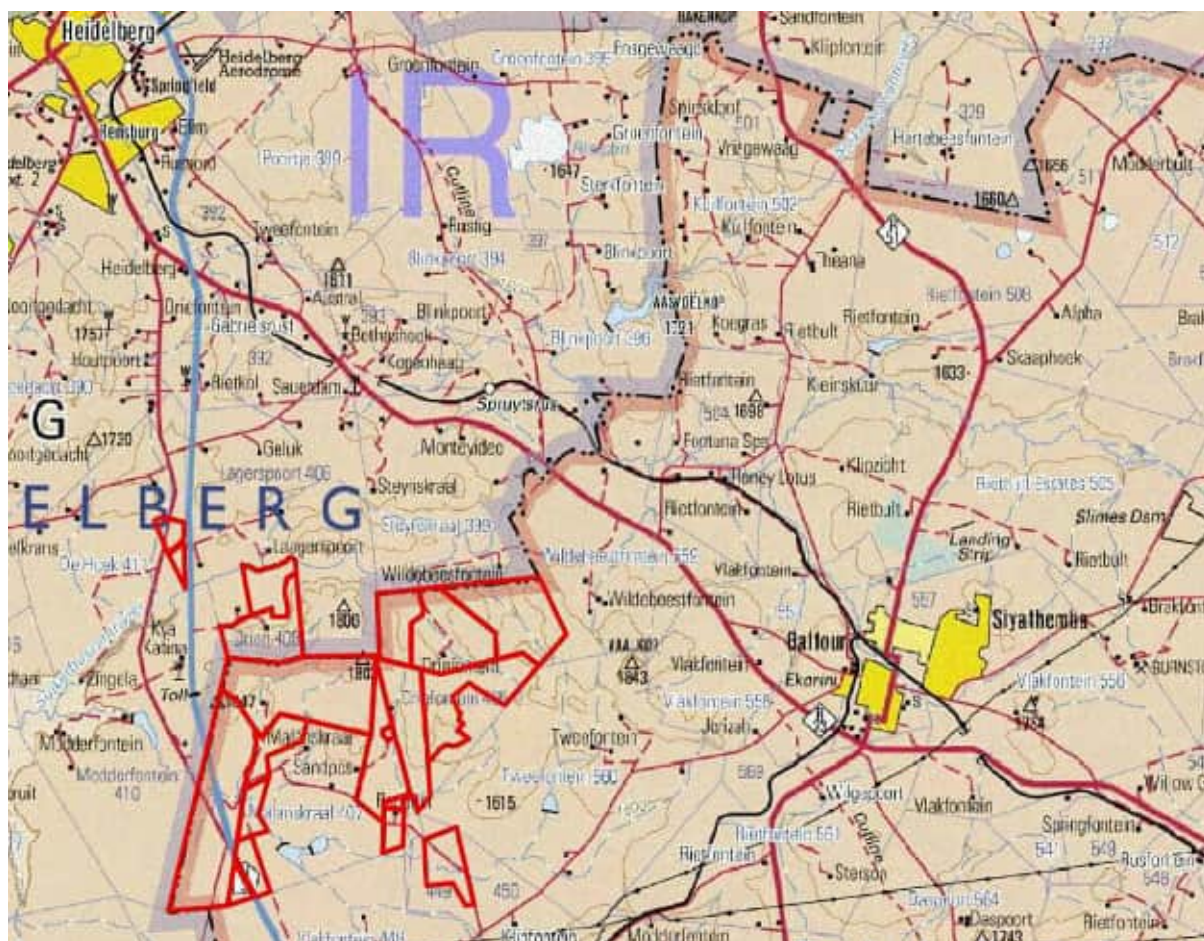


Figure 1. A topographical map of the study area, indicating the locality of the site (red polygon)

The area lies in the Suikerbosrant River Catchment in the larger Vaal-Orange River System. Details of the watercourses at the site are provided in Table 1.

Table 1. Water resource information related to the site assessed

Descriptor	Name / Details	Notes
Water Management Area	Vaal-Orange	
Catchment Area	Suikerbosrant Tributary	Tributary of the Vaal River
Quaternary Catchment	C21C	
Present Ecological State	Suikerbosrant Tributary: B Category (largely natural)	DWA 2012
Ecological Importance and Ecological Sensitivity	High Ecological Importance and Moderate Ecological Sensitivity	

The DFFE screening tool mapping (Figure 2) indicates the study site to be located within an area considered of Low Aquatic Biodiversity Sensitivity with areas of very high sensitivity associated with watercourses and wetlands within the project area of influence. The site does not lie within a National Freshwater Ecosystem Priority Area (FEPA) River Sub catchment or Strategic Water Source Area for groundwater or surface water. The wetlands are mapped in the National Wetland Map and the 2014 Mpumalanga Highveld Wetlands mapping and are mapped as Aquatic Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) in the Mpumalanga Biodiversity Sector Plan. The aquatic conservation mapping is discussed in Section 3.2 of this report.

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

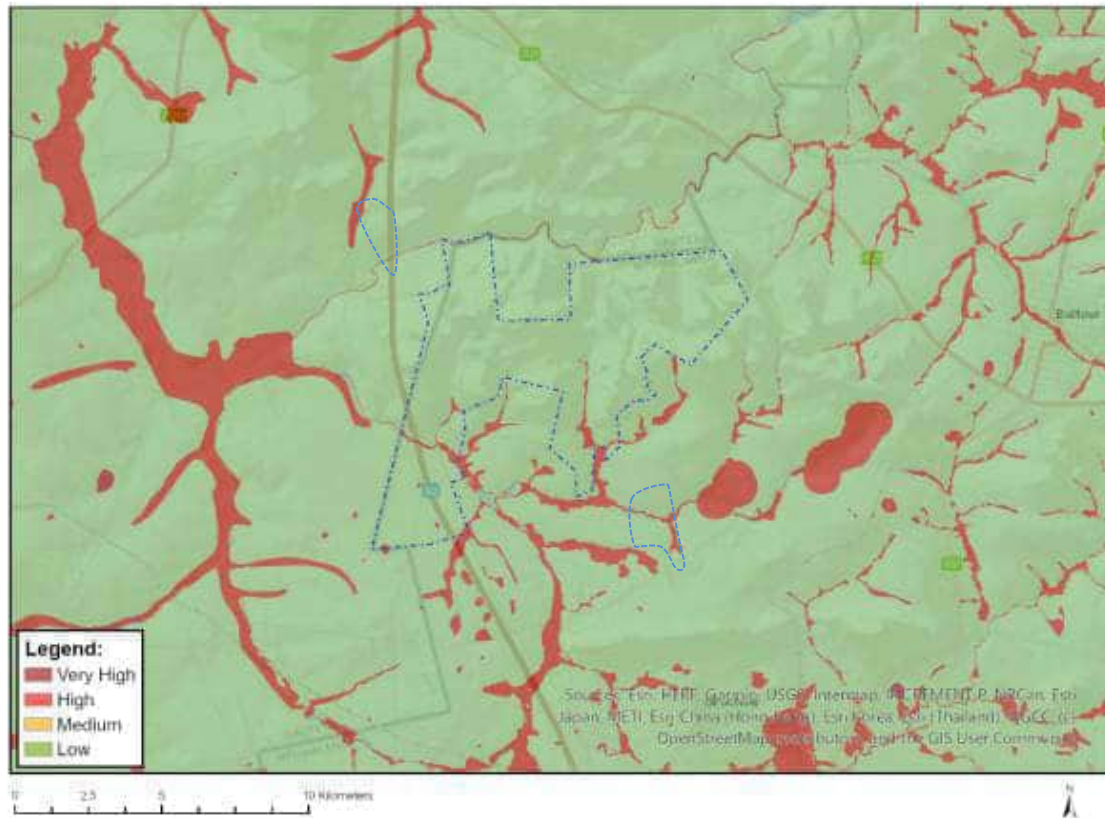


Figure 2. DFFE Screening Map for the area in terms of Aquatic Biodiversity Combined Sensitivity

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
x			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity
Very High	CBA: Wetlands
Very High	ESA: Wetlands
Very High	Rivers_C
Very High	Rivers_Z
Very High	Wetlands_(River)
Very High	Wetlands_Central Bushveld Bioregion (Seep)
Very High	Wetlands_Central Bushveld Bioregion (Valley-bottom)
Very High	Wetlands_Mesic Highveld Grassland Bioregion (Depression)
Very High	Wetlands_Mesic Highveld Grassland Bioregion (Floodplain)
Very High	Wetlands_Mesic Highveld Grassland Bioregion (Seep)
Very High	Wetlands_Mesic Highveld Grassland Bioregion (Valley-bottom)