

Appendix G

SPECIALIST REPORTS



Appendix G.1

SOIL, LAND USE AND LAND CAPABILITY ASSESSMENT



AGRICULTURAL AGRO-ECOSYSTEM SPECIALIST ASSESSMENT

FOR THE

**ABO UVEMVANE WIND ENERGY FACILITY 1
NEAR HEIDELBERG AND BALFOUR, GAUTENG
& MPUMALANGA PROVINCES**

August 2026

Specialist report prepared by:

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Report name	ABO UMEMVANE WIND ENERGY FACILITY 1 NEAR HEIDELBERG AND BALFOUR, GAUTENG & MPUMALANGA PROVINCES: AGRICULTURAL AGRO-ECOSYSTEM SPECIALIST ASSESSMENT
Specialist theme	Agricultural Agro-ecosystem
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EAP	WSP
Specialist investigation by	ENVIRONMENT RESEARCH CONSULTING
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Site inspection details	<ul style="list-style-type: none"> • Date/period: <ul style="list-style-type: none"> ○ First site visit: 29 July 2024 to 01 August 2024 (four days) ○ Second site visit: 02 to 03 October 2025 (two days) • Total duration: six days
Declaration	<p>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.</p>

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REPORT GUIDE

This Agricultural Agro-Ecosystem Specialist Assessment was conducted in cognisance of 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* (published in Government Notice No. 320, Government Gazette 43110 of 20 March 2020) (form hereon forward referred to as “the protocol”).

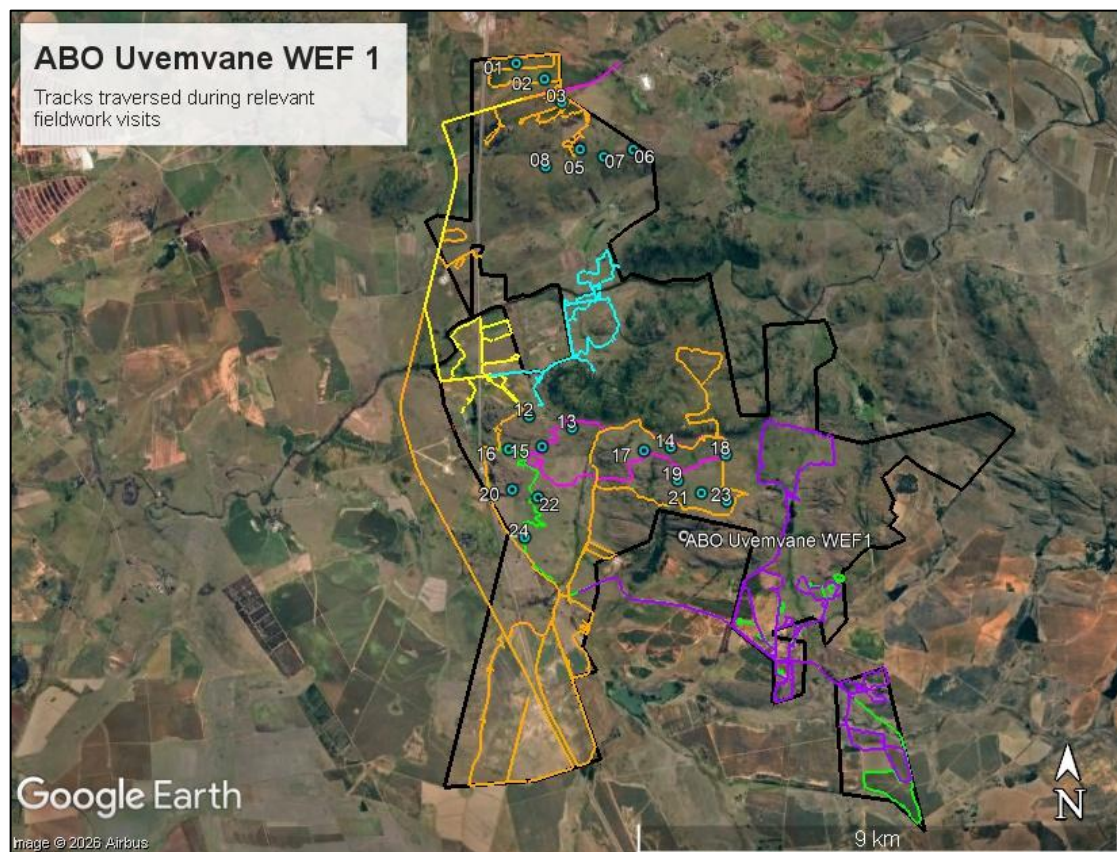
The table below presents the details and requirements set out in the protocol for an Agricultural Agro-Ecosystem Specialist Assessment Report with reference to where each relevant requirement is addressed in the report.

PROTOCOL ITEM NO.	PROTOCOL REQUIREMENT	RELEVANT REPORT SECTION
2.	Agricultural Agro-Ecosystem Specialist Assessment	
2.1.	The assessment must be undertaken by a soil scientist or agricultural specialist registered with the South African Council of Natural Scientific Professionals (SACNASP).	Cover sheet (p.1) & Appendix C
2.2.	The assessment must be undertaken on the preferred site and within the proposed development footprint.	Section 1.2
2.3.	The assessment must be undertaken based on a site inspection as well as an investigation of the current production figures, where the land is under cultivation or has been within the past 5 years, and must identify:	
2.3.1.	the extent of the impact of the proposed development on the agricultural resources; and	Section 4.2
2.3.2.	whether or not the proposed development will have an unacceptable impact on the agricultural production capability of the site, and in the event where it does, whether such an impact is outweighed by the positive impact of the proposed development on agricultural resources.	Sections 4 & 5
2.4.	The assessment must include a description of the status quo, including the following aspects which must be considered as a minimum in the baseline description of the agro-ecosystem:	
2.4.1.	the soil form/s, soil depth (effective and total soil depth), top and sub-soil clay percentage, terrain unit and slope;	Section 2.2.2 Table 6
2.4.2.	the soil form, soil depth (effective and total soil depth), top and sub-soil clay percentage, terrain unit and slope;	
2.4.3.	where applicable, the vegetation composition, available water sources as well as agro-climatic information;	Sections 2.1.1, 2.1.2 & 2.2.1
2.4.4.	the current productivity of the land based on production figures for all agricultural activities undertaken on the land for the past 5 years, expressed as an annual figure and broken down into production units;	Section 2.2.3
2.4.5.	the current employment figures (both permanent and casual) for the land for the past 3 years, expressed as an annual figure; and	Section 2.2.4
2.4.6.	existing impacts on the site, located on a map (e.g. erosion, alien vegetation, non-agricultural infrastructure, waste, etc.).	Section 2.2.5
2.5.	The assessment must include an assessment of impacts, including the following aspects which must be considered as a minimum in the predicted impact of the proposed development on the agro-ecosystem:	
2.5.1.	change in productivity for all agricultural activities based on the figures of the past 5 years, expressed as an annual figure and broken down into production units;	Section 2.2.3
2.5.2.	change in employment figures (both permanent and casual) for the past 5 years expressed as an annual figure; and	Section 2.2.4

PROTOCOL ITEM NO.	PROTOCOL REQUIREMENT	RELEVANT REPORT SECTION
2.5.3.	any alternative development footprints within the preferred site which would be of “medium” or “low” sensitivity for agricultural resources as identified by the screening tool and verified through the site sensitivity verification.	Section 4.5
2.6.	The findings of the Agricultural Agro-Ecosystem Specialist Assessment must be written up in an Agricultural Agro-Ecosystem Specialist Report that contains as a minimum the following information:	
2.6.1.	details and relevant experience as well as the SACNASP registration number of the soil scientist or agricultural specialist preparing the assessment including a curriculum vitae;	Appendix C - CV
2.6.2.	a signed statement of independence by the specialist;	Cover sheet & Appendix C
2.6.3.	the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	Sections 1.1 & 1.4
2.6.4.	a description of the methodology used to undertake the on-site assessment inclusive of the equipment and models used, as relevant;	Section 1.6
2.6.5.	a map showing the proposed development footprint (including supporting infrastructure) with a 50m buffered development envelope, overlaid on the agricultural sensitivity map generated by the screening tool;	Sections 2.1.4 & 2.1.6
2.6.6.	an indication of the potential losses in production and employment from the change of the agricultural use of land because of the proposed development;	Sections 2.2.3 & 2.2.4
2.6.7.	an indication of possible long-term benefits that will be generated by the project in relation to the benefits of the agricultural activities on the affected land;	Sections 4.2 & 4.4
2.6.8.	additional environmental impacts expected from the proposed development based on the current status quo of the land including erosion, alien vegetation, waste, etc.;	Section 4.2 Appendix B
2.6.9.	information on the current agricultural activities being undertaken on adjacent land parcels;	Section 2.2.1
2.6.10.	a motivation must be provided if there were development footprints identified as per paragraph 2.5.3 above that were identified as having a “low” or “medium” agriculture sensitivity and that were not considered appropriate;	N/A
2.6.11.	confirmation from the soil scientist or agricultural specialist that all reasonable measures have been considered in the micro-siting of the proposed development to minimise fragmentation and disturbance of agricultural activities;	Section 4.6
2.6.12.	a substantiated statement from the soil scientist or agricultural specialist with regards to agricultural resources on the acceptability or not of the proposed development and a recommendation on the approval or not of the proposed development;	Executive summary & Section 5
2.6.13.	any conditions to which this statement is subjected;	Section 5
2.6.14.	where identified, proposed impact management outcomes or any monitoring requirements and/or mitigation measures for inclusion in the Environmental Management Programme (EMPr);	Sections 4.7 & 4.8
2.6.15.	a description of the assumptions made and any uncertainties or gaps in knowledge or data;	Section 1.4
2.6.16.	calculations of the physical development footprint area for each land parcel as well as the total physical development footprint area of the proposed development (including supporting infrastructure);	Section 2.2.3, Tables 7 & 8
2.6.17.	confirmation whether the development footprint is in line with the allowable development limits set in Table 1 of the protocol, including where applicable any deviation from the set development limits and motivation to support the deviation, including:	Section 3.2
	a. where relevant, reasons why the proposed development footprint is required to exceed the limit;	N/A

PROTOCOL ITEM NO.	PROTOCOL REQUIREMENT	RELEVANT REPORT SECTION
	b. where relevant, reasons why this exceedance will be in the national interest; and	N/A
	c. where relevant, reasons why there are no alternative options available including evidence of alternatives considered; and	N/A
2.6.18.	a map showing the renewable energy facilities within a 50km radius of the proposed development.	Section 4.3
2.7.	The findings of the Agricultural Agro-Ecosystem Assessment must be incorporated into the Basic Assessment Report or the Environmental Impact Assessment Report, including the mitigation and monitoring measures as identified, which are to be contained in the EMPr.	
2.8.	A signed copy of the full Agricultural Agro-Ecosystem Assessment must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.	

The figure below shows the ABO Uvemvane WEF1 project affected area and the tracks traversed by the specialist during relevant site visits.



EXECUTIVE SUMMARY

INTRODUCTION, SITE & PROJECT DESCRIPTION

ABO Uvemvane Wind Energy Facility 1 (Pty) Ltd is proposing the development of ABO Uvemvane Wind Energy Facility 1 (WEF 1) and associated infrastructure. In October of 2024 Site Sensitivity Verification Reports (SSVRs) were compiled by Environment Research Consulting (ERC) (Gotze 2024a & b), which provides background and valuable information, which was combined with information and sensitivity data of other environmental disciplines to determine a proposed buildable area. Subsequently ERC was appointed in October 2025 to undertake an Agricultural Agro-Ecosystem Specialist Assessment of the project area with a focussed view on 27 proposed Wind Turbine Generator (WTG) hardstands and other associated infrastructure of the project. By July 2026 the number of WTGs had been reduced due to include 20 WTGs. The first site visit for the SSVR-phase was conducted over four days from 29 July 2024 to 01 August 2024 and the site visit and field surveys as well as personal interviews with the different landowners for this phase of reporting were conducted by ERC over two days from 02 to 03 October 2025. A map indicating the tracks traversed by the specialist during this last site visit is provided.

The proposed ABO Uvemvane WEF 1 project is planned to consist of up to 20 WTGs with a generating capacity of up to 170 Megawatts alternative current (MWac) comprising of all the components and infrastructure typical of a Wind Energy Facility (WEF). A project assessment area with a total combined extent of approximately 8200 ha was initially identified as a technically suitable project site for the development of the WEF project and was assessed at SSVR-phase. Within this a project affected area of approximately 6000 ha was assessed during this stage. It is anticipated that the proposed WEF would have a total (permanent) development footprint of up to 67.2 ha, which is approximately 1.12% of the total affected area (i.e. affected properties)*.

METHODOLOGY

A desktop assessment was compiled from various reputable data sources, which includes, but not limited to, the Natural Agricultural Resources Atlas of South Africa (<https://ndagis.nda.agric.za>), Cape Farm Mapper 3, Field Crop Boundaries as published by the Crop Estimates Consortium (2023), etc. From these and other data bases and literature, which are deemed sufficient for the purposes of this assessment, soil- and land capability data in the vicinity of the study area was collected and assessed for relevance.

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 proposed development sites, especially those that are proposed to fall directly in or adjacent to cultivated lands.
- Conduct interviews with landowners to gather information on crop yields, livestock stocking rates, labour, and other relevant land use information.

* Note regarding proposed facility capacity, footprint, turbine number and maximum turbine capacity: Note that the proposed development entails a proposed maximum development footprint for a combination of factors, namely facility capacity in terms of overall MWac, development footprint in terms of extent turbine numbers which caps the proposed number of turbines that could be developed within the facility as well as maximum turbine capacity for any given turbine, whereby any given aspect has maximum development parameters that has been assessed and the first lowest parameter achieved in this regard would determine the remaining specifications within the said maximum limits (i.e. all maximum parameters could not be achieved simultaneously).

Subsurface soil observations were made by means of a manual hand auger to a depth of 150 cm (or up to a shallower diagnostic or restrictive layer).

ASSESSMENT FINDINGS

The desktop assessment's findings are summarized in a table in section 2.1.7.

The land capability over the extent of the ABO Uvemvane WEF 1 project area varies between the classes 02 (Low) to 10 (Moderate-high) and project area is situated in portions of two Protected Agricultural Areas (PAAs) 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, 2024), namely the Suikerbosrant rainfed (RF) PAA and the Grootvlei-Balfour RF PAA. Both these PAAs have a 'C' (moderate) priority rating.

A report drawn from the DFFE National Screening tool indicates the agricultural sensitivity theme as 'Very High' for the entire project area due to its overlap with the mentioned PAAs, and land capability areas of 10 (high), 9 (moderate-high) and 8 (moderate), which includes areas of rainfed annual crop production, planted pastures and old fields.

The main agricultural land uses in the project area are rainfed annual grain crop cultivation, mainly maize and soya beans, while some areas are cultivated as perennial, rainfed, planted grass pastures – mostly *Eragrostis curvula*, which are sometimes cut and baled for winter feed for local livestock. Several old fields occur, which are grazed by livestock together with non-arable areas of natural rangelands. The land use in areas adjacent to the project area is also agriculture related and include the same agricultural activities and production types as those found on the project area as well as some areas of pivot irrigation.

Soils were classified according to the latest South African soil classification system (Soil Classification Working Group, 2018) for each WTG hardstand and presented in a summative table in section 2.2.2 and visually, with photographs of each WTG hardstand terrain and dominant soil form, in the appendices of the report.

The assessment of the agricultural production potential of the project area is based on information gained during the desktop assessment as well as soil and terrain parameters of which information was gathered during the field assessments. At the time of the site visit, personal interviews with the different landowners were conducted during which relevant information was gathered regarding crop and livestock production and employment records for the last five years. These figures are expressed in different summative and calculative tables and discussed as part of the assessment of agricultural production potential of the land. Production losses that are expected should the WEF project go ahead are minimal and of low impact on the agricultural production of the area.

Employment of farm workers differ from one landowner to another. In general, though, the permanent work force on the assessed farm units has been stable for at least the last five years with no major fluctuations in job opportunities over that period. Any temporary fluctuations are filled by local, seasonal (casual) workers as the need arises. No losses in agricultural employment opportunities due to the development of the ABO Uvemvane WEF 1 project, are foreseen by either the landowners or the specialist.

SITE SENSITIVITY VERIFICATION

From an Agricultural Theme Sensitivity point of view, the 'Very High' sensitivity classification for the ABO Uvemvane WEF 1 project area, in terms of the PAA's that

occur in the area cannot be disputed summarily. However, there is much variation within the PAA of the project area and all land within it is not necessarily of sufficient agricultural potential to be suitable for sustainable crop production, due to site-specific terrain, soil, and other constraints. All land within the relevant farm units is therefore not necessarily worthy of prioritised protection as agricultural production land and can be utilized for other land uses to potentially diversify the income of landowners.

Three of the currently proposed 20 WTG hardstands fall within, or partially within, the boundaries of currently cultivated lands (rainfed, annual crops). Two of the three Electrical Infrastructure Hub (EIH) options fall in rainfed pastures, one of which is actively cut and baled for winter feed and the other no longer actively managed. Six WTG sites are situated in old fields. The verified sensitivity of these areas is summarized in the table below and compared between the screening tool sensitivity and the specialist verified sensitivity. An indication of what limitation(s) causes lowered sensitivity ratings is also included.

The table below summarizes the screening tool versus the specialist's verified sensitivity findings.

Farm Unit	WTG / EIH no.	Current land use	Screening tool sensitivity	Verified sensitivity	Verified limitation(s)
1	1	Cultivation - rainfed	Very High (PAA)	Medium	Effective soil depth; seasonal water logging
	2	Cultivation - rainfed		Low	Effective soil depth
	3	Cultivation 30% & fall-out land 70%		Low	Soil texture; seasonal water logging; deposited sandy overburden from upslope erosion.
	5	Natural veld - grazing		Low	Effective soil depth
	6	Natural veld - grazing		Low	Effective soil depth
	7	Natural veld - grazing		Low	Effective soil depth
	8	Natural veld - grazing		Low	Effective soil depth
2	13	Natural veld - grazing	Low	Low	Effective soil depth; slope
	14	Old field - grazing	High	Low	Effective soil depth
	15	Old field 50% & natural veld 50%	High	Low	Effective soil depth; soil texture
	17	Old field - grazing	High	Low	Effective soil depth; soil texture
	18	Old field - grazing	Medium	Low	Effective soil depth
	19	Natural veld - grazing	Medium	Low	Effective soil depth
	21	Natural veld - grazing	Medium	Low	Effective soil depth
	23	Natural veld - grazing	Medium	Low	Effective soil depth
	EIH2	Pasture - cut & baled	High	Medium	Effective soil depth, soil texture; slope; accessibility
3	12	Natural veld - grazing	Very High (PAA)	Low	Effective soil depth
	16	Old field - grazing		Medium	Soil texture; slope; accessibility
	20	Natural veld - grazing		Low	Effective soil depth
	22	Natural veld - grazing		Low	Effective soil depth
	24	Old field - grazing		Low	Effective soil depth; soil texture
	EIH1	Pasture - grazed		Medium	Soil texture; slope; accessibility
	EIH3	Natural veld - grazing		Low	Effective soil depth

From the data above all the WTG hardstands and EIH options are verified to fall outside 'very high' or 'high' sensitivity crop land sections. All are verified to fall in either medium or low sensitivity land sections that have moderate to serious limitations (soil, slope, and/or terrain) with regards to sustainable, rainfed crop production. Although some of

these areas have some level of cropping potential, it should be noted that the cropping potential of land changes over time as the agricultural economy changes. Marginal soils that are economically cultivated now, or in the past, often become a liability for farmers in a more challenging agricultural economy, with increased input costs, and as climate conditions change and fluctuate from one extreme to another. Such soils are often abandoned as they become less probable to produce economically viable crops.

Allowable Development Limits (ADL)

The ABO Uvemvane WEF 1 project is planned to consist of up to 20 WTGs (31 WTG sites were initially proposed) with a generating capacity of up to 170 MW. It has been established that nine of the 20 currently proposed WTG hardstands fall in cultivated areas (3 currently cultivated lands and 6 in old fields). Additionally, three EIH development options have been assessed of which two fall in planted pastures. Other infrastructure such as access roads, internal power connections and temporary laydown areas was also considered.

For the purposes of this assessment each WTG hardstand is up to 1 ha in size, which brings the total area of WTGs within field crop boundaries to up to 9 ha (3 ha + 6 ha) and subsequently those outside field crop boundaries to up to 11 ha as they lay distributed over the three farm units in the project area. Likewise, for the purposes of this assessment each EIH option (of which only one will be constructed) is up to 7 ha in size. As mentioned, two of the options (EIH 1 & 2) fall inside field crop boundaries (planted pastures) and one in natural veld (EIH3).

Calculations show that for the planned generating capacity of up to 170 MW, the combined footprint of all the proposed elements of the ABO Uvemvane WEF 1 project, fall within the ADL guidelines for each agricultural land use type and the overall ADL of the project area and is, therefore, acceptable for this perspective.

CONSIDERATION OF IMPACTS

Impacts on agricultural resources

A summary of the impact assessment is presented in the table below. The impact assessment is discussed in section 4 of the report, and the relevant impact rating and mitigation tables are presented in Appendix B.

IMPACT TYPE	PHASE	NOT MITIGATED	MITIGATED
Direct impacts			
Agricultural land use change.	Construction	Negative low	Negative low
	Operation	No impact	No impact
	Decommissioning	No impact	No impact
Land and soil degradation.	Construction	Negative medium	Negative low
	Operation	Negative low	Negative low
	Decommissioning	Negative low	Negative low
Indirect impacts			
Prevention of or interference in farming operations	Construction	Negative low	Negative low
	Operation	Negative low	Negative low
	Decommissioning	Negative low	Negative low

IMPACT TYPE	PHASE	NOT MITIGATED	MITIGATED
Positive impacts			
Increased financial security for farming operations Local infrastructure improvements. Improved local security	Project lifetime	No mitigation	Positive high

Cumulative Impacts

The spatial boundary evaluated in assessing the cumulative effects includes an area of a 50 km radius (as required by the agriculture protocol) surrounding the proposed ABO Uvemvane WEF 1 project area. According to the South African Renewable Energy EIA Application Database for the first quarter of 2026, as published on 29 May 2026 (REEA, 2026) there are several approved renewable energy projects and related infrastructure projects within this area.

Due to all the small (relative to the larger agricultural environment) physical footprint of the project infrastructure, the cumulative loss of future agricultural production potential is assessed as low. With the information available at the time of this assessment, the specialist is satisfied that the proposed project will not have an unacceptable negative cumulative impact on the agricultural production capability of the area.

With regards to the proposed grid connection related to the project, no significant cumulative impact is anticipated due to its proposed route following existing roads and border fences, as far as possible. Similarly, no major cumulative impacts are expected from the proposed access roads or other project supporting infrastructure (Take note that the electrical grid connection component of the ABO Uvemvane WEF 1 project will be subject to separate environmental impact assessments).

Long term project benefits versus agricultural production benefits

The development will generate a significant and reliable additional income for the farming enterprises, without compromising the existing farming income or employment opportunities. It will also generate additional income and employment in the local economy. In addition, it will contribute to the country's need for energy generation, particularly renewable energy that has lower environmental and agricultural impact than existing, coal powered energy generation.

Alternatives

The following alternatives were considered:

1. Layout alternatives: after consideration of all environmental sensitivities as well as technical considerations, topography, individual turbine wake loss setbacks, grid setbacks, land right risks, and landowner inputs, which contribute to the determination of the 'developable area', no alternatives in terms of the WTG layout are recommended from an agro-ecological or agricultural production potential point of view.

Two of the EIH options (i.e. EIH1 and EIH2) fall in planted pastures, which should be avoided if possible. Although over the total project area and in combination with all other project infrastructure they do not cause an exceedance in the Allowable Development Limits it would be advisable to avoid these areas due to their current contribution towards sustainable livestock farming in the agro-ecosystem that the project area falls in. EIH3 is situated in natural veld and is deemed the preferred option from an agriculture theme sensitivity.

2. A 33kV overhead/underground line will be constructed to connect northern and southern parts of the WEF:

- A 100 m assessment corridor should be assessed, while the actual servitude width would only be 22 m.
- The line will be approximately 8 km long and a conservative average span length of approximately 100 m can be assumed for assessment purposes, although actual spans may be longer (depending on final engineering design and terrain).
- Two route alternatives will be assessed.

3. 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. From an agriculture theme point of view, all alternatives in this regard are equally considered and no preference is given to one or the other.

4. The no-go alternative considers the option of 'doing nothing' and maintaining the status quo. The site is currently zoned as agricultural. Should the proposed activity not proceed, the site will continue to be used for agricultural production purposes. This, however, does not necessarily imply that no future changes or impacts will be experienced by the natural resources within the assessed project area.

Should the project not proceed, the potential opportunity costs in terms of adding wind energy generation to the current land use would be lost, and therefore all positive impacts and socio-economic opportunities and associated regional economic growth will also be lost. Furthermore, the development offers an additional income source to the landowner and thus to the local agro ecosystem, without excluding agriculture production from the land.

Therefore, the negative agricultural impact of the no-go alternative is more significant than that of the development and subsequently, from an agricultural impact perspective, the proposed development may be preferred above the no-go option.

Micro-siting

As part of the planning of this WEF project development, access roads have deliberately been laid out along existing roads and on the edges of croplands wherever possible, so that croplands are not unnecessarily fragmented. Similarly, WTG hardstands have in most cases been placed on the edges of croplands in such a way as to avoid cropland fragmentation and several others that were previously considered within crop fields, were excluded in the current layout iteration. The specialist is satisfied that this aspect has been conducted as thoroughly as possible taking other environmental sensitivities and alternatives into consideration. Therefore, no further micro-siting recommendations are made.

Various environmental management programme inputs and monitoring requirements are proposed.

CONCLUDING STATEMENTS

The main conclusion of this Agricultural Agro-Ecosystem Specialist Assessment is that the proposed development will not have an unacceptable negative impact on the agricultural production capability of the site or cumulatively in the wider area. This is substantiated by the fact that the development will exclude only a very small proportion of the land from agricultural production (about 1.12 %) and will therefore have minimal impact on agricultural production potential.

The ABO Uvemvane WEF 1 project offers improved financial security for landowners, as well as wider, societal benefits such as job security for farm workers. This income by far supersedes the income that is obtainable through crop or livestock production on areas directly affected by the development. The rental income diversifies the landowner's revenue streams, which can be especially valuable in times where agricultural production may be variable or less stable due to climate change, droughts, floods, or other natural crop/livestock destroying disasters.

The WEF project also has an indirect security benefit to the farm environment against stock theft and other crime due to heightened security in and around the affected project area. The project poses a low risk in terms of causing soil degradation and the loss of agricultural land by occupation is not permanent as the land will become available again for agricultural production after decommissioning of the project.

In conclusion therefore, the specialist is of the opinion that the advantages to the agro ecosystem with the development of the ABO Uvemvane WEF 1 project may outweigh the disadvantages thereof.

Based on the findings of this assessment, it is the specialist's opinion that the proposed development is favourably considered for approval from an agricultural production potential and agro ecosystem point of view.

This statement is not subject to any conditions.



A.R. Götze (M.Sc.; *Pr.Sci.Nat.*)

1 INTRODUCTION

1.1 Project Background and Location

ABO Uvemvane Wind Energy Facility 1 (Pty) Ltd is proposing the development of ABO Uvemvane Wind Energy Facility 1 (WEF 1) and associated infrastructure (from here on forward referred to as the ABO Uvemvane WEF 1 project), which is located approximately 9 km west of the town of Balfour in the Mpumalanga Province in the Dipaleseng Local Municipality within the Gert Sibande District Municipality, and approximately 14 km south-east of the town Heidelberg in the Gauteng Province in the Lesedi and Midvaal Local Municipalities within the Sedibeng District Municipality. Figure 1 below presents the regional setting of the project area.

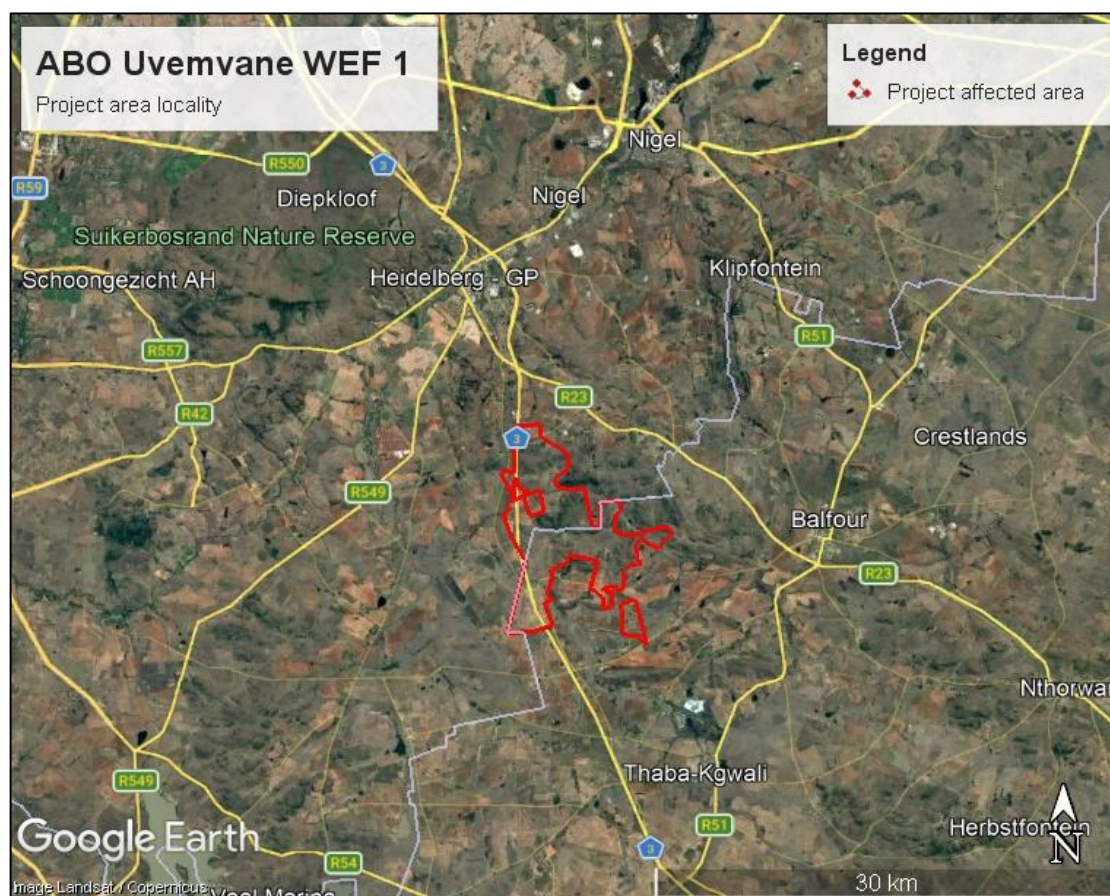


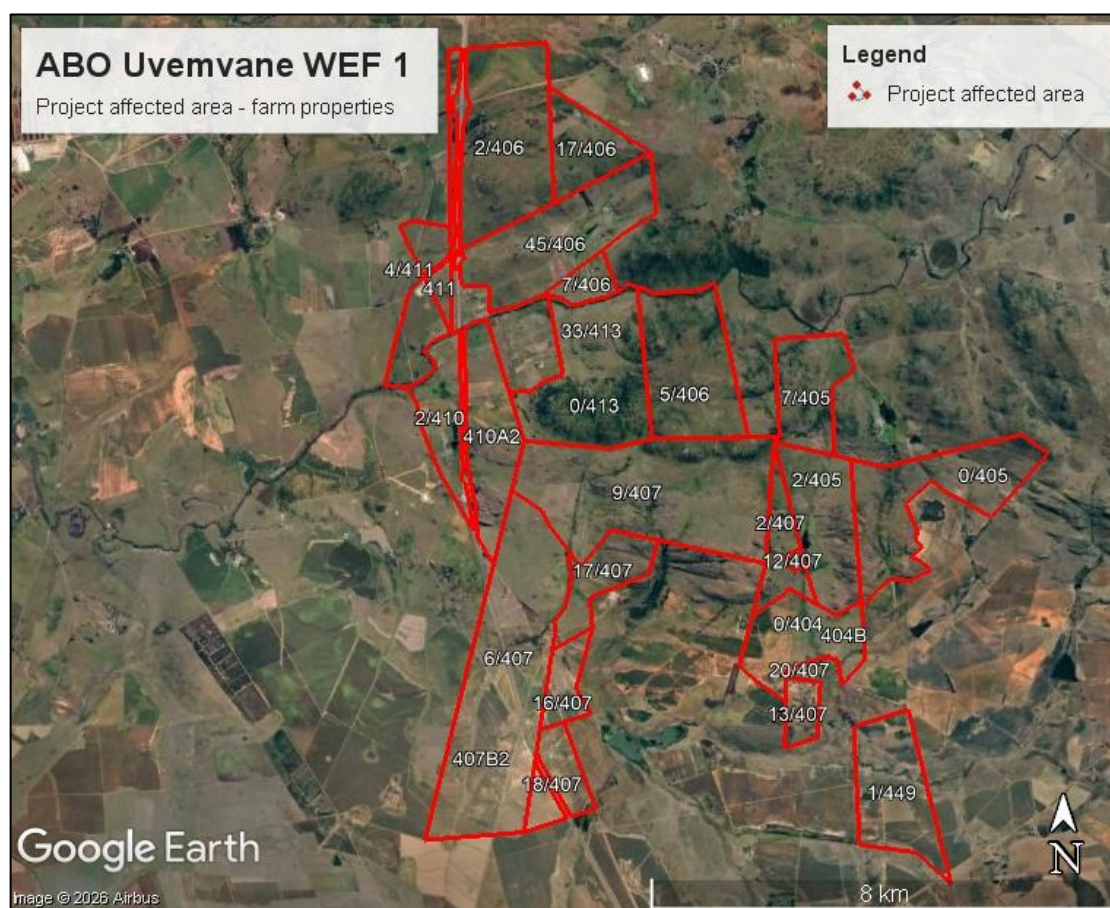
Figure 1: Locality of the proposed ABO Uvemvane WEF 1 project area.

In October of 2024 Site Sensitivity Verification Reports (SSVR's) were compiled by Environment Research Consulting (ERC) (Götze, 2024a & 2024b), which provides background and valuable information, which was combined with information and sensitivity data of other environmental disciplines to determine a proposed buildable area. Subsequently ERC was appointed in October 2025 to undertake an Agricultural Agro-Ecosystem Specialist Assessment of the project area with a focussed view on Wind Turbine Generator (WTG) hardstands and associated infrastructure as part of the environmental authorisation application process for the proposed development as well as answering crucial questions with regards to the local agro-ecosystem. This

report is an update of the October 2025 report to reflect the latest project layout and details as presented for the Draft EIA phase.

Site visits and field surveys were initially conducted from 29 July 2024 to 01 August 2024 for the Site Sensitivity Verification phase. A second site visit to conduct detailed ground truthing of each WTG position falling within or close to cultivated land, as well as to conduct personal interviews with the different landowners were done over two days from 02 to 03 October 2025. A map indicating tracks traversed by the specialist during relevant site visits is included in the “report guide” at the top of the report and professional information about the specialist that conducted this investigation are included in Appendix C of the report.

An initially preferred study area with a total combined extent of approximately 8200 ha was identified as a technically suitable project site for the development of the WEF project and assessed at SSVR-phase. Within this a project affected area (i.e. affected properties) of approximately 6000 ha was assessed during this stage of reporting. It is anticipated that the proposed WEF, including associated infrastructure, would have a total (permanent) development footprint of up to 67.2 ha, which is approximately 1.12% of the total 6000 ha affected area*, which includes 18 farm properties (Figure 2 & Table 1).



* Note regarding proposed facility capacity, footprint, turbine number and maximum turbine capacity: Note that the proposed development entails a proposed maximum development footprint for a combination of factors, namely facility capacity in terms of overall MWac, development footprint in terms of extent turbine numbers which caps the proposed number of turbines that could be developed within the facility as well as maximum turbine capacity for any given turbine, whereby any given aspect has maximum development parameters that has been assessed and the first lowest parameter achieved in this regard would determine the remaining specifications within the said maximum limits (i.e. all maximum parameters could not be achieved simultaneously).

Figure 2: Affected farm properties that make up the proposed ABO Uvemvane WEF1 project area.**Table 1: ABO Uvemvane WEF 1 affected property information.**

AFFECTED PROPERTY	SG CODE
The Remaining Extent of Portion 2 of the Farm Lagerspoort Number 406	T0IR00000000040600002
Portion 17 (a Portion of Portion 3) of the Farm Lagerspoort Nr 406	T0IR00000000040600017
Remaining Extent of Portion 4 of the Farm De Hoek 411	T0IR00000000041100004
Portion 45 of the Farm Lagerspoort 406	T0IR00000000040600045
Portion 7 of the Farm Lagerspoort Number 406	T0IR00000000040600007
Portion 19 of the Farm De Hoek No 411	T0IR00000000041100019
Remaining Extent of Portion 2 of the Farm Modderfontein 410	T0IR00000000041000002
The Farm Orion No 413	T0IR00000000041300000
Remaining Extent of Portion 5 of the Farm Lagerspoort 406	T0IR00000000040600005
Portion 7 of the Farm Driefontein 405	T0IR00000000040500007
Remaining Extent of Portion 9 of the Farm Malanskraal No 407	T0IR00000000040700009
Remaining Extent of Portion 2 of the Farm Malanskraal 407	T0IR00000000040700002
Portion 12 (a Portion of Portion 2) of the Farm Malanskraal 407	T0IR00000000040700012
Remaining Extent of Portion 2 of the Farm Driefontein 405	T0IR00000000040500002
Remaining Extent of the Farm Driefontein 405	T0IR00000000040500000
Remainder of Portion 6 (Kingsmead) of the Farm Malanskraal 407	T0IR00000000040700006
Portion 17 (a Portion of Portion 8) of the Farm Malanskraal No 407	T0IR00000000040700017
Farm Bothas Spruit Nr. 404	T0IR00000000040400000
Portion 16 (a Portion of Portion 4) of the Farm Malanskraal No 407	T0IR00000000040700016
Remaining Extent of Portion 13 (a Portion of Portion 2) of the Farm Malanskraal 407	T0IR00000000040700013
Remainder of Portion 18 (a Portion of Portion 3) of the Farm Malanskraal 407	T0IR00000000040700018
Portion 1 of the Farm Weltevreden Nr. 449	T0IR00000000044900001

Renewable Energy Development Zones (REDZ) are published under NEMA (1998) in Government Gazette No. 43571 of 31 July 2020 (DFFE no. 840) and are geographical areas where wind and solar PV development can occur in concentrated zones. Strategic Transmission Corridors (STC) on the other hand are geographical areas of strategic importance for the development of national electricity transmission and distribution infrastructure according to DFFE no. 787 under NEMA (1998) in Government Gazette No. 43528 of 17 July 2020.

The project area does not fall in a recognized REDZ or STC of South Africa (Figure 3).

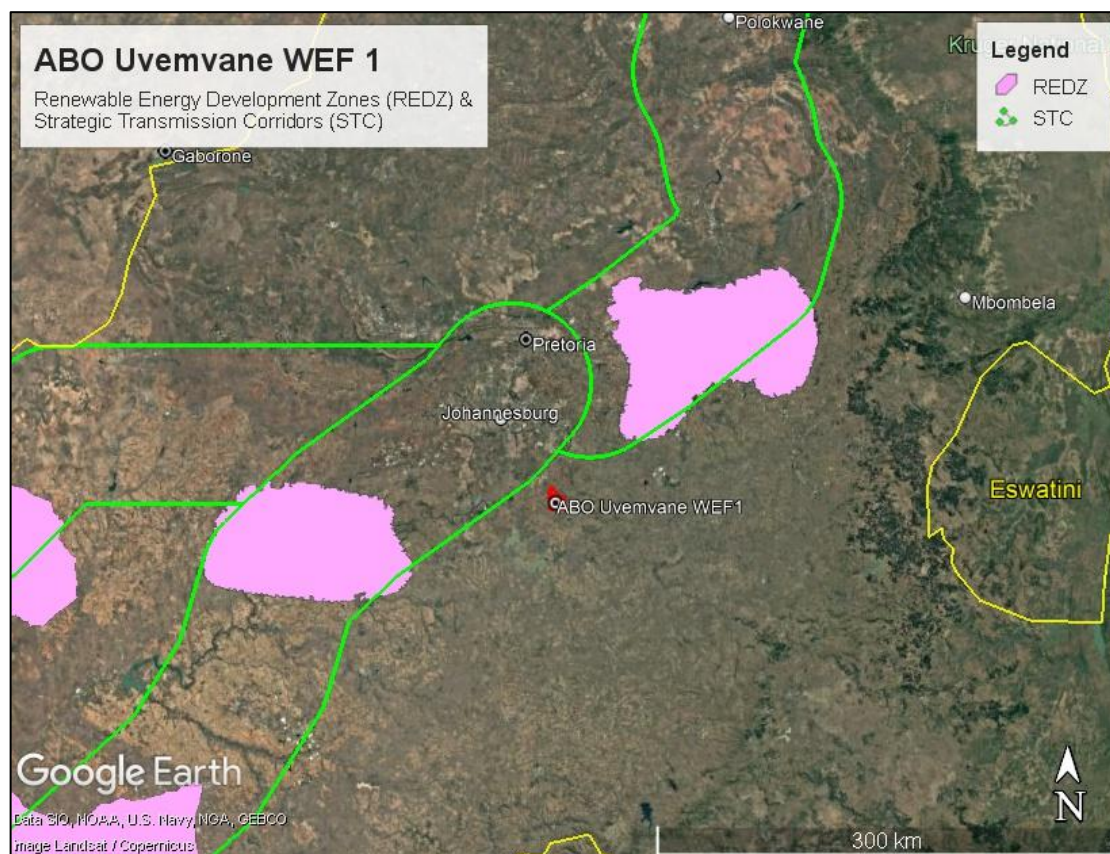


Figure 3: The project area in relation to South African Renewable Energy Development Zones and Strategic Transmission Corridors.

1.2 Project Details

The proposed ABO Uvemvane WEF 1 will be a commercial wind energy generation facility comprising up to 20 turbines and with a total generation capacity of up to 170 Megawatts alternative current (MWac).

Within the project area presented above, a development footprint (buildable area) has been defined in consideration of the environmental sensitivities present on the affected properties and which intentionally remains outside of highly sensitive areas. All affected properties in their entirety have been considered in this Scoping and Environment Impact Assessment (S&EIA) process (including assessments undertaken by independent specialists) and assessed in terms of the suitability from an environmental and social perspective. The location of the proposed project and the siting of the WTGs and other project infrastructure within the assessed project area have been informed by the recommendations of the specialists following their respective assessment findings.

It is important to note 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 Environmental Authorization (EA), should it be granted), but that the information provided below is seen as the maximum development scenario for the proposed development and may thus include:

- Up to 20 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 including the turbine, crane, and blade hardstand.
- 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.
- 4 Temporary laydown areas/ construction compounds (includes concrete batching), totalling up to 15 ha, would be fenced with access control; and/or
- 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;
- A 33kV overhead/underground line to connect the northern and southern portions of the facility; and
- One on-site Electrical Infrastructure Hub (EIH) of up to 7 ha in extent (note that 3 locations were assessed as options, however only 1 will be constructed) consisting of:
 - 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 include the installation of a communications tower and lighting mast on site with a maximum height of 32 m and 25 m respectively, and/or
 - Battery Energy Storage System (BESS).

Five access points are proposed, four of these are off existing unnamed farm roads (originating from the D1220, two from the P243/1, and one off Lagerspoort Road from the R23). The details of the access would 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 planned distribution of WTG hardstands of the ABO Uvemvane WEF 1 project and the layout of other project related infrastructure is visually presented in Figure 4 below.

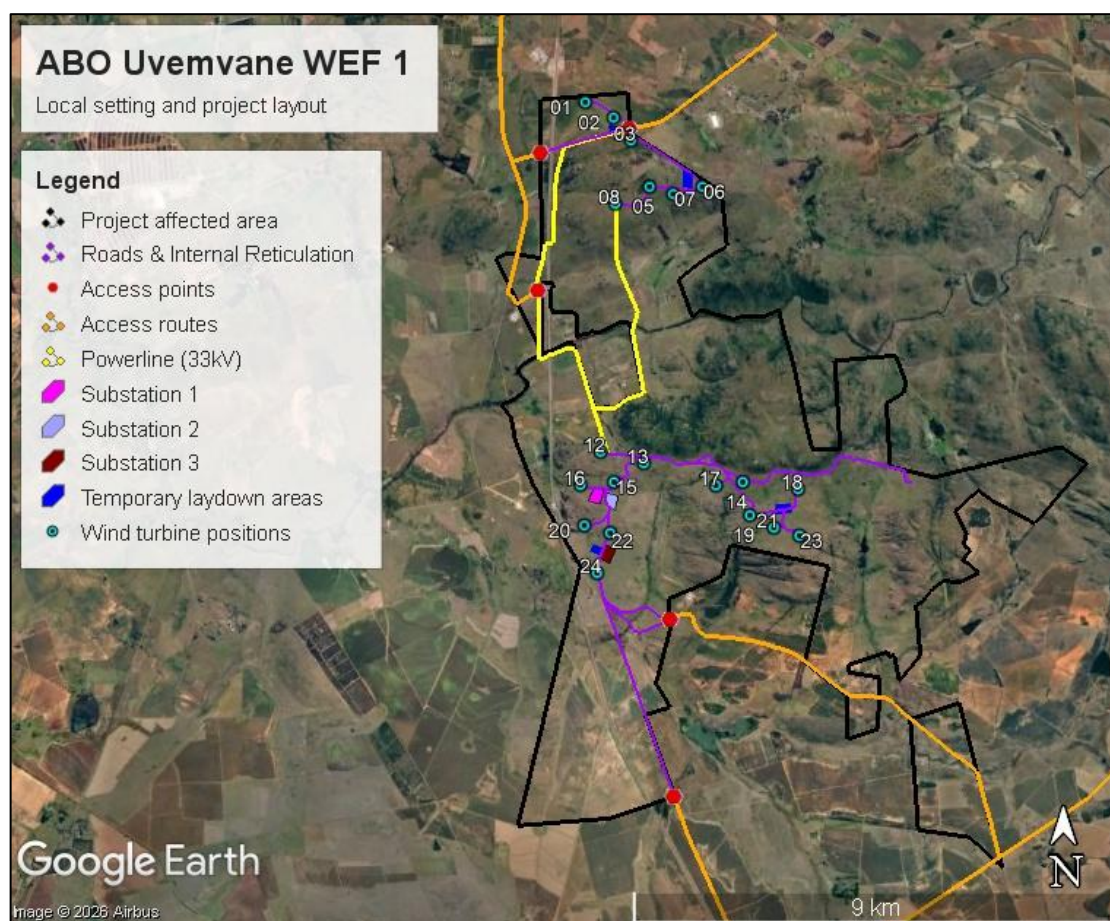


Figure 4: The proposed layout of the ABO Uvemvane WEF 1 project.

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 10,000 L 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 may be constructed on site 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 WEF, other than any interventions prescribed by the relevant specialist/s through the S&EIA process.

Blade patterning may be implemented as a recommended avian mitigation, in accordance with recognized Blade Patterning Guidelines.

The grid connection for the project within could occur via a new loop-in-loop-out connection or via a direct connection to one of the nearby substations. Take note that the Electrical Grid Infrastructure (EGI) component of the ABO Uvemvane WEF 1 will be subject to a separate environmental impact assessment process.

1.3 Project Alternatives

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

- 1) 33kV overhead/underground line to connect northern and southern parts of the facility:
 - A 100 m assessment corridor should be assessed; the actual servitude width would only be 22 m.
 - The line is approximately 8km long and a conservative average span length of approximately 100 m can be assumed for assessment purposes, although actual spans may be longer (depending on final engineering design and terrain).
 - Two route alternatives to assess.
- 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 affected properties do hold existing development rights (i.e., Agriculture) and so, not developing the proposed project does not necessarily imply that no future changes or impacts will be experienced by the natural resources within the assessed project area.

1.4 Scope and purpose of the study

This assessment from an Agriculture Theme (soil, land capability and agricultural potential) point of view was for a Site Sensitivity Verification and 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).
- Assess and compare/verify the sensitivity findings of this assessment against that of a screening report generated using the National Web-based Screening Tool of the Department of Forestry, Fisheries and the Environment (DFFE) for the proposed project area.
- Compile an Agricultural Agro-Ecosystem Specialist Assessment Report presenting the results of findings during the field assessment and other relevant information gathered.
- The 20 WTG hardstand sites (27 initially assessed), with special focus on those occurring directly in or within 50 m of cultivated lands and three EIH alternatives under consideration (four initially assessed), were prioritized for this investigation.

1.5 Assumptions and Limitations

The following assumptions and limitations are applicable to this assessment:

- 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).
- 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 analysed 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.

- The field assessment specifically relevant to this report was done over two days from 02 to 03 October 2025 and is supported by previous pedological assessments of the affected area conducted between 28 July 2024 to 01 August 2024 (four days). Given the size of the affected area, and the area of cultivated and potentially arable land, is deemed adequate for this assessment 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.

1.6 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 the Conservation of Agricultural Resources Act (Act No. 43 of 1983) (CARA, 1983). Furthermore, according to 7(3) of the CARA Regulations requires written approval where vleis, marshes or water sponges are to be drained or cultivated, or where a landowner intends cultivating on his farm unit within the flood area of a water course or within 10 metres horizontally outside the flood area of a water course.

The recently published Preservation and Development of Agricultural Land Act (Act No. 39 of 2024) (PDALA, 2024) aim to balance the need for renewable energy development with the preservation of agricultural land. This means that renewable energy projects will be subject to stringent regulations to ensure that they do not compromise the long-term viability of agricultural land.

The legislation, policies and guidelines listed in Table 2 below are in general applicable to the current project.

Table 2: 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).
	<p>The National Environmental Management Act (NEMA) (Act No. 107 of 1998).</p> <ul style="list-style-type: none"> - <i>Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44, GNR 320 of Government Gazette 43110 (March 2020); and GNR 1150 of Government Gazette 43855 (October 2020).</i> - <i>Protocol for the specialist assessment and minimum report content requirements of environmental impacts on agricultural resources by onshore wind and/or solar photovoltaic energy generation facilities where the electricity output is 20 megawatts or more, gazetted on 20 March 2020 in GN 320 (in terms of Sections 24(5)(a) and (h) and 44 of NEMA, 1998).</i>

Relevance	Legislation / Policy / Guideline
	Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) (CARA, 1983).
	Preservation and Development of Agricultural Land Act (Act No. 39 of 2024) (PDALA, 2024).
	Subdivision of Agricultural Land Act, 1970 (Act No. 70 of 1970) (SALA, 1970)
	Natural Scientific Professions Act (Act No. 27 of 2003).

The mandate of the DALRRD is to protect high potential land. This should not be interpreted as soil potential only and should include the impact that climate has on crop type and crop yield.

The potential of land is defined in terms of a viable farming unit as described in CARA and PDALA and in other legislation and guidelines that are used by DALRRD. However, land and soil properties will determine if land is arable and is often the only criterion that is used for land use potential.

National policy on the protection of high potential and unique agricultural land concludes that the protection of high potential agricultural land for food security remains the primary responsibility of DALRRD. The recently published PDALA (2024) indicates the thinking of DALRRD on land uses, rezoning and of the protection of agricultural land. High potential cropping land can also be defined as *land best suited to, and capable of, consistently producing acceptable levels of agricultural products (food, feed, forage, fibre, and oilseed) and services for a wide range of agricultural enterprises in a sustainable manner, taking into consideration expenditure of energy and economic resources*; and includes:

- Land capability classes I to III.
- Unique agricultural land
- Irrigated land or land that is suitable for irrigation.

Essentially, its objective is to prevent high potential land from being exploited for non-farming purposes. Change of land use applications must subsequently be submitted to the Minister of DALRRD for approval.

1.7 Methodology

1.7.1 Desktop assessment

A desktop assessment was compiled from various data sources, including but not limited to the Agricultural Geo-Referenced Information System (AGIS), i.e. the Natural Agricultural Resources Atlas of South Africa, 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
- Climatic data
- Grazing capacity data
- Potential crop yield data
- Field crop boundaries
- Protected Agricultural Areas
- Current and historical satellite imagery of crop fields

1.7.2 Field surveys

An on-site field survey of the soils and agricultural conditions of the project area was conducted to:

- Ground-truth cropland status and subsequent agricultural sensitivity.
- To visually assess the overall soil- and agricultural production potential on the proposed development site with the focus on the planned WTG hardstands, especially those that are proposed to fall directly in or adjacent to cultivated lands.
- Conduct interviews with landowners to gather information on crop yields, livestock stocking rates, labour, and other relevant land use information.

At the time of the field work the exact dimensions and extent of the planned WTG hardstands was still to be determined, to be confirmed during the detailed engineering design phase prior to construction (after the issuing of an EA, should it be granted). Subsequently an area of up to 1 ha surrounding the given WTG positions was delineated and assessed. At least four soil observation points were investigated per 1 ha assessment site (see example in Figure 5).

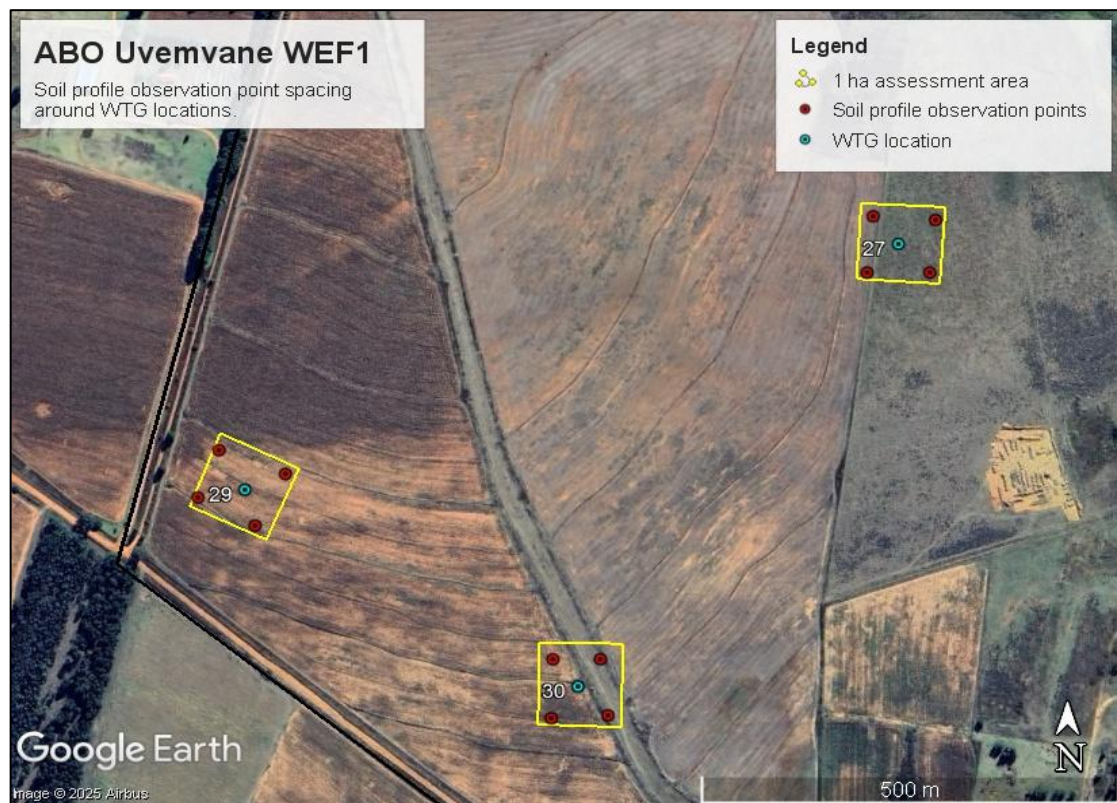


Figure 5: An example of the distribution of soil observation points around assessed previously considered WTG locations of the ABO Uvemvane WEF 1 project area.

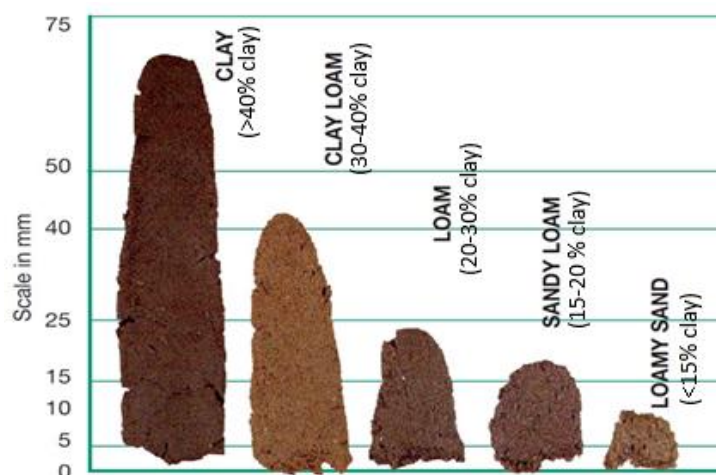
Subsurface pedological (soil profile) observations were made by means of a manual hand auger (bucket and/or French-type) to a depth of 1500 mm (or up to a shallower diagnostic or restrictive layer), which is a practical, cost-effective technique and deemed adequate for the broad identification and description of soils in this type of 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.
 - Texture and approximate clay percentage of the top and sub-soil (see method description in text box below).
 - 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.



1.7.3 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.

1.7.4 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 partly 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 3).

Table 3: Relationship between land capability and the screening tool's agricultural sensitivity rating.

Land capability value	Agricultural sensitivity (screening tool)
1 – 5	Low
6 – 7	Medium
8 – 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.

1.7.5 Impact assessment

The assessment of impacts and mitigation evaluates the likely extent and significance of the potential impacts on identified receptors and resources against defined assessment criteria, to develop and describe measures that will be taken to avoid, minimise, or compensate for any adverse environmental impacts, to enhance positive impacts, and to report the significance of residual impacts that occur following mitigation.

The key objectives of the risk assessment methodology are to identify any additional potential environmental issues and associated impacts likely to arise from the proposed project, and to propose a significance ranking. Issues / aspects will be reviewed and ranked against a series of significance criteria to identify and record interactions between activities and aspects, and resources and receptors to provide a detailed discussion of impacts.

A standard risk assessment methodology is used for the ranking of the identified environmental impacts pre-and post-mitigation. The significance of environmental aspects is determined and ranked by considering the criteria presented in Table 4 below.

Table 4: Impact Assessment Criteria and Scoring System.

NATURE		
A brief description of the impact of environmental parameter being assessed in the context of the project. This criterion includes a brief written statement of the environmental aspect being impacted upon by a particular action or activity.		
GEOGRAPHICAL EXTENT		
This is defined as the area over which the impact will be experienced.		
1	Site	The impact will only affect the site.
2	Local/district	Will affect the local area or district.
3	Province/region	Will affect the entire province or region.
4	International and National	Will affect the entire country.

PROBABILITY		
This describes the chance of occurrence of an impact.		
1	Unlikely	The chance of the impact occurring is extremely low (Less than a 25% chance of occurrence).
2	Possible	The impact may occur (Between a 25% to 50% chance of occurrence).
3	Probable	The impact will likely occur (Between a 50% to 75% chance of occurrence).
4	Definite	Impact will certainly occur (Greater than a 75% chance of occurrence).
DURATION		
This describes the duration of the impacts. Duration indicates the lifetime of the impact because of the proposed activity.		
1	Short term	The impact will either disappear with mitigation or will be mitigated through natural processes in a span shorter than the construction phase (0 – 1 years), or the impact will last for the period of a relatively short construction period and a limited recovery time after construction, thereafter it will be entirely negated (0 – 2 years).
2	Medium term	The impact will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (2 – 10 years).
3	Long term	The impact and its effects will continue or last for the entire operational life of the development but will be mitigated by direct human action or by natural processes thereafter (10 – 30 years).
4	Permanent	The only class of impact that will be non-transitory. Mitigation either by man or natural process will not occur in such a way or such a time span that the impact can be considered indefinite.
INTENSITY/ MAGNITUDE		
Describes the severity of an impact.		
1	Low	Impact affects the quality, use and integrity of the system/component in a way that is barely perceptible.
2	Medium	Impact alters the quality, use and integrity of the system/component but system/component continues to function in a moderately modified way and maintains general integrity (some impact on integrity).
3	High	Impact affects the continued viability of the system/ component, and the quality, use, integrity and functionality of the system or component is severely impaired and may temporarily cease. High costs of rehabilitation and remediation.
4	Very high	Impact affects the continued viability of the system/component, and the quality, use, integrity and functionality of the system or component permanently ceases and is irreversibly impaired. Rehabilitation and remediation often impossible. If possible, rehabilitation and remediation often unfeasible due to extremely high costs of rehabilitation and remediation.
REVERSIBILITY		
This describes the degree to which an impact can be successfully reversed upon completion of the proposed activity.		
1	Completely reversible	The impact is reversible with implementation of minor mitigation measures.
2	Partly reversible	The impact is partly reversible, but more intense mitigation measures are required.
3	Barely reversible	The impact is unlikely to be reversed even with intense mitigation measures.
4	Irreversible	The impact is irreversible, and no mitigation measures exist.
IRREPLACEABLE LOSS OF RESOURCES		
This describes the degree to which resources will be irreplaceably lost because of a proposed activity.		
1	No loss of resource	The impact will not result in the loss of any resources.

2	Marginal loss of resource	The impact will result in marginal loss of resources.
3	Significant loss of resources	The impact will result in significant loss of resources.
4	Complete loss of resources	The impact will result in a complete loss of all resources.
CUMULATIVE EFFECT		
This describes the cumulative effect of the impacts. A cumulative impact is an effect which may not be significant but may become significant if added to other existing or potential impacts emanating from other similar or diverse activities because of the project activity in question.		
1	Negligible cumulative impact	The impact would result in negligible to no cumulative effects.
2	Low cumulative impact	The impact would result in insignificant cumulative effects.
3	Medium cumulative impact	The impact would result in minor cumulative effects.
4	High cumulative impact	The impact would result in significant cumulative effects
SIGNIFICANCE		
Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale and, therefore, indicates the level of mitigation required. The calculation of the significance of an impact uses the following formula: (Extent + probability + reversibility + irreplaceability + duration + cumulative effect) x magnitude/intensity. The summation of the different criteria will produce a non-weighted value. By multiplying this value with the magnitude/intensity, the resultant value acquires a weighted characteristic which can be measured and assigned a significance rating.		
Points	Impact significance rating	Description
6 to 28	Negative low impact	The anticipated impact will have negligible negative effects and will require little to no mitigation.
6 to 28	Positive low impact	The anticipated impact will have minor positive effects.
29 to 50	Negative medium impact	The anticipated impact will have moderate negative effects and will require moderate mitigation measures.
29 to 50	Positive medium impact	The anticipated impact will have moderate positive effects.
51 to 73	Negative high impact	The anticipated impact will have significant effects and will require significant mitigation measures to achieve an acceptable level of impact.
51 to 73	Positive high impact	The anticipated impact will have significant positive effects.
74 to 96	Negative very high impact	The anticipated impact will have highly significant effects and are unlikely to be able to be mitigated adequately. These impacts could be considered "fatal flaws".
74 to 96	Positive very high impact	The anticipated impact will have highly significant positive effects.
Mitigation Confidence: The significance of an impact is re-assessed following the proposed implementation of mitigation measures. The proposed mitigation measures are subsequently subjectively evaluated and, based on the confidence levels to which level the mitigation measures will reduce the impact, is adjusted to an expected post-mitigation rating. This is done for both negative and positive impacts where mitigation confidence is applied to negative impacts, and enhancement confidence to positive impacts.		
Mitigation Confidence - Negative Impacts		
Confidence value	Confidence rating	Description
0.9 – 1	Very low	No confidence that the mitigation measures will reduce the impact.
0.7 – 0.8	Low	20% confidence that the mitigation measures will reduce the impact
0.5 – 0.6	Moderate	50% confidence that the mitigation measures will reduce the impact
≤ 0.4	High	80% confidence that the mitigation measures will reduce the impact

Mitigation Confidence - Positive Impacts		
1 – 1.1	Very Low	No change to the significance of the impact. No mitigation measures required.
1.2 – 1.3	Low	20% enhancement with the implementation of management/mitigation measures.
1.5 – 1.6	Moderate	50% enhancement with the implementation of management/mitigation measures.
1.8 – 1.9	High	80% enhancement with the implementation of management/mitigation measures.

2 RESULTS

2.1 Desktop assessment

2.1.1 Natural environment

The ABO Uvemvane WEF1 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 (2024), the study area falls in two biomes over four 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.
- Tsakane Clay Grassland (Gm 9)
 - The terrain is generally flat to slightly undulating with low hills. Short dense grassland dominates the vegetation with a mixture of common highveld grasses.
 - The geology is mainly made up of basaltic lavas of the Klipriviersberg Group (Ventersdorp Supergroup), together with sedimentary rocks of the Madzaringwe Formation (Karoo Supergroup).
 - Clayey soils that are typically associated with the Ba and Bb land types occur throughout Gm 9.

2.1.2 Climate Capability

The area receives strongly seasonal summer rainfall with mean annual precipitation of between 600 and 700 mm and a mean annual evaporation varying between 2000 mm and 2200 mm (Schulze, 2009). Summers are hot and winters very dry with frequent frost. The climate capability rating, which forms a component of the land capability rating, is '5' (out of 9) (moderate) with a small portion of '6' (moderate-high) on the very eastern side (DAFF, 2017) (Figure 6).

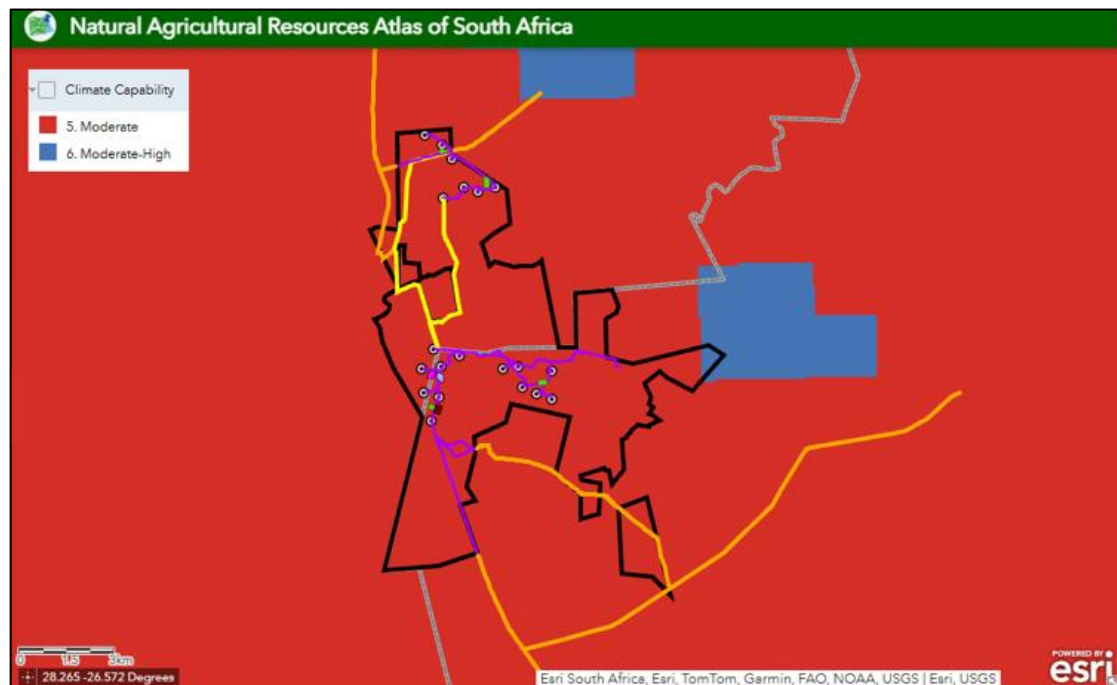


Figure 6: Climate capability of the ABO Uvemvane WEF 1 project area (black polygons) and the proposed layout.

2.1.3 Terrain & Soil Capability

According to DAFF (2017) as presented in the Natural Agricultural Resources Atlas of South Africa (<https://ndagis.nda.agric.za>) the terrain capability varies between classes 02 (Low-very low) to 07 (High) (Figure 7) and the soil capability between classes 02 (Low-very low) to 08 (High-very high) (Figure 8).

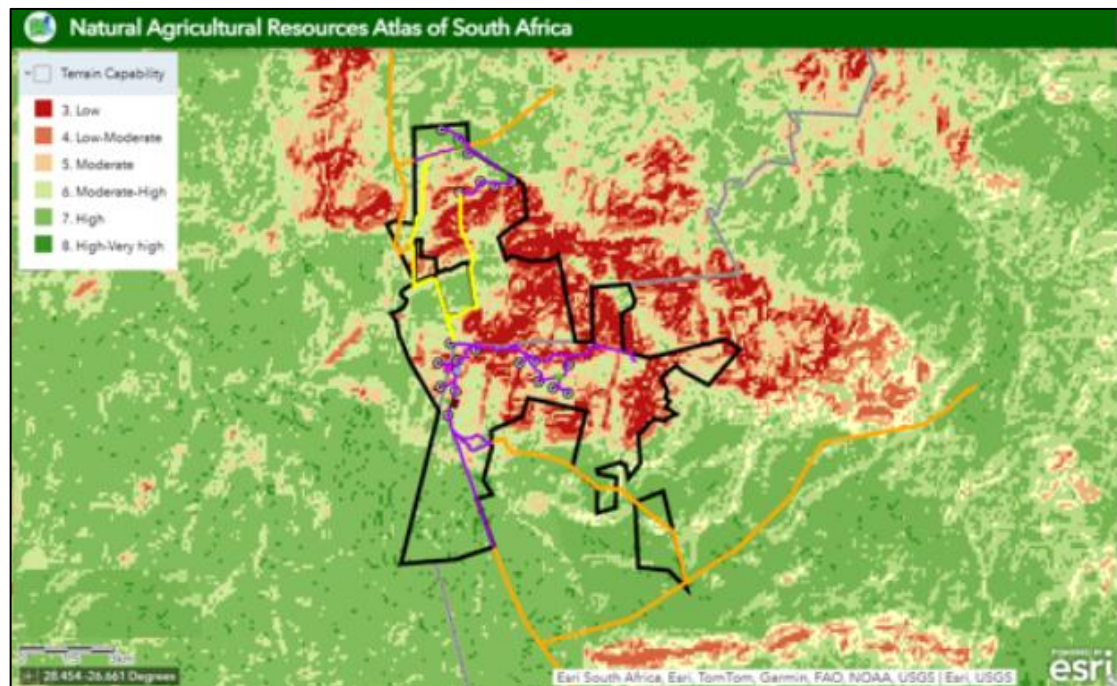


Figure 7: Terrain capability of the ABO Uvemvane WEF 1 project area (black polygons) and the proposed layout.

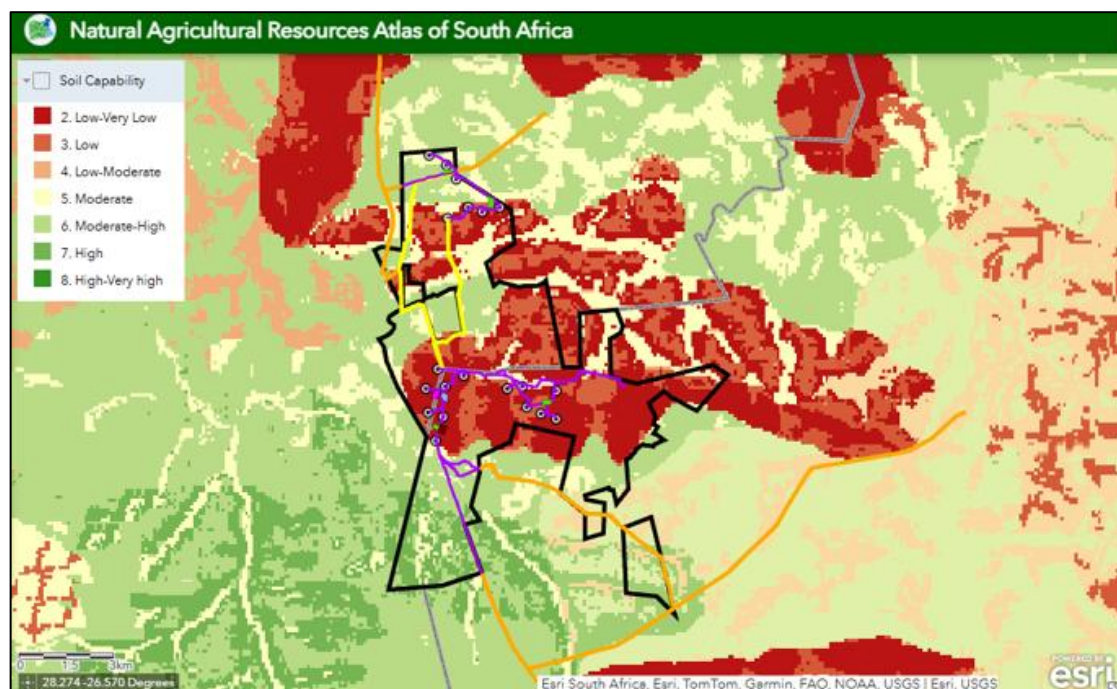


Figure 8: Soil capability in the ABO Uvemvane WEF 1 project area (black polygons) and the proposed layout.

2.1.4 Land capability

Land capability information for the ABO Uvemvane WEF 1 project area, as accessed on the Natural Agricultural Resources Atlas of South Africa is presented in Figure 9. The land capability over the extent of the assessed area varies between the classes 02 (Low) to 10 (Moderate-high).

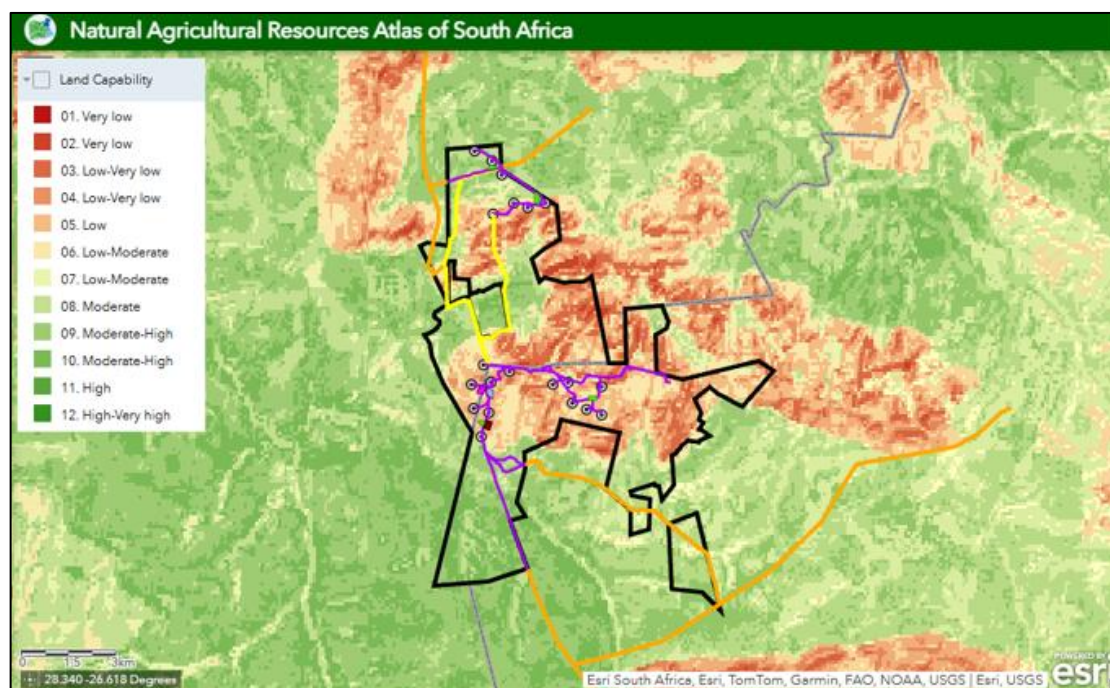


Figure 9: Land capability in the ABO Uvemvane WEF 1 project area (black polygons) and the proposed layout.

According to Lanz (2024), soil capability is determined in the land capability data largely by an average soil capability value attributed to each land type. However, there is a natural range of soil capabilities within each land type, which the land capability dataset is unable to consider and accurately map. On ground level, the soils (and therefore the land capability) vary in a complex pattern across the landscape, which is not reflected at the scale of the national land capability spatial data of DAFF (2017). The most reliable indication of cropping potential or land capability is historical and current land use. The suitable versus the unsuitable soils have been identified over time through trial and error where in an agricultural environment such as the ABO Uvemvane WEF 1 project area, all the suitable soils are generally under active (annual) crop production and therefore have a realistic land capability of at least 8 (Moderate) or more. Land that is not actively cultivated can reliably be considered to have limitations that make them unsuitable for annual crop production with the result that their realistic land capability is less than 8 (moderate).

2.1.5 Protected Agricultural Areas

The ABO Uvemvane WEF 1 project area is situated in two Protected Agricultural Areas (PAA's) as defined by the Department of Agriculture, Land Reform and Rural Development (DALRRD, 2020) and recently published in the Preservation and Development of Agricultural Land Act (Act No. 39 of 2024) (PDALA, 2024). The relevant PAA's are the Suikerbosrant Rainfed (RF) PAA in the northern and western parts and the Grootvlei-Balfour RF PAA towards the south and east (Figure 10).

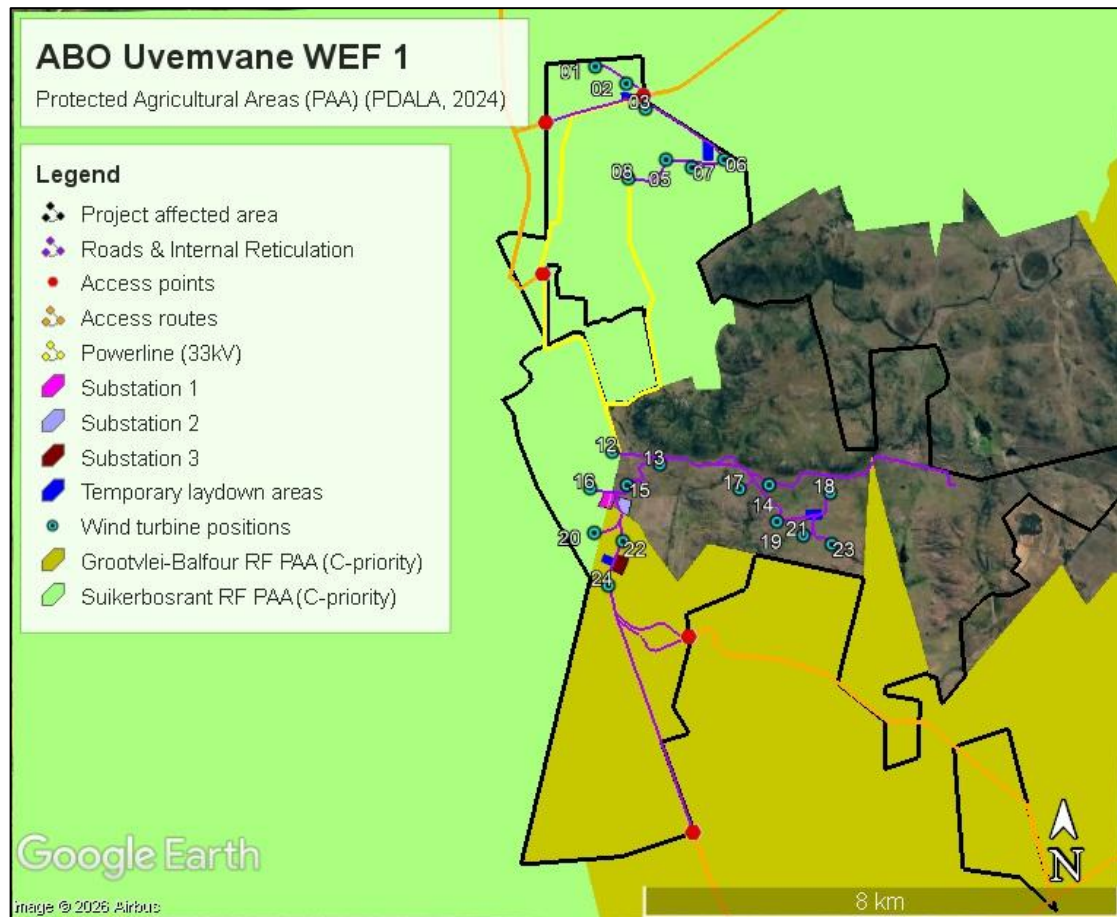


Figure 10: Protected Agricultural Areas in relation to the ABO Uvemvane WEF 1 project area and layout.

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 (2024), 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.”*

A Cultivation PAA is a demarcated area in which the climate, terrain, and soil are generally conducive for agricultural crop production and which, historically, has made important contributions to the production of the various crops that are grown across South Africa. Grazing PAA's are currently also being defined by DALRRD but were not published yet at the time of this assessment.

Within Cultivation 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 may therefore not necessarily be worthy of prioritised protection as agricultural production land.

According to DALRRD (2020), the approach for the demarcation of 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 detailed planning purposes, which forms part of the results of this SSVR.

The PDALA (2024) assigns Priority Ratings to PAAs which are based on a sliding scale from A onwards in terms of the priority of the area from a cultivation perspective. For Rainfed (RF) PAAs the Priority Ratings ranges from 'A' to 'F' with 'A' being the highest priority level and 'F' the lowest Priority Rating pertaining to the RF PAAs demarcation. For Irrigated (IR) PAAs the Priority Ratings ranges from 'A' to 'D' with 'A' again being the highest priority rating and 'D' the lowest Priority Rating pertaining to IR PAA. In future, Grazing PAAs will have priority ratings of 'A' to 'D'.

PAAs are divided into National (administered by the National Department of Agriculture) and Provincial (administered by provincial departments of agriculture) PAAs according to their different priority ratings as follows:

- National PAAs (for the protection of national food security)
 - RF PAAs priority A to D
 - IR PAA's priority A to C
 - Grazing PAA's priority A and B
- Provincial PAA's (of provincial economic and social importance)
 - RF PAA's priority E & F
 - IR PAA's priority D
 - Grazing PAA's priority C and D

Both the Suikerbosrant and the Grootvlei-Balfour PAA's have a priority rating of 'C' (moderate priority) and therefore of national significance.

2.1.6 Screening tool assessment

As mentioned previously, there is a direct correlation between land capability rating and the agricultural sensitivity cited by the National web-based Screening Tool of the Department of Forestry, Fisheries, and the Environment (DFFE) (screening tool). A screening tool report was generated for the proposed ABO Uvemvane WEF 1 project area, which is presented in Figure 11 below and indicates the Agricultural Sensitivity theme as 'Very high' for the entire project area due to its overlap with the Suikerbosrant and Grootvlei-Balfour RF PAA's (both with 'C'-priority ratings) as previously stated.

It is important to note that only the highest environmental sensitivity recorded in the actual uploaded development footprint is indicated in the screening tool report. The

environmental sensitivities for the proposed development footprint, as identified in the screening report, are indicative only and must be verified by a specialist site visit.

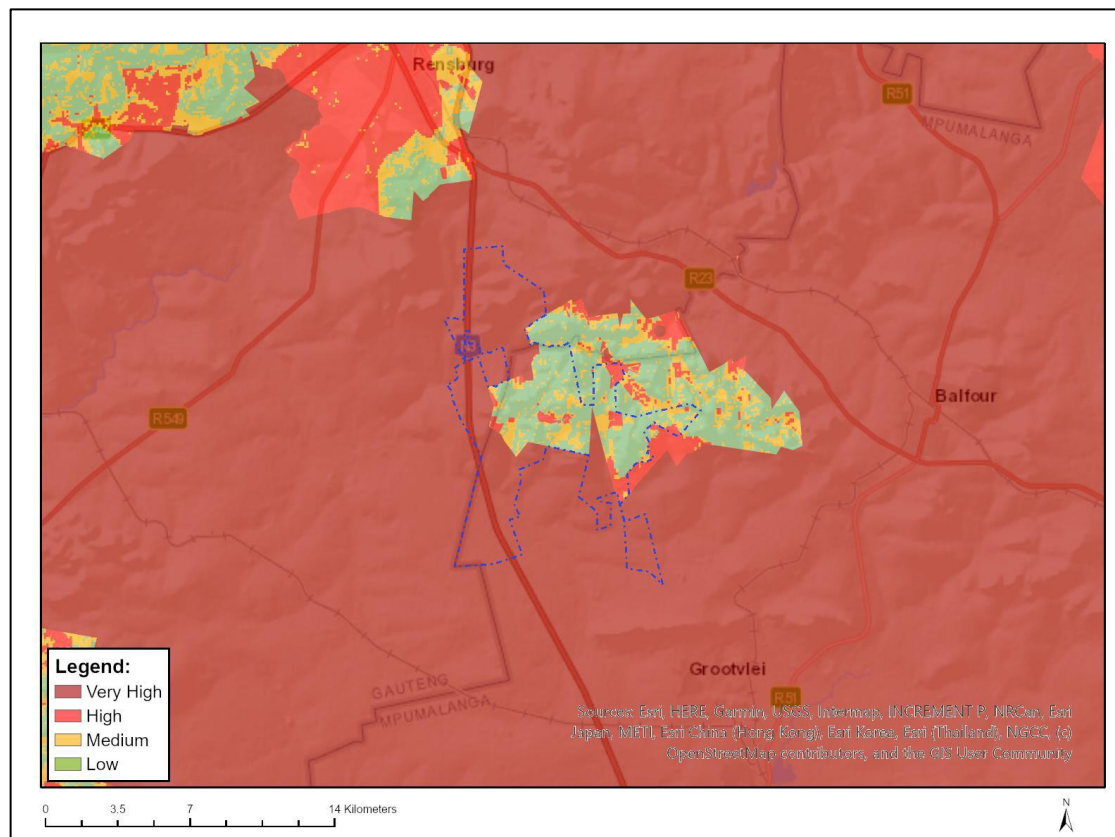


Figure 11: Screening tool sensitivity map of the agriculture theme overlain by the planned ABO Uvemvane WEF 1 project area.

The screening tool also cites areas of “high” sensitivity for land capability areas of 10 (high), 9 (moderate-high) and 8 (moderate), which includes areas of rainfed annual crop production, planted pastures and old fields.

The boundaries of the latter, however, are mostly overshadowed by the ‘Very high’ rating mapping of the mentioned ‘C’-importance PAA’s.

2.1.7 Desktop assessment summary

Table 5 below presents a summary of the above and other data applicable to the agricultural resources within the proposed project area, according to various data sources:

Table 5: Summary of the results of the desktop assessment.

Main Aspect	Descriptor	Value / description
Climate	Mean Annual Rainfall (mm) (Schulze, 2009).	600 – 700
	Total annual evaporation (mm) (Schulze, 2009)	2000 - 2200
	Climate capability classification (out of 9) (DAFF, 2017)	05 (moderate) to 06 (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 classes (%)	wide range from 0 to >35%
	Altitude (m)	1500 - 1800
	Terrain capability classification (out of 8) (DAFF, 2017)	02 (low-very low) to 07 (High)
Soil	Geology	Klipriviersberg Group; Turffontein Subgroup; Johannesburg Subgroup; Jeppestown Subgroup.
	Land types (approximate % area covered)	Ba1, Ba29, Ba 30, Ib42, Ib43 & Ib44
	General description of soils	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, Vaalbos, Ermelo, Clovelly, Bainsvlei, Westleigh, Sepane, Valsrivier, Sterkspruit, Rensburg, Bonheim, Swartland, Glenrosa, Mispah.
	Soil capability classification (out of 9) (DAFF, 2017)	02 (low-very low) to 08 (High-very high)
	Water erosion susceptibility	04 (moderate-high) to 07 (Low)
	Wind erosion susceptibility	01 (Very high) to 06 (Moderate-low)
Land use	Agricultural land use in the surrounding area	Cultivation (rain-fed & irrigation), natural grazing (livestock & game)
	Agricultural land use on the site	Cultivation (rain-fed & irrigation), natural grazing (livestock & game)
	Irrigation suitability (out of 5)	01 (unsuitable) to 04 (good)
General	Long-term grazing capacity (ha per Large Stock Unit) (DAFF, 2018)	5 to 8

Main Aspect	Descriptor	Value / description
	Land capability classification (out of 15) (DAFF, 2017)	02 (Low) to 10 (Moderate-high)
	Within Protected Agricultural Area (PPA) (DALRRD, 2020 & PDALA, 2024)	Suikerbosrant RF PAA – 'C' (moderate) priority rating. Grootvlei-Balfour RF PAA– 'C' (moderate) priority rating.

2.1.8 Field Crop Boundaries

Figure 12 below presents the national data base of Field Crop Boundaries as published by the Crop Estimates Consortium (2023) in relation to the proposed development components of the ABO Uvemvane WEF 1 project.

According to this data, seven of the currently proposed WTG positions and associated infrastructure are placed directly in or partially within cultivated lands. The other 13 WTG sites are placed outside currently or previously cultivated lands.

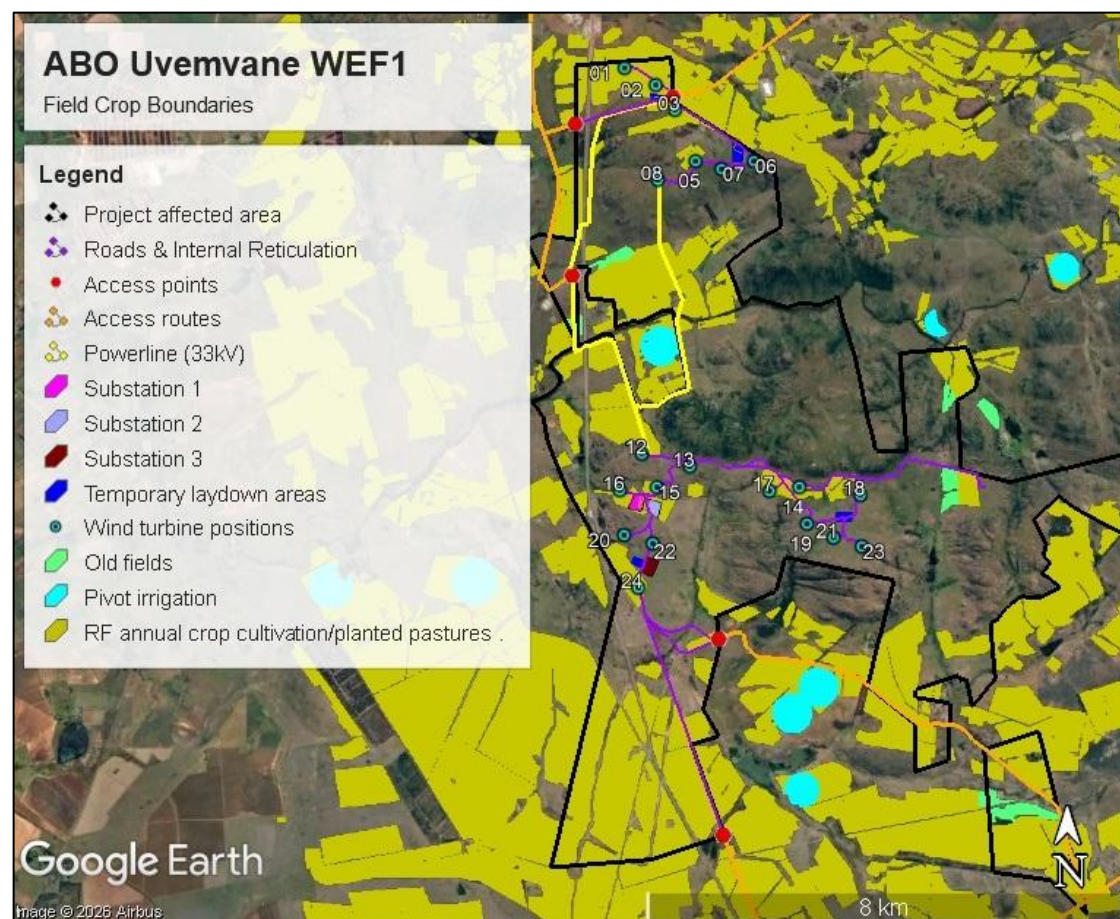


Figure 12: Field Crop Boundaries associated with the ABO Uvemvane WEF 1 project area and related infrastructure (Crop Estimates Consortium, 2023).

2.2 Field survey findings

2.2.1 Agricultural land uses

According to field survey findings, nine of the WTG positions fall directly or partially in cultivated lands (i.e. currently cultivated land, old fields, and planted pastures) and one is located within 50 m of a cultivated land. Table 6 below summarizes the locations of the different WTG hardstands as well as the three alternative sites considered for the development of the EIH (EIH1 to EIH3) in terms of agricultural land uses. Figure 13 further below illustrates the project layout in relation to recorded cultivated land.

Table 6: Summary of the proposed locations of WTG hardstands and alternative EIH sites with regards to areas of local agricultural land use.

Verified agricultural land use	WTG's
Within annual, rainfed cultivated lands (currently cultivated).	01 & 02
Partially within annual, rainfed cultivated lands (currently cultivated).	03
Within planted pastures.	EIH1 & EIH2
Within old fields (not cultivated in the last 5 years or more).	14, 15, 16, 17, 18 & 24
In natural veld but within 50 m of annual, rainfed cultivated lands, planted pastures or old fields.	05
Natural veld – grazing.	06, 07, 08, 12, 13, 19, 20, 21, 22, 23 & EIH3

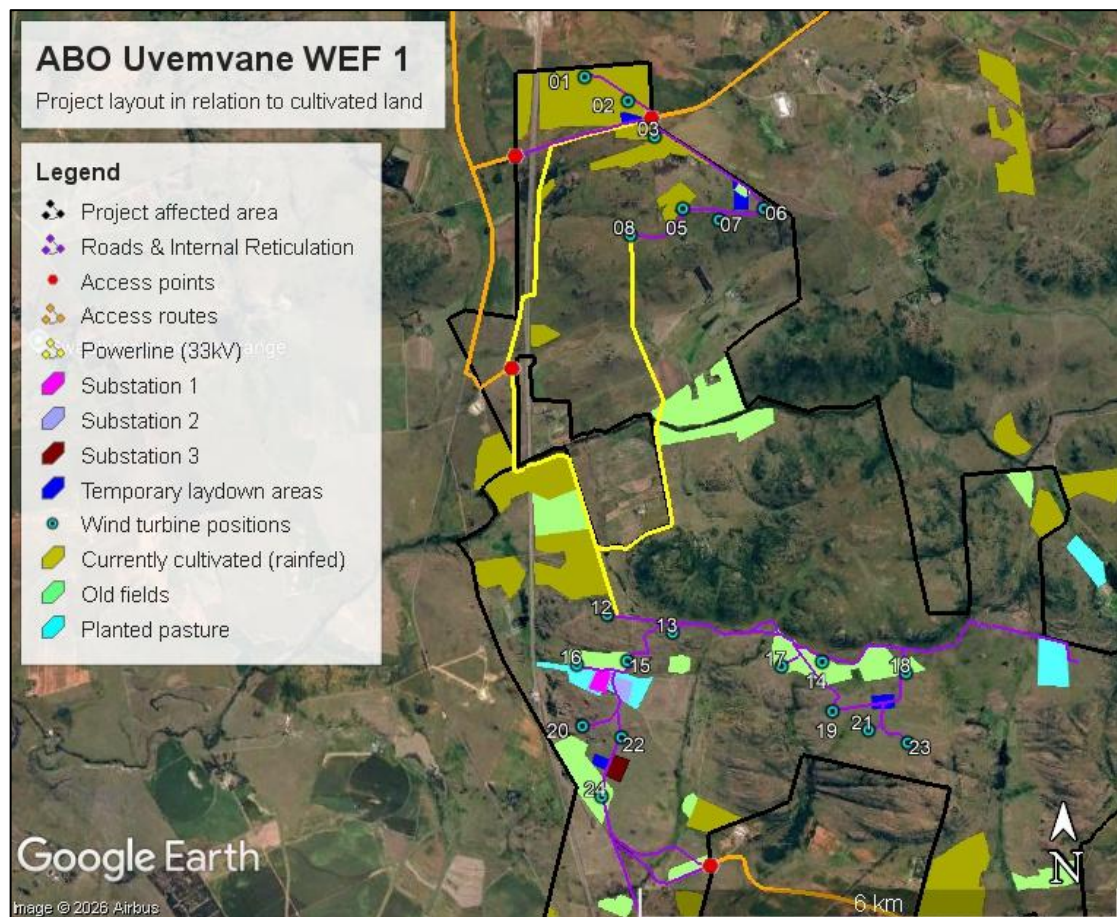


Figure 13: Proposed project infrastructure in relation to recorded cultivated lands.

In the project area, annual, rainfed cultivated lands (Figure 14) are used to produce maize and soya beans, while other areas have been cultivated as rainfed planted perennial grass pastures – mostly *Eragrostis curvula* (Weeping Love Grass / Oulands Gras) (Figure 15), which are mostly grazed as standing hay but also cut and baled for winter feed for local livestock. Old fields (areas where no cultivation has been recorded in the last five years and no pastures have been planted) (Figure 16) also occur and are grazed by livestock together with non-arable areas of natural vegetation (Figure 17).

The natural vegetation in the area, which includes a variety of habitats (mountain slopes, plains, drainage lines, etc.) and mostly occur on shallow, non-arable soils or low-lying areas associated with drainage lines and wetlands, are utilized for livestock grazing which includes cattle and sheep. The long-term grazing capacity according to DAFF (2018) is between 5 and 8 ha per Large Stock Unit (ha/LSU). This resource, however, has been overutilized in some areas where the estimated grazing capacity is lower due to a decline in ecological veld condition over time. The estimated actual grazing capacity for the project area is between 7 and 12 ha/LSU, which is still considered moderately high by DAFF (2018).



Figure 14: A recently harvested crop of rainfed maize in the vicinity of the ABO Uvemvane WEF 1 project area.



Figure 15: A planted pasture of perennial *Eragrostis curvula* in the vicinity of the ABO Uvemvane WEF 1 project area.



Figure 16: An old field in the ABO Uvemvane WEF 1 project area that has not been cultivated for more than 20 years.



Figure 17: Natural, non-arable, grazing veld in the ABO Uvemvane WEF 1 project area.

The land use in areas within the larger project area as well as adjacent land also includes pivot irrigated lands. However, none of the proposed WTG hardstands or other project infrastructure are proposed to be constructed in or close to such areas.

2.2.2 Soils

From the perspective of the assessment to which this report pertains, soil observations were focussed on the 10 WTG hardstand areas that fall directly or partially in or close to cultivated lands (Refer back to Table 6). Other WTG sites that don't fall in or near

such areas were randomly assessed as well to verify pedological conditions. The crop production potential of all assessed areas was evaluated taking various relevant factors into consideration to determine if the land can sustainably produce crops to support food security of the region. On a regional level, the main factor relied upon in this regard is climate capability and, on a landscape (local) level soil texture, effective soil depth (soil capability) and terrain slope (terrain capability) are most heavily relied upon for the assessment of land use potential for rainfed crop production. Practical considerations such as accessibility to agricultural machinery and implements are also considered where applicable.

Where WTG sites occur directly or partially in currently cultivated lands, consideration is given to production figures of the past season as well as for seasons of average, above average and below average rainfall. These figures were sourced from the relevant landowner/s in personal interviews during the site visit and presented further down below.

Based on the findings of the SSVR that preceded this report (Götze, 2024a & b), those WTG sites that occur in natural veld (areas of no current or historical cultivation), which were not included in this assessment, were assumed to have 'low' sensitivity in terms of annual, rainfed crop production. In this regard, it is assumed (with a high degree of certainty from a specialist viewpoint) that the most reliable indication of cropping potential or land capability is historical and current land use. The suitable versus the unsuitable soils have been identified over time through trial and error where the suitable soils are generally under active (annual) crop production and therefore have a realistic land capability of at least 8 (moderate) or more. Land that is not actively cultivated can reliably be considered to have limitations that make them unsuitable for annual, rainfed crop production with a resulting realistic land capability of less than 8 (moderate).

Pedological observations were conducted and classified according to the latest South African soil classification system (Soil Classification Working Group, 2018) for each relevant WTG hardstand and EIH alternative and presented in a summative table below (Table 7) and visually, with photographs of the terrain and dominant soil form(s) of each assessed WTG hardstand and EIH alternative, in Appendix A.

Table 7: Results of soil and terrain investigations on each WTG hardstand planned for the Uvemvane WEF 1 project.

WTG / EIH no.	Soil form	Soil depth (mm)			Clay %			Topography	Slope class (%)	Current land use	Latitude	Longitude
		A horizon	B/C horizon	Effective depth	A horizon	B/C horizon	Restrictive horizon					
1	Dresden	400		400	15	-	hard plinthite	mid-slope	5 - 10	Cultivated - rainfed	-26,594145	28,396199
	Dresden	400		400	15	-	hard plinthite	mid-slope	5 - 10	Cultivated - rainfed	-26,594782	28,396305
	Westleigh	350	1000	350	15	30	30	mid-slope	5 - 10	Cultivated - rainfed	-26,594780	28,395470
	Westleigh	250	1000	250	15	30	30	mid-slope	5 - 10	Cultivated - rainfed	-26,594118	28,395437
2	Dresden	350		350	15	-	hard plinthite	crest	0 - 5	Cultivated - rainfed	-26,597304	28,401703
	Lichtenburg	300	1400	1400	15	15	hard plinthite	mid-slope	5 - 10	Cultivated - rainfed	-26,596745	28,401675
	Dresden	350		350	15	-	hard plinthite	crest	5 - 10	Cultivated - rainfed	-26,596819	28,400904
	Lichtenburg	250	500	500	15	15	hard plinthite	crest	0 - 5	Cultivated - rainfed	-26,597839	28,401313
	Dresden	300		300		-	hard plinthite	crest	0 - 5	Cultivated - rainfed	-26,597461	28,400953
3	Sepane	300	650	650	10	35	35	crest	0 - 5	Cultivated - rainfed	-26,600864	28,404374
	Kroonstad	300	1300	1300	10	10	35	crest	0 - 5	Cultivated - rainfed	-26,601564	28,404479
	Kroonstad	400	600	600	10	10	35	crest	0 - 5	Cultivated - rainfed	-26,601117	28,405177
	Kroonstad	300	600	600	10	10	35	crest	0 - 5	Fall-out area	-26,600589	28,405029
5	Mispah	300		300	10	-	hard rock	mid-slope	10 - 15	Cultivated - rainfed	-26,608737	28,408227
	Hutton	400	1500	1500	10	15	n/a	mid-slope	10 - 15	Cultivated - rainfed	-26,608751	28,407501
	Mispah	100		100	10	-	hard rock	mid-slope	15 - 20	Natural veld	-26,609455	28,407779
	Mispah	200		200	10	-	hard rock	mid-slope	10 - 15	Natural veld	-26,609342	28,408411
14	Mispah	150		150	15	-	hard rock	mid-slope	5 - 10	Natural veld	-26,659218	28,426618
	Mispah	100		100	15	-	hard rock	mid-slope	10 - 15	Natural veld	-26,658997	28,425882
	Mispah	150		150	15	-	hard rock	mid-slope	5 - 10	Old field	-26,659823	28,426491
	Mispah	200		200	15	-	hard rock	mid-slope	5 - 10	Old field	-26,659679	28,425705
15	Mispah	200		200	10	-	hard rock	mid-slope	5 - 10	Natural veld	-26,659742	28,401719
	Vaalbos	350	1200	1200	10	10	hard rock	mid-slope	10 - 15	Old field	-26,660253	28,400813
	Mispah	350		350	10	-	hard rock	mid-slope	10 - 15	Natural veld	-26,660261	28,401544

WTG / EIH no.	Soil form	Soil depth (mm)			Clay %			Topography	Slope class (%)	Current land use	Latitude	Longitude
		A horizon	B/C horizon	Effective depth	A horizon	B/C horizon	Restrictive horizon					
	Vaalbos	350	700	700	10	10	hard rock	mid-slope	10 - 15	Old field	-26,659570	28,400938
16	Ermelo	400	1500	1500	10	10	n/a	valley bottom	5 - 10	Old field	-26,660598	28,395375
	Hutton	350	1500	1500	10	10	n/a	valley bottom	5 - 10	Old field	-26,659928	28,395377
	Hutton	350	1500	1500	10	10	n/a	valley bottom	10 - 15	Old field	-26,659844	28,394617
	Ermelo	350	1500	1500	10	10	n/a	valley bottom	5 - 10	Old field	-26,660539	28,394485
17	Mispah	250		250	10	-	hard rock	mid-slope	5 - 10	Old field	-26,660716	28,420076
	Carolina	250	550	550	10	10	hard rock	mid-slope	5 - 10	Old field	-26,660082	28,420292
	Carolina	350	750	750	10	10	hard rock	mid-slope	5 - 10	Old field	-26,660174	28,421071
	Carolina	400	700	700	10	10	hard rock	mid-slope	0 - 5	Old field	-26,660892	28,420903
18	Glenrosa	350		350	15	-	lithic	mid-slope	10 - 15	Old field	-26,661428	28,435646
	Glenrosa	300		300	15	-	lithic	mid-slope	10 - 15	Old field	-26,661329	28,436483
	Glenrosa	350		350	15	-	lithic	mid-slope	10 - 15	Old field	-26,660700	28,436183
	Glenrosa	350		350	15	-	lithic	mid-slope	10 - 15	Old field	-26,660841	28,435497
19	Mispah	350		350	15	-	hard rock	mid-slope	5 - 10	Natural veld	-26,665438	28,426827
	Mispah	300		300	15	-	hard rock	mid-slope	5 - 10	Natural veld	-26,665292	28,426966
24	Clovelly	300	650	650	10	10	lithic	mid-slope	5 - 10	Old field	-26,675666	28,397705
	Carolina	350	1100	1100	10	10	hard rock	mid-slope	5 - 10	Old field	-26,674864	28,397608
	Carolina	300	950	950	10	10	hard rock	mid-slope	5 - 10	Old field	-26,674851	28,398318
	Mispah	250		250	15	-	hard rock	mid-slope	5 - 10	Old field	-26,675594	28,398456
EIH1	Carolina	250	500	500	10	10	hard rock	mid-slope	15 - 20	Pasture - rainfed	-26,663132	28,397682
	Clovelly	300	1100	1100	10	10	lithic	mid-slope	10 - 15	Pasture - rainfed	-26,662926	28,396343
	Hutton	300	1500	1500	10	10	n/a	mid-slope	15 - 20	Pasture - rainfed	-26,662186	28,397488
	Hutton	350	1500	1500	10	10	n/a	mid-slope	5 - 10	Pasture - rainfed	-26,661622	28,398780
	Hutton	350	1500	1500	10	10	n/a	valley bottom	10 - 15	Pasture - rainfed	-26,660994	28,397291
EIH2	Glenrosa	400		400	10	-	lithic	mid-slope	10 - 15	Pasture - rainfed	-26,663318	28,399806

WTG / EIH no.	Soil form	Soil depth (mm)			Clay %			Topography	Slope class (%)	Current land use	Latitude	Longitude
		A horizon	B/C horizon	Effective depth	A horizon	B/C horizon	Restrictive horizon					
	Clovelly	300	650	650	10	10	lithic	mid-slope	5 - 10	Pasture - rainfed	-26,662163	28,400355
	Clovelly	250	550	550	10	10	lithic	mid-slope	5 - 10	Pasture - rainfed	-26,662627	28,401555
	Clovelly	250	600	600	10	10	lithic	mid-slope	10 - 15	Pasture - rainfed	-26,663107	28,400832
	Mispah	200		200	10	-	hard rock	mid-slope	10 - 15	Pasture - rainfed	-26,664234	28,401156
EIH3	Clovelly	350	650	650	10	10	lithic	mid-slope	10 - 15	Natural veld	-26,672713	28,398653
	Clovelly	350	600	600	10	10	lithic	mid-slope	10 - 15	Natural veld	-26,673386	28,400133
	Clovelly	300	700	700	10	10	lithic	mid-slope	10 - 15	Natural veld	-26,672027	28,399785
	Glenrosa	300		300	10	-	lithic	mid-slope	10 - 15	Natural veld	-26,671454	28,400952
	Clovelly	300	800	800	10	10	lithic	mid-slope	10 - 15	Natural veld	-26,670841	28,399579

2.2.3 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 soil parameters of which information was gathered during the field assessments, which included:

- Topography (terrain unit).
- Terrain slope (%).
- Soil texture (i.e. clay %) of different soil horizons.
- Depth of different soil horizons.
- Effective soil depth.
- Notable impacts.
- Crop production figures for the last five years.
- Livestock stocking rates and grazing potential.

For ease of presentation and discussion WTG and EIH sites are grouped together under farm units (Table 8; Figure 18) belonging to different landowners, which in most instances represent more than one farm portion. The focus of interviews was primarily on cultivation and harvest records, livestock production figures, and labour related subjects.

Table 8: Information on each farm unit that was assessed in this investigation.

Farm Unit	Farm portion(s)	Interview conducted with	Interview date(s)	WTG / EIH no.
1	2 & 17 Lagerspoort 406	Landowner: Jaques Rosenthal Current renter: Stephan Potgieter Former renter: Mouton Kotze	02-Oct-25 28-Oct-25	1, 2, 3, 5, 6, 7 & 8
2	9 Malanskraal 407	Landowner: Anton Weststrate	02-Oct-25	13, 14, 15, 17, 18, 19, 21, 23, & EIH2
3	6 Malanskraal 407 2 Modderfontein 410	Landowner: Hendrik de Wet Farm manager: Mouton Kotze	28-Oct-25	12, 16, 20, 22, 24 EIH1 & EIH3

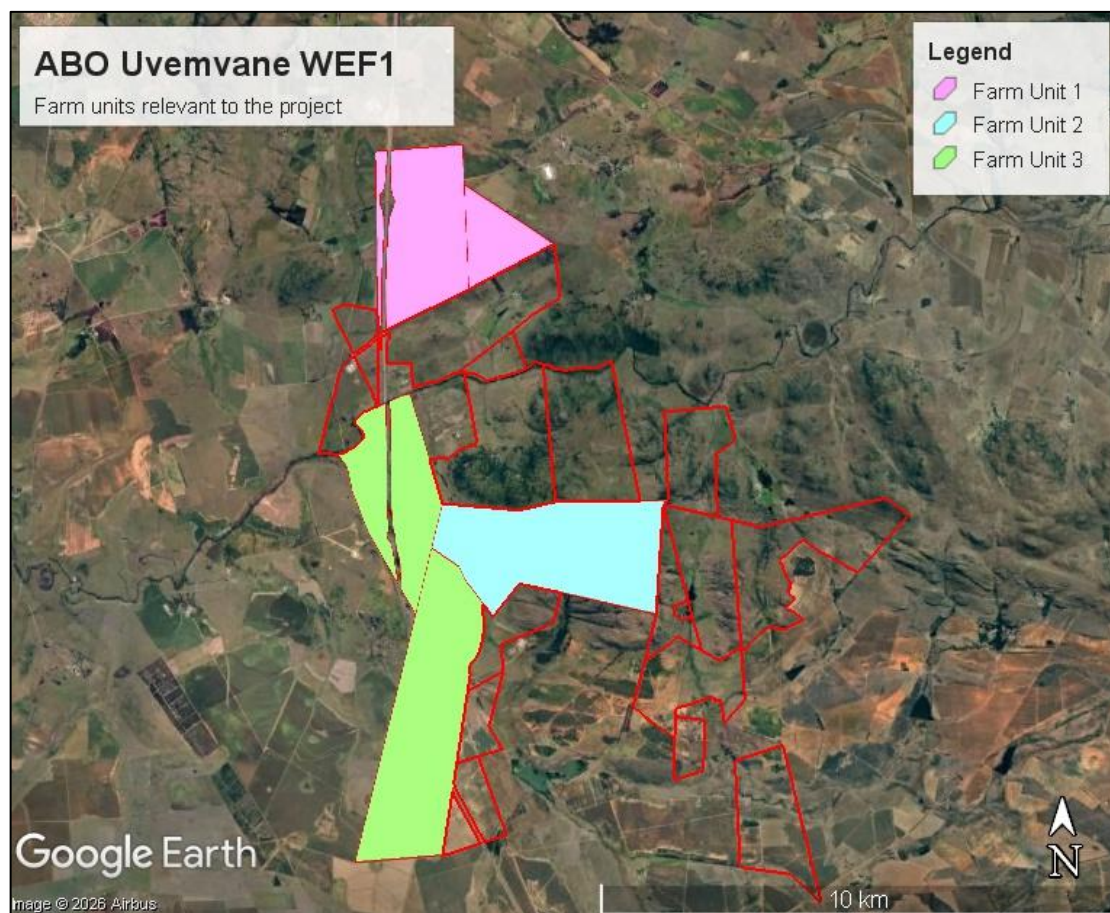


Figure 18: Farm units relevant to the proposed development.

At the time of the site visit, personal interviews with the different landowners where WTG positions occur directly in cultivated lands, was prioritized. It is the specialist's opinion that enough regional and local data is available from other interviews to extrapolate livestock figures for those areas.

Further below, Tables 9 and 10 presents crop and other agricultural production figures on a 5-year average per farm unit as listed above, while Tables 11 and 12 presents information related to expected agricultural production losses per farming unit related to the occupation of the WTG hardstands of the ABO Uvemvane WEF 1 project of different agricultural production areas.

All assessed WTG hardstands that fall in cultivated lands have a variety of soil limitations that cause the production potential of each 1 ha hardstand to be different from the average production that was obtained from landowner information. Where block-specific production figures for cultivated lands (such as detailed harvest maps) were not available, and to account for the fact that on ground level, the soils (and hence the land capability and production potential) of each WTG hardstand vary in a complex pattern across the landscape, a basic 'soil limitation factor' was applied to the crop production potential of each WTG hardstand falling within cropland boundaries to gain a calculated production loss estimate in terms of the expected impact caused by the proposed development. For example, where it is the specialist's opinion that due to soil limitations that may cause diminished crops and where it is expected that only 75% of the average harvest production can be obtained, a soil limitation factor of 0.75 is applied to the long-term average. Conversely, if it is expected that the site on which a WTG hardstand is proposed may outperform the long-term average due to a lack of

such limiting factors a 'soil limitation factor' of more than 1.0 is applied. For example, a factor of 1.25 is applied where a crop of 25% more than the long-term average is expected.

The production of livestock in the different farm units is also addressed in Tables 9 and 10. The different land users stock their land at different stocking rates and use a variety of feeding regimes. Some make use of only natural grazing and others a combination of natural grazing (6 to 8 months – rainfall dependent), bales from perennial grass pastures (3 to 4 months), and the gleaning of cultivated lands after harvesting (2 to 3 months). Winter and summer licks are continuously set out as a rule by all farmers. Cattle is the only commercially farmed livestock in the project area although some farmers have small herds of sheep, mostly for personal use, of which the grazing utilization is deemed negligible on the broad scale.

Signs of overgrazing were observed on all farm units. The estimated ecological grazing capacity of all natural rangeland portions varies between 7 and 12 ha/LSU.

Table 9: Production area sizes of the different farm units directly related to the project development in the ABO Uvemvane WEF 1 project area.

FARM UNIT PRODUCTION AREAS				
Production type	Farm unit			Total area
	1	2	3	
Total cultivated land (ha)	152,4	4,6	540,6	697,6
Total pastures (ha)	0,0	20,4	25,1	45,5
Total grazing rangelands (ha)	530,6	714,2	605,9	1850,7
Total infrastructure and fall-out areas (ha)	8,0	4,2	31,3	43,5
Total extent (ha)	691,0	743,3	1202,9	2637,2

Table 10: Production figures (5-year average) of the directly influenced farm units in the ABO Uvemvane WEF 1 project area.

ANNUAL PRODUCTION (5-year average)				
Product	Farm unit			Averages
	1	2	3	
Maize (t/ha)	7,5	0	5,9	4,5
Soya beans (t/ha)	1,6	0	2,2	1,3
250 kg grass bales (units/ha)	0	20	17	12,3
Livestock - (weaned calf/ha)	0,2	0,35	0,28	0,3

Table 11: Production areas in relation to WTG's and EIH alternatives in the ABO Uvemvane WEF 1 project area.

PRODUCTION AREAS RELATED TO WTG's AND EIH ALTERNATIVES				
Infrastructure	Farm unit			Project area total (ha)
	1	2	3	
WTG's (area = 1 ha ea.)				
WTG in cultivated land (ha)	3	0	0	3
WTG in planted pasture (ha)	0	0	0	0
WTG in old fields (ha)	0	3	2	5
WTG in natural grazing rangelands (ha)	4	5	3	12
Total WTG's	7	8	5	20
EIH's (area = maximum 7 ha)				
EIH in cultivated land (ha)	0	0	0	0
EIH in planted pasture (ha)	0	7	7	14
EIH in old fields (ha)	0	0	0	0
EIH in natural grazing rangelands (ha)	0	7	0	7
Total EIH alternatives	0	14	7	21
Total area WTG + EIH (ha)	7	22	12	41

The area potentially occupied by WTG hardstands is 20 ha and the area covered by one EIH is approximately 7 ha giving a total of 27 ha of land surface that will be permanently occupied by these WEF components. This equates to about 1.02 % of the total 2637 ha agricultural production area (Table 9) on which WTG and EIH sites are proposed. This percentage compares well to the total proposed permanent project footprint including all components and supporting infrastructure, which takes up about 1.12 % of the total affected area (67.2 ha of 6000 ha).

Other project infrastructure and affected land surfaces has low permanent surface coverage as access roads will be constructed along existing roads and tracks, and others such as the electrical connection network and temporary laydown areas are not expected to permanently affect large tracts of agricultural production land.

Table 12: Expected agricultural production losses of the different farm units in relation to the areas occupied by WTG hardstands and one EIH in the ABO Uvemvane WEF 1 project area.

ESTIMATED ANNUAL PRODUCTION LOSSES (units per hectare)				
Agricultural Product	Farm unit			Total loss
	1	2	3	
Maize (t)	7,5	0	0	7,5
Soya beans (t)	1,6	0	0	1,6
250 kg grass bales (units)	0	51	60	111
Livestock - (weaned calves)	0,8	1,8	0,8	3,4

2.2.4 Labour related issues

The agricultural sector is an important source of employment in South Africa and job opportunities should be protected as far as possible. Current employment figures on the effected farm units for both permanent and casual (seasonal) workers and what effect the proposed development will have should it be constructed, are investigated in this section. Casual (temporary) workers are employed seasonally at times when extra labour is needed.

The permanent work force on the three farm units has been stable for at least the last five years with no major fluctuations in job opportunities over that period. Any temporary fluctuations are filled by casual (temporary) workers from time to time.

As their farming operations cover different farms in the same area, none of the landowners have many workers that are specifically dedicated to the farm units upon which the ABO Uvemvane WEF 1 project is proposed to be developed. To counter this the landowners were requested to give information related to labour in a person per hectare format, from which the data presented in Table 13 below was derived. The calculations for casual labourers were converted to an annual figure.

Table 13: Summary of employment figures for the three farm units in the ABO Uvemvane WEF 1 project area.

ANNUAL EMPLOYMENT OPPORTUNITIES (5-year average)				
Details	Farm unit			Averages
	1	2	3	
Total permanent employees	6	4	3	4,333
Total casual employees	3	2	2	2,333
Total employees	9	6	5	6,667
Farm unit size (ha)	691	743,3	1202,9	
Permanent/ha	0,009	0,005	0,002	0,005
Casual/ha	0,004	0,003	0,002	0,003
Employees/ha	0,013	0,008	0,004	0,008
Total WTG/EIH ha*	7	22	12	
Number of potentially affected employees:	0,091	0,176	0,048	0,105

*WTG = 1 ha; EIH = 7 ha (refer to Table 11)

The main issue related to labour is the potential of job opportunities to be lost because of changing the agricultural land use of the land. In the case of the ABO Uvemvane WEF1 project, the total area lost to agricultural land use are the 20 WTG hardstands (20 ha) and related infrastructure and one of the four EIH alternatives being considered.

In the specialist's experience landowners sometimes express concern that they may lose farm workers, especially skilled workers, to better, higher paid opportunities at the construction or eventual operation of the WEF. No such concern was, however raised by any of the interviewed employers. Other than this, all landowners are of the opinion that the loss to agricultural land uses caused by the relatively small areas occupied by the proposed project infrastructure, will not lead to any loss of farm employment opportunities on their farming units. This view is strongly shared by the specialist as

quantified in Table 13 above, where the estimated agricultural production losses of the different farm units in relation to the areas occupied by WTG hardstands has negligible effects on employment opportunities.

2.2.5 Existing impacts and land degradation

All agricultural land is subjected to forms of land degradation and other anthropogenic impacts. Other than overgrazing that was mentioned in the previous section, the following anthropogenic impacts and forms of land degradation were observed and visually presented in Figure 19.

- Farm dwellings, homesteads and other infrastructure such as barns, sheds, pens, livestock handling and housing area, dams, etc.
- Groves and plantations of exotic trees – mostly *Eucalyptus camaldulensis*, *Acacia dealbata* and *Populus x canescens*.
- Erosion (water and wind) and areas that have been covered by the eroded soil.
- Widely degraded areas of constant human and/or livestock presence or other anthropogenic causes.

WTG positions that overlap with already disturbed areas, as noted above, are summarized in Table 14.

Table 14: Summary of existing impacts recorded in or near WTG hardstands and EIH alternatives.

WTG / EIH alternative	Recorded existing impact
1, 16, 18, EIH1 & EIH2	Soil erosion (water)
3	Between 300 to 800 mm siltation due to upslope erosion
EIH1	Exotic tree plantation

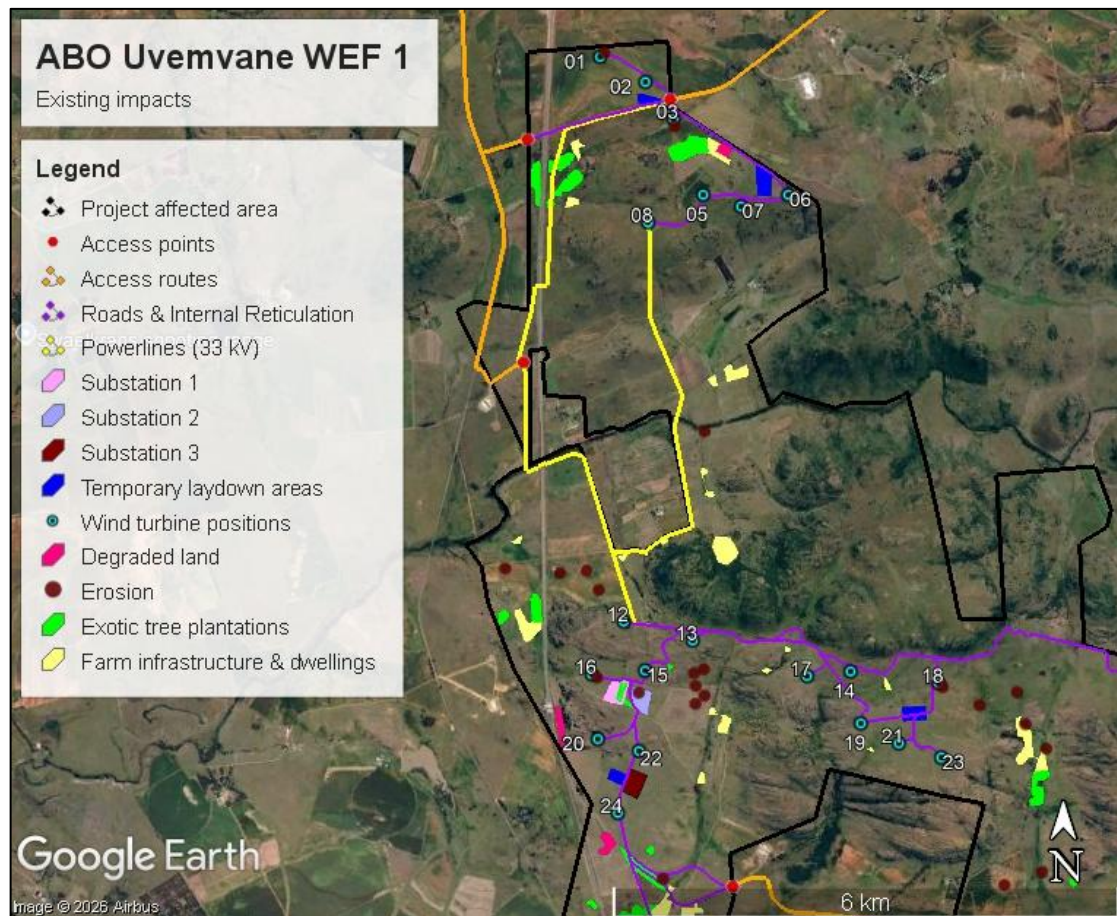


Figure 19: Existing impacts in the ABO Uvemvane WEF 1 project area in relation to proposed project infrastructure.

3 AGRICULTURAL SENSITIVITY

3.1 Site Sensitivity Verification

Although this step was already followed in Site Sensitivity Verification Reports (SSVR's) by Götze (2024a & b), a review and update is necessary.

From an Agricultural Theme Sensitivity point of view, the mentioned SSVR's were conducted at a time before a recent review of agricultural sensitivities with specific reference to PAA's. At the time of drafting the SSVR's the Suikerbosrant Rainfed (RF) PAA in the northern and western parts and the Grootvlei-Balfour RF PAA towards the south and east (refer to section 2.1.6) of the larger assessment area were not specifically recognized by the screening tool in terms of agricultural theme sensitivity. However, after recent upgrades of the screening tool, the latest sensitivity demarcation places 12 of the 20 proposed WTG sites and two of the EIH options in the two mentioned PAA's (refer to Figure 10 in section 2.1.5).

From an Agricultural Theme Sensitivity point of view, the 'Very High' sensitivity classification for the ABO Uvemvane WEF 1 project area, in terms of the PAA's that occur in the area cannot be disputed summarily. However, during the WTG and EIH site assessments to which this report pertains, it was verified that much variation occurs within the relevant PAA's and that all land within them is not necessarily of sufficient agricultural potential for annual, rainfed crop production, due to verified site-specific terrain, soil, and other constraints. All land within the two PAA's on which WTG's and associated infrastructure are considered is, therefore, not necessarily worthy of prioritised protection as agricultural production land.

Other than the screening tool's sensitivities, and with reference to Table 6 in section 2.2.1, three of the proposed WTG hardstands fall within, or partially within, the boundaries of currently cultivated lands (annual, rainfed crop cultivation). Two of the EIH alternative sites fall in planted perennial pastures, one of which is actively cut and baled for winter feed and the other not actively managed. Six WTG sites are situated in old fields.

Based on the findings of this assessment, Table 15 below compares the screening tool's assigned sensitivities for the different WTG hardstand sites and the four alternative EIH areas to the specialist verified sensitivities.

Table 15: Comparison of screening tool sensitivities and specialist verified sensitivities for the WTG hardstands that fall within crop field boundaries or planted pastures.

Farm Unit	WTG / EIH no.	Current land use	Screening tool sensitivity	Verified sensitivity	Verified limitation(s)
1	1	Cultivation - rainfed	Very High (PAA)	Medium	Effective soil depth; seasonal water logging
	2	Cultivation - rainfed		Low	Effective soil depth
	3	Cultivation 30% & fall-out land 70%		Low	Soil texture; seasonal water logging; deposited sandy overburden from upslope erosion.
	5	Natural veld - grazing		Low	Effective soil depth
	6	Natural veld - grazing		Low	Effective soil depth
	7	Natural veld - grazing		Low	Effective soil depth
	8	Natural veld - grazing		Low	Effective soil depth

Farm Unit	WTG / EIH no.	Current land use	Screening tool sensitivity	Verified sensitivity	Verified limitation(s)
2	13	Natural veld - grazing	Low	Low	Effective soil depth; slope
	14	Old field - grazing	High	Low	Effective soil depth
	15	Old field 50% & natural veld 50%	High	Low	Effective soil depth; soil texture
	17	Old field - grazing	High	Low	Effective soil depth; soil texture
	18	Old field - grazing	Medium	Low	Effective soil depth
	19	Natural veld - grazing	Medium	Low	Effective soil depth
	21	Natural veld - grazing	Medium	Low	Effective soil depth
	23	Natural veld - grazing	Medium	Low	Effective soil depth
	EIH2	Pasture - cut & baled	High	Medium	Effective soil depth, soil texture; slope; accessibility
3	12	Natural veld - grazing	Very High (PAA)	Low	Effective soil depth
	16	Old field - grazing		Medium	Soil texture; slope; accessibility
	20	Natural veld - grazing		Low	Effective soil depth
	22	Natural veld - grazing		Low	Effective soil depth
	24	Old field - grazing		Low	Effective soil depth; soil texture
	EIH1	Pasture - grazed		Medium	Soil texture; slope; accessibility
	EIH3	Natural veld - grazing		Low	Effective soil depth

From the data above all the proposed WTG hardstands and EIH options are verified to fall outside 'very high' or 'high' sensitivity crop fields and other agricultural land. All are verified to fall in either medium or low sensitivity land sections that have moderate to serious limitations (soil, slope, and/or terrain) related to sustainable, rainfed crop production. Although some of these areas have some level of cropping potential, it should be noted that the cropping potential of land changes over time as the agricultural economy changes. Marginal soils that are economically cultivated now, or in the past, often become a liability for farmers in a more challenging agricultural economy, with increased input costs, and as climate conditions change and fluctuate from one extreme to another. Such soils are often abandoned as they become less probable to produce economically viable crops.

3.2 Allowable development limits

The consideration of Allowable Development Limits (ADL) for renewable energy generation developments generating electricity of 20 MW or more, is required for the project.

According to *Table 1 of the protocol* there are limitations set on renewable generation developments that generate electricity of 20 MW or more on agricultural land. These are provided in Table 16 below as they are published.

Table 16: Allowable development limits for renewable energy generation developments generating electricity of 20 MW or more according to Table 1 of the protocol.

CRITERIA (land capability evaluation value and category of crop boundary)	ALLOWABLE DEVELOPMENT LIMITS in hectares per MW of installed generation capacity (with sensitivity ratings from the national web based environmental screening tool shown in brackets)	
	Within field crop boundaries	Outside field crop boundaries
Land capability evaluation value of 11 –15; Irrigation, horticulture/viticulture, shade-net; high value agricultural (PAA) areas with a priority rating A and/or B.	0 (Very High Sensitivity)	0 (Very High Sensitivity)
Land capability evaluation value of 8 –10; all cultivated areas including sugarcane; high value agricultural (PAA) areas with a priority rating C and/or D.	0.20 (High Sensitivity)	0.35 (Medium Sensitivity)
Land capability evaluation value of 6 -7	0.25 (High Sensitivity)	2.50 (Low Sensitivity)
Land capability evaluation value of 1 -5	0.30 (High Sensitivity)	2.50 (Low Sensitivity)

The ABO Uvemvane WEF 1 project is planned to consist of up to 20 WTG's (although 31 WTG sites were initially proposed) with a generating capacity of up to 170 MW. It has been established that nine of the 20 currently proposed WTG hardstands fall in cultivated areas (3 currently cultivated lands and 6 in old fields). Additionally, three EIH development alternatives have been assessed of which two fall in planted pastures. Other infrastructure such as access roads, internal power connections and temporary laydown areas was also considered.

Using the guidelines as stipulated in Table 16 above, Table 17 provides the calculations of the allowable development limits per farm unit including the 67.2-ha proposed development footprint that includes WTG hardstands, EIH alternatives, and other related infrastructure.

For the purposes of this assessment each WTG hardstand is up to 1 ha in size, which brings the total area of WTGs within field crop boundaries to up to 9 ha (3 ha + 6 ha) and subsequently those outside field crop boundaries to up to 11 ha as they lay distributed over the three farm units in the project area. Likewise, for the purposes of this assessment each EIH alternative (of which only one will be constructed) is up to 7 ha in size. As mentioned, two of the alternatives (EIH 1 & 2) fall inside field crop boundaries (planted pastures) and one in natural veld (EIH3).

The calculations in Table 17 show that for the planned generating capacity of up to 170 MW, the combined footprint of all the proposed elements of the ABO Uvemvane WEF 1 project, fall within the ADL guidelines for each agricultural land use type and the overall ADL of the project area.

Table 17: Allowable development limits (ADL) per agricultural land use type for the total proposed development footprint of the ABO Uvemvane WEF 1 project area with a proposed 170 MW generation capacity.

Allowable Development Limit (ADL) Criterion	Proposed development area per farm unit (ha)									Total potential development area (ha)	Total ADL for the proposed generation capacity (ha)	Within ADL (yes/no)
	1			2			3					
	WTG	ElH	Other	WTG	ElH	Other	WTG	ElH	Other			
Inside field crop boundaries: Cultivated land - High sensitivity	3	0	2	0	0	0	0	0	0	5,0	34	Yes
Inside field crop boundaries: Planted Pasture - High sensitivity	0	0	0	2	2	0	0	2	0	6,7	34	Yes
Inside field crop boundaries: Land Capability 6 to 7 - High sensitivity (PAA)	4	0	2	0	0	3	5	2	8	24,3	42,5	Yes
Outside field crop boundaries (ha) - Medium sensitivity	0	0	0	2	0	0	0	0	0	2,0	59,5	Yes
Outside field crop boundaries (ha) - Low sensitivity	0	0	6	3	0	6	0	0	14	29,2	425	Yes
Total (ha):	7	0	10	7	2	9	5	5	22	67,2	595	Yes

4 CONSIDERATION OF IMPACTS

4.1 Impact assessment considerations

An agricultural impact is a change to the current and/or future agricultural production potential of agricultural land, which is primarily caused by the disruption or exclusion of agriculture production activities from the footprint of a development. The significance of the impact is directly proportional to the extent of the change in agricultural production potential. Where a development will not change the future production potential of the land, there is no subsequent agricultural impact. An impact resulting in a decrease in future agricultural production potential constitutes a negative impact and where the potential is increased or supported is a positive impact is experienced.

When the impact of a development on the agro-ecosystem or part thereof involves the permanent or long-term loss or cessation of agricultural land use on agricultural land, as it will in the proposed ABO Uvemvane WEF 1 project, the defining question of the agricultural impact assessment is whether the resulting loss of future agricultural production potential is serious enough to justify the reservation of the land solely for agricultural production and therefore not approving the development. Conversely, if the loss is small relative to the larger agro-ecosystem, approval is likely to be obtained for the development, considering the other benefits associated with the development.

Consensus among soil & agricultural specialists is that where negative impacts are recorded, the extent of the agro-ecosystem losses is a direct function of, firstly, the extent of land surface that will be lost to agricultural production, and secondly, the production potential of the land that will be lost. In the case a wind energy facility, the amount of land loss is so small that the total extent of the loss of future agricultural production potential is insignificantly small, regardless of how much production potential the land has. This is due to the required spacing between WTG's, which results in the extent of land that end up excluded from future agricultural land use to be very small in relation to the surface area over which the WEF is distributed. WEF infrastructure (including all associated infrastructure and roads) typically occupies less than 2% of the surface area, according to the typical surface area requirements of wind farms in South Africa (DEA, 2015). Most agricultural activities can continue relatively unaffected on all parts of the affected land other than the small, excluded WTG footprint. The area potentially occupied by WTG hardstands is 20 ha and the area covered by one EIH is up to 7 ha giving a total of 27 ha of land surface that will be permanently occupied by these WEF components. This equates to about 1.02 % of the total 2637 ha agricultural production area (see Table 9 above) on which WTG and EIH sites are proposed. This percentage compares well to the total proposed permanent project footprint including all components and supporting infrastructure, which takes up about 1.12 % of the total affected area (67.2 ha of 6000 ha). The actual loss of agricultural production potential is therefore insignificant when taking into consideration that, for example, only three of the 20 WTG footprints directly affect currently cultivated areas.

Furthermore, it is important to note that renewable energy facilities have both positive and negative effects on the production potential of land and so it is the net sum of these positive and negative effects that determines the extent of the change in future production potential. The significance of the limited loss of agricultural production potential is subsequently reduced even further because it is compensated by the potential positive impacts that enhance or support agricultural production.

4.2 Assessment of Impacts

Here it is considered whether the proposed development will have an unacceptable impact on the agricultural production capability of the site, and in the event where it does, whether such an impact is outweighed by the positive impact of the proposed development on agricultural resources?

The main expected impact on the agro ecosystem by a permanent land use change is the degradation or destruction of the current and future agricultural production potential of the land. In the case of the proposed project this is expected to be directly brought about by:

- Agricultural land use change – direct, permanent occupation of productive agricultural land by WTG hardstands and associated infrastructure (including the EIH and other permanent infrastructure).
- Land and soil degradation – soil erosion, compaction, pollution, spread of alien invasive plants, etc. brought about by poor project management.

One indirect impact is considered:

- Prevention of or interference in farming operations.

Three positive impacts are recognized:

- Increased financial security for agriculture through fixed rental income/ financial incentives.
- Local infrastructure improvements – roads, storm water canalization (erosion control), etc.
- Improved local security due to the increased presence of security at the WEF.

A summary of the impact assessment is presented in Table 18. The complete impact rating and mitigation tables are presented in Appendix B.

Table 18: Impact assessment summary

IMPACT TYPE	PHASE	NOT MITIGATED	MITIGATED
Direct impacts			
Agricultural land use change.	Construction	Negative low	Negative low
	Operation	No impact	No impact
	Decommissioning	No impact	No impact
Land and soil degradation.	Construction	Negative medium	Negative low
	Operation	Negative low	Negative low
	Decommissioning	Negative low	Negative low
Indirect impacts			
Prevention of or interference in farming operations	Construction	Negative low	Negative low
	Operation	Negative low	Negative low
	Decommissioning	Negative low	Negative low
Positive impacts			
Increased financial security for farming operations Local infrastructure improvements. Improved local security	Project lifetime	No mitigation	Positive high

4.3 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 effected by 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?

The spatial boundary evaluated in assessing the cumulative effects includes an area of a 50 km radius (as required by the agriculture protocol) surrounding the proposed ABO Uvemvane WEF 1 project area. According to the South African Renewable Energy EIA Application Database for the first quarter of 2026 as published on 29 May 2026 (REEA, 2026) there are several approved renewable energy projects and related infrastructure projects within this area (Figure 20). These are related to both wind and solar energy generation as listed in Table 19 further below.

Although a separate application will be made for the Grid Connection (GC) options under consideration, the impacts of the potential GC options are also taken into consideration from a cumulative perspective as a precautionary approach. There are several overhead powerlines (OHPLs) in the vicinity of the ABO Uvemvane WEF 1 project area. In this regard, no significant cumulative impact is anticipated for the GC due to the route under consideration will follow existing roads and border fences, as far as possible. Similarly, no major cumulative impacts are expected from the proposed access roads or other project supporting infrastructure.

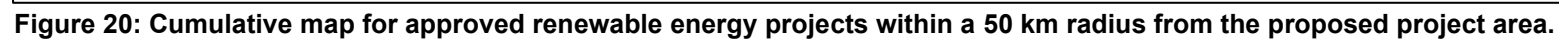


Table 19: Approved renewable energy projects within a 50 km radius of the ABO Uvemvane WEF 1 project area.

PROJECT TITLE	DEA REF	TECHNOLOGY	MW	PROJECT STATUS
The Proposed Villiers Solar Power Plant near Villiers, Free State Province.	14/12/16/3/3/2/2549	Solar PV	50	Approved
The Proposed Suikerbos PV 3 and Associated Infrastructure in the Midvaal Local Municipality and the Sedibeng District Municipality, near Vereeniging, Gauteng Province.	14/12/16/3/3/2/2601	Solar PV	240	Approved
The proposed Suikerbos PV 4 Photovoltaic Solar Energy Facility and Associated Infrastructure near Vereeniging, Gauteng Province.	14/12/16/3/3/2/2624	Solar PV	250	Approved
Proposed Kynoch Rooftop Energy Installation in Endicott Gauteng Province	14/12/16/3/3/1/1234	Solar PV	1,8	In process
The proposed establishment of a 115MW solar photovoltaic (PV) facility in Springs, within the Ekurhuleni Metropolitan Municipality, Gauteng Province	14/12/16/3/3/1/2358	Solar PV	115	Approved
Proposed construction of a 3MW PV solar power facility on Farm Villa Liza No. 675 IR in Mapelton.	14/12/16/3/3/1/569	Solar PV	3	Approved
The Proposed Construction of A 75mw Solar Energy Generation Facility and Its Associated Infrastructure on Portion 1 of the Farm Putfontein 26 IR, Ekurhuleni Metropolitan Municipality, Gauteng Province	14/12/16/3/3/2/375	Solar PV	75	Approved
The Proposed Construction of A 75mw Solar Energy Generation Facility and Its Associated Infrastructure on Portion 1 of the Farm Putfontein 26 IR, Ekurhuleni Metropolitan Municipality, Gauteng Province	14/12/16/3/3/2/375/AM1	Solar PV	0	Approved
Proposed 75 MW Solar PV facility at Lethabo Power Station, Free State Province	14/12/16/3/3/2/753	Solar PV	75	Approved
The 100 MW Waterval Solar Park including solar glass manufacturing, metallurgical silicone manufacturing plant and module manufacturing plant near Meyerton, Gauteng Province	14/12/16/3/3/2/825	Solar PV	100	Approved

Due to all the small (relative to the larger agricultural environment) physical footprint of the ABO Uvemvane WEF 1 project infrastructure, the cumulative loss of future agricultural production potential is assessed as low. With the information available at the time of this assessment, the specialist is satisfied that the proposed project will not have an unacceptable negative cumulative impact on the agricultural production potential of the wider agro ecosystem.

As noted in the preceding sections, since most agricultural activities can continue relatively unaffected on all parts of the affected land other than the relatively small development footprint (the project infrastructure will occupy only about than 1.12% of the surface area – 67.2 ha of 6000 ha), the actual loss of agricultural production potential is therefore insignificant. Therefore, the proposed development will not significantly change the agricultural character of the area and therefore will not lead to unacceptable cumulative impacts on agricultural activities. In addition, there will be no

significant loss of high potential agricultural land that need to be preserved for agricultural purposes and/or food security in the country, therefore the project is deemed acceptable from a cumulative impact perspective.

4.4 Long term project benefits versus agricultural production benefits

The development will generate a significant and reliable additional income for the farming enterprises, without compromising the existing farming income or employment opportunities. It will also generate additional income and employment in the local economy. The project offers improved financial security for landowners by providing additional income that diversifies the landowner's revenue streams, which can be especially valuable in times where agricultural production may be variable or less stable due to climate change, droughts, floods, or other natural crop/livestock destroying disasters. This income by far supersedes the income that is obtainable through crop or livestock production on areas directly affected by the development. The project related income is typically providing a stable long-term income stream. Additionally, once-off payments may be made at key project milestones.

Wind turbines have a relatively small physical footprint, and agricultural activities can continue around them. Furthermore, the project poses a low risk in terms of causing soil degradation and the loss of agricultural land by occupation is not permanent as the land will become available again for agricultural production after decommissioning of the project.

In terms of infrastructure improvements, the project will typically construct, upgrade and/or maintain internal access roads for the project operations, which the landowner could indirectly benefit from for increased accessibility to the farm. The WEF project also has an indirect security benefit to the farm environment against stock theft and other crime due to heightened security and access control measures associated with the project area during the relevant phases. Typically, project-specific management plans and mitigation measures are to be implemented, including the management of stormwater, erosion and alien invasive plants associated with the project area.

In addition, it will contribute to the country's need for energy generation, particularly renewable energy that has lower environmental and agricultural impact than existing, coal powered energy generation.

4.5 Consideration of alternatives

One of the requirements of the agricultural protocol is to investigate alternative development footprints within the preferred site which would be of "medium" or "low" sensitivity for agricultural resources as identified by the screening tool and verified through the site sensitivity verification.

Many of the WTG hardstands and associated WEF infrastructure fall in areas that are cited as 'very high' sensitivity due to the overlap of the project area with two PAA's. The site sensitivity verification (section 3.1), however, has shown that all the WTG hardstands that fall within cropland boundaries as well as outside are confirmed to fall in 'medium' or 'low' sensitivity land sections that have moderate to serious limitations on sustainable rainfed crop cultivation.

4.5.1 Layout alternatives

The positioning of WTGs in a WEF project is a complex exercise and multiple, interacting factors that determine the locations that will ensure the viability of the WEF need to be considered. Different environmental sensitivities as well as technical considerations, topography, individual turbine wake loss setbacks, grid setbacks, land right risks, and landowner inputs must all be considered in combination to ensure the developable area, which in this case is quite limited, is optimally positioned in the larger ecological landscape. WTGs, therefore, cannot simply be moved off croplands into adjacent areas as viable alternatives. However, it has been illustrated in the impact assessment above that the agricultural impact of the currently proposed WTG hardstands within the cropland boundaries in the project area is so small that it is senseless to compromise the viability of the total WEF project, to effect an insignificant change to the agricultural production environment.

Technology alternatives, including the choice of, for example, lithium-ion or redox flow for the BESS, will have no bearing on the significance of agricultural impacts. All will have equal impact and are assessed as equally acceptable. Similarly, the placement of other project components such as access- and internal roads and cabling networks as these are currently proposed, will have an insignificant impact on agricultural potential. From an agriculture theme point of view, all alternatives in this regard are equally considered and no preference is given to one or the other.

Two of the EIH alternatives (i.e. EIH1 and EIH2) fall in planted pastures, which should be avoided if possible. Although over the total project area and in combination with all other project infrastructure none cause an exceedance in the Allowable Development Limits it would be advisable to avoid these areas due to their current contribution towards sustainable livestock farming in the agro-ecosystem that the project area falls in. EIH3 is situated in degraded natural veld and is deemed the preferred option from an agriculture theme sensitivity.

4.5.2 No-go alternative

This alternative considers the option of ‘doing nothing’ and maintaining the status quo. The site is currently zoned as agricultural. Should the proposed activity not proceed, the site will continue to be used for agricultural production purposes. This, however, does not necessarily imply that no future changes or impacts will be experienced by the natural resources within the assessed project area.

Should the project not proceed, the potential opportunity costs in terms of adding wind energy generation to the current land use would be lost, and therefore all positive impacts and socio-economic opportunities and associated regional economic growth will also be lost.

Furthermore, the development offers an additional income source to the landowner and thus to the local agro ecosystem, without excluding agriculture production from the land. Therefore, the negative agricultural impact of the no-go alternative is more significant than that of the development and subsequently, from an agricultural impact perspective, the proposed development may be preferred above the no-go option.

4.6 Micro-siting

The agricultural protocol requires confirmation that all reasonable measures have been taken through micro-siting to minimize fragmentation and disturbance of agricultural activities.

As part of the planning of this WEF project development, access roads have deliberately been laid out along existing roads and on the edges of croplands wherever possible, so that croplands are not unnecessarily fragmented. Similarly, WTG hardstands have in most cases been placed on the edges of croplands in such a way as to avoid cropland fragmentation and several others that were previously considered within crop fields, were excluded in the current layout iteration. The specialist is satisfied that this aspect has been conducted as thoroughly as possible taking other environmental sensitivities and alternatives into consideration. Therefore, no further micro-siting recommendations are made.

4.7 Monitoring requirements

The following monitoring requirements are proposed together with those detailed in the following section:

- All erosion control and water storm water management systems and infrastructure are to be monitored in and out of the rainy season. Maintenance requirements are to be set, executed and monitored on a continual basis.
- Monitoring of the potential establishment and spread of Alien Invasive Plants (AIP's) must be done during all phases of the project on a bi-annual basis. Post treatment monitoring of AIP control measures should happen as often as such control is applied. Revisit controlled sites at least twice a year to monitor the re-emergence of any treated AIPs.

4.8 Environmental management programme inputs

The tables below (Table 20 to 23) address various EMPr inputs for the planning, construction, operational and decommissioning phases of the proposed project.

Table 20: Management plan for the planning and design phase.

Impact	Mitigation / management objectives and outcomes	Mitigation / management actions	Monitoring		
			Methodology	Frequency	Responsibility
Aspect: Protection of soil resources					
Erosion	Ensure that soil disturbances and existence of hard surfaces do not cause erosion on or down-slope of development sites.	Design an effective system of storm water run-off control, where it is required – i.e. any points where run-off water might concentrate. The system must effectively collect and safely disseminate any run-off water from all project surfaces and prevent any potential down-slope erosion.	Include the storm water run-off control system in the engineering designs of the project.	Once-off during the design phase.	Holder of the EA.

Table 21: Management plan for the construction phase.

Impact	Mitigation / management objectives and outcomes	Mitigation / management actions	Monitoring		
			Methodology	Frequency	Responsibility
Aspect: Protection of soil resources					
Erosion	Ensure that soil disturbances and existence of hard surfaces do not cause erosion on or down-slope of development sites.	Implement an effective system of storm water run-off control, where it is required - i.e. any points where run-off water might concentrate. The system must effectively collect and safely disseminate any run-off water from all project surfaces and prevent any potential down-slope erosion.	Undertake a periodic site inspection to verify and inspect the effective construction and maintenance of the storm water run-off control system. Record the occurrence of any erosion on site or down-slope for re-design and corrective action to be implemented.	After any heavy rainfall events but at least every 2 months during the construction phase.	Environmental Control Officer (ECO)
Erosion	Ensure that vegetation clearing does not pose a high erosion risk.	Maintain vegetation cover where possible and facilitate re-vegetation of denuded areas to stabilize disturbed soil against erosion.	Undertake a periodic site inspection to record the occurrence of and re-vegetation progress of all areas that require re-vegetation.	Every 4 months during the construction phase	Environmental Control Officer (ECO)
Topsoil loss	Ensure the minimization of topsoil loss.	Where an activity will mechanically disturb deeper soil levels, topsoil should first be stripped from the entire surface to be disturbed and stockpiled for re-spreading during rehabilitation. During rehabilitation the stockpiled topsoil must be used as soon as possible after stripping and be evenly spread over the disturbed surface.	Record GPS positions of all occurrences of subsoil disturbance (e.g. excavations). Record the date of topsoil stripping and replacement. Check that topsoil covers the entire disturbed area and counter erosion measures are implemented.	As required, whenever areas are disturbed.	Environmental Control Officer (ECO)

Table 22: Management plan for the operational phase.

Impact	Mitigation / management objectives and outcomes	Mitigation / management actions	Monitoring		
			Methodology	Frequency	Responsibility
Aspect: Protection of soil resources					
Erosion	Ensure that soil disturbances and existence of hard surfaces do not cause erosion on or down-slope of operational sites.	Effectively maintain the storm water run-off control system.	Undertake a periodic site inspection to verify and inspect the effectiveness and integrity of the storm water run-off control system and to specifically record the occurrence of any erosion on site or down-slope. Immediate reparations must be done if any part of the storm water control system should fail.	Bi-annual monitoring; immediate action in the event of failure.	Facility Environmental Manager
Erosion	Rehabilitate and re-vegetate denuded areas to stabilise soil against erosion.	Re-seed rehabilitated surfaces with locally indigenous grass and other herbaceous species.	Undertake a periodic site inspection to record the successional progress of all rehabilitated surfaces.	Bi-annually	Facility Environmental Manager

Table 23: Management plan for the decommissioning phase.

Impact	Mitigation / management objectives and outcomes	Mitigation / management actions	Monitoring		
			Methodology	Frequency	Responsibility
Aspect: Protection of soil resources					
Erosion	Ensure that soil disturbances and existence of hard surfaces do not cause erosion on or down-slope of decommissioned infrastructure.	Effectively maintain the storm water run-off control system during and after decommissioning.	Undertake a periodic site inspection to verify and inspect the effectiveness and integrity of the storm water run-off control system and to specifically record the occurrence of any erosion on site or down-slope. Immediate reparations must be done if any part of the storm water control system should fail.	Every 2 months during the decommissioning phase, and then every 6 months after completion of decommissioning, until final sign-off is achieved.	Environmental Control Officer (ECO)
Erosion	Ensure that vegetation clearing does not pose a high erosion risk.	Maintain vegetation cover where possible and facilitate re-vegetation of denuded areas to stabilize disturbed soil against erosion.	Undertake a periodic site inspection to record the occurrence of and re-vegetation progress of all areas that require re-vegetation.	Every 4 months during the decommissioning phase, and then every 6 months after completion of decommissioning, until final sign-off is achieved.	Environmental Control Officer (ECO)
Topsoil loss	Ensure the minimization of topsoil loss.	Where an activity will mechanically disturb deeper soil levels, topsoil should first be stripped from the entire surface to be disturbed and stockpiled for re-spreading during rehabilitation. During rehabilitation the stockpiled topsoil must be used as soon as possible after stripping and be evenly spread over the disturbed surface.	Record GPS positions of all occurrences of subsoil disturbance (e.g. excavations). Record the date of topsoil stripping and replacement. Check that topsoil covers the entire disturbed area and counter erosion measures are implemented.	As required, whenever areas are disturbed then every 6 months after completion of decommissioning, until final sign-off is achieved.	Environmental Control Officer (ECO)

5 SUMMARY & CONCLUSIONS

The main conclusion of this Agricultural Agro Ecosystem Specialist Assessment is that the proposed development will not have an unacceptable negative impact on the agricultural production capability of the site or cumulatively in the wider area. This is substantiated by the fact that most agricultural activities can continue relatively unaffected on all parts of the affected land other than the relatively small development footprint (about 1.12 % of the affected properties), the actual loss of agricultural production potential is therefore insignificant. Therefore, the proposed development will not significantly change the agricultural character of the area and therefore will not lead to unacceptable cumulative impacts on agricultural activities. In addition, there will be no significant loss of high potential agricultural land that need to be preserved for agricultural purposes and/or food security in the country, therefore the project is deemed acceptable.

All the proposed 20 WTG hardstands, together with three alternative EIH development options, have been verified as having medium to low agricultural sensitivity due to a variety of soil, slope and/or terrain limiting factors. The small area of agricultural land loss, however, together with the fact that the total area of agricultural land loss through the proposed development is well within the Allowable Development Limits (ADL) as prescribed by DFFE in the agricultural protocols, being the prime motivation factors for this conclusion. From this point of view, all proposed project infrastructure is subsequently viewed as acceptable for the proposed development. However, two of the proposed EIH alternatives (EIH1 and EIH2) fall in planted pastures, which should be avoided if possible. Although these do not cause an exceedance in the ADL it would be advisable to avoid these areas due to their current valuable contribution towards sustainable livestock farming in the agro-ecosystem that the project area falls in. These mentioned options, however, are not deemed as no-go areas but EIH3 is the preferred option from an agro ecosystem point of view.

From the findings of this assessment, most agricultural activities can continue relatively unaffected on all parts of the affected land other than the relatively small development footprints of the ABO Uvemvane WEF1 project. The actual loss of agricultural production potential is therefore deemed insignificant. Therefore, the proposed development will not significantly change the agricultural character of the area and will not lead to unacceptable cumulative impacts on agricultural activities. In addition, there will be no significant loss of high potential agricultural land that needs to be preserved for agricultural purposes and/or food security in the country, therefore the project is deemed acceptable

As a direct positive outcome, the ABO Uvemvane WEF 1 project offers improved financial security for landowners, as well as wider, societal benefits such as job security for farm workers. This income by far supersedes the income that is obtainable through crop or livestock production on areas directly affected by the development. The rental income diversifies the landowner's revenue streams, which can be especially valuable in times where agricultural production may be variable or less stable due to climate change, droughts, floods, or other natural crop/livestock destroying disasters.

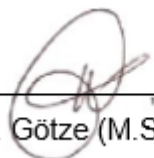
The WEF project also has an indirect security benefit to the farm environment against stock theft and other crime due to heightened security in and around the affected project area. Furthermore, the project poses a low risk in terms of causing soil degradation and the loss of agricultural land by occupation is not permanent as the land will become available again for agricultural production after decommissioning of the project. Therefore, the specialist is of the opinion that the advantages to the agro

ecosystem with the development of the ABO Uvemvane WEF 1 project may outweigh the disadvantages thereof.

The positioning of WTGs in a WEF project is a complex exercise and multiple, interacting factors that determine the locations that will ensure the viability of the WEF need to be considered. Different environmental sensitivities as well as technical considerations, topography, individual turbine wake loss setbacks, grid setbacks, land right risks, and landowner inputs must all be considered in combination to ensure the developable area, which in this case is quite limited, is optimally positioned in the larger ecological landscape. WTG's, therefore, cannot simply be moved off croplands into adjacent areas as viable alternatives. However, it has been illustrated in the impact assessment that the agricultural impact of the currently proposed WTG hardstands within the cropland boundaries in the project area is so small that it is deemed senseless to compromise the viability of the total WEF project to affect a relatively insignificant change to the agricultural production environment. The project layout initially included 31 WTG positions of which only 20 are being applied for environmental authorization. Three EIH alternatives are also included. No alternatives to the current project layout are proposed other than the avoidance of two of the EIH alternatives (EIH1 & EIH2) if possible. No recommendations are made in terms of micro-siting, and the specialist is satisfied that all due process has been followed to place WTG locations and other project infrastructure as effectively as possible to actively avoid areas of 'High' and 'Very High' environmental (including agriculture) sensitivity.

Therefore, based on the findings of this assessment, it is the specialist's opinion that the proposed development is favourably considered for approval from an agricultural production potential and agro-ecosystem point of view.

This statement is not subject to any conditions.



A.R. Götze (M.Sc.; Pr.Sci.Nat.)

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LIST OF APPENDICES

Appendix A: Summative descriptions and photographs of WTG hardstands.

Appendix B: Impact assessment and mitigation tables related to section 4

Appendix C: Specialist Investigator professional information.

7 APPENDIX A: Summative descriptions and photographs of WTG hardstands.

Site details		Photo 1: Site view	Photo 2: Dominant soil profile
WTG no.	1		
Soil type(s)	Restirctive layer?		
Westleigh	Gley		
Dresden	Hard plinthite		
Effective soil depth (mm):	700		
Curent land use:	Cultivated-Rainfed		
WTG no.	2		
Soil type(s)	Restirctive layer?		
Dresden	Hard plinthite		
Lichtenburg	Hard plinthite		
Effective soil depth (mm):	580		
Curent land use:	Cultivated-Rainfed		
WTG no.	3		
Soil type(s)	Restirctive layer?		
Kroonstad	Gley		
Sepane	Gley		
Effective soil depth (mm):	787		
Curent land use:	Cultivated-Rainfed		
	fall-out area		

Site details		Photo 1: Site view	Photo 2: Dominant soil profile
WTG no.	5	 <p>ABO Uvenvane WEF WTG5 02-10-2025 10:31 26°36'31.64"S 28°49'59.42"E Diphaseng Local Municipality</p>	 <p>ABO Uvenvane WEF WTG5 02-10-2025 10:31 26°36'31.64"S 28°49'59.42"E Diphaseng Local Municipality</p>
Soil type(s)	Restrictive layer?		
Mispah	Hard rock		
Hutton	-		
Effective soil depth (mm):	525		
Curent land use:	Cultiv. - rainfed / natural veld		
WTG no.	14	 <p>ABO Uvenvane WEF WT14 02-10-2025 14:16 26°39'53.61"S 28°59'55.83"E Unnamed Road</p>	 <p>ABO Uvenvane WEF WT14 02-10-2025 14:16 26°39'53.61"S 28°59'55.83"E Unnamed Road</p>
Soil type(s)	Restrictive layer?		
Mispah	Hard rock		
Effective soil depth (mm):	150		
Curent land use:	Natural veld / old field		
WTG no.	15	 <p>ABO Uvenvane WEF WT15 02-10-2025 15:04 26°39'34.81"S 28°24'6.16"E Unnamed Road</p>	 <p>ABO Uvenvane WEF WT15 02-10-2025 15:04 26°39'34.81"S 28°24'6.16"E Unnamed Road</p>
Soil type(s)	Restrictive layer?		
Vaalbos	Hard rock		
Mispah	Hard rock		
Effective soil depth (mm):	613		
Curent land use:	Natural veld / old field		

Site details		Photo 1: Site view	Photo 2: Dominant soil profile
WTG no.	16		
Soil type(s)	Restriptive layer?		
Ermelo	-		
Hutton	-		
Effective soil depth (mm):	1500+		
Curent land use:	Old field	ABO Uvenvane WEF WTG16 03-11-2025 09:29 26°39'38.06"S 28°28'43.42"E Unnamed Road	ABO Uvenvane WEF WTG16 03-11-2025 09:30 26°39'38.06"S 28°28'43.42"E Unnamed Road
WTG no.	17		
Soil type(s)	Restriptive layer?		
Carolina	Hard rock		
Mispah	Hard rock		
Effective soil depth (mm):	562		
Curent land use:	Old field	ABO Uvenvane WEF WTG17 02-10-2025 13:48 26°39'39.39"S 28°25'12.43"E Unnamed Road	ABO Uvenvane WEF WTG17 02-10-2025 13:48 26°39'39.39"S 28°25'12.43"E Unnamed Road
WTG no.	18		
Soil type(s)	Restriptive layer?		
Glenrosa	Lithic		
Effective soil depth (mm):	338		
Curent land use:	Old field	ABO Uvenvane WEF WTG18 02-10-2025 13:55 26°39'41.09"S 28°26'8.36"E Unnamed Road	ABO Uvenvane WEF WTG18 02-10-2025 13:55 26°39'41.09"S 28°26'8.36"E Unnamed Road

Site details		Photo 1: Site view	Photo 2: Dominant soil profile
WTG no.	19	 <p>ABO Uvemvane WEF WTG 19 02.10.2025 13:47 26°39'55.61"S 28°25'36.96"E Unnamed Road</p>	 <p>ABO Uvemvane WEF WTG 19 02.10.2025 08:24 26°40'31.87"S 28°25'33.94"E Unnamed Road</p>
Soil type(s)	Restriptive layer?		
Mispah	Hard rock		
Effective soil depth (mm):	325		
Current land use:	Natural veld - grazing		
WTG no.	24	 <p>ABO Uvemvane WEF WTG 24 03.10.2025 08:15 26°40'32.42"S 28°23'31.57"E Unnamed Road</p>	 <p>ABO Uvemvane WEF Carolina 02.10.2025 14:22 26°39'36.09"S 28°23'32.47"E Unnamed Road</p>
Soil type(s)	Restriptive layer?		
Carolina	Hard rock		
Mispah	Hard rock		
Effective soil depth (mm):	737		
Current land use:	Old field		
EIH alt	1	 <p>ABO Uvemvane WEF SS1 03.10.2025 09:03 26°39'47.36"S 28°23'51.76"E Unnamed Road</p>	 <p>ABO Uvemvane WEF Hutton 02.10.2025 15:27 26°39'44.94"S 28°23'55.76"E Unnamed Road</p>
Soil type(s)	Restriptive layer?		
Hutton	-		
Carolina	Hard rock		
Clovelly	Lithic		
Effective soil depth (mm):	1220		
Current land use:	Pasture - rainfed		

Site details		Photo 1: Site view	Photo 2: Dominant soil profile
EIH alt	2	 <p>ABO Uvemvane WEF SS2 02/10/2025 15:39 26°39'17.75"S 28°23'58.23"E Unnamed Road</p>	 <p>ABO Uvemvane WEF Cloveilly 02/10/2025 15:48 26°38'43.89"S 28°23'11.31"E Unnamed Road</p>
Soil type(s)	Restrictive layer?		
Cloveilly	Lithic		
Glenrosa	Lithic		
Mispah	Hard rock		
Effective soil depth (mm):	480		
Curent land use:	Pasture - rainfed		
EIH alt	3	 <p>ABO Uvemvane WEF SS3 03/10/2025 08:52 26°40'14.05"S 28°23'58.71"E Unnamed Road</p>	 <p>ABO Uvemvane WEF Cloveilly 03/10/2025 08:52 26°40'14.05"S 28°23'58.71"E Unnamed Road</p>
Soil type(s)	Restrictive layer?		
Cloveilly	Lithic		
Glenrosa	Lithic		
Effective soil depth (mm):	610		
Curent land use:	Natural veld - grazing		

8 APPENDIX B: Impact assessment and mitigation tables

8.1 Construction phase impacts

Table 24: DIRECT IMPACT: Agricultural land use change because of construction.

Table 24: DIRECT IMPACT: Agricultural land use change because of construction.							
Impact		Construction phase impacts					
DIRECT IMPACT: Agricultural land use change.		Occupation of agricultural land for WTG and related WEF infrastructure construction leading to the loss of agricultural productivity.					
		Fragmentation of croplands and other productive agricultural areas.					
Impact assessment							
Geographical Extent	Duration	Reversibility	Irreplaceable loss of resources	Cumulative Effect	Probability	Intensity / Magnitude	Significance
1	2	2	2	1	4	2	24 negative low
Mitigation of Impact:							
WTG hardstands and other construction sites should be fenced off before construction commences and construction activities must be confined to the immediate footprint of the planned infrastructure. Access to the adjacent croplands or grazing rangelands should be strictly controlled to prevent unnecessary disturbance or destruction of agricultural potential.							
Maximum use should be made of existing access and internal roads, and the construction of new roads should be kept to a minimum. Where new roads need to be constructed, locate such roads outside of cropland boundaries to mitigate possible production losses and cropland fragmentation.							
Off-road driving should be strictly prohibited.							
Mitigation confidence							Significance after mitigation
0,3							7 negative low

Table 25: DIRECT IMPACT: Land and soil degradation – construction phase.

Impact		Construction phase impacts					
DIRECT IMPACT: Land and soil degradation.		Soil works, blasting, excavations and trenching for the development of WTG hardstands, access roads, cable networks and other project related infrastructure leading topsoil erosion and dust pollution of adjacent crops.					
		Pollution of agricultural resources due to dust effects, fuel- and chemical spills, poor sanitation- and waste practices, etc.					
		Disturbance of topsoil leading to altered habitats where Alien Invasive Plants (AIP) may establish and spread.					
Impact assessment							
Geographical Extent	Duration	Reversibility	Irreplaceable loss of resources	Cumulative Effect	Probability	Intensity / Magnitude	Significance
1	2	3	2	1	3	3	36 negative medium
Mitigation of Impact:							
Ensure that soil conservation and counter-erosion measures are implemented at all construction sites i.e. berms, soil traps, hessian curtains, and storm water diversion away from areas susceptible to erosion. A system of storm water management, which will prevent erosion, will be an inherent part of the road engineering on site.							
As part of storm water management, the integrity of any contour bank systems or other erosion control on nearby croplands, must be kept intact. Any occurrences of erosion must be attended to immediately and the integrity of the erosion control system at that point must be amended to prevent further erosion from occurring there.							
Ensure that dust suppression mitigation measures are implemented on construction sites.							
Construction vehicles should be well maintained to prevent oil and other chemically based materials entering the area. Refuelling and/or servicing points should be well managed and if any soil is contaminated, it should be stripped and disposed of at a registered hazardous waste dumping site.							
Speed limits on project related roads must be kept to a minimum. No unnecessary off-road driving is to be allowed.							
Close and rehabilitate excavations and trenches immediately after completion of activity.							
Proliferation of AIP species is expected within any disturbed areas. If observed species should be eradicated and controlled to prevent their spread beyond the construction footprint. Alien plant seed dispersal within the top layers of the soil within construction footprint areas, which will have an impact on future rehabilitation, must be controlled. A management plan and proper follow-up strategy for the prevention of the establishment and/or further spread of new populations of such species should be developed and enforced.							
Removal of all AIP species encountered in the project area must take place to comply with existing legislation (amendments to the regulations under the Conservation of Agricultural Resources Act, 1983; Section 28 of the National Environmental Management Act, 1998; NEMBA, 2004). Care should be taken with the choice of herbicides to ensure that no additional impact and loss of indigenous plant species occur due to the use of herbicides. Proper training should be given to contractors/applicators to avoid spraying non-target vegetation.							
Mitigation confidence							Significance after mitigation
0,5							18 negative low

Table 26: INDIRECT IMPACT: Disruption or prevention of farming operations – construction phase.

Impact		Construction phase impacts					
INDIRECT IMPACT: Disruption or prevention of farming operations.		Construction activities are likely to cause some degree of interference with farming activities when large bulky Wind Turbine Generator (WTG) components are delivered to the different hardstands.					
		Prevention of crop spraying by aircraft over cultivated land where WTGs are being developed.					
Impact assessment							
Geographical Extent	Duration	Reversibility	Irreplaceable loss of resources	Cumulative Effect	Probability	Intensity / Magnitude	Significance
1	2	3	1	1	3	2	22 negative low
Mitigation of Impact:							
Plan the delivery of WTG components in collaboration with land users and avoid high activity seasons on the farm such as harvest and planting season if possible. This will avoid road congestion and frustration for both the developer and local farmers.							
Ground based spraying or the use of drones for spraying are effective and provide alternative methods that can be used without implications for crop production or profitability.							
Mitigation confidence							Significance after mitigation
0,2							4 negative low

8.2 Operational phase impacts

Table 27: DIRECT IMPACT: Land and soil degradation – operational phase.

Impact		Operational phase impacts					
<u>DIRECT IMPACT:</u> Land and soil degradation.		Denuded areas within WTG hardstands, poor maintenance of access roads leading to uncontrolled storm water flows causing soil erosion and siltation of adjacent croplands and other areas.					
		Pollution of agricultural resources due to dust effects, fuel- and chemical spills, poor sanitation- and waste practices, etc.					
		Proliferation of Alien Invasive Plants (AIP).					
Impact assessment							
Geographical Extent	Duration	Reversibility	Irreplaceable loss of resources	Cumulative Effect	Probability	Intensity / Magnitude	Significance
1	3	2	2	1	2	2	22 negative low
Mitigation of Impact:							
Ensure that soil conservation and counter-erosion measures are well maintained and regularly monitored for degradation or failures.							
Ensure that dust suppression mitigation measures are implemented on operational sites where applicable.							
Operational/maintenance vehicles should be well maintained to prevent oil and other chemically based materials entering the area.							
Speed limits on project related roads must be kept to a minimum. No unnecessary off-road driving is to be allowed.							
Monitoring AIP populations on project related areas must be regularly done and the AIP management plan concisely followed.							
Mitigation confidence							Significance after mitigation
0,4							9 negative low

Table 28: INDIRECT IMPACT: Disruption or prevention of farming operations – operational phase.

Impact		Operational phase impacts					
INDIRECT IMPACT: Disruption or prevention of farming operations.		Prevention of crop spraying by aircraft over land where operational WTGs are positioned.					
Impact assessment							
Geographical Extent	Duration	Reversibility	Irreplaceable loss of resources	Cumulative Effect	Probability	Intensity / Magnitude	Significance
1	3	1	1	1	3	2	20 negative low
Mitigation of Impact:							
Ground based spraying or the use of drones for spraying are effective and provide alternative methods that can be used without implications for crop production or profitability.							
Mitigation confidence							Significance after mitigation
0,2							4 negative low

8.3 Decommissioning phase impacts

Table 29: DIRECT IMPACT: Land and soil degradation – decommissioning phase.

Impact		Operational phase impacts					
DIRECT IMPACT: Land and soil degradation.		Denuded areas of deconstructed WTG hardstands, cessation of maintenance to access roads leading to uncontrolled storm water flows causing soil erosion and siltation of adjacent croplands and other areas.					
		Pollution of agricultural resources due to dust effects, fuel- and chemical spills, poor sanitation- and waste practices, etc.					
		Proliferation of Alien Invasive Plants (AIP) after decommissioning.					
Impact assessment							
Geographical Extent	Duration	Reversibility	Irreplaceable loss of resources	Cumulative Effect	Probability	Intensity / Magnitude	Significance
1	3	2	2	1	2	2	22 negative low

Mitigation of Impact:	
Ensure that soil conservation and counter-erosion measures are well maintained and regularly monitored for degradation or failures during and after decommissioning.	
Facilitate the re-vegetation of denuded project related areas to stabilize disturbed soil against erosion.	
Ensure that dust suppression mitigation measures are implemented during the decommissioning phase.	
Vehicles involved during this phase should be well maintained to prevent oil and other chemically based materials entering the area. Refuelling and/or servicing points should be well managed and if any soil is contaminated, it should be stripped and disposed of at a registered hazardous waste dumping site.	
All waste and components generated by the deconstruction of project infrastructure must be handled with care to avoid environmental pollution. All waste / components should be removed to an approved recycling or disposal site in line with the project EMP.	
Speed limits on project related roads must be kept to a minimum. No unnecessary off-road driving is to be allowed.	
Post-decommissioning monitoring of AIP populations on project related areas must be done and the AIP management plan developed to cover the decommissioning phase and a suitable period thereafter.	
Mitigation confidence	Significance after mitigation
0,4	9 negative low

Table 30: INDIRECT IMPACT: Disruption or prevention of farming operations – decommissioning phase.

Table 66: INDIRECT IMPACT: Disruption or prevention of farming operations – decommissioning phase.							
Impact		Construction phase impacts					
INDIRECT IMPACT: Disruption or prevention of farming operations.		Decommissioning activities are likely to cause some degree of interference with farming activities when large bulky Wind Turbine Generator (WTG) components are removed from the different hardstands.					
		Prevention of crop spraying by aircraft over land where WTGs are being developed.					
Impact assessment							
Geographical Extent	Duration	Reversibility	Irreplaceable loss of resources	Cumulative Effect	Probability	Intensity / Magnitude	Significance
1	2	2	1	1	3	2	20 negative low
Mitigation of Impact:							
Plan the removal of project related waste and components in collaboration with land users and avoid high activity seasons on the farm such as harvest and planting season if possible. This will avoid road congestion and frustration for both the developer and local farmers.							

Ground based spraying or the use of drones for spraying are effective and provide alternative methods that can be used without implications for crop production or profitability.	
Mitigation confidence	Significance after mitigation
0,2	4 negative low

8.4 Positive impacts

Table 31: Positive impacts – project lifetime.

Impact		All phases (lifetime of the project)					
<u>POSITIVE IMPACTS:</u>		Landowners are compensated financially through fixed rental income. This income supersedes the income that is obtainable through crop or livestock production on areas affected by the development. The rental income diversifies the landowner's revenue streams, which can be especially valuable in times where agricultural production may be variable or less stable.					
		Local <u>infrastructure improvements</u> – an improved road network, with associated storm water handling system. The WEF will construct turbine access roads of a higher standard than the existing farm roads which will give farming vehicles better access to farmlands. This will be especially relevant during wet periods when access to croplands for spraying etc is limited by the current farm roads.					
		<u>Improved local security</u> due to the increased presence of security at the WEF construction sites and in the general area of WTG for the lifetime of the project.					
Impact assessment							
Geographical Extent	Duration	Reversibility	Irreplaceable loss of resources	Cumulative Effect	Probability	Intensity / Magnitude	Significance
1	3	3	1	1	4	4	52 positive high
No mitigation needed.							

9 APPENDIX C: Professional information of the specialist investigator

9.1 Details

<u>Specialist investigator:</u>	Albert Richardt Götze (<i>Pr.Sci.Nat.</i>)
<u>ID:</u>	7405275082083
<u>Highest tertiary qualifications:</u>	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
- Soil Science Society of South Africa (SSSSA) – membership ID: 2371575
- South African Association of Botanists (SAAB) – membership no: 813
- Grassland Society of Southern Africa (GSSA) – membership no: 2771391
- South African Wetland Society – membership ID: 2164640

Contact details:

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

9.2 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. 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.

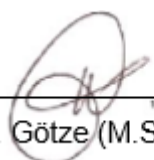
Past projects of a similar nature:

- 2024: Soil, land capability and agricultural potential SSVR and Compliance Statement for the proposed Bear Grid Connection Corridor near Excelsior, Free State Province (*Solis Environmental/Subsolar Energy*).
- 2025: Agriculture Theme SSVR for the ABO Ujekamanzi WEF 3 project near Ermelo, Mpumalanga (*ABO Energy South Africa*).
- 2025: Agriculture Theme SSVR for the proposed ABO Ujekamanzi Wind Energy Facility 1 Overhead Power Line between Ermelo and Amersfoort, Mpumalanga Province (*WSP and ABO Energy South Africa*).
- 2025: Agricultural Agro-Ecosystem Specialist Assessment for the ABO Ujekamanzi Wind Energy Facility 1 near Amersfoort, Mpumalanga Province (*ABO Energy South Africa*).
- 2025: Specialist assessment report of Agriculture Theme for the proposed development of a chrome and platinum group metals mining rights application near Lekurung Village, Limpopo Province (*Gudani Consulting*).
- 2026: Specialist assessment of the agro-ecosystem (agriculture theme) of the proposed project area for the Larissa Solar Power Plant (RF) (Pty) Ltd project Phase 2 near Westonaria, West City Local Municipality, West Rand District Municipality, Gauteng Province (*Solis Environmental*).
- 2026: Specialist assessment of the agro-ecosystem (agriculture theme) of the proposed project area for the proposed upgrade and extension of the N8 Ring Road around Bloemfontein – Phase 1, Mangaung Metropolitan Municipality, Free State Province (*Enviro Matrix Environmental Consultants / KSEMS Environmental Consulting*).

9.3 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.)

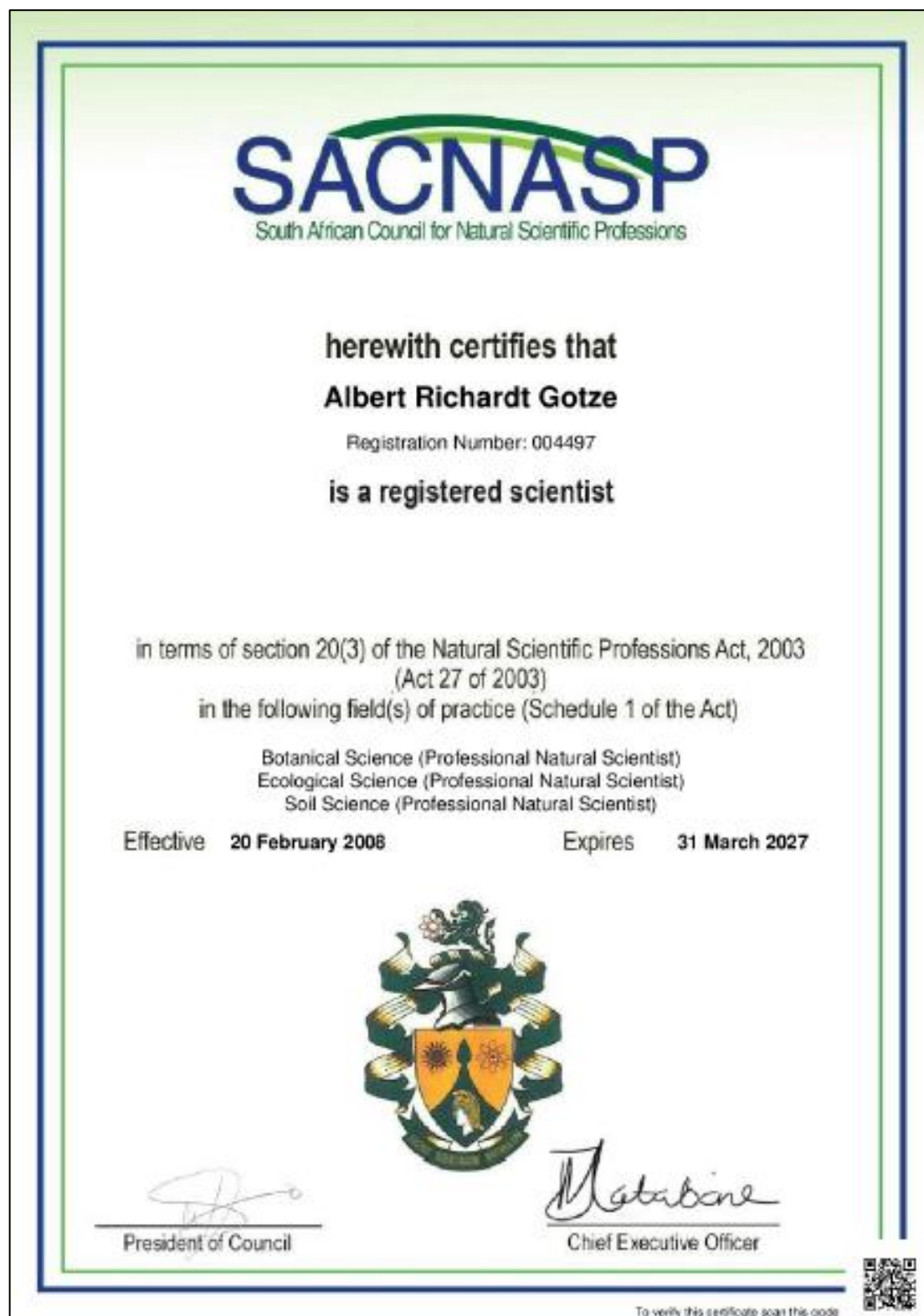


Figure 21: SACNASP registration certificate of the specialist that conducted the assessment.