

Appendix G.7

VISUAL ASSESSMENT



**PROPOSED DEVELOPMENT OF THE ABO UVEMVANE WIND ENERGY
FACILITY 1 AND ASSOCIATED INFRASTRUCTURE, GAUTENG &
MPUMALANGA PROVINCE**

VISUAL IMPACT ASSESSMENT

On behalf of:



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DOCUMENT CONTROL

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Report date:	21 August 2026
Report number:	02

DECLARATION

I, **Lourens du Plessis**, as an independent consultant who compiled this Visual Impact Assessment, declare that it correctly reflects the findings made at the time of the report's compilation. I further declare that I, act as an independent consultant in terms of the following:

- Do not have any financial interest in the undertaking of the activity, other than remuneration for the work performed in terms of the National Environmental Management Act, 1998 (Act 107 of 1998, as amended).
- Undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the National Environmental Management Act, 1998 (Act 107 of 1998, as amended).
- Based on information provided to me by the project proponent, and in addition to information obtained during the course of this study, will present the results and conclusion within the associated document to the best of my professional judgement.



Lourens du Plessis
Professional GISc Practitioner

I, **Tosca de Villiers**, as an independent consultant compiled this Visual Impact Assessment and declare that it correctly reflects the findings made at the time of the report's compilation. I further declare that I, act as an independent consultant in terms of the following:

- Do not have any financial interest in the undertaking of the activity, other than remuneration for the work performed in terms of the National Environmental Management Act, 1998 (Act 107 of 1998, as amended).
- Undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the National Environmental Management Act, 1998 (Act 107 of 1998, as amended).
- Based on information provided to me by the project proponent, and in addition to information obtained during the course of this study, will present the results and conclusion within the associated document to the best of my professional judgement.



Tosca de Villiers
Landscape Architect & Environmental Assessment Practitioner
SACLAP Reg nr: 20421
EAPASA Reg nr: 2019/1582

EXECUTIVE SUMMARY

ABO Uvemvane Wind Energy Facility 1 (Pty) Ltd proposes the development of the ABO Uvemvane Wind Energy Facility 1 (WEF 1), comprising up to 20 wind turbines with a total generation capacity of up to 170 MWac, together with associated infrastructure, located approximately 9km west of Balfour (Mpumalanga Province) and approximately 14km south-east of Heidelberg (Gauteng Province). LOGIS was appointed to undertake an independent Visual Impact Assessment (VIA) in support of the Environmental Impact Assessment (EIA) process for the proposed WEF 1, in accordance with the National Environmental Management Act, 1998 (Act 107 of 1998, as amended) and the 2014 EIA Regulations (as amended).

This Executive Summary provides a condensed overview of the approach, findings and recommendations of the VIA. It should be read in conjunction with the full report, which contains the detailed methodology, mapping, photo simulations and impact tables that support the conclusions summarised below.

Study Approach and Site Sensitivity

The VIA was undertaken in accordance with the EIA Regulations (2014, as amended) and applicable specialist reporting requirements, and included a desktop review, a site sensitivity verification (SSV), viewshed and visibility modelling, cumulative impact assessment, shadow flicker modelling, photo simulations and a structured impact assessment. A site visit and site sensitivity verification were undertaken in October 2025 and revised in February 2026.

The DFFE National Web-Based Environmental Screening Tool rated the site as having a very high sensitivity for both the Landscape (Wind) Theme and the Flicker Theme. Based on the specialist site verification:

- The Landscape (Wind) Theme Sensitivity was revised down to high (from very high), owing to the site's location outside a Renewable Energy Development Zone (REDZ), moderate visual absorption capacity, and the presence of moderate existing infrastructure, balanced against the site's high visual quality, mountainous terrain and proximity to the N3.
- The Flicker Theme Sensitivity was confirmed as very high, based on verified occupation of homesteads within 1km of proposed turbines.

Layout revisions since the scoping phase (including the removal of seven turbines and the shifting of others) have reduced, but not eliminated, the number of turbines located within identified sensitive visual buffers. As per the current layout: four turbines remain within mountainous/tall hill terrain, six turbines remain within the 1km N3 buffer, and two turbines (03 and 24) remain within the shadow flicker zone of visible shadows of homesteads. Only one turbine (24) now falls within two or more sensitive buffers simultaneously.

Key Findings

The visual environment surrounding the site, particularly within a 5–10km radius, and potentially up to 20km, will be visually impacted for the anticipated 20–25 year operational lifespan of the facility. Key findings include:

- Direct visual impacts on residents of homesteads, visitors to tourist accommodation and Protected Areas within 5km of the WEF are rated of very high significance during the operational phase, both before and after mitigation, as the primary visual impact (the presence and scale of the turbines) cannot be mitigated through conventional means.
- Visual impacts on observers travelling along roads and on residents/visitors located between 5–10km are rated of high significance; impacts reduce to moderate between 10–20km and to low beyond 20km.
- Shadow flicker was identified as a potential impact of concern for two turbines (03 and 24) affecting two homesteads (Geluk and residences south of Modderfontein/Charmick Wedding and Functions Venue). Written landowner consent has been obtained for turbine 03 (Geluk), resolving that impact. Engagement with the affected party at Modderfontein is recommended and outstanding at the time of this report; the pre-mitigation high significance rating is expected to reduce to low, subject to that engagement and, where necessary, the escalation and mitigation hierarchy set out in Section 12.
- Operational, safety and security lighting at night was rated of very high significance pre-mitigation for receptors within 0–10km, reducing to high significance with recommended

lighting mitigation measures (e.g. aircraft detection lighting systems, shielded and minimum-intensity fixtures).

- The cumulative visual impact of the proposed WEF, together with other authorised, constructed and in-process wind, solar and grid infrastructure projects within a 50km radius, is rated of low significance. The proposed WEF 1 would be transformative in nature, introducing a new facility into a landscape without other operational WEFs in the region, but is not expected to result in an unacceptable cumulative loss of visual resource.
- The overall significance of the visual impact associated with the proposed WEF 1 is rated as high, both pre-mitigation and post-mitigation, on a scale ranging from negligible to very high.

Potential to Mitigate Visual Impacts

The primary visual impact of the proposed WEF 1 (i.e. the presence, scale and movement of the wind turbines) cannot be mitigated, as the functional design of the turbines cannot be altered to reduce their visibility. The overall potential for mitigation is therefore considered low. Mitigation measures identified in this report are, however, effective in reducing specific secondary impacts, namely those associated with shadow flicker (through landowner engagement, screening, curtailment and, where required, automated shutdown technology), night-time lighting (through sensitive design, shielding and aircraft detection systems), blade painting, and construction and decommissioning phase impacts (through good site management practice). These measures should be implemented and maintained throughout the life of the facility regardless of their effect on the overall significance rating, as they represent good practice.

Conclusion

Based on the assessment undertaken, the proposed ABO Uvemvane WEF 1 is expected to result in visual impacts ranging from very high to low significance across the study area, with an overall high significance rating both pre- and post-mitigation. No fatal flaws, from a visual impact perspective, have been identified that would preclude the granting of environmental authorisation for the proposed development, provided that the recommended mitigation measures are implemented and maintained, and that the outstanding shadow flicker engagement process relating to the Modderfontein receptor is concluded in accordance with the recommendations of this report.

1. STUDY APPROACH

1.1 Qualification and experience of the practitioner

Lourens du Plessis (t/a LOGIS) is a Professional Geographical Information Sciences (GISc) Practitioner registered with The South African Geomatics Council (SAGC) and specialises in Environmental Geographical Information Systems (GIS) and Visual Impact Assessments (VIAs).

Lourens has been involved in the application of GIS in Environmental Planning and Management since 1990. He has extensive practical knowledge in spatial analysis, environmental modelling, and digital mapping, and applies this knowledge in various scientific fields and disciplines. His GIS expertise is often utilised in Environmental Impact Assessments (EIAs), Environmental Management Frameworks, State of the Environment Reports, Environmental Management Plans, tourism development and environmental awareness projects.

He holds a BA degree in Geography and Anthropology from the University of Pretoria and worked at the GisLAB (Department of Landscape Architecture) from 1990 to 1997. He later became a member of the GisLAB and in 1997, when Q-Data Consulting acquired the GisLAB, worked for GIS Business Solutions for two years as project manager and senior consultant. In 1999 he joined MetroGIS (Pty) Ltd as director and equal partner until December 2015. From January 2016 he worked for SMEC South Africa (Pty) Ltd as a technical specialist until he went independent and began trading as LOGIS in April 2017.

Lourens has received various awards for his work over the past two decades, including EPPIC Awards for ENPAT, a Q-Data Consulting Performance Award and two ESRI (Environmental Systems Research Institute) awards for Most Analytical and Best Cartographic Maps, at Annual International ESRI User Conferences. He is a co-author of the ENPAT atlas and has had several of his maps published in various tourism, educational and environmental publications.

He is familiar with the "Guidelines for Involving Visual and Aesthetic Specialists in EIA Processes" (Provincial Government of the Western Cape: Department of Environmental Affairs and Development Planning) and utilises the principles and recommendations stated therein to successfully undertake visual impact assessments.

1.2 Assumptions, knowledge gaps and limitations

This Report has been prepared by LOGIS at the request of the WSP as the appointed Environmental Assessment Practitioner (EAP) on behalf of the Project Developer to provide them with an independent specialist assessment. Unless otherwise agreed by LOGIS in writing, LOGIS does not accept responsibility or legal liability to any person other than the WSP for the contents of, or any omissions from, this Report.

To prepare this Report, LOGIS utilised only the documents and information provided by WSP or any third parties directed to provide information and documents by WSP. LOGIS has not consulted any other documents or information in relation to this Report, except where otherwise indicated.

The findings, recommendations and conclusions given in this report are based on the author's best scientific and professional knowledge, as well as the available information. This report is based on survey and assessment techniques which are limited by time and budgetary constraints relevant to the type and level of investigation undertaken. LOGIS reserve the right to modify aspects of the report including the recommendations if and when new information may become available from on-going research or further work in this field or pertaining to this investigation.

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This report may not be altered or added to without the prior written consent of the author. This also refers to electronic copies of this report which are supplied for the purposes of inclusion as part of other reports. Similarly, any recommendations, statements or conclusions drawn from or

based on this report must make reference to this report. If this report is used as part of a main report, the report in its entirety must be included as an appendix or separate section to the main report.

This assessment was undertaken during the planning stage of the project and is based on information available at that time.

This Visual Impact Assessment and all associated mapping have been undertaken according to the worst-case scenario such as mapping undertaken at the maximum turbine heights (i.e. tip-heights), predominately negative I&AP perceptions, no VAC taken into account of the environment, perfect weather conditions and atmospheric visibility, etc.

1.3 Legal framework

The following legislation and guidelines have been considered in the preparation of this report:

- **The National Environmental Management Act, 1998 (Act No. 107 of 1998, as amended) (NEMA):** This report is in line with Appendix 6 of NEMA: EIA Regulations (2014, as amended) which details the minimum requirements a specialist report must contain for an EIA.
- **Guideline for Involving Visual and Aesthetic Specialists in EIA Processes (DEADP, Provincial Government of the Western Cape, 2005):** This guideline was developed for use in the Western Cape, however in the absence of the development of any other guideline, this provides input for the preparation of visual specialist input into EIA processes. The guideline documents the requirements for visual impact assessment, typical issues that trigger the need for specialist visual input, the scope and extent of a visual assessment, information required, as well as the assessment and reporting of visual impacts and management actions.
- **Screening Tool as per Regulation 16 (1)(b)(v) of the EIA Regulations, 2014 as amended:** a Screening report was generated for this proposed project, whereby a visual impact assessment was identified as one of the specialist studies that would be required but no specific assessment protocol has been prescribed (hence the visual impact assessment is undertaken in compliance with the 2014 NEMA EIA Regulations (as amended)). Screening Tool Reports were generated during the Scoping Phase (2023) and EIA Phase (2025), and both reports are discussed in this visual impact assessment.
- **Strategic Environmental Assessment (SEA) for wind and solar photovoltaic energy in South Africa (CSIR, 2015 and 2019).** Although the project does not fall within the gazetted Renewable Energy Development Zones (REDZs), relevant information and guidelines are considered in this visual impact assessment.
- **International Finance Corporation (IFC) Performance Standards on Environmental and Social Sustainability, 2012.**
- **IFC Environmental, Health, and Safety Guidelines for Wind Energy, 2015.**

1.4 Information base

This assessment was based on information from the following sources:

- Chief Directorate National (CDN) Geo-Spatial Information, varying dates. *1:50 000 Topographical Maps and Data.*
- DFFE, 2018/2020. *National Land-cover Database 2018/2020 (NLC2018/2020).*
- DFFE, 2025. *South African Protected Areas Database (SAPAD_OR_2025_Q1).*
- DFFE, 2025 *Renewable Energy EIA Database (REEA_OR_2025_Q2).*
- Eskom Holdings SOC Ltd, 2018. *High Voltage/Main Transmission Systems Power Lines and Substations.*
- JAXA, 2021. Earth Observation Research Centre. *ALOS Global Digital Surface Model (AW3D30).*
- Google Earth Pro. *Up to date and recent satellite images.*
- Professional judgement based on experience gained from similar projects.
- Literature research on similar projects.
- Procedures for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of NEMA published in Government Notice (GN) 320 on 20 March 2020; particularly Part A that includes the site

sensitivity verification requirements where a specialist assessment is required but no protocol has been prescribed.

The quality of this data is rated as good.

1.5 Level of confidence

Level of confidence¹ is determined as a function of:

- The information available, and understanding of the study area by the practitioner:
 - **3:** A high level of information is available of the study area, and a thorough knowledge base could be established during site visits, surveys etc. The study area was readily accessible.
 - **2:** A moderate level of information is available of the study area, and a moderate knowledge base could be established during site visits, surveys etc. Accessibility to the study area was acceptable for the level of assessment.
 - **1:** Limited information is available of the study area, and a poor knowledge base could be established during site visits and/or surveys, or no site visit and/or surveys were carried out.
- The information available, understanding of the project and experience of this type of project by the practitioner:
 - **3:** A high level of information and knowledge is available of the project, and the visual impact assessor is well experienced in this type of project and level of assessment.
 - **2:** A moderate level of information and knowledge is available of the project, and the visual impact assessor is moderately experienced in this type of project and level of assessment.
 - **1:** Limited information and knowledge is available of the project, and the visual impact assessor has a low experience level in this type of project and level of assessment.

These values are applied as follows:

Table 1: Level of confidence

Information on the study area	Information on the project & experience of the practitioner			
		3	2	1
	3	9	6	3
	2	6	4	2
	1	3	2	1

Based on Table 1, the level of confidence for this assessment is determined to be **9** and indicates that the author's confidence in the accuracy of the findings is High:

- The information available and understanding of the study area by the practitioner is rated as **3**.
- The information available, understanding and experience of this type of project by the practitioner is rated as **3**.

1.6 EIA Requirements for Specialist Reports

As there is no specialist protocol available for visual impact assessments, this report has been compiled in accordance with the requirements of Appendix 6 of the 2014 NEMA EIA Regulations, as amended. This stipulates and prescribes the content of the Specialist Reports. Table 2 below details these requirements and refers the reader to relevant pages where specific information can be found for ease of reference:

¹ Adapted from Oberholzer (2005).

Table 2: EIA Specialist requirements

Requirements of Appendix 6 (Specialist Reports) of Government Notice R326 EIA Regulations, 2014 Requirements, as amended	Section where this has been addressed in the Specialist Report
1. (1) A specialist report prepared in terms of these Regulations must contain - Details of-	
(i) The specialist who prepared the report	Document control, Section 1.1
(ii) Expertise of that specialist to compile a specialist report including a CV	Document control, Section 1.1 and Appendix A
(b) Declaration that the specialist is independent in a form as may be specified by the competent authority	Page v (declaration)
(c) An indication of the scope of, and purpose for which, the report was prepared	Section 3
(cA) an indication of the quality and age of base data used for the specialist report	Section 1.4
(cB) a description of the existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change	Section 4 and Section 6.2
(d) The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment	Section 1.7
(e) A description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used	Section 1.7
(f) Details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternative	Section 5 and Map 5
(g) An identification of any areas to be avoided, including buffers	Section 5 and Map 5
(h) A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers	Map 5
(i) A description of any assumptions made and any uncertainties or gaps in knowledge	Section 1.2
(j) A description of the findings and potential implications of such findings on the impact of the proposed activity or activities	Section 10 and 11
(k) Any mitigation measures for inclusion in the EMPr	Section 12 and 13
(l) Any conditions for inclusion in the EA	Section 15
(m) Any monitoring requirements for inclusion in the EMPr or EA	Section 13
(n) A reasoned opinion-	
(i) Whether the proposed activity, activities or portions thereof should be authorized	Section 15
(iA) regarding the acceptability of the proposed activity or activities, and	Section 15
(ii) If the opinion is that the proposed activity, activities or portions thereof should be authorized, any avoidance, management and mitigation measures that should be included in the EMPr, and the closure plan in the case of a closure activity	Section 12 and 13

Requirements of Appendix 6 (Specialist Reports) of Government Notice R326 EIA Regulations, 2014 Requirements, as amended	Section where this has been addressed in the Specialist Report
(o) A description of any consultation process that was undertaken during the course of preparing the specialist report	N/A. No consultation with landowners, neighbouring landowners or local authorities was required during the course of preparing the visual specialist report.
(p) A summary and copies of any comments received during any consultation process and where applicable all responses thereto	Section 14. Comments as provided by the EAP.
(q) Any other information requested by the competent authority	N/A.
(2) Where a government notice by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply	Section 5

1.7 Methodology

The study was undertaken using GIS software as a tool to generate viewshed analyses and to apply relevant spatial criteria to the proposed facility. A detailed Digital Terrain Model (DTM) for the study area was created from topographical data provided by NASA in the form of a 30m SRTM (Shuttle Radar Topography Mission) elevation model.

The VIA rating methodology, as utilised in this report, differs from the qualitative approach as prescribed by Environmental Assessment Practitioner (EAP). The reason been that the primary objective of the VIA is to anticipate and, where possible, quantify the extent of visual impacts in a transparent and unbiased manner. This is undertaken through the application of defined criteria and spatial analyses, which collectively inform the determination of impact magnitude and the subsequent evaluation of overall significance. The methodology is designed to remain objective, avoiding reliance on emotive or subjective interpretation, as far as possible.

In recognition of the inherently perceptual nature of visual impacts, the VIA incorporates criteria not typically relevant to biophysical assessments. These include:

- **Magnitude** – the extent and intensity of visual alteration introduced by the proposed development.
- **Visual receptor sensitivity** – the degree to which individuals or groups of observers are likely to perceive and respond to the change.
- **Landscape character sensitivity** – the inherent capacity of the receiving landscape to absorb, accommodate, or resist visual change.

The inclusion of these additional criteria acknowledges that visual impacts are ultimately shaped by observer-based value judgements. For example, a development such as a WEF may be regarded positively, neutrally, or negatively depending on the perception of the receptor. Similarly, the ability of the receiving landscape to accommodate change plays a critical role in determining the overall significance of the impact. Receptor sensitivity and landscape character sensitivity are therefore central to ensuring that the visual impact assessment process is as reasoned, consistent, and objective as possible, and therefore cannot be excluded.

The Terms of Reference for the Visual Impact Assessment (VIA) is stated below.

The VIA is determined according to the nature, extent, duration, intensity or magnitude, receptor sensitivity, landscape character, probability and significance of the potential visual impacts and will propose management actions and/or monitoring programs and may include recommendations related to the wind turbine generator (WTG) layout.

The visual impact is determined for the highest impact-operating scenario (worst-case scenario) and varying climatic conditions (i.e. different seasons, weather conditions, etc.) have not be considered.

The VIA considers potential cumulative visual impacts, or alternatively the potential to concentrate visual exposure/impact within the region (if applicable).

The following VIA-specific tasks have been undertaken:

- **Determine potential visual exposure**

The visibility or visual exposure of any structure or activity is the point of departure for the visual impact assessment. It stands to reason that if (or where) the proposed facility and associated infrastructure were not visible, no impact would occur.

The viewshed analyses of the proposed facility and the related infrastructure are based on a 30m SRTM digital terrain model of the study area.

The first step in determining the visual impact of the proposed facility is to identify the areas from which the structures would be visible. The type of structures, the dimensions, the extent of operations and their support infrastructure are taken into account.

- **Determine visual distance/observer proximity to the facility**

In order to refine the visual exposure of the proposed facility on surrounding areas/receptors, the principle of reduced impact over distance is applied to determine the core area of visual influence for this type of structure. Proximity radii for the proposed infrastructure were created in order to indicate the scale and viewing distance of the proposed facility and to determine the prominence of the structures in relation to their environment.

The visual distance theory and the observer's proximity to the proposed facility are closely related, and especially relevant, when considered from areas with a high viewer incidence and a predominantly negative visual perception of the proposed facility.

- **Determine viewer incidence/viewer perception (sensitive visual receptors)**

The next layer of information is the identification of areas of high viewer incidence (i.e. main roads, residential areas, settlements, etc.) that would be exposed to the project infrastructure. This is done in order to focus the attention on areas where the perceived visual impact of the proposed facility will be the highest and where the perception of affected observers will be negative.

Related to this dataset, is a land use character map that further aids in identifying sensitive areas and possible critical features (i.e. tourist facilities, national parks, etc. – if applicable), that should be addressed.

- **Determine the visual absorption capacity (VAC) of the landscape**

This is the capacity of the receiving environment to absorb the potential visual impact of the proposed facility. The VAC is primarily a function of the vegetation, and will be high if the vegetation is tall, dense and continuous. Conversely, low growing sparse and patchy vegetation will have a low VAC.

The VAC would also be high where the environment can readily absorb the structure in terms of texture, colour, form and light / shade characteristics of the structure. On the other hand, the VAC for a structure contrasting markedly with one or more of the characteristics of the environment would be low. The VAC also generally increases with distance, where discernible detail in visual characteristics of both environment and structure decreases.

- **Calculate the visual impact index**

The results of the above analyses are merged in order to determine the areas of likely visual impact and where the viewer perception would be negative. An area with short distance visual exposure to the proposed infrastructure, a high viewer incidence and a predominantly negative perception would therefore have a higher value (greater impact) on the index. This focusses the attention to the critical areas of potential impact and determines the potential **magnitude** of the visual impact.

GIS software was used to perform all the analyses and to overlay relevant geographical data sets in order to generate a visual impact index.

- **Determine impact significance**

The potential visual impacts are quantified in their respective geographical locations in order to determine the significance of the anticipated impact on identified receptors. Significance is determined as a function of extent, duration, magnitude (derived from the visual impact index) and probability. Potential cumulative and residual visual impacts are also addressed. The result of this section is displayed in impact tables and summarised in an impact statement.

- **Propose mitigation measures**

The preferred alternative (or a possible permutation of the alternatives) is based on its potential to reduce the visual impact. Additional general mitigation measures have been proposed in terms of the planning, construction, operation and decommissioning phases of the project.

- **Reporting and map display**

All the data categories, used to calculate the visual impact index, and the results of the analyses are displayed as maps in this report. The methodology of the analyses, the results of the visual impact assessment and the conclusion of the assessment are addressed in this VIA report.

- **Site visit and photo simulations**

A site visit was undertaken on the 28th November 2024 in order to verify the results of the spatial analyses and to identify any additional site-specific issues that may need to be addressed in the VIA report.

It should be noted that, from a visual perspective, the different seasons do not influence the results of the impact assessment, and as such regardless of the timing of the site visit, the level of confidence for the assessment and findings is high.

Photographs from strategic viewpoints were taken in order to simulate realistic post construction views of the proposed Wind Energy Facility (WEF). This aids in visualising the perceived visual impact of the proposed WEF and place it in spatial context.

2. PROJECT DESCRIPTION

ABO Uvemvane Wind Energy Facility 1 (Pty) Ltd proposes the development of ABO Uvemvane Wind Energy Facility 1 (WEF 1), a commercial wind energy generation facility comprising up to 20 turbines and with a total generation capacity of up to 170 MWac in capacity, as well as associated infrastructure. The proposed WEF would be located approximately 9km west of the town of Balfour in the Mpumalanga Province in the Dipaleseng Local Municipality within the Gert Sibande District Municipality and approximately 14km south-east of the town Heidelberg in the Gauteng Province in the Lesedi & Midvaal Local Municipalities within the Sedibeng District Municipality. It is anticipated that the proposed WEF would have a total development footprint of up to 67.2 ha, which is approximately 1.12% of the total site (i.e., affected properties) area².

A development area (i.e., the full extent of the affected properties as well as beyond, where appropriate) has been identified for the proposed development. Within this identified development area, a development footprint has been defined in a manner which has considered the environmental sensitivities present on the affected properties and intentionally remains outside of highly sensitive areas. All affected properties in their entirety have been considered in this S&EIA process (which includes the independent specialists' assessments undertaken hereunder) and assessed in terms of the suitability from an environmental and social perspective. The location of the proposed project and the siting of the project infrastructure within the assessed study area has been informed by the recommendations of the specialists following their field assessments, where relevant.

² 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).

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

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

- 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;
 - Turbine, crane, and blade hardstands (included in the abovementioned 1 ha).
- Primary/main access roads as well as internal road reticulation (note that existing roads/disturbed areas would be used as far as possible, and for the proposed roads, a corridor of up to 12 m wide may be temporarily impacted upon during construction and be rehabilitated to up to 10 m wide after construction), inclusive of stormwater infrastructure where relevant.
- 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
- On-site electrical infrastructure hub up to 7 ha in extent (note there are 3 locations to be 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 25m respectively, and/or
 - BESS.

A summary of key infrastructure is provided in the table below:

Table 3: Summary of key infrastructure

Aspect	Details
Total Area of Applicable Farm Portions	A preferred study area with a total combined extent of approximately 8,200 ha was identified as a technically suitable project site for the development of the WEF project, within this an affected area of approximately 6000 ha has been assessed.
Total Buildable Area (I.e. likely footprint area)	Approximately 67.2 ha: Turbines/ hardstands/foundations: up to 1Ha per turbine (up to 20ha) Roads: up to 31km (approx. 18km of which are existing roads to be widened) and up to 33ha Electrical Infrastructure Hub: up to 7ha Temporary Laydown Areas: 4 x laydown areas (includes concrete batching plant) totaling up to 15ha Internal Underground Cabling: up to 31km, but nothing beyond proposed roads so has been included in road footprint 33kV OHL/underground facility connection: Up to 0.02ha
Export Capacity	Up to 170MWac
Technology	Wind
Number of Wind Turbines	Up to 20
Turbine Specs/ Aspects	Maximum hub height 180 m; Maximum blade length 100 m; Maximum rotor diameter 200 m; Maximum capacity per turbine 10 MW; A transformer at the base of each turbine; Concrete turbine foundations up to 1 ha each; Turbine, crane, and blade hardstands (included in the abovementioned 1 ha).
Electrical Infrastructure Hub (with collector sub-station, sub-station, and BESS infrastructure)	Three (3) locations have been assessed and are being applied for noting that only one will be constructed based on technical feasibility to be confirmed at pre-construction stage (Up to 7ha)
Construction camp and laydown area	4 temporary laydown areas/ construction compounds (includes concrete batching), totaling up to 15 ha, would be fenced with access control.
Access Routes	Five (5) existing routes; four of these are off existing unnamed farm roads (originating from the D1220 and P243/1), and one is off Lagerspoort Road from Heidelberg - Balfour Road (R23). The Details of the access would be as per the recommendations in the Transport Impact Assessment.
Internal Roads	Up to 31 km length (approx. 18km of which are existing roads to be widened). 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.
Associated infrastructure	Includes 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

	<p>On-site electrical infrastructure hub (up to 7 ha in extent). Note there are three (3) locations assessed as options, however only 1 will be constructed, consisting of:</p> <p>On-site substation and associated infrastructure;</p> <p>Additional step-up/ transformation /collector /switchyard infrastructure;</p> <p>Auxiliary buildings, including but not limited to O&M building(s) administrative buildings, workshops, gatehouses, security buildings, control centres, offices, visitor centres, warehouses, etc.;</p> <p>The installation of a communications tower (maximum height 32 m) and/or lighting mast (maximum height 25 m); and</p> <p>BESS.</p>
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Five access points are proposed, four of these are off existing unnamed farm roads (originating from the D1220 and P243/1), and one is off Lagerspoort Road from Heidelberg - Balfour Road (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).

Blade patterning may be implemented as a recommended avian mitigation, in accordance with the Blade Patterning Guidelines (SAWEA & BirdLife South Africa, 2024).

The connection for the project within could occur via a new loop-in-loop-out connection or via a direct connection to one of the two nearby substations. Note that the EGI component of the WEFs will be subject to separate environmental impact assessments.

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 22m.
 - 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: With regard to the proposed BESS, the technology thereof is dynamic and so the specific type/technology to be developed would be selected based on market demands and technology availability at the time of construction. Therefore, both Lithium-ion and redox-flow are assessed as technology alternatives, with Lithium-ion being the current preferred technology.
- 3) The No-go alternative has also been assessed, noting that the property does hold existing development rights (i.e., Agriculture) and so, not developing the proposed development does not necessarily mean that there would be no changes or impacts on the site.

Figure 1 provides a generic illustration of the main components of a wind turbine.

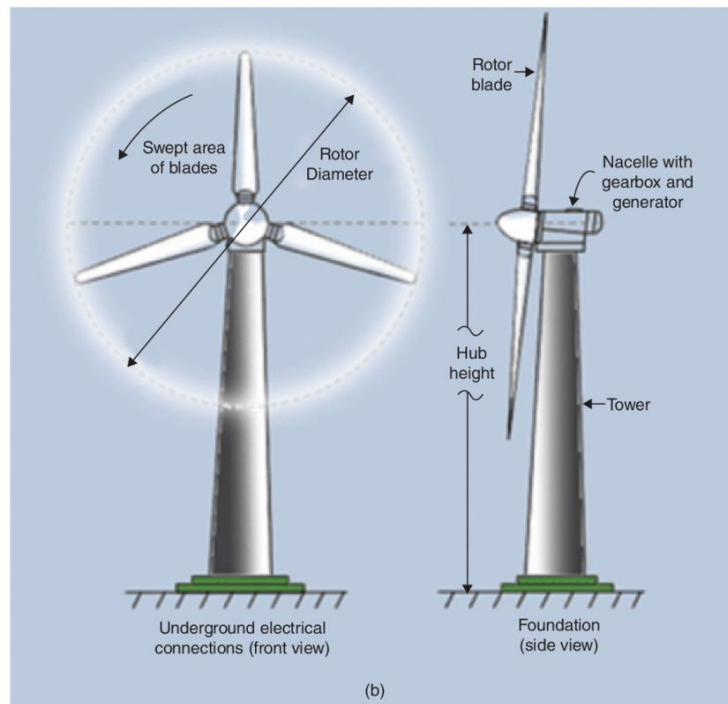


Figure 1: Illustration of the main components of a wind turbine³

3. SCOPE OF WORK

This report is the Visual Impact Assessment (VIA) of the proposed **ABO Uvemvane WEF 1** as described above. The determination of the potential visual impacts is undertaken in terms of nature, extent, duration, magnitude, receptor sensitivity, landscape character, probability and significance of the construction and operation of the proposed infrastructure. The study area for the visual assessment includes a minimum 20km radius from the proposed wind turbine structures located on the periphery of the proposed ABO Uvemvane WEF 1 including all wind turbine structures within. Anticipated issues related to the potential visual impact of the proposed WEF include the following:

- The visibility of the facility to, and potential visual impact on, observers travelling along the national, arterial or secondary roads within the study area.
- The visibility of the facility to, and visual impact on residents of homesteads within the study area.
- The potential visual impact of the facility on the visual character or sense of place of the region.
- The potential visual impact of the facility on tourist routes or tourist destinations (if present).
- The potential visual impact of the construction of ancillary infrastructure (i.e. substations) on observers in close proximity to the facility.
- The VAC of the natural vegetation (if applicable).
- The potential cumulative visual impact of the proposed WEF and associated infrastructure in context of the other WEFs, SEFs and EGI in process and authorised within a 50km radius of the proposed ABO Uvemvane WEF 1, or potential consolidation of visual impacts.
- The potential visual impact of lighting of the facility in terms of light glare, light trespass and sky glow.
- Potential visual impacts associated with the construction, operational and decommissioning phase.
- The potential visual impact of shadow flicker.
- The potential to mitigate visual impacts and inform the design process.

It is envisaged that the issues listed above may constitute a visual impact at a local and/or regional scale.

³ Illustration courtesy of Charlier, R & Thys, A. (2016). Wind Power—Aeole Turns Marine. 10.1002/9781119066354.ch7.

4. THE AFFECTED ENVIRONMENT

The proposed ABO Uvemvane WEF 1 and associated infrastructure is located approximately 9km west of the town of Balfour in the Mpumalanga Province in the Dipaleseng Local Municipality within the Gert Sibande District Municipality and approximately 14km south-east of the town Heidelberg in the Gauteng Province in the Lesedi & Midvaal Local Municipalities within the Sedibeng District Municipality.

The study area, as per the extent of the maps below encompassing the proposed development site / WEF site boundary, occurs on land that ranges in elevation from approximately 1450m above sea level (a.s.l.) along the drainage lines and water courses (i.e. Suikerbosrant, Blesbokspruit, etc.) occurring in this area, to 1925m a.s.l. on the top of the hills associated within the Suikerbosrand Nature Reserve to the northwest of the site. The topography or terrain morphology of the region is broadly described as comprising of hill slopes and valleys with gentle to moderately undulating landscapes on the highveld plateau.

The development site itself is located on land with an average elevation of between approximately 1525m – 1820 a.s.l, it contains representations of both the undulating valley landscapes as well as the hills associated with the study area. Refer to **Map 1** for the shaded relief/topography map of the study area.



Figure 2: General topography of the site and study area

The region has a largely rural character, interspersed with commercial agricultural activities (i.e. dryland, irrigated and livestock production activities), scattered human settlements and numerous protected areas. Settlements closest to the site are the town of Heidelberg to the northwest and Balfour to the east. Formal agricultural activities are mostly associated with the watercourses of the region including the Suikerbosrant and Blesbokspruit Rivers.



Figure 3: Rural character of the study area interspersed with commercial agricultural activities

The natural vegetation or land cover types of the region are described as Grassland interspersed with scattered areas of wetlands and includes small pockets of dense woodland, open woodland and exotic plantations. Refer to Error! Reference source not found..



Figure 4: Illustrating the land use and land cover occurring within the study area

Several prominent rivers and hydrological features occur within the study area. These include numerous wetlands, farm dams, numerous perennial spruits scattered throughout the study area including the Suikerbosrant and Blesbokspruit Rivers located in the northern portion of the study area, as well as the Vaal Dam to the southwest.



Figure 5: Example of scattered homesteads and settlements found in and around the site

The study area is densely populated to the north in the Gauteng Province with a population density of 67 people per km², however the more south you travel towards the Mpumalanga Province the study area is less populated with a population density of 16 people per km² within the local municipality. The most populated areas within the study area are the towns of Heidelberg and Nigel to the north, as well as Balfour and Grootvlei to a lesser extent located southeast of the site. Outside of these areas, there are isolated homesteads and scattered settlements throughout the study area. The study area particularly located south of Heidelberg and around the site itself is a known wedding venue and tourist destination.

The inhabited status of all homesteads within the proposed development site has been verified via a combination of desktop and on-site verification methods. It stands to reason that farmsteads that are not currently inhabited will not be visually impacted upon at present and have therefore been removed as potential sensitive receptors within this report. However, it must be noted that these farmsteads do retain the potential to be affected visually should they ever become inhabited again in the future.

Access to the sites is via a network of national, arterial and secondary roads that branch off of either the national N3 to the west, or the arterial R103 to the west and the R23 to the east. The N3 is a national route in South Africa that connects Johannesburg and Durban, respectively South Africa's largest and third-largest cities. Johannesburg is the financial and commercial heartland of South Africa, while Durban is South Africa's key port and one of the busiest ports in the

Southern Hemisphere. It is also a popular holiday destination. As a result, the N3 is a very busy highway that transports a high volume of traffic especially during peak holiday times⁴. The N3 Toll Route Agency confirms that volumes can spike up to 2000-3500 vehicles per hour on peak days and that high (heavy) constitutes 1500 vehicles per hour in a particular direction⁵.



Figure 6: Looking over the site from the R23



Figure 7: View over the site from the R103

Other industrial infrastructure within the study area includes existing high voltage powerlines scattered throughout the study area, as well as numerous associated substations.



Figure 8: Existing power lines within the study area

⁴ Source: [https://en.wikipedia.org/wiki/N3_\(South_Africa\)](https://en.wikipedia.org/wiki/N3_(South_Africa))

⁵ Source: <http://www.n3tc.co.za/n3-toll-route-traffic-and-crash-data-provide-numerous-safety-clues/#:~:text=Traffic%20forecasts,per%20hour%20on%20peak%20days.>

There are numerous protected areas scattered throughout the study area⁶, located predominately in the northern and southern portions of the study area. None of the protected areas are found within the proposed development site itself. The closest protected areas are the Alice Glockner and Suikerbosrand Nature Reserves, which are located approximately 5.1km and 12.3km respectively, to the northwest of the site. The study area is also a popular tourist and wedding destination. Refer to **Map 1** for the locations of the protected areas within the study area relative to the proposed development site.

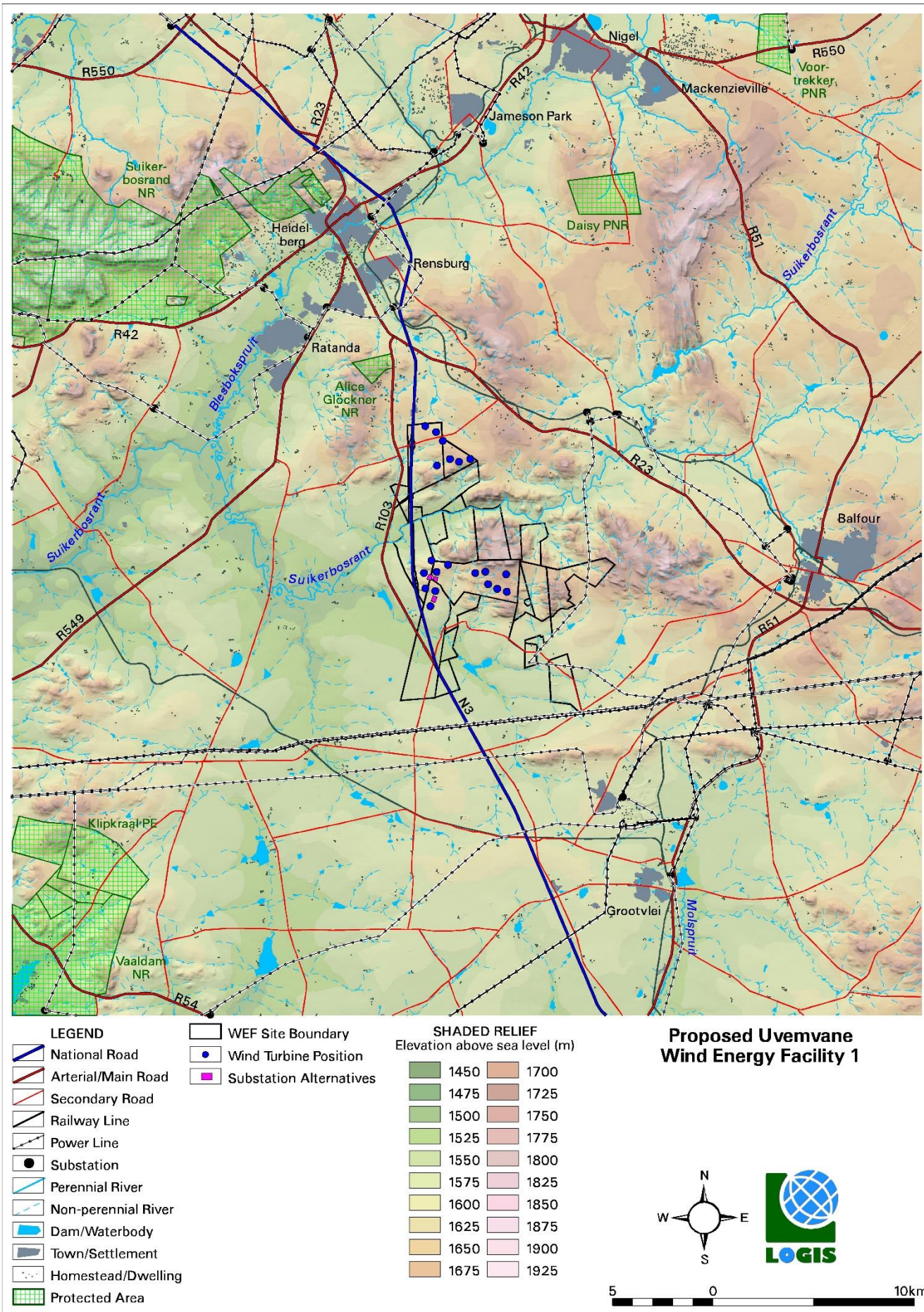
The greater environment with its wide open, predominately rural agricultural and undeveloped landscapes is considered to have a moderate to high visual quality.

Refer to **Map 3 and Map 4** for the location of the images taken during the site visit and the location of the images relative to the site used within the report

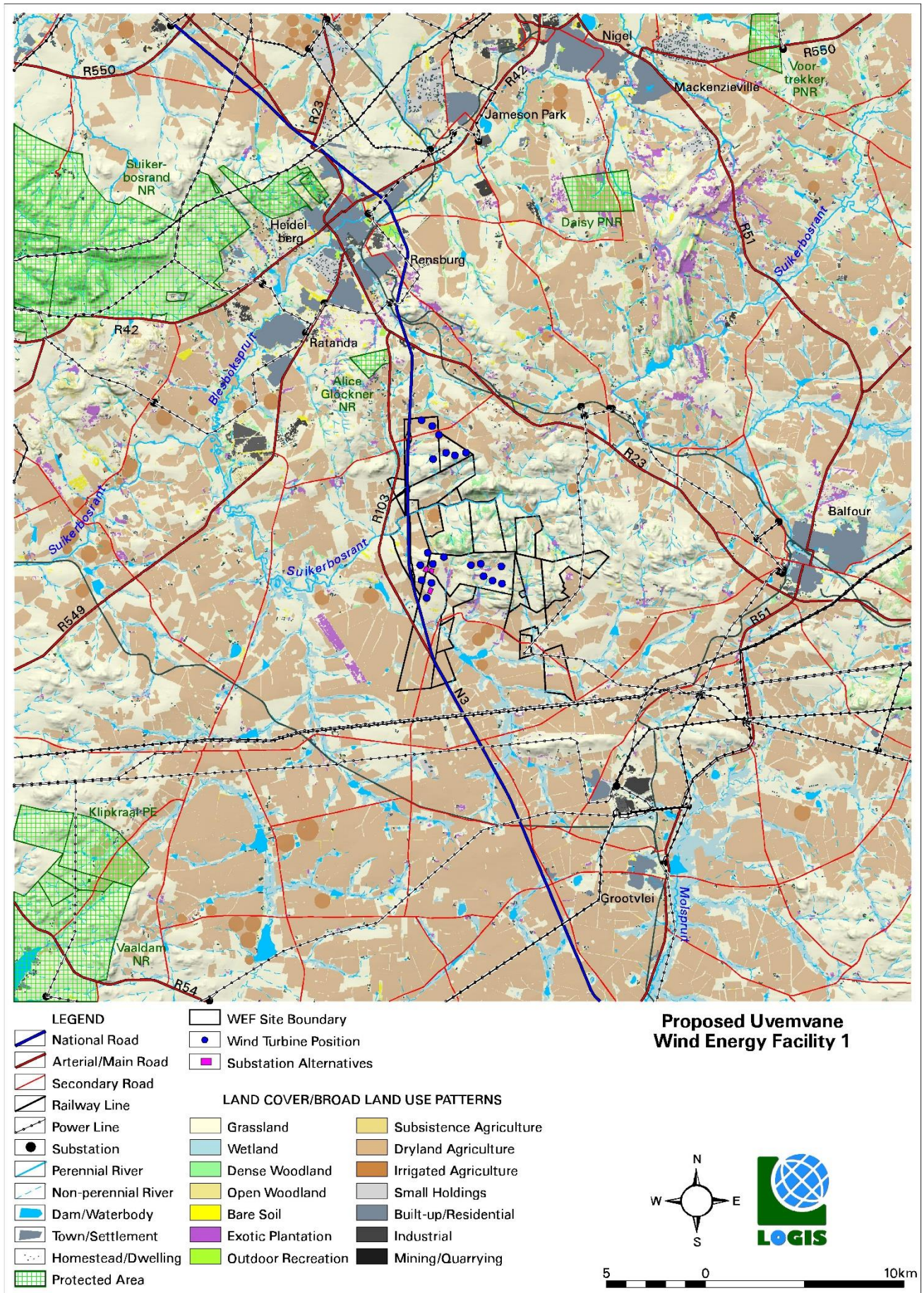


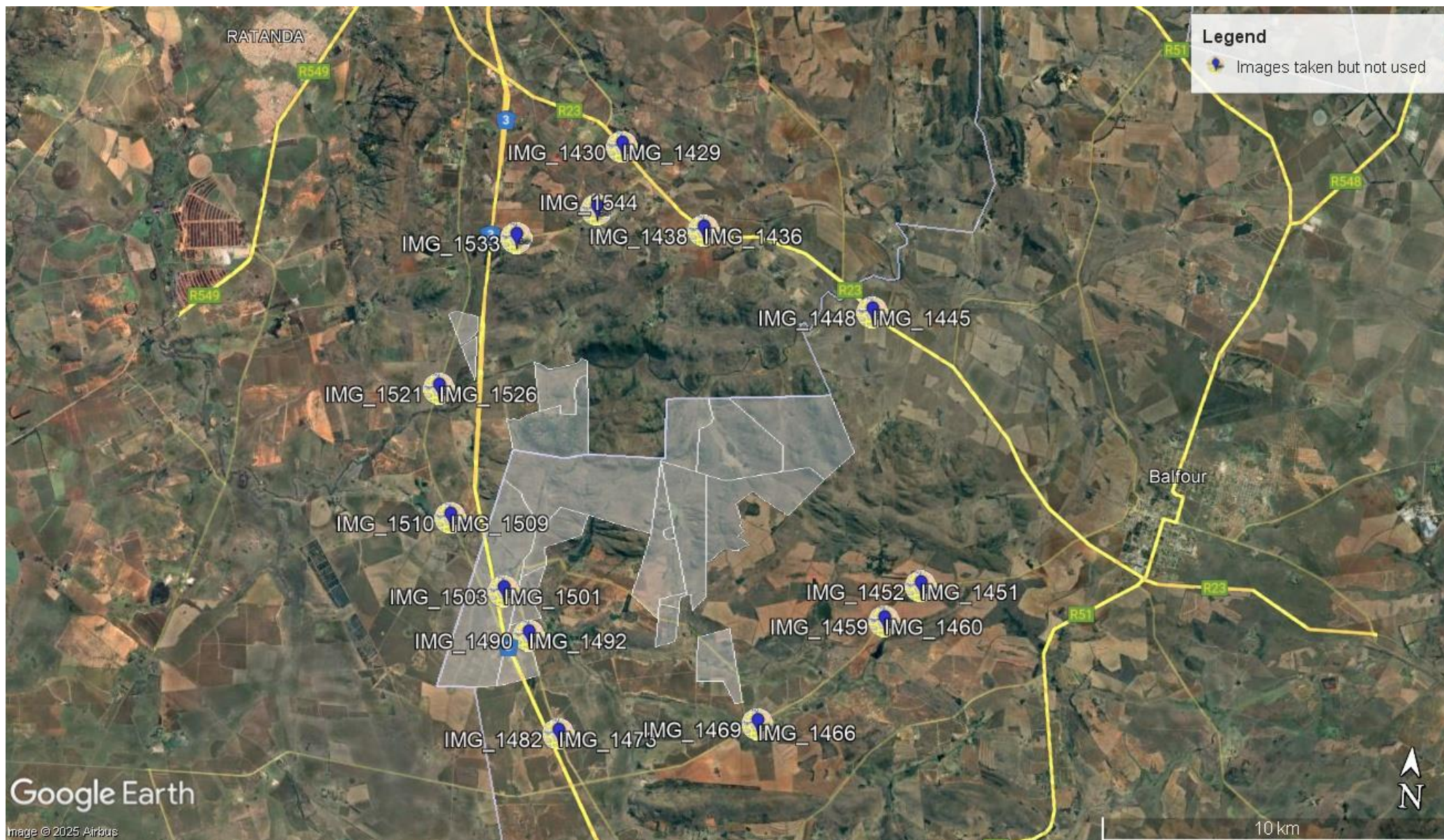
Figure 9: Moderate to high visual quality of the study area

⁶ The study area is defined as the extent of the maps outlined in this report, encompassing the proposed development site or WEF Site Boundary.

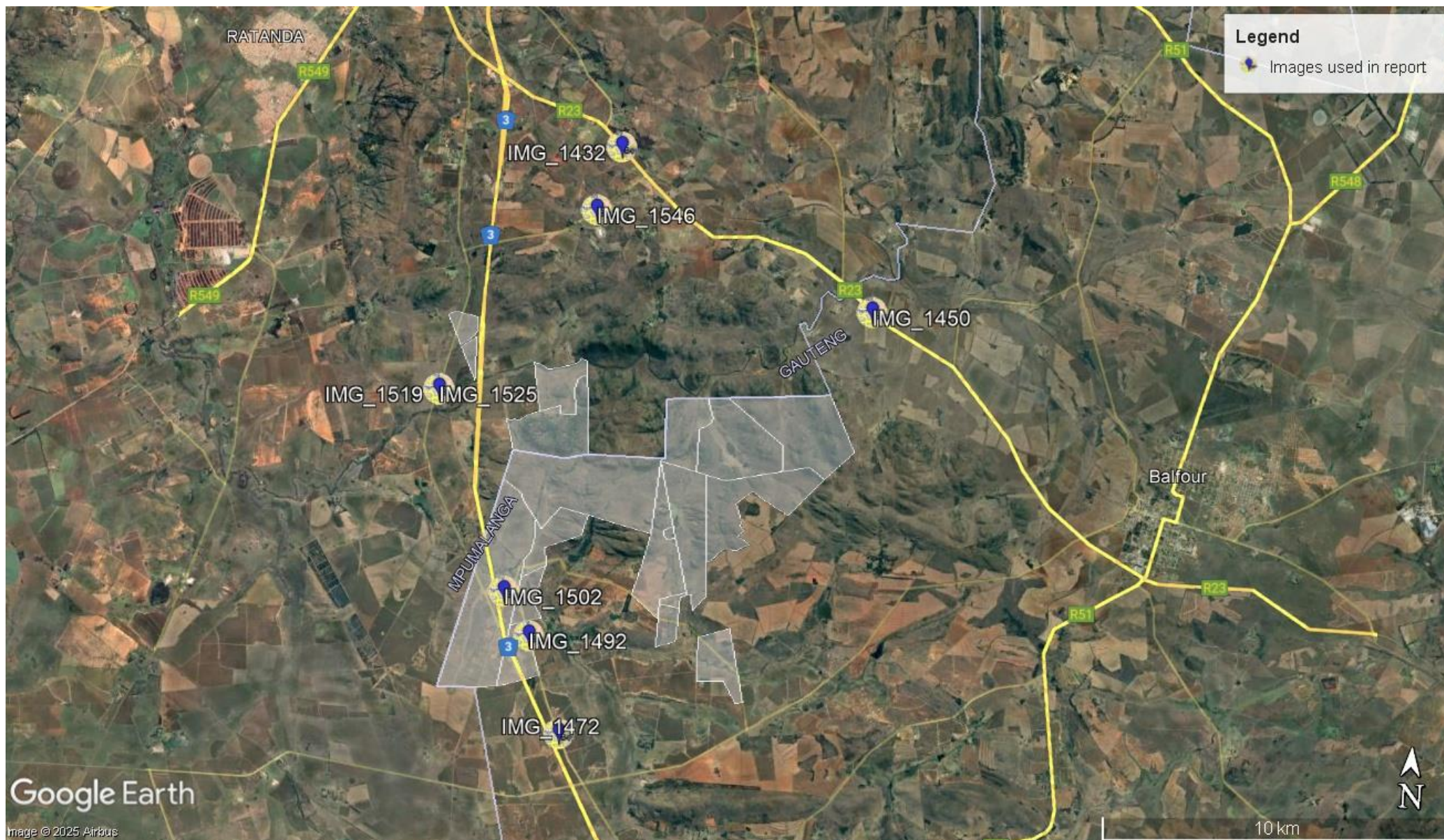


Map 1: Shaded relief map of the study area





Map 3: Location of the images taken during the site visit



Map 4: Location of the images relative to the site used within the report

5. SITE SENSITIVITY VERIFICATION

In accordance with GN 320 (20 March 2020) of the NEMA EIA Regulations of 2014 (as amended), prior to commencing with a visual specialist assessment, a site sensitivity verification (SSV) must be undertaken to confirm the current land use and environmental sensitivity of the proposed project areas as identified by the National Web-Based Environmental Screening Tool (i.e., Screening Tool). An SSV was undertaken in October 2025 and revised in February 2026 as part of the scoping phase reporting.

As part of the Scoping Phase reporting undertaken in October 2025 and revised in February 2026, based on the layout available at the time, site sensitivity buffers were established with the outcomes summarised below. From a specialist reporting perspective, it is confirmed that the findings of the specialist inputs to the Final Scoping Report are still valid, and the environmental context has not changed in terms of visual sensitivity. Refer to the Scoping Phase report for more information.

The DFFE Screening Tool generated for the ABO Uvemvane WEF 1 indicated that the site has a **very high** sensitivity in terms of the Landscape (Wind) Theme Sensitivity, as well as very high sensitivity relating to the visual aspects of Flicker Theme Sensitivity (potential temporarily or permanently inhabited residence). Based on the findings of the scoping phase, it was found that the **sensitivity of the visual receiving environment** for the proposed ABO Uvemvane WEF 1 was in fact **high** due to the following:

- Low to moderate VAC of the receiving environment.
- Location of the site outside of a REDZ.
- Shadow flicker impacts as a result of turbines located within 1km of numerous homesteads located within and adjacent to the site.
- High visual quality of the receiving environment.
- Location of turbines within Mountains and tall hills located within the site extent.
- Location of turbines within 1km of the N3 national road directly adjacent to the site.
- Location of turbines beyond 3km from the Alice Glockner Nature Reserve.
- Presence of a moderate amount of existing infrastructure.

This assessment therefore disputed some of the visual sensitivity classification identified by the Screening Tool with regards to flicker and landscape theme sensitivities. Refer to Table 4. Overall, the sensitivity rating in terms of the **Landscape Theme Sensitivity** of the entire site can be considered as **high** - as opposed to very high - as is mapped in the Screening Tool. Additionally, it was confirmed that where the occupation of the homesteads within the study area was verified, the **visual aspects of Flicker Theme Sensitivity** for the proposed ABO Uvemvane WEF 1 is confirmed to be **very high**.

Table 4: Summary of sensitivity ratings verified for the ABO Uvemvane WEF 1

Theme Sensitivity	Sensitivity rating of entire site in DFFE Screening Tool Report (2023 and 2025)	Specialist's verified sensitivity rating
Landscape (Wind)	Very High	High
Flicker (potential temporarily or permanently inhabited residence)	Very High	Very High

Based on general best practice and the findings above, the following was recommended in the scoping phase (based on the turbine layout available at that time) in order to mitigate potential visual impacts:

- Potential relocation/repositioning of **turbines placed within the topographical feature areas identified as mountains and tall hills, if at all possible**, as the placement of the turbines within this area is expected to exacerbate the visual exposure of the facility as a result of the elevated terrain, as well as have a visual impact on the scenic resources located within the study area. This applied to eight (8) turbines, namely turbines number 05, 06, 07, 08, 09, 10, 11, and 14.

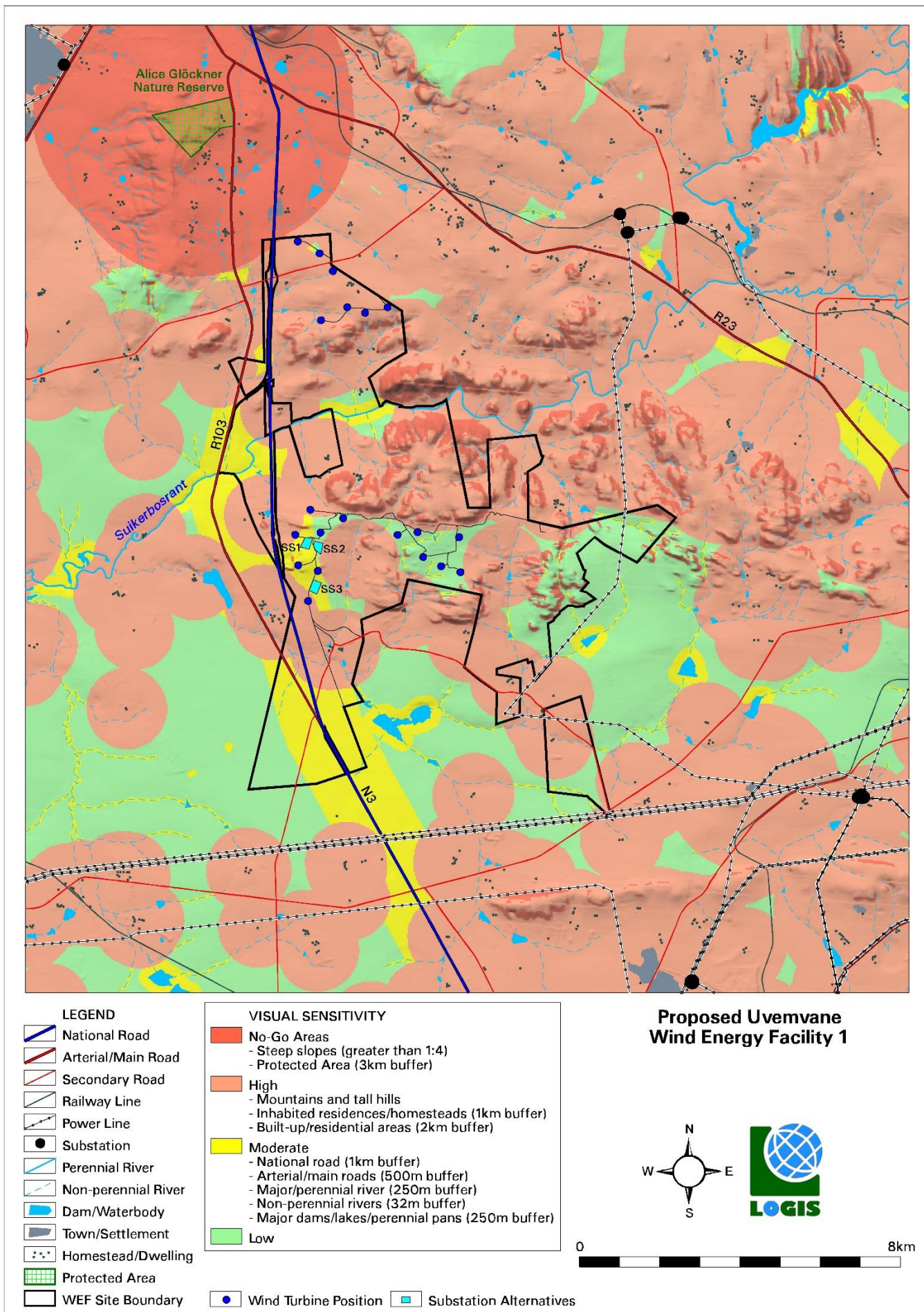
- **Turbines placed within the 1km buffer associated with the N3 are carefully considered for development with a “tread-light” approach** and minimum infrastructure development. This applied to six (6) turbines, namely turbines 01, 12, 16, 20, 22 and 24.
- It was recommended that **no turbines should be placed within the identified shadow flicker zone of visible shadows** of the identified five (5) homesteads, namely Geluk, Steynskraal, dwelling south of Modderfontein, dwelling south of Sandpos and Request, **unless otherwise agreed upon by the affected landowner**, even if the landowner is located within the development site. Proof of such agreement is required and to be included in the EIR Phase Reporting. This applied to five (5) turbines, namely turbines 03, 04, 24, 28 and 30.
- Given their height, effective mitigation measures for the visual impact of the proposed wind turbines are not possible. However, impacts can be minimized to some extent through micro-siting adjustments to reduce turbine clustering and visibility from sensitive receptors. It is recommended that the positions of the following **twelve (12) turbines are either relocated or removed** based on the findings of the scoping report and applied only to turbines that are located within two or more sensitive visual buffers / areas.
 - Turbine numbers 01, 03, 04, 05, 07, 09, 10, 11, 12, 16, 24 and 30. This recommendation is based on the findings of the scoping report and applied only to turbines that are located within two or more sensitive visual buffers / areas.
 - *Of note is that should landowner consent be received for turbines 03, 04 and 30, then the above recommendation will not apply to these specific turbines.*
- **Ten (10) turbines**, namely turbine numbers 13, 15, 17, 18, 19, 21, 23, 25, 26 and 28, are located within areas not associated with visual sensitivity buffers and are considered **low impact areas**. The placement of these turbines is **supported from a visual perspective** moving into the EIR Phase.

Since the scoping phase report the layout has been revised. Based on these revisions and feedback received from the Applicant the below listed turbines have been removed / relocated:

- Turbines 04, 9, 10, 11 and 25 - 31 have been removed.
- Turbines 1, 2, 5 and 7 have been shifted slightly further away from the relevant receptors.
- Consent for turbine 3 regarding shadow flicker has been obtained.
- The removal of additional turbines would jeopardise the technical feasibility of the project, according to the Applicant.

Refer to **Map 5**. As per the revised layout the following turbines are located in areas of visual sensitivity:

- Four (4) turbines, namely turbines number 05, 06, 07 and 08, are placed within the topographical feature areas identified as mountains and tall hills.
- All six (6) turbines previously identified, namely turbines 01, 12, 16, 20, 22 and 24, still remain within the 1km buffer associated with the N3.
- Two (2) turbines, namely turbines 03 and 24, are located within the identified shadow flicker zone of visible shadows of the identified homesteads, namely Geluk and residences located just south of Modderfontein. Consent from the landowners of Geluk for the placement of turbine 3 has been obtained. Refer to Appendix B.
- Based on the layout revision only one turbine is located within two or more sensitive visual buffers / areas. Turbine 24 is located within the 1km N3 buffer as well as identified as a turbine that could pose a shadow flicker impact of concern.



Map 5: Proximity of the proposed ABO Uvemvane WEF 1 development footprint to areas of visual sensitivity

6. RESULTS

6.1 Visual distance and observer proximity

Proximity offsets (the radial distance between the proposed development and the identified visual receptors) were determined based on the anticipated visual experience of the observer over varying distances. In general, the severity of the visual impact on visual receptors decreases with increased distance from the proposed infrastructure. Therefore, in order to refine the visual exposure of the facility on surrounding areas/receptors, the principle of reduced impact over distance is applied in order to determine the core area of visual influence for the ABO Uvemvane WEF 1. Proximity offsets for the proposed development footprint are thus established in order to indicate the scale and viewing distance of the facility and to determine the prominence of the structures in relation to their environment.

These proximity offsets are based on the anticipated visual experience of the observer over varying distances. The distances are adjusted upwards for larger facilities and downwards for smaller facilities (i.e. depending on the size and nature of the proposed infrastructure). This rationale was developed in the absence of any known and/or acceptable standards for South African WEFs. Therefore, for the purpose of this study, proximity offsets have been calculated from the expected boundary of the site, as indicated on **Map 6** and as follows:

- 0 – 5 km. Short distance view where the facility would dominate the frame of vision and constitute a very high visual prominence.
- 5 – 10 km. Short to medium distance view where the structures would be easily and comfortably visible and constitute a high to moderate visual prominence.
- 10 – 20 km. Medium to long distance view where the facility would become part of the visual environment but would still be visible and recognisable. This zone constitutes a moderate visual prominence.
- 20 km. Long distance view of the facility where the structures are not expected to be immediately visible and not easily recognisable. This zone constitutes a lower visual prominence for the facility.

The figure below helps to place the above explanations in context, illustrating what scale a turbine structure will be perceived at different viewing distances.



Figure 10: Schematic representation of a wind turbine from 1, 2, 5 and 10km under perfect viewing conditions.

6.2 Viewer incidence / viewer perception and sensitivity

The number of observers and their perception of a structure determine the concept of visual impact. If there are no observers or if the visual perception of the structure is favourable to all the observers, there would be no visual impact. It is necessary to identify areas of high viewer incidence and to classify certain areas according to the observer's visual sensitivity towards the proposed WEF and its related infrastructure. It would be impossible not to generalise the viewer incidence and sensitivity to some degree, as there are many variables when trying to determine the perception of the observer; regularity of sighting, cultural background, state of mind, purpose of sighting, etc. which would create a myriad of options.

To aid in assessing the overall viewer sensitivity, visual receptors have been graded according to their sensitivity to changes in the landscape as per the table below:

Table 5: Visual receptor sensitivity

Visual receptor sensitivity	Description
Very High	Occupiers of residential properties within a very short to medium distance to the proposed development (0-10 km)
	Guest houses, lodges, other tourist accommodation within a very short to medium distance to the proposed development (0-10 km)
	Users/visitors to outdoor recreational facilities/ areas including protected areas, private nature reserves, and nature-based recreational activities-walking, cycling, hiking, horse-riding, swimming etc where their attention or interest is focussed on the landscape
High	Communities where views contribute to the landscape setting enjoyed by residents
	Visitors to identified heritage sites and cultural landscapes or other attractions where views of surroundings are an important contributor to the cultural experience
	Guest houses, lodges, other tourist accommodation within a medium to long distance to the proposed development (>10 km)
	Road users in motor vehicles along scenic routes where the primary focus is the landscape
Moderate	Occupiers of residential properties within medium to long distance from the proposed development (>10 km)
	Outdoor recreation users where the focus is primarily on the activity and the landscape/views are secondary and not the focus i.e. sporting activities
	Road users in motor vehicles travelling through or past the affected landscape on provincial/secondary roads where views are transitory and fleeting.
Low	People at their place of work
	Road users in motor vehicles travelling through or past the affected landscape on major/national roads where views are fleeting
Negligible	No receptors present

Viewer incidence is calculated to be the highest along the public roads within the study area (N3, R103, R23 and various secondary roads). Travellers using these roads may be negatively impacted upon by visual exposure to the WEF. Additional sensitive visual receptors are located at the farm residences (homesteads) throughout the study area. It is expected that the viewer's perception, unless the observer is associated with (or supportive of) the WEF, would generally be negative.

To the knowledge of the author, as confirmed by the EAP, objections pertaining to visual have been received regarding the proposed ABO Uvemvane WEF 1.

6.3 Landscape Quality

The quality of a landscape is based on particular characteristics such as the scenic value, sense of place, uniqueness as well as, the extent to which its valued features have remained untransformed. These characteristics influence the way in which the landscape is experienced overall. A landscape with consistent, intact, well-defined and distinctive features is considered to be of higher quality, and in turn, higher sensitivity, than a landscape where the introduction of built infrastructure and transformation of the natural environment has diminished its character.

Sensitivity of the landscape character is intrinsically linked to its ability to absorb change.

Table 6: Landscape character sensitivity

Landscape character sensitivity	Description
Very High	The landscape character is such that its capacity to accommodate change is very low such as, formally protected landscapes inclusive of National Parks, Nature Reserves etc. where the management objective is protection of the existing character. This also applies to non-designated landscapes of similar character and quality where the condition of the landscape is natural in state with little to no development or transformation.
High	<p>The landscape character is such that it has limited/low capacity to accommodate change such as informal conservation areas not formally proclaimed i.e. Private Nature Reserves, Game Farms, areas identified in the Protected Area Expansion Strategy.</p> <p>The condition of the landscape is largely natural in state with little development or transformation.</p>
Moderate	<p>The landscape character is such that there is some capacity for change. This includes the urban edge which consists of a mixture of land uses (residential, recreational facilities and farming) and rural countryside. These landscapes may be recognized at a local (municipal) planning/policy level.</p> <p>The condition of the landscape is somewhat natural with a fair amount of built infrastructure and transformation.</p>
Low	<p>The character is such that it has capacity for change and where development would not result in a significant change or alternatively would have a positive impact. This includes the urban edge and rural countryside where these landscapes are not recognized at a local (municipal) planning/policy level.</p> <p>The condition of the landscape is largely transformed with a high level of built infrastructure.</p>
Negligible	<p>The character is such that its capacity to accommodate change is high and where development would make no significant change or would make a positive impact i.e. landscapes with little to no natural environment remaining i.e. urban areas, industrial and mining lands.</p> <p>The landscape often exhibits negative character and no longer holds any natural value.</p>

The study area is considered to have a moderate landscape quality based on its location within the urban edge and mixture of land uses. The condition of the landscape is somewhat natural with a fair amount of built infrastructure and transformation; the landscape character is such that there is some capacity for change.

6.4 Visual absorption capacity

Visual Absorption Capacity (VAC) is the capacity of the receiving environment to absorb the potential visual impact of the proposed development. VAC is primarily a function of the vegetation and will be high if the vegetation is tall, dense and continuous. Conversely, low growing sparse and patchy vegetation will have a low VAC.

The VAC would also be high where the environment can readily absorb the development in terms of texture, colour, form and light / shade characteristics. On the other hand, the VAC for a development contrasting markedly with one or more of the characteristics of the environment would be low. Since the significant height of WTG's adds to the potential visual intrusion of the WEF in the landscape and against the background of the horizon, the scale and form of the structures mean that it is unlikely that the environment will visually absorb them in terms of texture, colour, form and light/shade characteristics, therefore VAC in this case would be considered low.

The VAC also generally increases with distance, where discernible detail in visual characteristics of both environment and development decreases.

Since the land cover within the study area consists primarily of low mountains and undulating plains with very flat extensive areas covered mostly by grasslands interspersed with scattered areas of agriculture throughout the study area, overall, the VAC of the receiving environment of the ABO Uvemvane WEF 1 is deemed to be low to moderate owing to the low growing vegetation grassland vegetation. However, the undulating and hilly topography aids in reducing the potential visual exposure to some degree as some receptors may experience a moderate VAC depending on where in the study area the receiver is located relative to a topographical feature of elevation at that specific location.

Where homesteads and settlements occur, some more significant vegetation and trees may have been planted, which would contribute to the VAC (i.e. shielding the observers from the facility). As this is not a consistent occurrence, however, VAC will not be taken into account for any of the homesteads or settlements, thus assuming a worst-case scenario in the impact assessment.

As a result of the inconsistency of the nature of the vegetation and the high contrast of the WTGs with the surrounding receiving environment VAC will not be taken into account for the visual impact assessment of the ABO Uvemvane WEF 1 thereby representing the worst-case scenario.

6.5 Potential visual exposure

The result of the viewshed analyses for the proposed ABO Uvemvane WEF 1 is shown on **Map 6** Error! Reference source not found. that follows.

The analysis has been undertaken from each proposed turbine position as indicated within the proposed development area of ABO Uvemvane WEF 1 in order to determine the general visual exposure (visibility) of the area under investigation. It is expected, from a visual impact perspective, that the wind turbines themselves would constitute the highest potential visual impact of the WEF, therefore, the viewshed analysis for the facility was undertaken at an offset height of maximum 280m above average ground level (i.e. the approximate maximum blade tip height of the turbines).

The result of the viewshed analysis displays the potential areas of visual exposure. Land that is more elevated is typically more exposed to the proposed WEF, whilst lower lying areas such as valleys are shielded, or not as exposed.

It must be noted that the viewshed analysis does not include the effect of vegetation cover or existing structures on the exposure of the proposed wind turbines, therefore signifying a worst-case scenario.

Map 5 indicates areas from which the proposed ABO Uvemvane WEF 1 could potentially be visible, as well as proximity offsets (5km, 10km and 20km) from the proposed development area. Typically, structures of this height (i.e. 280m) may be visible from up to 20km away. In this respect, the anticipated Zone of Visual Influence for this facility as calculated from the

development footprint (i.e. determined from the edge of the proposed development areas) has been indicated at 20km. The extent of visual exposure within this zone is expected to be very high.

The following is an overview of the findings of the viewshed of ABO Uvemvane WEF 1 only, based on the layout illustrated on the Map provided:

0 – 5km

The proposed facility will have a large core area of potential visual exposure on the project site itself, and within a 5km radius thereof. Small pockets of visually screened areas can be found to the far east and northwestern portions of this zone.

Potential sensitive visual receptors within this visually exposed zone include residents of numerous scattered homesteads/farmsteads, and tourist accommodations, as well as visitors to portion of the Alice Glockner Nature Reserve. This zone also contains various roads, namely the N3 national road, the R23 and R103 regional roads, as well as various secondary roads, which are located adjacent to or traverse the site. Observers travelling along these roads will similarly be exposed to the WEF infrastructure.

5 – 10km

Potential visual exposure is still fairly concentrated within this zone though it does become slightly more scattered (i.e. between 5 and 10km). Visually screened areas can be found in the northern, southeastern and northwestern portions of this zone. These screened areas are mostly associated with the screening effects of the hilly topography. Visual exposure and frequency of exposure is predominately concentrated to the northeastern and southwestern portions of this zone.

Sensitive visual receptors comprise residents of the numerous homesteads/farmsteads scattered around the study area, as well as residents located on the outskirts of the town of Heidelberg. Additionally, potential sensitive visual receptors include observers travelling along the various roads listed above, as well as a portion of the R549, and other various secondary roads.

10 – 20km

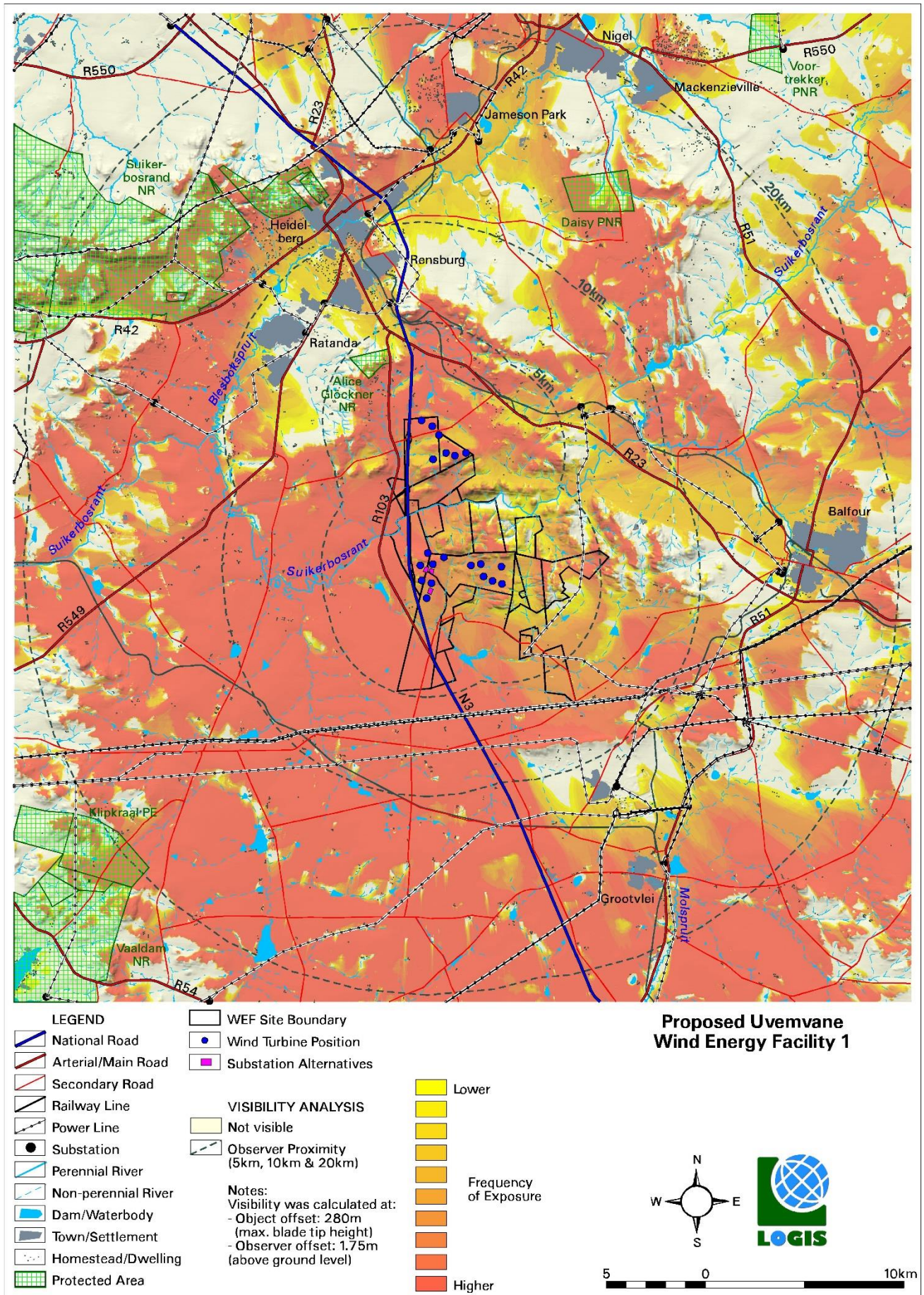
In the longer distance (i.e. between 10 and 20km offset), the extent of potential visual exposure become more scattered with larger visually exposed areas concentrated to predominately to the southwestern portions of this zone. The frequency of exposure is also incredibly concentrated and high in the visually exposed areas to the southwest. Visual exposure to the northeastern portions of the zone is more scattered and the frequency of exposure lower. Visually screened areas are largely associated with low lying areas located behind scattered ridges throughout the study area. Visually screened areas are found scattered in the northern, eastern and southeastern portions of this zone.

Sensitive visual receptors comprise residents of various homesteads/farmsteads and towns/settlements (i.e. Heidelberg, Nigels, Balfour, Grootvlei, etc.) scattered throughout the zone. Potential sensitive visual receptors also include observers travelling along the R549, R548, R23, R42 and R51, as well as various secondary roads. Several protected areas including Suikerbosrand Nature Reserve, Daisy Private Nature Reserve and Klipkraal Nature Reserve / Protected Environment are located within this zone and may also potentially be impacted upon.

> 20km

Beyond the 20 km offset from the proposed site, potential sensitive visual receptors are not likely to be visually exposed to the proposed facility, despite lying within the viewshed.

In general terms it is envisaged that the turbines associated with the proposed ABO Uvemvane WEF 1, where visible from shorter distances (e.g. less than 5km and potentially up to 10km), and where sensitive visual receptors may find themselves within this zone, may constitute a high visual prominence, potentially resulting in a high to very high visual impact. This may include tourists visiting the region, observers travelling along the roads, as well as residents of the homesteads and towns / settlements mentioned above.



Map 6: Viewshed analysis of the proposed ABO Uvemvane Wind Energy Facility 1, indicating the frequency of visual exposure

6.6 Cumulative visual assessment

Cumulative visual impacts can be defined as the additional changes caused by a proposed development in conjunction with other similar developments or as the combined effect of a set of developments.

The purpose of the cumulative visual assessment is to evaluate the combined visual effects of the proposed development together with existing, approved, and reasonably foreseeable WEF and other developments within the surrounding landscape. The assessment considers how the proposed project contributes to incremental changes in visual character, visual amenity, and sense of place over time, rather than assessing the project in isolation.

The assessment of cumulative visual impacts requires professional judgement informed by landscape character, visual receptor sensitivity, and the magnitude of visual change. While there are no universally prescribed numerical thresholds for determining acceptable cumulative visual change, cumulative impacts are evaluated based on whether the proposed development results in a **material or unacceptable erosion of visual amenity, landscape character, or sense of place** beyond existing conditions.

The specialist is also required to conclude if the proposed development will result in any unacceptable loss of visual resource considering all the projects existing and proposed in the area.

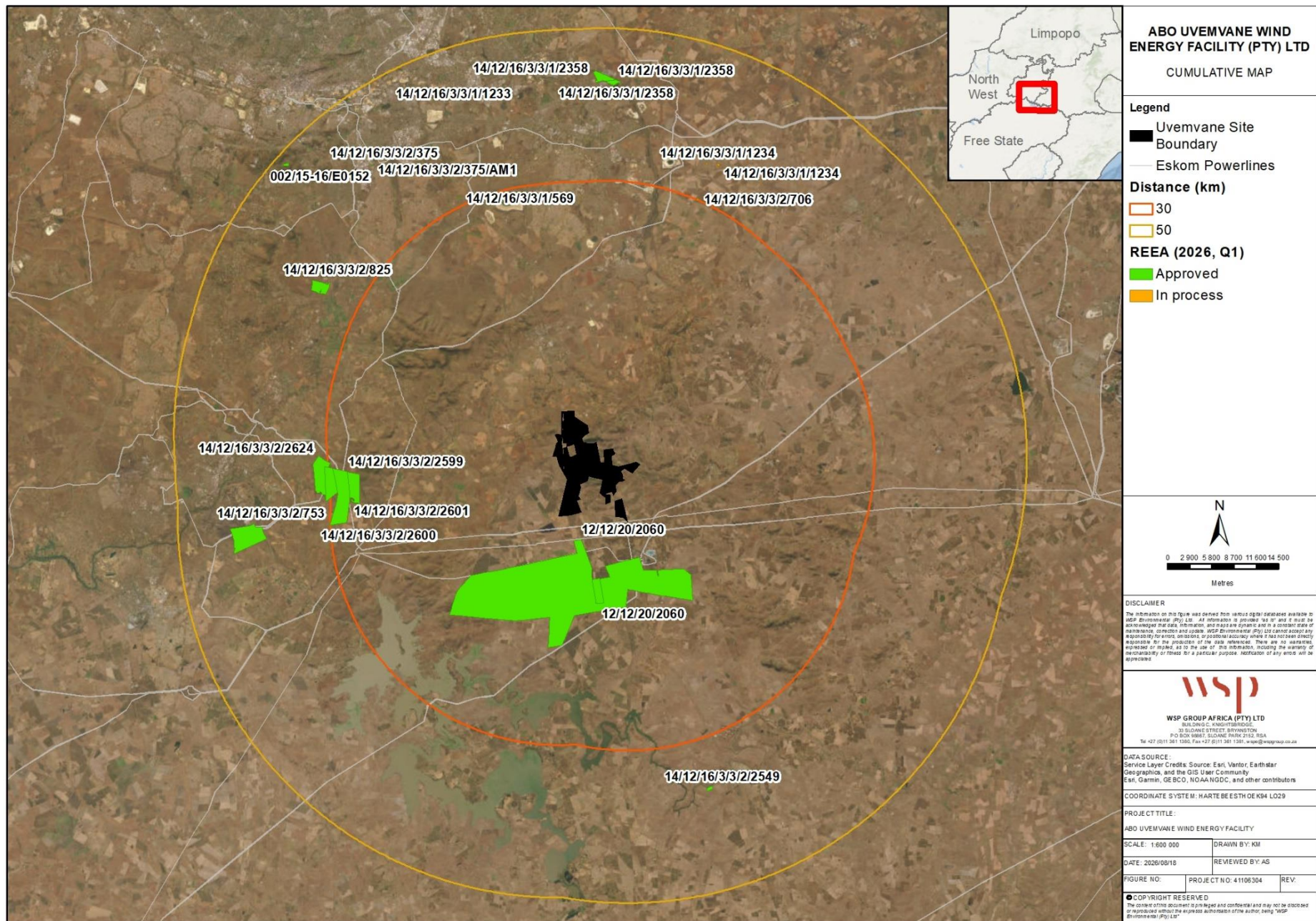
In assessing cumulative visual impacts, differentiation must be made between primary and secondary cumulative drivers. **Primary cumulative drivers** comprise developments that are visually comparable to the proposed activity, such as other wind energy facilities, Solar PV facilities, or powerlines, which share similar scale, form, and visual characteristics (like for like e.g. PV with PV, wind with wind, powerlines with powerlines). In the context of visual impact assessment, cumulative effects are most meaningfully experienced where developments share comparable scale, form, and visual characteristics, as these have the greatest potential to reinforce perception and alter landscape character. **Secondary cumulative drivers** include associated or functionally linked infrastructure, as well as other diverse developments within the landscape, such as substations, access roads, and non-like-for-like land uses e.g. grid connection powerlines associated with WEFs or PV facilities, substations, access roads, service infrastructure. These are considered qualitatively, informing baseline landscape character, landscape sensitivity, and overall cumulative context.

This approach is consistent with the NEMA definition of cumulative impact, which requires consideration of the combined effects of past, current and reasonably foreseeable activities that may individually be insignificant but collectively result in a material impact.

The significance of cumulative visual impacts is therefore determined primarily by the interaction of primary cumulative drivers with the landscape using a structured sensitivity–magnitude significance matrix, while secondary cumulative drivers provide context, ensuring that the resulting magnitude and significance ratings reflect both visually reinforcing developments and the broader landscape setting.

In order to establish the baseline cumulative environment, all renewable energy projects were mapped, inclusive of WEFs, PV facilities and overhead powerlines within 50km that have received an Environmental Authorisation (EA) in order to determine the extent of authorised developments within the region. Information was collated from multiple sources, including the National DFFE Renewable Energy EIA Application (REEA) database, 2026 Quarter 1 and the Mpumalanga Tourism and Parks Agency (MTPA) database. The REEA database is the most accurate and up-to-date data available to the project team. There may be some projects with "in-process" applications for which data is not yet publicly available. This is the data found to be available, and efforts were made to determine recent amendments. The REEA database contains land parcels, and not the footprints. In most cases the actual development footprint of the nearby Renewable Energy developments could not be easily quantified or accessed spatially. Hence the land parcels considered, are larger than the land the facility will occupy. It is important to note that the existence of an approved EA does not directly equate to actual development of the project. For these reasons this data tends towards a worst-case scenario.

Map 7 illustrates the projects considered in this cumulative impact assessment, while **Table 7** provides further detail on each REF represented on the Map.



Map 7: Renewable energy and EGI projects within the 50km radius considered for the Cumulative Impact Assessment.

Table 7: Information regarding the proposed renewable energy projects located within 50km of the proposed ABO Uvemvane WEF 1 that will be considered in the Cumulative Impact Assessment

No .	DFFE REFERENCE	PROCESS	PROJECT TITLE	APPLICANT	EAP	TECH	MW/ kV	STATUS
1	14/12/16/3/3/2/2549	Scoping EIA	The Proposed Villiers Solar Power Plant near Villiers, Free State Province	Villiers Solar Power Plant (RF) Pty Ltd	Blue Crane Environmental (Pty) Ltd	Solar PV	50	Approved
2	14/12/16/3/3/2/2601	Scoping EIA	The Proposed Suikerbos PV 3 and Associated Infrastructure in the Midvaal Local Municipality and the Sedibeng District Municipality, near Vereeniging, Gauteng Province.	Suikerbos PV 3 (Pty) Ltd	Blue Crane Environmental (Pty) Ltd	Solar PV	240	Approved
3	14/12/16/3/3/2/2624	Scoping EIA	The proposed Suikerbos PV 4 Photovoltaic Solar Energy Facility and Associated Infrastructure near Vereeniging, Gauteng Province.	Suikerbos PV 4 (Pty) Ltd	Blue Crane Environmental (Pty) Ltd	Solar PV	250	Approved
4	14/12/16/3/3/1/1234	BAR	Proposed Kynoch Rooftop Energy Installation in Endicott Gauteng Province	Building Energy (Pty) Ltd	Savannah Environmental (Pty) Ltd	Solar PV	1,8	In process
5	14/12/16/3/3/1/2358	BAR	The proposed establishment of a 115MW solar photovoltaic (PV) facility in Springs, within the Ekurhuleni Metropolitan Municipality, Gauteng Province	Calodex (Pty) Ltd	WSP Group Africa (Pty) Ltd	Solar PV	115	Approved
6	14/12/16/3/3/1/569	BAR	Proposed construction of a 3MW PV solar power facility on Farm Villa Liza No. 675IR in Mapelton	BNM Technology and Associates	Phaki Phakanani Environmental Consultants (Pty) Ltd	Solar PV	3	Approved
7	14/12/16/3/3/2/375	Scoping EIA	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	Clyde Brickfields (Pty) Ltd	Rock Environmental Consulting (Pty) Ltd	Solar PV	75	Approved
8	14/12/16/3/3/2/375/AM 1	Amendment	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	Clyde Brickfields (Pty) Ltd	Rock Environmental Consulting (Pty) Ltd	Solar PV	0	Approved

No .	DFFE REFERENCE	PROCESS	PROJECT TITLE	APPLICANT	EAP	TECH	MW/ kV	STATUS
9	14/12/16/3/3/2/753	Scoping EIA	Proposed 75 MW Solar PV facility at Lethabo Power Station, Free State Province	Eskom Holdings SOC Limited	Savannah Environmental (Pty) Ltd	Solar PV	75	Approved
10	14/12/16/3/3/2/825	Scoping EIA	The 100 MW Waterval Solar Park including solar glass manufacturing, metallurgical silicone manufacturing plant and module manufacturing plant near Meyerton, Gauteng Province	TFS Solar (Pty) Ltd	EON Consulting	Solar PV	100	Approved
11	14/12/16/3/3/2/2549	Scoping EIA	The Proposed Villiers Solar Power Plant near Villiers, Free State Province	Villiers Solar Power Plant (RF) Pty Ltd	Blue Crane Environmental (Pty) Ltd	Solar PV	50	Approved

From the map it is clear that the proposed ABO Uvemvane WEF 1 and associated grid connection infrastructure is located near a number of approved Solar PV Facilities within a **50 km radius** (as outlined in the table above).

Although several Solar PV have been identified within a **50 km radius** (as outlined in the table above), the majority are either solar installations (which have a low vertical profile and limited long-distance visibility) or projects still in early planning phases, meaning the cumulative visual exposure may not materialise to its theoretical maximum.

Cumulative visual impacts for the proposed ABO Uvemvane WEF 1 may be as a result of one or more of the following interaction types:

- **Additive effect:** Where additional and new WEFs reinforce an existing wind energy landscape, collectively increase turbine visual clutter, reinforcing dominance or skyline saturation within the landscape and increasing the dominance of engineered land cover.
- **Sequential effect:** Where repeated exposure of different WEFs occurs along travel routes or within the landscape.
- **Transformative effect:** Where the introduction of additional or new WEF infrastructure results in a step-change in landscape character, redefining the landscape character.

The proposed ABO Uvemvane WEF 1 will be **transformative** in nature as the proposed scattered layout of the WEF introduces a new WEF into a landscape without any other authorised or operational WEFs in the region resulting in the redefining of the landscape character.

As such, the cumulative visual context within which the proposed ABO Uvemvane WEF 1 being assessed is characterised by the **absence of wind energy infrastructure**, and the proposed development could potentially represent the **first introduction of this infrastructure type** within the broader landscape.

Cumulative significance rating matrix

The cumulative visual impact of the proposed ABO Uvemvane WEF 1 was evaluated using a qualitative matrix that considers the **interaction between landscape sensitivity and the magnitude of cumulative visual change** as follows:

- The **visual quality and landscape character** sensitivity of the receiving environment.

As per Section 6.3. above, the study area is considered to have a **moderate** landscape character sensitivity as a result of the study area's location within the urban edge and mixture of land uses. The condition of the landscape is somewhat natural with a fair amount of built infrastructure and transformation; the landscape character is such that there is some capacity for change.

- **Magnitude of cumulative change**

The magnitude of cumulative visual change reflects the **extent to which wind energy facilities collectively influence the visual environment within the defined cumulative visual study area**, with particular emphasis on **the number of facilities present, the degree of intervisibility, and the resulting perceptual change** as per the table below:

Table 8: Magnitude of cumulative change

Magnitude Rating	Description
Very High	Several WEF are visible across a wide area, often sequentially, resulting in a visually dominant wind energy landscape. The cumulative effect represents a fundamental and widespread transformation of landscape character and sense of place, perceived as one facility.
High	Multiple WEFs are present within the cumulative visual study area, with frequent intervisibility or

	overlapping viewsheds. The combined presence of turbines noticeably influences skylines, openness, and the visual identity of the landscape, often perceived as one facility.
Moderate	Two or three WEFs occur within the cumulative visual study area, with limited to moderate intervisibility. The facilities are perceived as separate developments, but cumulative change to landscape character remains contained.
Low	The proposed WEF occurs in the presence of one or more authorised / operational WEF that occurs at the periphery of the cumulative study area, with limited or intermittent intervisibility and the facilities are perceived as separate developments. Cumulative effects are possible but spatially restricted.
Negligible	The proposed wind energy facility is the only wind energy facility within the cumulative visual study area . Cumulative effects are limited to internal repetition within the project, with no interaction with other wind energy facilities. While turbines may be visible, cumulative change arising from multiple developments does not occur.

The matrix is based on the interaction between **visual sensitivity** and the **magnitude of cumulative visual change**. By combining sensitivity and magnitude, it is recognised that the same level of development may result in different levels of impact depending on context. For example, a moderate increase in infrastructure within a highly modified landscape may result in a low to moderate cumulative impact, whereas the same level of change in a visually intact landscape may result in a high cumulative impact. The table below outlines how the overall cumulative sensitivity rating is determined based on the context specific visual sensitivity and the magnitude of cumulative visual change for the proposed ABO Uvemvane WEF 1.

Table 9: Cumulative visual impact significance matrix

	Negligible Magnitude	Low Magnitude	Moderate Magnitude	High Magnitude	Very High Magnitude
Negligible Landscape Sensitivity	Negligible	Negligible–Low	Low	Low–Moderate	Moderate
Low Landscape Sensitivity	Negligible–Low	Low	Low–Moderate	Moderate	Moderate–High
Moderate Landscape Sensitivity	Low	Low–Moderate	Moderate	Moderate–High	High
High Landscape Sensitivity	Low–Moderate	Moderate	Moderate–High	High	Very High
Very High Landscape Sensitivity	Moderate	Moderate–High	High	High–Very High	Very High

The outcome of the cumulative visual impact of the proposed ABO Uvemvane WEF 1 is as follows:

Table 10: Outcome of the cumulative visual impact of the proposed ABO Uvemvane WEF 1

Criteria	Rating	Rationale
Landscape Sensitivity	Moderate	The study area is considered to have a moderate landscape character sensitivity as a result of the study area's location within the urban edge and mixture of land uses. The condition of the landscape is somewhat natural with a fair amount of built

		infrastructure and transformation; the landscape character is such that there is some capacity for change.
Magnitude of cumulative change	Negligible	The proposed ABO Uvemvane WEF 1 is the only WEF within the cumulative visual study area.
Cumulative significance	Low	The first introduction of this infrastructure type within the broader landscape.

Based on the above, the cumulative visual impact of the proposed ABO Uvemvane WEF 1 is ultimately expected to be of **low** significance that is **transformative** in nature, especially when considering the scale of regional renewable energy development and the spatial distribution of other renewable energy developments.

Given the regional landscape character and visual absorption capacity, as well as the spacing and likely visual separation between individual facilities, it is likely that the landscape can accommodate the proposed ABO Uvemvane WEF 1 without leading to an unacceptable loss of visual resource or overwhelming the viewer's experience from a cumulative perspective.

Therefore, while **cumulative visual impacts are acknowledged**, they are **not considered a fatal flaw** to the proposed development, provided that appropriate mitigation measures (such as careful turbine placement, colour selection, and layout optimisation) are implemented to reduce visibility from key receptors and routes. This level of cumulative visual impact is expected to be **within acceptable limits**.

6.7 Visual impact index

The combined results of the visual exposure, viewer incidence/perception and visual distance of the proposed ABO Uvemvane WEF 1 are displayed on **Map 8**. Here the weighted impact and the likely areas of impact have been indicated as a visual impact index. Values have been assigned for each potential visual impact per data category and merged in order to calculate the visual impact index.

The criteria (previously discussed in this report) which inform the visual impact index are:

- Visibility or visual exposure of the structures.
- Observer proximity or visual distance from the structures.
- The presence of sensitive visual receptors.
- The perceived negative perception or objections to the structures (if applicable).
- The visual absorption capacity of the vegetation cover or built structures (if applicable).

An area with short distance visual exposure to the proposed infrastructure, a high viewer incidence and a potentially negative perception (i.e. a sensitive visual receptor) would therefore have a **higher** value (greater impact) on the index. This helps in focussing the attention to the critical areas of potential impact and determining the potential **magnitude** of the visual impact.

The index indicates that **potentially sensitive visual receptors** within a 5km radius of the WEF may experience a **very high** visual impact. The magnitude of visual impact on sensitive visual receptors subsequently subsides with distance to; **high** within a 5 – 10km radius (where sensitive receptors are present) and **moderate** within a 10 – 20km radius (where sensitive receptors are present). Receptors beyond 20km are expected to have a **low** potential visual impact.

Likely areas of potential visual impact and potential sensitive visual receptors⁷ located within a 20km radius of the proposed WEF are displayed on **Map 9** and numbered on **Map 10**.

⁷ The names indicated on the map and listed below here are of the homestead or farm dwelling as indicated on the SA 1: 50 000 topographical maps and do not refer to the registered farm name. Should a homestead / residence / institution not be listed in terms of the SA 1: 50 000 topographical maps, then it is assumed that the impacts will be similar to the other identified residences within the same proximity radii.

Magnitude of the potential visual impact

The WEF may have a visual impact of **very high** magnitude on the following identified observers within a 5km radius:

1. Tweefontein
2. Tweefontein
3. Tweefontein
4. Unkown
5. Tweefontein
6. Unkown
7. Tweefontein
8. Houtpoort (Alice Glockner NR)
9. Bella Rochelle
10. Driefontein
11. Unknown
12. Houtpoort
13. Unknown
14. Nooitgedacht
15. Houtpoort
16. Unknown (Paane Water)
17. Nooitgedacht
18. Unknown (Low Hanging Nuts)
19. Unknown (Hayani Country Stay)
20. Nooitgedacht (Hurricane Corso)
21. Unknown
22. Sedgehill
23. Gabrielsrust (Naveh Guest Farm)
24. Unknown
25. Heritage9
26. Unknown
27. Driefontein
28. Rietkol
29. Austral Farm (Silver Oaks Mantessori School)
30. Unknown
31. Bothashoek
32. Rocky Ridge
33. Unknown
34. Unknown
35. Konehaag
36. Driefontein
37. Unknown
38. Unknown
39. Sauerdam
40. Unknown
41. Unknown
42. Unknown
43. Unknown
44. Unknown
45. Josephskroon
46. Unknown (Kiepersol Gasteplaas)
47. Unknown
48. Steynskraal (Mooi Begin Guest Farm & Venue)
49. Unknown
50. Unknown
51. Steynskraal
52. Unknown
53. Unknown (Tuin van Eden)
54. Lagerspoort (on site)
55. Lagerspoort (on site)
56. Lagerspoort
57. Lagerspoort

58. Unknown (The Wild Lodge & Wedding Venue)
59. Unknown
60. Unknown (The Wild Lodge & Wedding Venue)
61. Kya Katina (on site)
62. Malanskraal (on site)
63. Malanskraal
64. Driefontein
65. Malanskraal (Plaas Driefontein - on site)
66. Sandpos
67. Unknown
68. Request (onsite)
69. Malanskraal
70. Unknown
71. Malanskraal (on site)
72. Unknown
73. Modderfontein (Charmick Wedding & Functions Venue)
74. Modderfontein
75. Unknown (Zingela venue/lodge)
76. Unknown
77. Modderfontein (Banabatau Pty)
78. Modderfontein
79. Unknown
80. Caesersvlei (Estate)
81. Steenkaampskraal
82. Unknown
83. N3 national road
84. R103/R23 main/arterial roads
85. Various secondary roads
86. Unknown (on site)
87. Unknown (on site)
88. Unknown

The WEF may have a visual impact of **high** magnitude on the following identified observers within a 5 – 10km radius:

89. Rensburg (south-eastern outlying)
90. Unknown
91. Unknown
92. Blinkpan
93. Blinkpoort
94. Unknown
95. Unknown
96. Unknown
97. Unknown
98. Blinkpoort
99. Unknown
100. Unknown (Fortuna Resort)
101. Oppi Koppie
102. Steynskraal (Thai Spa R23)
103. Unknown
104. Stone Cellar (eastern outlying areas)⁸
105. Die Brug
106. Unknown
107. Wildebeesfontein
108. Wildebeesfontein

⁸ This list contains visually exposed receptors. Receptors, even in relatively close proximity (e.g. The Oppi Koppie by die Dam Gastelaas), that are not exposed is omitted. The aforementioned guest facilities are set down very low in the landscape (i.e. on the edge of the dam), and is not exposed to the wind turbine structures and therefore not likely to be visually impacted by exposure to the wind turbine structures. Receptors located higher up in the landscape (east of the dam e.g. the Fortuna Resort) are exposed and have been mapped and listed. The Stone Cellar facilities (Stone Cellar proper) is located within a view shadow caused by the hill to the west, but a section of the property further down the hill (further east) may be exposed. This receptor is included in the list as a sensitive visual receptor as a precaution in the event that the exposed part the property is utilized for guest functions.

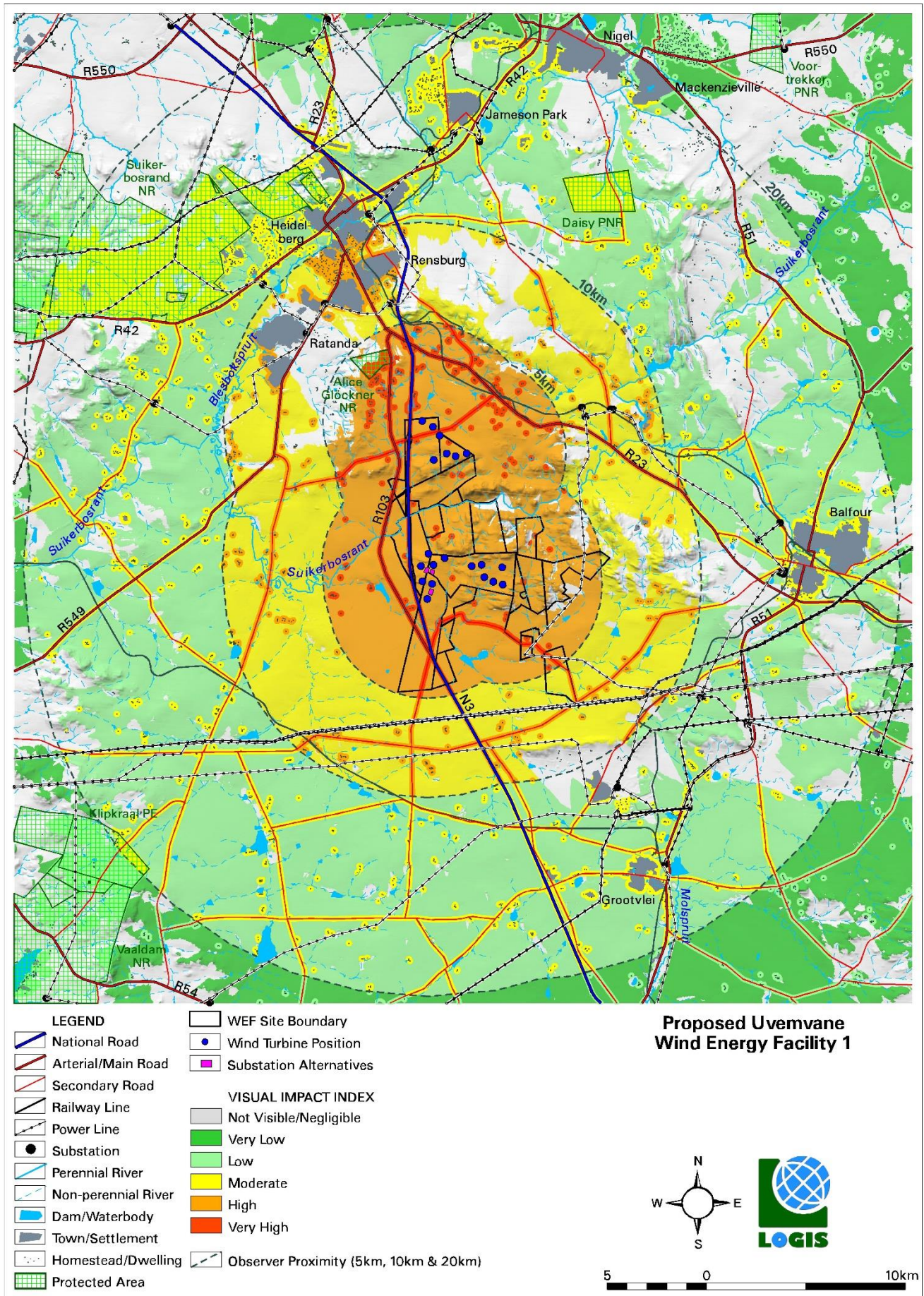
109. Wildebeesfontein
110. Unknown
111. Wildebeesfontein (Mondoro Lodge Wedding Venue)
112. Unknown
113. Unknown (Sediba Lodge)
114. Tweefontein
115. Tweefontein
116. Tweefontein
117. Klipfontein
118. Unknown
119. Unknown
120. Lammermoor
121. Lammermoor
122. Unknown
123. Lammermoor
124. Kleinfontein
125. Rietspruit
126. Kleinfontein
127. Rietspruit
128. Unknown
129. Unknown
130. Rietspruit
131. Rietspruit (Kudung Middle School)
132. Unknown
133. Rietspruit
134. Unknown
135. Riviersdraai
136. Kruitbad
137. Vlaklaagte
138. Unknown
139. Unknown
140. Elandsfontein
141. Swaelskrans
142. De Hoek
143. Unknown
144. Unknown
145. Unknown
146. Unknown
147. Karans Estate
148. Nooitgedacht/Ratanda (south-eastern outlying)
149. Hoerskool Emmasdal
150. Heidelberg agricultural holdings

The WEF may have a visual impact of **moderate** magnitude impact on the following identified observers located between a 10 – 20km radius of the wind turbine structures:

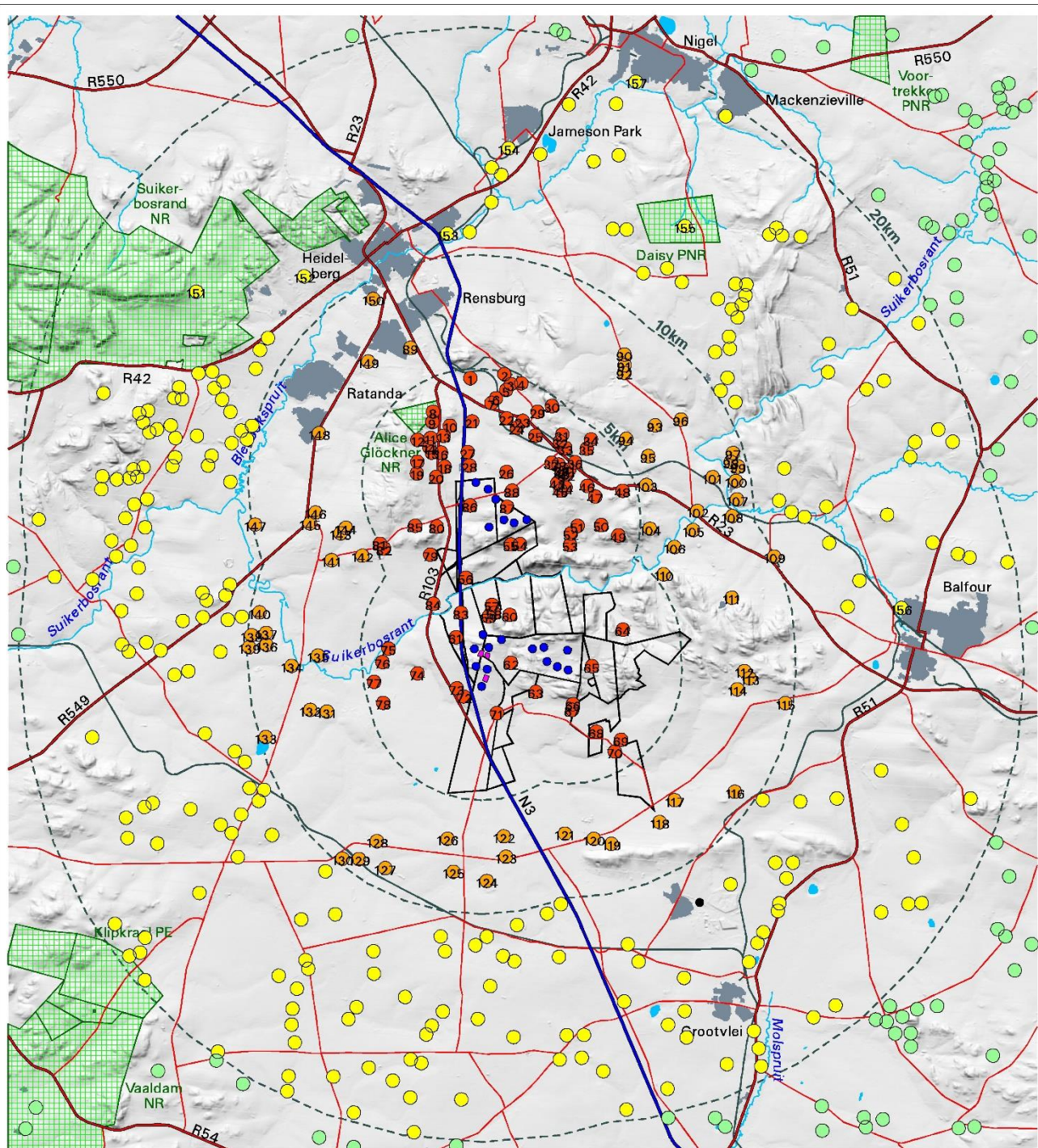
151. Suikerbosrand NR
152. Boschfontein agricultural holdings
153. Bergsig (south-eastern outlying)
154. Jameson Park (southern outlying)
155. Daisy PNR
156. Balfour (western outlying)
157. Nigel (southern outlying)
158. Various exposed (occupied) homesteads/dwellings (not numbered)

The WEF may have a visual impact of **low** magnitude impact on occupied/exposed residences located beyond the 20km radius of the wind turbine structures.

Note: Where any of the above-mentioned homesteads are derelict or deserted, the visual impact will be non-existent, until such time as it is inhabited again.



Map 8: Visual impact index including likely areas of potential visual impact and potential sensitive visual receptors

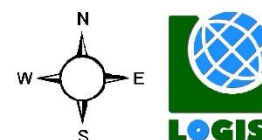


LIKELY AREAS OF POTENTIAL VISUAL IMPACT & POTENTIAL SENSITIVE VISUAL RECEPTORS (Indicating the potential magnitude)

- **VERY HIGH (< 5km)**
Exposed receptors located within 5km of the WEF structures
- **HIGH (5 - 10km)**
Exposed receptors located within 5km to 10km of the WEF structures
- **MODERATE (10 - 20km)**
Exposed receptors located within 10km to 20km of the WEF structures (individual residences not labelled)
- **LOW (> 20km)**
Occupied/exposed residences located beyond 20km (individual residences not labelled)

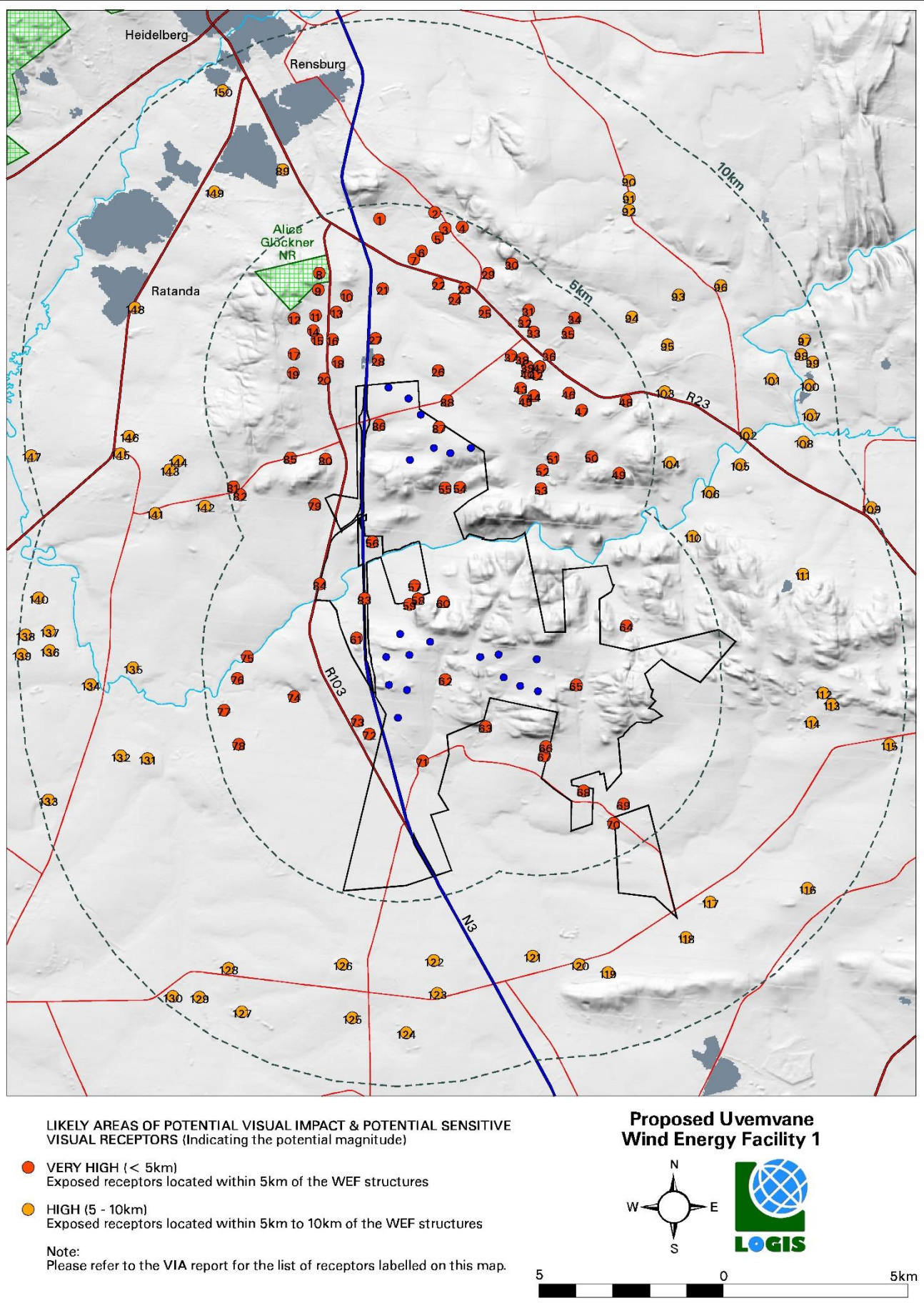
Note:
Please refer to the VIA report for the list of receptors labelled on this map.

Proposed Uemvane Wind Energy Facility 1



5 0 10km

Map 9: Likely areas of potential visual impact and potential sensitive visual receptors of the proposed ABO Uemvane WEF 1



Map 10: Zoomed in likely areas of potential visual impact and numbered potential sensitive visual receptors of the proposed ABO Uvemvane WEF 1

7. SHADOW FLICKER ASSESSMENT

Shadow flicker is the visual phenomenon that occurs when the rotating blades of a wind turbine intermittently obstruct sunlight, creating a pulsating shadow at a fixed location in the landscape. It is only observed under clear sky conditions when the turbine rotor lies between the sun and a receptor, and its intensity is influenced by the angle of the sun, the position of the receptor, and distance from the turbine. The effect diminishes with distance as shadows lose clarity and contrast, meaning it is most noticeable for receptors situated directly within the path of the moving shadow.

De Gryse in *Scenic Landscape Architecture* (2006) notes that "shadow flickering associated with the rotation of the rotor blades has the potential to alter the viewed landscape, and to detract from the experience of people ...". Shadow flicker is therefore considered a potential visual impact, particularly for residents in dwellings located near turbines, at certain orientations, and where limited screening exists.

Although shadow flicker can theoretically extend several kilometres, its intensity rapidly decreases with distance, with shadows beyond this distance generally regarded as visually negligible due to reduced intensity. De Gryse also observed that shadow effects are most significant within three (3) to four (4) times the turbine height, with shadows beyond this distance generally regarded as visually negligible due to reduced intensity. As a result, for the purposes of this assessment, shadow flicker beyond this distance has not been considered, as it falls outside the threshold of meaningful visual impact or **zone of visible shadows**.

Given the site's location in the Southern Hemisphere (at approximately 32° south of the equator and south of the Tropic of Capricorn) it can be expected that shadow flicker will be experienced by sensitive receptors who are predominately located close to and to the south of the turbines. The overall pattern creates a **bow-tie shaped distribution**, radiating outward along the east-west axis from the turbine, reflecting the sun's daily path across the sky. The figure below illustrates the **typical area of shadow flicker** generated by a single wind turbine and the associated **zones of visible shadows**. For this reason, only the zone of visible shadows, as indicated in the Figure below, where shadow intensity is expected to be moderate and visually significant were included in this analysis.

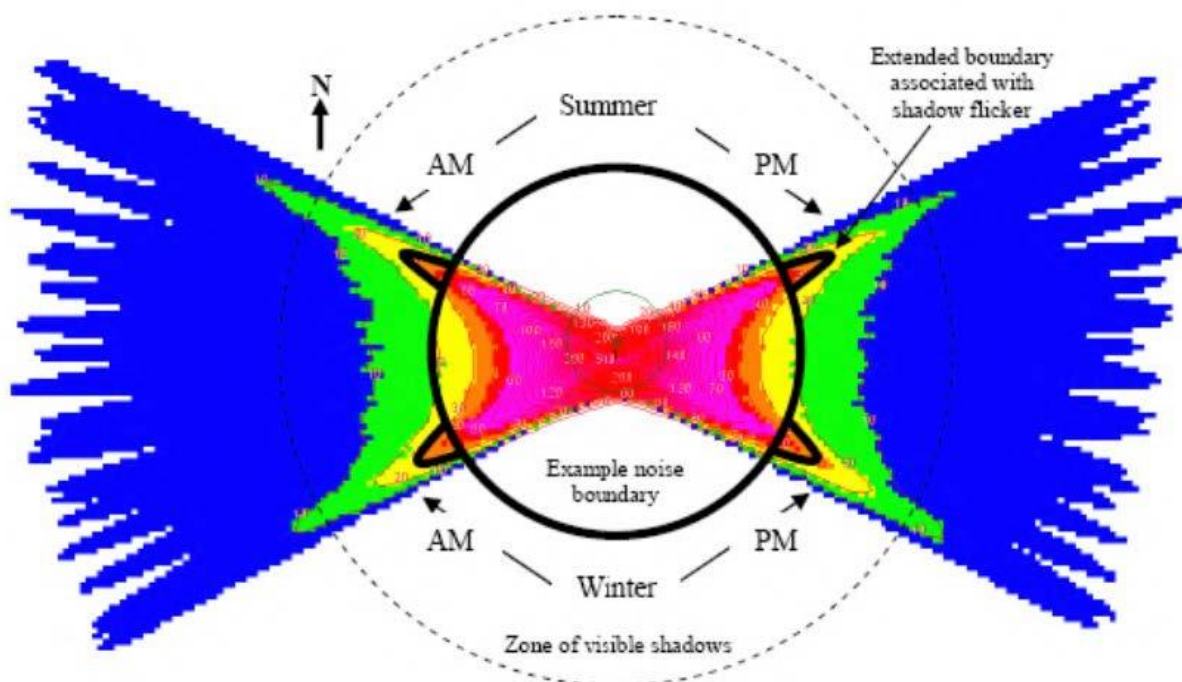


Figure 11: Typical area of shadow flicker generated by a single wind turbine and the associated zones of visible shadows based on the turbine's height⁹

⁹ Source: Moir Landscape Architecture Pty Ltd, 2025. Shadow Flicker Assessment: Tall Tree Wind Farm.

In practice, the degree of shadow flicker experienced may be reduced by the following variable factors, if present:

- Orientation and layout of the homestead's façade in relation to the turbine(s), including the position of windows and main living areas.
- Presence and density of natural vegetation between the turbine(s) and the dwelling.
- Other physical obstructions or other visual barriers, such as buildings or structures, that may provide screening between the turbine(s) and the receptor.
- Seasonal variations, including changes in sun angle and vegetation cover throughout the year.
- Operational alignment of turbine rotors with sunlight, noting that rotors may not always face directly toward the sun.
- Duration of turbine operation during daylight hours.
- Local climatic conditions, particularly the prevalence of clear skies and direct sunlight at low sun angles.

Therefore, this report's shadow flicker modelling **represents a worst-case scenario** by assuming uninterrupted turbine operation during all daylight hours under clear sky conditions throughout the year, no screening by vegetation, topography, or structures and that the geometric shadow paths are determined solely by the sun-turbine-receptor relationship, excluding the expected radiating intensity of the shadow flicker within the zone of visible shadows.

As such, the shadow flicker assessment for the proposed ABO Uvemvane WEF 1 was undertaken for a 20 turbine layout with a maximum blade tip height of 280 m (hub height up to 180 m and rotor blade length of 100 m). Based on the literature and international practice, sensitive receptors are defined as dwellings within 1km (3- 4 times the turbine height) of a turbine where flicker effects are most likely to occur at perceptible levels. It should also be noted that shadow flicker is only of concern on occupied residences, if any of the identified homesteads are derelict, deserted or not permanently occupied, the shadow flicker visual impact will be non-existent, and not constitute a shadow flicker visual impact of concern, until such a time as they are inhabited again.

Of note is that shadow flicker may also be experienced by, and impact motorists, if a wind turbine is located in close proximity to an existing road. It is however expected that the shadow flicker experienced by motorists traveling along roads will be fleeting and the level of exposure will be brief, thereby, not constituting a shadow flicker visual impact of concern for these receptors. As such, shadow flicker on roads is not dealt with in this report.

Additionally, the impact of shadow flicker can be effectively mitigated by choosing the correct site and layout for the wind turbines, taking the orientation of the turbines relative to the nearby homesteads and the latitude of the site into consideration.

Based on the above, this study found that a total of two (2) turbines (shaded in red) may pose shadow flicker visual impacts of concern on residents of two (2) homesteads, namely Geluk, located within the proposed development site, and residences located just south of the homestead Modderfontein (Farm Modderfontein 410 Portion 1) to the west of the N3, not located on the development site. Of note is that the homestead Modderfontein is operational as a wedding and functions venue called Charmick Wedding and Functions Venue. They are also not located within the development site. These dwellings are expected to experience shadow flicker as a result of turbines, 03 and 24 respectively. Refer to **Map 11**.

Recommendations:

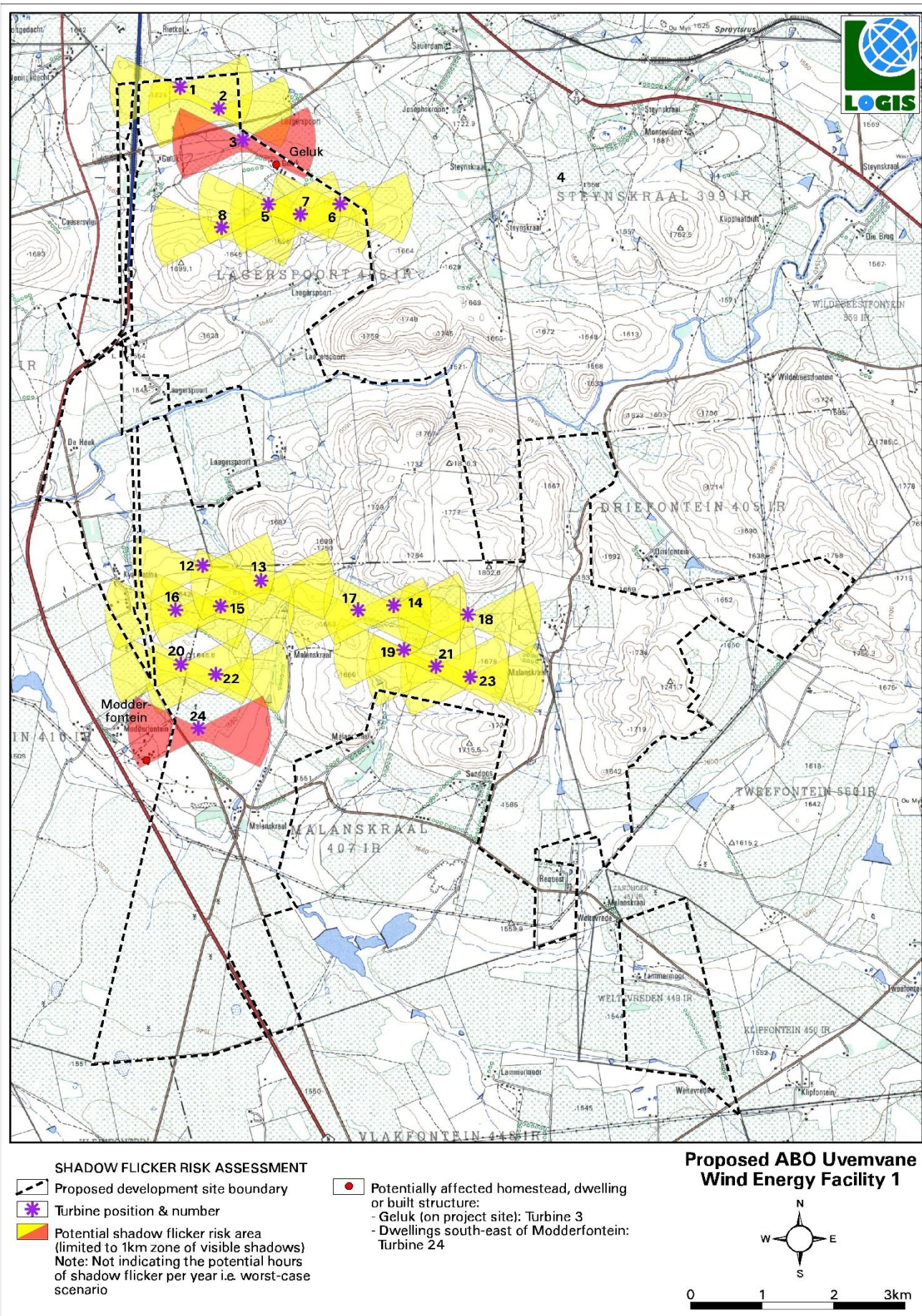
In light of the above findings, the visual specialist recommends the following:

Located within the development site:

- For the homestead Geluk, which is located within the proposed development site, written landowner consent must be obtained for the placement of the turbine, acknowledging the anticipated shadow flicker impact. **Proof of such agreement has been received from the landowner of the property where Geluk is located, therefore shadow flicker is not an impact of concern for turbine 03. Refer to Appendix B.**

Located outside of the development site:

- **Proof of engagement:** For the residences situated south of the Modderfontein homestead (Charmick Wedding and Functions Venue), which falls outside the development site boundary, it is recommended that the EAP/Applicant provide documented proof of a concerted and meaningful effort to specifically contact the affected landowner, informing them of the potential shadow flicker impacts identified through this desktop-level assessment and the resultant implications thereof. This documentation should further demonstrate that the I&AP was afforded sufficient opportunity to review and comment on the anticipated impacts, in line with standard public participation requirements, and should include proof of acknowledgment of receipt of this notification by the I&AP. Should the I&AP associated with the Modderfontein residences formally object to the anticipated shadow flicker impacts, the recommendations and mitigation measures as outlined in Section 12 should be followed.



Map 11: Potential sensitive receptors exposed to shadow flicker from the proposed ABO Uvemvane WEF 1

8. PHOTO SIMULATIONS

Photo simulations were undertaken (in addition to the above spatial analyses) in order to illustrate the potential visual impact of the proposed ABO Uvemvane WEF 1 within the receiving environment. The purpose of the photo simulation exercise is to support/verify the findings of the VIA and is not an exercise to illustrate what the facilities will look like from all directions (i.e. it is not an artist's impression). Instead, the photo simulations indicate the anticipated visual alteration of the landscape from various sensitive visual receptors located at different distances from the facility should it be constructed.

The simulations are based on the wind turbine dimensions and layout. The photograph positions are indicated on **Map 12** below and should be referenced with the photo simulation being viewed in order to place the observer in spatial context of the proposed facility.

The simulated views show the placement of the wind turbines during the long-term operation phase of the facilities lifespan. It is assumed that the necessary post-construction phase rehabilitation and mitigation measures, as proposed by the various specialists in the EIA report, have been undertaken.

It is imperative that the natural vegetation be restored to its original (current) status for these simulated views to ultimately be realistic. The additional infrastructure (e.g. the proposed substation, access roads, etc.) associated with the facility are not included in the photo simulations.

The simulated wind turbines, as shown on the photographs, were adapted to the atmospheric conditions present when the original photographs were taken. This implies that factors such as haze and solar glare were also simulated in order to as realistically as possible represent the observer's potential view of the WEF.

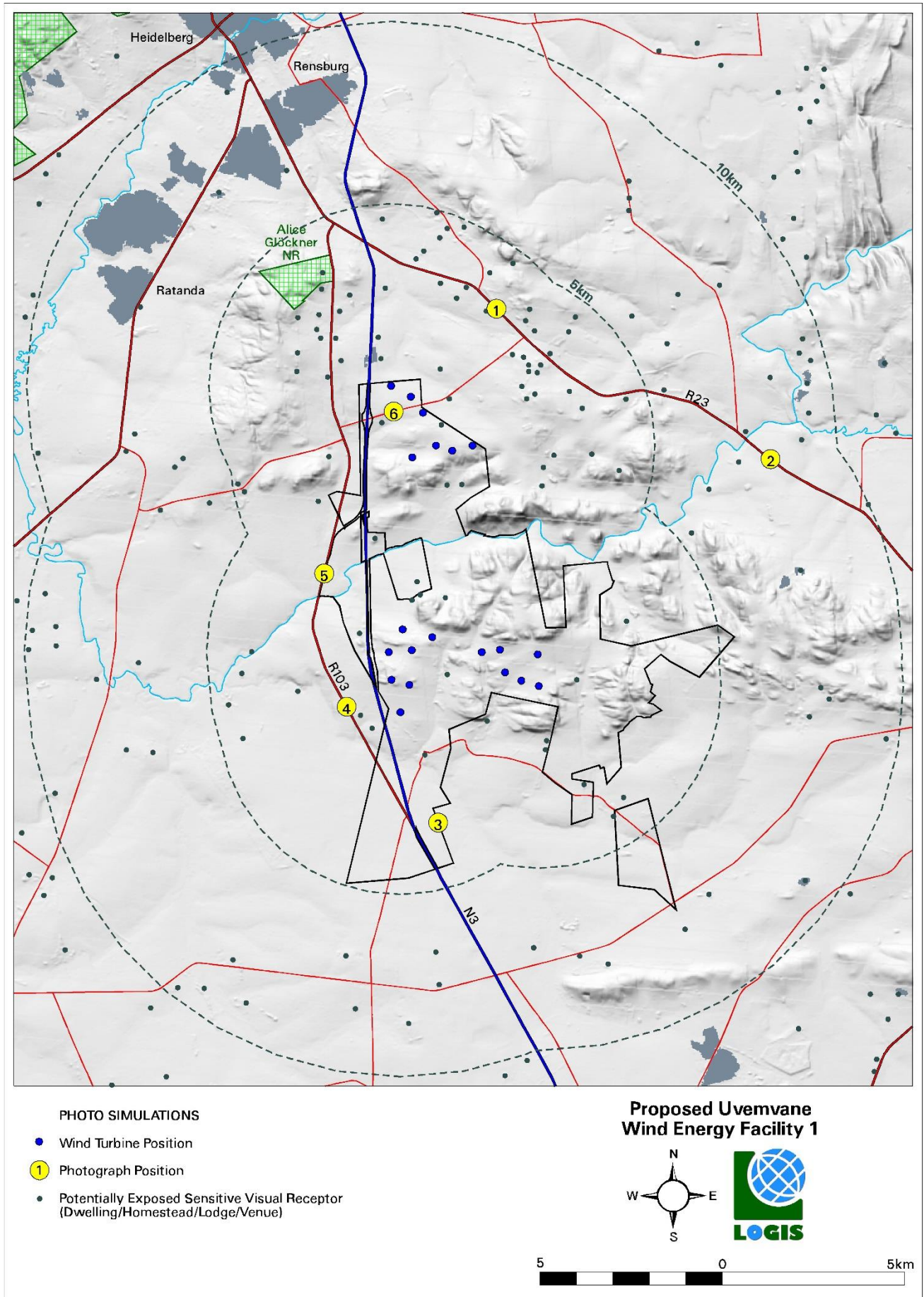
While the photo simulations included in this report provide a useful tool for conveying the relative position, orientation, and general visibility of turbines within the context of the receiving landscape, it is important to acknowledge the inherent limitations in terms of their reliability as exact visual replications, which are limited by a number of technical constraints associated with photographic capture and image processing.

The photo simulations represented in this report are produced by stitching together a sequence of overlapping photographs to create a panoramic image that approximates the full horizontal field of view (up to 120–180°). This process inevitably introduces distortion as a result of the focal length effects, and the compression of wide fields of view onto a flat surface, the apparent scale and spacing of turbines may not precisely replicate human visual perception. In practice, turbines may appear larger and more prominent in the landscape than suggested by the images produced. Due to these limitations, photomontages should be regarded as indicative rather than definitive representations of visual impact and they should not be interpreted as exact replications of human perception.

Additionally, it should be noted that turbines located at the same physical distance from a viewpoint may appear at different relative sizes in different photo simulation images produced as a result of the different panoramic fields of view. This is due to variations in focal length and geometric distortion introduced during panoramic stitching. Wider fields of view tend to reduce the apparent size of turbines, while narrower fields of view may enlarge them.

The photo simulations undertaken below are displayed as "before" and "after" views of the affected landscape. A table describing the details of the photo simulation for each viewpoint is provided to not only orientate the viewer as accurately as possible but also to provide a descriptive analysis to account for the limitations of scale representation.

A total of seven (7) photo simulations were prepared for the proposed ABO Uvemvane WEF 1, from six (6) different points. The views were chosen to as far as possible accurately represent the likely visual impact from a variety of viewpoints/receptors and directions around the proposed WEF site.



Map 12: Photo locations undertaken for the photo simulations of the ABO Uvemvane WEF 1

8.1. Photo simulation 1

Table 11: Details of photo simulation point 1

LOCATION PHOTO SIMULATION 1: VIEWPOINT FROM THE R23 LOOKING SOUTHWEST	
After View	
Closest turbine visible (km)	3.37km
Furthest turbine visible (km)	10.64km
No of turbines possibly visible at hub height of 180m	19 of 20
No of turbines possibly visible at tip-height of 280m	20 of 20



Figure 12: Photo simulation 1 – before.



Figure 13: Photo simulation 1 – after.

8.2. Photo simulation 2

Table 12: Details of photo simulation point 2

LOCATION PHOTO SIMULATION 2: VIEWPOINT FROM THE R23 LOOKING WEST	
After View	
Closest turbine visible (km)	8.17km
Furthest turbine visible (km)	12.31km
No of turbines possibly visible at hub height of 180m	13 of 20
No of turbines possibly visible at tip-height of 280m	5 of 20



Figure 14: Photo simulation 2 – before.



Figure 15: Photo simulation 2 – after.

8.3. Photo simulation 3

Table 13: Details of photo simulation point 3

LOCATION PHOTO SIMULATION 3: VIEWPOINT FROM THE SECONDARY ROAD ADJACENT TO THE N3 LOOKING NORTH	
After View	
Closest turbine visible (km)	3.21km
Furthest turbine visible (km)	11.76km
No of turbines possibly visible at hub height of 180m	19 of 20
No of turbines possibly visible at tip-height of 280m	14 of 20



Figure 16: Photo simulation 3 – before.



Figure 17: Photo simulation 3 – after.

8.4. Photo simulation 4

Table 14: Details of photo simulation point 4

LOCATION PHOTO SIMULATION 4: VIEWPOINT FROM THE R103 LOOKING NORTHEAST	
After View	
Closest turbine visible (km)	1.43km
Furthest turbine visible (km)	8.92km
No of turbines possibly visible at hub height of 180m	17 of 20
No of turbines possibly visible at tip-height of 280m	20 of 20



Figure 18: Photo simulation 4 – before.



Figure 19: Photo simulation 4 – after.

8.5. Photo simulation 5a

Table 15: Details of photo simulation point 5a

LOCATION PHOTO SIMULATION 5a: VIEWPOINT FROM THE R103 LOOKING NORTHEAST	
After View	
Closest turbine visible (km)	4.05km
Furthest turbine visible (km)	5.48km
No of turbines possibly visible at hub height of 180m	7 of 20
No of turbines possibly visible at tip-height of 280m	7 of 20



Figure 20: Photo simulation 5a – before.



Figure 21: Photo simulation 5a – after.

8.6. Photo simulation 5b

Table 16: Details of photo simulation point 5b

LOCATION PHOTO SIMULATION 5b: VIEWPOINT FROM THE R103 LOOKING SOUTHEAST	
After View	
Closest turbine visible (km)	2.64km
Furthest turbine visible (km)	6.64km
No of turbines possibly visible at hub height of 180m	12 of 20
No of turbines possibly visible at tip-height of 280m	13 of 20



Figure 22: Photo simulation 5b – before.



Figure 23: Photo simulation 5b – after.

8.7. Photo simulation 6

Table 17: Details of photo simulation point 6

LOCATION PHOTO SIMULATION 6: VIEWPOINT FROM THE SECONDARY ROAD TRANSECTING THE SITE LOOKING EAST	
After View	
Closest turbine visible (km)	0.62km
Furthest turbine visible (km)	8.55km
No of turbines possibly visible at hub height of 180m	10 of 20
No of turbines possibly visible at tip-height of 280m	13 of 20



Figure 24: Photo simulation 6 – before.



Figure 25: Photo simulation 6 – after.

9. BLADE PAINTING

In South Africa, the regulatory framework governing the colouring of wind turbines is defined by the South African Civil Aviation Technical Standard (SA-CATS) for *Obstacle Limitations and Markings Outside of Aerodromes or Heliports* (SACATS 139), which came into effect on 1 August 2012. The standard requires wind turbines to be painted bright white to maximise daytime conspicuousness, while prohibiting grey, blue, or darker shades of white unless supplemented by additional daytime lighting.

In response to emerging avifaunal concerns, the South African Wind Energy Association (SAWEA) submitted an Alternative Means of Compliance (AMoC) application to the South African Civil Aviation Authority (SACAA). This application requested a deviation from the uniform white blade requirement, to allow the adoption of high-contrast blade designs aimed at reducing bird collisions. On 18 January 2024, SACAA approved this request, thereby enabling Independent Power Producers (IPPs) to incorporate patterned blade painting into new and existing wind energy facilities, subject to approved designs.

The motivation for blade painting arises from increasing evidence that avian species, particularly large raptors, are vulnerable to collisions with turbine blades. Research in Norway demonstrated a **72% reduction in bird fatalities** when part of a turbine blade was painted black. Similarly, preliminary monitoring at the Umoya Wind Farm in the Western Cape has indicated that signal-red blade striping may also improve visibility for birds and reduce collision risk.



Figure 26: Example of a red patterned blade on a wind turbine at the Umoya Energy Wind Farm¹⁰

¹⁰ Source: Dr Rob Simmons via the Mail and Guardian

To guide implementation, **Blade Patterning Guidelines** have been developed collaboratively by SAWEA, BirdLife South Africa (BLSA), and the Birds and Renewable Energy Specialist Group (BARESG). These guidelines recommend that one or more blades be painted in **signal red** (S1580-Y90R) with approved patterning (e.g., stripes or partial coverage) to comply with SACAA regulations. Refer to the figure below. The guidelines emphasise that blade painting should be applied across all turbines within a facility to ensure consistency and should be complemented by additional avifaunal mitigation measures until sufficient local evidence supports its standalone effectiveness.

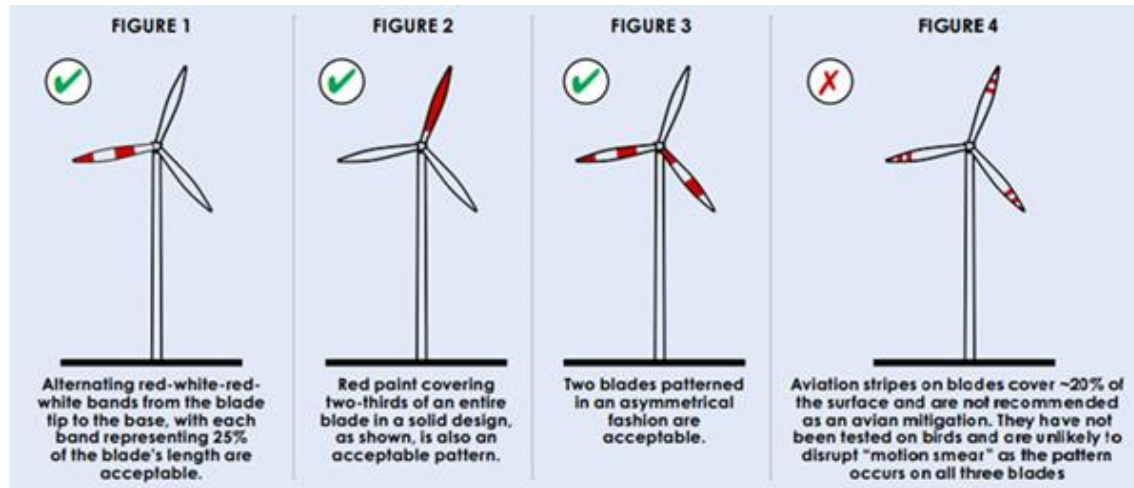


Figure 27: Visual illustration of turbine blade patterning recommendations¹¹

It is DARDLEAs position that Blade Patterning must be applied to all approved turbines for the proposed ABO Uvemvane WEF 1, in accordance with the recommendations in the BirdLife SAWEA Blade Patterning Guidelines and according to a SACAA approved pattern, since the viable wind resource in the province coincides with high-risk areas.

From a **visual impact perspective**, the painting of wind turbine blades in high-contrast patterns (e.g., signal red stripes) is anticipated to slightly increase their visibility compared to the standard uniform white blades. This effect is most noticeable at closer viewing distances (within ~1–2 km), where the contrast between the painted sections and the background landscape is most distinct. At medium to far distances (beyond ~2–5 km), the visibility of painted blades diminishes significantly due to atmospheric conditions, topographic screening, and the limited resolution of the human eye, as is illustrated in the figure below.

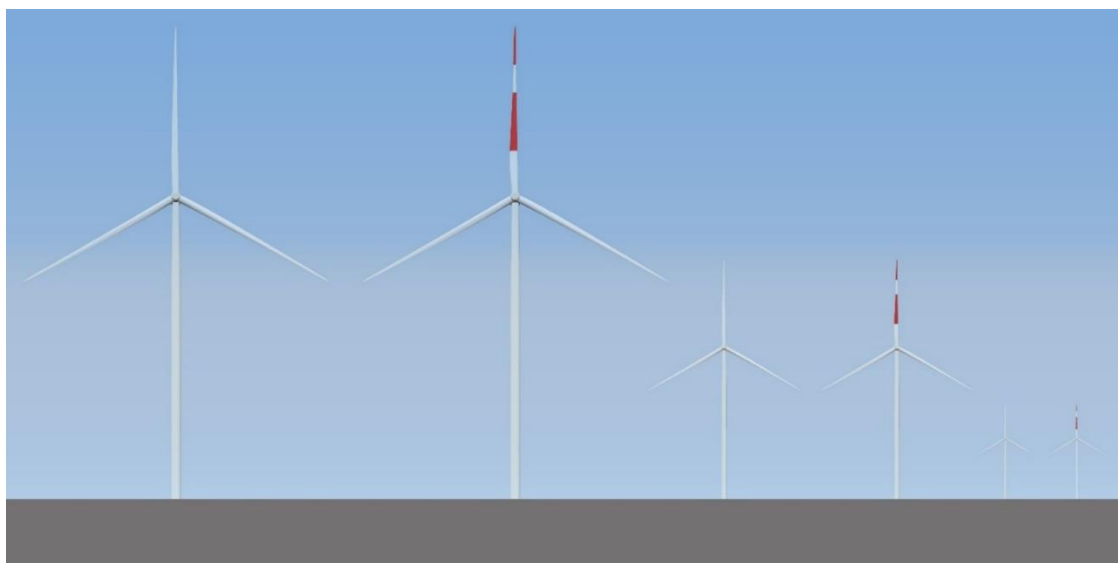


Figure 28: Scale of turbines with and without painted blades at 1km, 2km & 5km from left to right, respectively.

¹¹ Source: BLSA, Blade Patterning Guidelines

While blade painting does make turbines more conspicuous, this change does not fundamentally alter their overall scale, form, or prominence in the landscape. Instead, it represents a moderate adjustment in colour contrast. The incremental increase in visual impact is therefore **not regarded as a fatal flaw**, or a material change in the significance of visual effects of the proposed WEF. Instead, it represents a balanced approach that prioritises ecological outcomes while maintaining visual impacts within acceptable thresholds.

In the South African context, where both the protection of biodiversity and the expansion of renewable energy infrastructure are national priorities, blade painting is emerging as a pragmatic compromise. It offers a science-based avifaunal mitigation measure, now formally recognised by aviation regulators, while **posing only minor additional visual implications**.

10.VISUAL IMPACT ASSESSMENT

10.1 Impact rating methodology

The previous section of the report identified specific areas where likely visual impacts would occur. This section will attempt to quantify these potential visual impacts in their respective geographical locations and in terms of the identified issues (see **Section 3**) related to the visual impact.

The methodology for the assessment of potential visual impacts states the **nature** of the potential visual impact (e.g. the visual impact on users of major roads in the vicinity of the proposed infrastructure) and includes a table quantifying the potential visual impact according to the following criteria:

Extent - How far the visual impact is going to extend and to what extent it will have the highest impact. In the case of this type of development the extent of the visual impact is most likely to have a higher impact on receptors closer to the development and decrease as the distance increases.

- (1) Very low: Long distance > 20km
- (2) Low: Medium to long distance between 10 – 20km
- (3) Medium: Short distance between 5 – 10km
- (4) High: Very short distance < 5km
- (5) Very high: Site specific, within the development site only

Duration - The timeframe in both the construction and operational phase over which the effects of the impact will be felt.

- (1) Very short: 0-1 years
- (2) Short: 2-5 years
- (3) Medium: 5-15 years
- (4) Long: >15 years
- (5) Permanent

Magnitude - The severity or size of the impact. This value is read off the Visual Impact Index maps. Where more than one value is applicable, the higher of these will be used as a worst-case scenario.

- (2) Negligible
- (4) Low
- (6) Moderate
- (8) High
- (10) Very High

Receptor Sensitivity – the sensitivity of visual receptors based on location, susceptibility and value etc to change (of the landscape).

- (2) Negligible
- (4) Low
- (6) Moderate
- (8) High
- (10) Very High

Landscape Character – the quality of the landscape in terms of its particular characteristics

- (2) Negligible
- (4) Low
- (6) Moderate
- (8) High
- (10) Very High

Probability – The likelihood of the impact occurring.

- (1) Very improbable: Less than 20% sure of the likelihood of an impact occurring
- (2) Improbable: 20-40% sure of the likelihood of an impact occurring
- (3) Probable: 40-60% sure of the likelihood of an impact occurring
- (4) Highly probable: 60-80% sure of the likelihood of that impact occurring
- (5) Definite: More than 80% sure of the likelihood of that impact occurring

Significance – The significance weighting for each potential visual impact (as calculated above) is as follows:

- **(0-12) Negligible:** Where the impact would have no direct influence on the decision to develop in the area. The impact would be of a very low order. In the case of negative impacts, almost no mitigation and or remedial activity would be needed, and any minor steps, which might be needed, would be easy, cheap, and simple.
- **(13-30) Low:** Where the impact would have a very limited direct influence on the decision to develop in the area. The impact would be of a low order and with little real effect. In the case of negative impacts, mitigation and / or remedial activity would be either easily achieved, or little would be required, or both.
- **(31-60) Moderate:** Where the impact could influence the decision to develop in the area. The impact would be real but not substantial. In the case of negative impacts, mitigation and / or remedial activity would be both feasible and fairly easily possible.
- **(61-80) High:** Where the impact must have an influence on the decision to develop in the area. The impacts are of a substantial order. In the case of negative impacts, mitigation and / or remedial activity would be feasible but difficult, expensive, time-consuming or some combination of these.
- **(81-100) Very High:** Where the impact will definitely have an influence on the decision to develop in the area. The impacts are of the highest order possible. In the case of negative impacts, there would be no possible mitigation and / or remedial activity possible.

The **significance** of the potential visual impact is equal to the **consequence** multiplied by the **probability** of the impact occurring, where the consequence is determined by the sum of the individual scores for magnitude, duration, extent, receptor sensitivity and landscape character divided by two (2).

$$\text{Significance} = \frac{(\text{Extent} + \text{Magnitude} + \text{Duration} + \text{Receptor Sensitivity} + \text{Landscape Character}) \times \text{Probability}}{2}$$

Status – The perception of Interested and Affected Parties towards the proposed development.

- Positive
- Negative
- Neutral

Reversibility – The possibility of visual recovery of the impact following the decommissioning of the proposed development

- (1) Reversible
- (3) Recoverable
- (5) Irreversible

The VIA rating methodology, as utilised in this report, differs from the qualitative approach as prescribed by Environmental Assessment Practitioner (EAP). The reason been that the primary objective of the VIA is to anticipate and, where possible, quantify the extent of visual impacts in a transparent and unbiased manner. This is undertaken through the application of defined criteria and spatial analyses, which collectively inform the determination of impact magnitude and the subsequent evaluation of overall significance. The methodology is designed to remain objective, avoiding reliance on emotive or subjective interpretation, as far as possible.

In recognition of the inherently perceptual nature of visual impacts, the VIA incorporates criteria not typically relevant to biophysical assessments. These include:

- **Magnitude** – the extent and intensity of visual alteration introduced by the proposed development.
- **Visual receptor sensitivity** – the degree to which individuals or groups of observers are likely to perceive and respond to the change.
- **Landscape character sensitivity** – the inherent capacity of the receiving landscape to absorb, accommodate, or resist visual change.

The inclusion of these additional criteria acknowledges that visual impacts are ultimately shaped by observer-based value judgements. For example, a development such as a WEF may be regarded positively, neutrally, or negatively depending on the perception of the receptor. Similarly, the ability of the receiving landscape to accommodate change plays a critical role in determining the overall significance of the impact. Receptor sensitivity and landscape character sensitivity are therefore central to ensuring that the visual impact assessment process is as reasoned, consistent, and objective as possible, and therefore cannot be excluded.

This methodology complies to the International Finance Corporation (IFC) Performance Standards on Environmental and Social Sustainability, 2012 and Environmental, Health, and Safety Guidelines for Wind Energy, 2015.

10.2 Direct Impact Assessment

The direct visual impacts of the proposed ABO Uvemvane WEF 1 are assessed as follows:

10.2.1. Construction Phase

During the construction period it is expected that any visual impact of concern on sensitive visual receptors within the study area will be temporary and limited to a short-term period (2-5 years). The below direct construction visual impacts of the proposed ABO Uvemvane WEF 1 are assessed as follows:

10.2.1.1. Potential visual impact of construction activities on identified sensitive visual receptors within 0 – 5km to the proposed WEF

During the construction period, there will be an increase in heavy vehicles utilising the roads to the construction site that may cause, at the very least, a visual nuisance to landowners in the area within 5km from the proposed site. Additionally, dust as a result of the construction activities and construction equipment (i.e. cranes), temporary laydown areas, construction camps, etc. may also be visible at the site, resulting in a visual impact occurring during construction on the identified sensitive receptors.

Residents of homesteads, visitors to tourist accommodation and Protected Areas

Construction activities may potentially result in a **high** temporary visual impact (significance rating = 80) which may be mitigated to a **moderate** significance (significance rating = 60) post mitigation on residents of homesteads, visitors to tourist accommodation and Protected Areas (i.e. Alice Glockner NR) located within 5km.

Additionally, it must be noted that residents of homesteads located on the development site itself (i.e. landowners) within this radius are presumed to know and accept the impacts associated with WEFs. Therefore, the impact on these receptors (i.e. landowners) is

expected to be lower and the table below represents a worse-case scenario for sensitive receptors who are not landowners.

Table 18: Visual impact of construction on residents of homesteads, visitors to tourist accommodation and Protected Areas within 5km to the proposed WEF.

Nature of Impact:		
Visual impact of construction activities on residents of homesteads, visitors to tourist accommodation and Protected Areas within 5km to the proposed WEF.		
	Without mitigation	With mitigation
Extent	Very short distance (4)	Very short distance (4)
Duration	Short term (2)	Short term (2)
Magnitude	Very high (10)	High (8)
Receptor sensitivity	Very high (10)	Very high (10)
Landscape character	Moderate (6)	Moderate (6)
Probability	Definite (5)	Highly Probable (4)
Significance	High (80)	Moderate (60)
Status (positive or negative)	Negative	Negative
Reversibility	Reversible (1)	Reversible (1)
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation:		
<u>Planning:</u>		
<ul style="list-style-type: none"> Retain and maintain natural vegetation in all areas outside of the development footprint, but within the project site. Existing roads should be utilised wherever possible. New roads should be planned taking due cognisance of the topography to limit cut and fill requirements. Construction/upgrade of roads should be undertaken properly, with adequate drainage structures in place to forego potential erosion problems. In terms of onsite ancillary buildings and structures, it is recommended that it be planned so that the clearing of vegetation is minimised. This implies consolidating this infrastructure as much as possible and making use of already disturbed areas rather than undisturbed sites wherever possible. 		
<u>Construction:</u>		
<ul style="list-style-type: none"> Ensure that vegetation is not unnecessarily cleared or removed during the construction period. Reduce the construction period through careful logistical planning and productive implementation of resources. Ensure that the placement of laydown areas and any potential temporary construction camps are within the areas planned in order to minimise vegetation clearing (i.e. in already disturbed areas). Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads. Ensure that rubble, litter, and disused construction materials are appropriately stored and then disposed of regularly at licensed waste facilities. Reduce and control construction dust using approved dust suppression techniques as and when required (i.e. whenever dust becomes apparent). Restrict construction activities to daylight hours whenever possible in order to reduce the visual impacts associated with lighting. Rehabilitate all disturbed areas immediately after the completion of construction works. If necessary, an ecologist should be consulted to assist or give input into rehabilitation specifications. 		
Residual impacts:		
None, provided that rehabilitation works are carried out as required.		

Observers travelling along roads

Construction activities may potentially result in a **high** temporary visual impact (significance rating = 70) which may be mitigated to a **moderate** significance (significance rating = 52) post mitigation on observers travelling along roads within 5km.

Table 19: Visual impact of construction activities on observers travelling along roads located within 5km of the proposed WEF

Nature of Impact: Visual impact of construction activities on observers travelling along roads within 5km of the proposed WEF.		
	Without mitigation	With mitigation
Extent	Very short distance (4)	Very short distance (4)
Duration	Short term (2)	Short term (2)
Magnitude	Very high (10)	High (8)
Receptor sensitivity	Moderate (6)	Moderate (6)
Landscape character	Moderate (6)	Moderate (6)
Probability	Definite (5)	Highly probable (4)
Significance	High (70)	Moderate (52)
Status (positive or negative)	Negative	Negative
Reversibility	Reversible (1)	Reversible (1)
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation:		
<u>Planning:</u>		
<ul style="list-style-type: none">Retain and maintain natural vegetation in all areas outside of the development footprint, but within the project site.Existing roads should be utilised wherever possible. New roads should be planned taking due cognisance of the topography to limit cut and fill requirements. Construction/upgrade of roads should be undertaken properly, with adequate drainage structures in place to forego potential erosion problems.In terms of onsite ancillary buildings and structures, it is recommended that it be planned so that the clearing of vegetation is minimised. This implies consolidating this infrastructure as much as possible and making use of already disturbed areas rather than undisturbed sites wherever possible.		
<u>Construction:</u>		
<ul style="list-style-type: none">Ensure that vegetation is not unnecessarily cleared or removed during the construction period.Ensure that the placement of laydown areas and any potential temporary construction camps are within the areas planned in order to minimise vegetation clearing (i.e. in already disturbed areas).Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads.Ensure that rubble, litter, and disused construction materials are appropriately stored and then disposed of regularly at licensed waste facilities.Reduce and control construction dust using approved dust suppression techniques as and when required (i.e. whenever dust becomes apparent).Restrict construction activities to daylight hours whenever possible in order to reduce the visual impacts associated with lighting.Rehabilitate all disturbed areas immediately after the completion of construction works. If necessary, an ecologist should be consulted to assist or give input into rehabilitation specifications.		
Residual impacts:		
None, provided that rehabilitation works are carried out as required.		

10.2.2. Operational Phase

During the operational phase of the proposed ABO Uvemvane WEF 1, it is generally accepted that the wind turbine structures associated with the proposed facility will constitute the largest visual impact of concern on sensitive visual receptors within the study area, as a result of their sheer scale in relation to other proposed infrastructure that may be located on the site.

No mitigation of the below assessed impacts is generally possible (i.e. the structures will be visible regardless), but general mitigation and management measures are recommended as best practice in the tables below. This is however not seen as a fatal flaw from a visual perspective for this type of development.

The below direct operational visual impacts of the proposed ABO Uvemvane WEF 1 are assessed as follows:

10.2.2.1. Potential visual impact on sensitive visual receptors located within a 5km radius of the wind turbine structures

Residents of homesteads, visitors to tourist accommodation and Protected Areas

The operation of the ABO Uvemvane WEF 1 is expected to have a **very high** visual impact (significance rating = 85) on observers/visitors residing at homesteads, tourist accommodation and Protected Areas (i.e. Alice Glockner NR) within a 5km radius of the wind turbine structures.

Of note is that the impact dealt with in the table below only addresses the potential visual impact associated with the visual intrusion of wind turbines structures themselves. The impacts associated with any other potential visual impacts as a result of the proposed development, such as ancillary infrastructure, sense of place or lighting impacts are dealt with separately in below sections of this report.

Additionally, it must be noted that residents of homesteads located on the development site itself (i.e. landowners) within this radius are presumed to know and accept the impacts associated with WEFs. Therefore, the impact on these receptors (i.e. landowners) is expected to be lower and the table below represents a worse-case scenario for sensitive receptors who are not landowners.

Table 20: Visual impact on residents of homesteads and visitors to tourist accommodation (if present) within 5km of the proposed wind turbine structures

Nature of Impact:		
Visual impact on residents of homesteads and visitors to tourist accommodation (if present) within 5 km to the proposed WEF.		
	Without mitigation	With mitigation
Extent	Very short distance (4)	Very short distance (4)
Duration	Long term (4)	Long term (4)
Magnitude	Very high (10)	Very high (10)
Receptor sensitivity	Very high (10)	Very high (10)
Landscape character	Moderate (6)	Moderate (6)
Probability	Definite (5)	Definite (5)
Significance	Very High (85)	Very High (85)
Status (positive or negative)	Negative	Negative
Reversibility	Reversible (1)	Reversible (1)
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No	
Generic best practise mitigation/management measures:		
<u>Planning:</u>		
<ul style="list-style-type: none"> Retain/re-establish and maintain natural vegetation in all areas outside of the development footprint/servitude, but within the project site. Existing roads should be utilised wherever possible. New roads should be planned taking due cognisance of the topography to limit cut and fill requirements. Construction/upgrade of roads should be undertaken properly, with adequate drainage structures in place to forego potential erosion problems. In terms of onsite ancillary buildings and structures, it is recommended that it be planned so that the clearing of vegetation is minimised. This implies consolidating this infrastructure as much as possible and making use of already disturbed areas rather than undisturbed sites wherever possible. 		
<u>Operations:</u>		
<ul style="list-style-type: none"> Ensure that the maintenance of the turbines and ancillary structures and infrastructure must be undertaken to ensure that the facility does not degrade, therefore aggravating the visual impact. Roads must be maintained to forego erosion and to suppress dust, and rehabilitated areas must be monitored for rehabilitation failure. Remedial actions must be implemented as and when required. Monitor rehabilitated areas for rehabilitation failure or concerns and implement remedial action as and when required. 		
<u>Decommissioning:</u>		
<ul style="list-style-type: none"> Remove infrastructure not required for the post-decommissioning use. Rehabilitate all areas. Consult an ecologist regarding rehabilitation specifications. 		
Residual impacts:		

The visual impact will be removed after decommissioning, provided the WEF infrastructure is removed and the area rehabilitated. Failing this, the visual impact will remain.

Observers travelling along roads

The operation of the ABO Uvemvane WEF 1 is expected to have a **high** visual impact (significance rating = 75) on observers traveling along the various roads (i.e. N3, R23, R103, etc.) within a 5km radius of the wind turbine structures.

Table 21: Visual impact on observers travelling along roads within 5km of the proposed wind turbine structures

Nature of Impact:		
Visual impact on observers travelling along the roads within 5 km to the proposed WEF.		
	Without mitigation	With mitigation
Extent	Very short distance (4)	Very short distance (4)
Duration	Long term (4)	Long term (4)
Magnitude	Very high (10)	Very high (10)
Receptor sensitivity	Moderate (6)	Moderate (6)
Landscape character	Moderate (6)	Moderate (6)
Probability	Definite (5)	Definite (5)
Significance	High (75)	High (75)
Status (positive or negative)	Negative	Negative
Reversibility	Reversible (1)	Reversible (1)
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No	No
Generic best practise mitigation/management measures:		
<u>Planning:</u>		
<ul style="list-style-type: none"> Retain/re-establish and maintain natural vegetation in all areas outside of the development footprint/servitude, but within the project site. Existing roads should be utilised wherever possible. New roads should be planned taking due cognisance of the topography to limit cut and fill requirements. Construction/upgrade of roads should be undertaken properly, with adequate drainage structures in place to forego potential erosion problems. In terms of onsite ancillary buildings and structures, it is recommended that it be planned so that the clearing of vegetation is minimised. This implies consolidating this infrastructure as much as possible and making use of already disturbed areas rather than undisturbed sites wherever possible. 		
<u>Operations:</u>		
<ul style="list-style-type: none"> Ensure that the maintenance of the turbines and ancillary structures and infrastructure must be undertaken to ensure that the facility does not degrade, therefore aggravating the visual impact. Roads must be maintained to forego erosion and to suppress dust, and rehabilitated areas must be monitored for rehabilitation failure. Remedial actions must be implemented as and when required. Monitor rehabilitated areas for rehabilitation failure or concerns and implement remedial action as and when required. 		
<u>Decommissioning:</u>		
<ul style="list-style-type: none"> Remove infrastructure not required for the post-decommissioning use. Rehabilitate all areas. Consult an ecologist regarding rehabilitation specifications. 		
Residual impacts:		
The visual impact will be removed after decommissioning, provided the WEF infrastructure is removed and the area rehabilitated. Failing this, the visual impact will remain.		

10.2.2.2. Potential visual impact on sensitive visual receptors within a 5 – 10km radius of the proposed WEF

Residents of homesteads and visitors to tourist accommodation (if present)

The ABO Uvemvane WEF 1 could have a **high** visual impact (significance rating = 77) on residents of (or visitors to) homesteads within a 5 - 10km radius of the wind turbine structures.

Table 22: Visual impact of the proposed wind turbine structures on residents of homesteads/tourist accommodation (if present) within 5 – 10km of the proposed WEF

Nature of Impact: Visual impact on residents of homesteads and visitors to tourist accommodation (if present) within 5-10 km to the proposed WEF.		
	Without mitigation	With mitigation
Extent	Short distance (3)	Short distance (3)
Duration	Long term (4)	Long term (4)
Magnitude	High (8)	High (8)
Receptor sensitivity	Very High (10)	Very High (10)
Landscape character	Moderate (6)	Moderate (6)
Probability	Definite (5)	Definite (5)
Significance	High (77)	High (77)
Status (positive or negative)	Negative	Negative
Reversibility	Reversible (1)	Reversible (1)
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No	
Generic best practise mitigation/management measures:		
<u>Planning:</u>		
<ul style="list-style-type: none"> Retain/re-establish and maintain natural vegetation in all areas outside of the development footprint/servitude, but within the project site. Existing roads should be utilised wherever possible. New roads should be planned taking due cognisance of the topography to limit cut and fill requirements. Construction/upgrade of roads should be undertaken properly, with adequate drainage structures in place to forego potential erosion problems. In terms of onsite ancillary buildings and structures, it is recommended that it be planned so that the clearing of vegetation is minimised. This implies consolidating this infrastructure as much as possible and making use of already disturbed areas rather than undisturbed sites wherever possible. 		
<u>Operations:</u>		
<ul style="list-style-type: none"> Ensure that the maintenance of the turbines and ancillary structures and infrastructure must be undertaken to ensure that the facility does not degrade, therefore aggravating the visual impact. Roads must be maintained to forego erosion and to suppress dust, and rehabilitated areas must be monitored for rehabilitation failure. Remedial actions must be implemented as and when required. Monitor rehabilitated areas for rehabilitation failure or concerns and implement remedial action as and when required. 		
<u>Decommissioning:</u>		
<ul style="list-style-type: none"> Remove infrastructure not required for the post-decommissioning use. Rehabilitate all areas. Consult an ecologist regarding rehabilitation specifications. 		
Residual impacts:		
The visual impact will be removed after decommissioning, provided the WEF infrastructure is removed and the area rehabilitated. Failing this, the visual impact will remain.		

Observers travelling along roads

The ABO Uvemvane WEF 1 could have a **high** visual impact (significance rating = 68) on observers travelling along the various roads (i.e. N3, R23, R103, etc.) within a 5 - 10km radius of the wind turbine structures.

Table 23: Visual impact of the proposed wind turbine structures on observers travelling along roads within 5 – 10km of the proposed WEF

Nature of Impact: Visual impact on observers travelling along roads within 5-10 km to the proposed WEF.		
	Without mitigation	With mitigation
Extent	Short distance (3)	Short distance (3)
Duration	Long term (4)	Long term (4)
Magnitude	High (8)	High (8)
Receptor sensitivity	Moderate (6)	Moderate (6)
Landscape character	Moderate (6)	Moderate (6)
Probability	Definite (5)	Definite (5)
Significance	High (68)	High (68)
Status (positive or negative)	Negative	Negative
Reversibility	Reversible (1)	Reversible (1)

Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No	
Generic best practise mitigation/management measures:		
<u>Planning:</u>		
<ul style="list-style-type: none"> Retain/re-establish and maintain natural vegetation in all areas outside of the development footprint/servitude, but within the project site. Existing roads should be utilised wherever possible. New roads should be planned taking due cognisance of the topography to limit cut and fill requirements. Construction/upgrade of roads should be undertaken properly, with adequate drainage structures in place to forego potential erosion problems. In terms of onsite ancillary buildings and structures, it is recommended that it be planned so that the clearing of vegetation is minimised. This implies consolidating this infrastructure as much as possible and making use of already disturbed areas rather than undisturbed sites wherever possible. 		
<u>Operations:</u>		
<ul style="list-style-type: none"> Ensure that the maintenance of the turbines and ancillary structures and infrastructure must be undertaken to ensure that the facility does not degrade, therefore aggravating the visual impact. Roads must be maintained to forego erosion and to suppress dust, and rehabilitated areas must be monitored for rehabilitation failure. Remedial actions must be implemented as and when required. Monitor rehabilitated areas for rehabilitation failure or concerns and implement remedial action as and when required. 		
<u>Decommissioning:</u>		
<ul style="list-style-type: none"> Remove infrastructure not required for the post-decommissioning use. Rehabilitate all areas. Consult an ecologist regarding rehabilitation specifications. 		
Residual impacts:		
The visual impact will be removed after decommissioning, provided the WEF infrastructure is removed and the area rehabilitated. Failing this, the visual impact will remain.		

10.2.2.3. Potential visual impact on sensitive visual receptors within 10 – 20km radius of the proposed wind turbine structures

Residents of homesteads and visitors to tourist accommodation (if present)

The ABO Uvemvane WEF 1 could have a **moderate** visual impact (significance rating = 39) on residents of (or visitors to) homesteads and tourist accommodation within a 10 - 20km radius of the wind turbine structures.

Table 24: Visual impact of the proposed wind turbine structures on residents of homesteads and visitors to tourist accommodation located within a 10 – 20km radius

Nature of Impact:		
Visual impact on residents of homesteads and visitors to tourist accommodation within 10-20 km to the proposed WEF.		
	Without mitigation	With mitigation
Extent	Medium distance (2)	Medium distance (2)
Duration	Long term (4)	Long term (4)
Magnitude	Moderate (6)	Moderate (6)
Receptor sensitivity	High (8)	High (8)
Landscape character	Moderate (6)	Moderate (6)
Probability	Probable (3)	Probable (3)
Significance	Moderate (39)	Moderate (39)
Status (positive or negative)	Negative	Negative
Reversibility	Reversible (1)	Reversible (1)
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No	
Generic best practise mitigation/management measures:		
<u>Planning:</u>		
<ul style="list-style-type: none"> Retain/re-establish and maintain natural vegetation in all areas outside of the development footprint/servitude, but within the project site. Existing roads should be utilised wherever possible. New roads should be planned taking due cognisance of the topography to limit cut and fill requirements. Construction/upgrade of roads should be undertaken properly, with adequate drainage structures in place to forego potential erosion problems. In terms of onsite ancillary buildings and structures, it is recommended that it be planned so that the clearing of vegetation is minimised. This implies consolidating this infrastructure as 		

much as possible and making use of already disturbed areas rather than undisturbed sites wherever possible.

Operations:

- Ensure that the maintenance of the turbines and ancillary structures and infrastructure must be undertaken to ensure that the facility does not degrade, therefore aggravating the visual impact.
- Roads must be maintained to forego erosion and to suppress dust, and rehabilitated areas must be monitored for rehabilitation failure. Remedial actions must be implemented as and when required.
- Monitor rehabilitated areas for rehabilitation failure or concerns and implement remedial action as and when required.

Decommissioning:

- Remove infrastructure not required for the post-decommissioning use.
- Rehabilitate all areas. Consult an ecologist regarding rehabilitation specifications.

Residual impacts:

The visual impact will be removed after decommissioning, provided the WEF infrastructure is removed and the area rehabilitated. Failing this, the visual impact will remain.

Visitors to Protected Areas

The ABO Uvemvane WEF 1 could have a **moderate** visual impact (significance rating = 42) on visitors Protected Areas (i.e. Suikerbosrand NR, Daisy PNR) within a 10 - 20km radius of the wind turbine structures.

Table 25: Visual impact of the proposed wind turbine structures on visitors to Protected Areas located within a 10 – 20km radius

Nature of Impact:		
Visual impact on visitors to Protected Areas within 10-20 km to the proposed WEF.		
	Without mitigation	With mitigation
Extent	Medium distance (2)	Medium distance (2)
Duration	Long term (4)	Long term (4)
Magnitude	Moderate (6)	Moderate (6)
Receptor sensitivity	Very High (10)	Very High (10)
Landscape character	Moderate (6)	Moderate (6)
Probability	Highly probable (4)	Highly probable (4)
Significance	Moderate (56)	Moderate (56)
Status (positive or negative)	Negative	Negative
Reversibility	Reversible (1)	Reversible (1)
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No	
Generic best practise mitigation/management measures:		
Planning:		
<ul style="list-style-type: none"> ▪ Retain/re-establish and maintain natural vegetation in all areas outside of the development footprint/servitude, but within the project site. ▪ Existing roads should be utilised wherever possible. New roads should be planned taking due cognisance of the topography to limit cut and fill requirements. Construction/upgrade of roads should be undertaken properly, with adequate drainage structures in place to forego potential erosion problems. ▪ In terms of onsite ancillary buildings and structures, it is recommended that it be planned so that the clearing of vegetation is minimised. This implies consolidating this infrastructure as much as possible and making use of already disturbed areas rather than undisturbed sites wherever possible. 		
Operations:		
<ul style="list-style-type: none"> ▪ Ensure that the maintenance of the turbines and ancillary structures and infrastructure must be undertaken to ensure that the facility does not degrade, therefore aggravating the visual impact. ▪ Roads must be maintained to forego erosion and to suppress dust, and rehabilitated areas must be monitored for rehabilitation failure. Remedial actions must be implemented as and when required. ▪ Monitor rehabilitated areas for rehabilitation failure or concerns and implement remedial action as and when required. 		
Decommissioning:		
<ul style="list-style-type: none"> ▪ Remove infrastructure not required for the post-decommissioning use. ▪ Rehabilitate all areas. Consult an ecologist regarding rehabilitation specifications. 		
Residual impacts:		
The visual impact will be removed after decommissioning, provided the WEF infrastructure is removed and the area rehabilitated. Failing this, the visual impact will remain.		

Observers travelling along roads

The ABO Uvemvane WEF 1 could have a **moderate** visual impact (significance rating = 36) on observers travelling along roads within a 10 - 20km radius of the wind turbine structures.

Table 26: Visual impact of the proposed wind turbine structures on observers travelling along roads located within a 10 – 20km radius

Nature of Impact:		
Visual impact on observers travelling along roads within 10 - 20km to the proposed WEF.		
	Without mitigation	With mitigation
Extent	Medium distance (2)	Medium distance (2)
Duration	Long term (4)	Long term (4)
Magnitude	Moderate (6)	Moderate (6)
Receptor sensitivity	Moderate (6)	Moderate (6)
Landscape character	Moderate (6)	Moderate (6)
Probability	Probable (3)	Probable (3)
Significance	Moderate (36)	Moderate (36)
Status (positive or negative)	Negative	Negative
Reversibility	Reversible (1)	Reversible (1)
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No	
Generic best practise mitigation/management measures:		
<u>Planning:</u>		
<ul style="list-style-type: none"> Retain/re-establish and maintain natural vegetation in all areas outside of the development footprint/servitude, but within the project site. Existing roads should be utilised wherever possible. New roads should be planned taking due cognisance of the topography to limit cut and fill requirements. Construction/upgrade of roads should be undertaken properly, with adequate drainage structures in place to forego potential erosion problems. In terms of onsite ancillary buildings and structures, it is recommended that it be planned so that the clearing of vegetation is minimised. This implies consolidating this infrastructure as much as possible and making use of already disturbed areas rather than undisturbed sites wherever possible. 		
<u>Operations:</u>		
<ul style="list-style-type: none"> Ensure that the maintenance of the turbines and ancillary structures and infrastructure must be undertaken to ensure that the facility does not degrade, therefore aggravating the visual impact. Roads must be maintained to forego erosion and to suppress dust, and rehabilitated areas must be monitored for rehabilitation failure. Remedial actions must be implemented as and when required. Monitor rehabilitated areas for rehabilitation failure or concerns and implement remedial action as and when required. 		
<u>Decommissioning:</u>		
<ul style="list-style-type: none"> Remove infrastructure not required for the post-decommissioning use. Rehabilitate all areas. Consult an ecologist regarding rehabilitation specifications. 		
Residual impacts:		
The visual impact will be removed after decommissioning, provided the WEF infrastructure is removed and the area rehabilitated. Failing this, the visual impact will remain.		

10.2.2.4. Potential visual impact on sensitive receptors beyond 20km from the proposed wind turbines

Residents of homesteads and visitors to tourist accommodation (if present)

The ABO Uvemvane WEF 1 could have a **low** visual impact (significance rating = 23) on residents of (or visitors to) homesteads beyond the 20km radius of the wind turbine structures.

No mitigation of this impact is possible (i.e. the structures will be visible regardless), but general mitigation and management measures are recommended as best practice. The table below illustrates this impact assessment.

Table 27: Visual impact of the proposed wind turbine structures on residents of homesteads and visitors to tourist accommodation (if present) located beyond the 20km radius

Nature of Impact:		
Visual impact on residents of homesteads and visitors to tourist accommodation (if present) located beyond the 20km radius to the proposed WEF.		
	Without mitigation	With mitigation
Extent	Long distance (1)	Long distance (1)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Low (4)
Receptor sensitivity	High (8)	High (8)
Landscape character	Moderate (6)	Moderate (6)
Probability	Improbable (2)	Improbable (2)
Significance	Low (23)	Low (23)
Status (positive or negative)	Negative	Negative
Reversibility	Reversible (1)	Reversible (1)
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No	No
Generic best practise mitigation/management measures:		
<u>Planning:</u>		
<ul style="list-style-type: none"> Retain/re-establish and maintain natural vegetation in all areas outside of the development footprint/servitude, but within the project site. Existing roads should be utilised wherever possible. New roads should be planned taking due cognisance of the topography to limit cut and fill requirements. Construction/upgrade of roads should be undertaken properly, with adequate drainage structures in place to forego potential erosion problems. In terms of onsite ancillary buildings and structures, it is recommended that it be planned so that the clearing of vegetation is minimised. This implies consolidating this infrastructure as much as possible and making use of already disturbed areas rather than undisturbed sites wherever possible. 		
<u>Operations:</u>		
<ul style="list-style-type: none"> Ensure that the maintenance of the turbines and ancillary structures and infrastructure must be undertaken to ensure that the facility does not degrade, therefore aggravating the visual impact. Roads must be maintained to forego erosion and to suppress dust, and rehabilitated areas must be monitored for rehabilitation failure. Remedial actions must be implemented as and when required. Monitor rehabilitated areas for rehabilitation failure or concerns and implement remedial action as and when required. 		
<u>Decommissioning:</u>		
<ul style="list-style-type: none"> Remove infrastructure not required for the post-decommissioning use. Rehabilitate all areas. Consult an ecologist regarding rehabilitation specifications. 		
Residual impacts:		
The visual impact will be removed after decommissioning, provided the WEF infrastructure is removed and the area rehabilitated. Failing this, the visual impact will remain.		

10.2.2.5. Shadow flicker

Shadow flicker only occurs when the sky is clear, and when the turbine rotor blades are between the sun and the receptor (i.e. when the sun is low). This report's shadow flicker modelling represents a worst-case scenario by assuming uninterrupted turbine operation during all daylight hours under clear sky conditions throughout the year, no screening by vegetation, topography, or structures and that the geometric shadow paths are determined solely by the sun-turbine-receptor relationship, excluding the expected radiating intensity of the shadow flicker within the zone of visible shadows.

As such, the shadow flicker assessment for the proposed ABO Uvemvane WEF 1 was undertaken for a 20 turbine layout with a maximum blade tip height of 280 m (hub height up to 180 m and rotor blade length of 100 m). Based on the literature and international practice, sensitive receptors are defined as dwellings within 1km (3- 4 times the turbine height) of a turbine where flicker effects are most likely to occur at perceptible levels. It should also be noted that shadow flicker is only of concern on occupied residences, if any of the identified homesteads are derelict, deserted or not permanently occupied, the shadow flicker visual impact will be non-existent, and not constitute a shadow flicker visual impact of concern, until such a time as they are inhabited again.

This study found that a total of two (2) turbines may pose shadow flicker visual impacts of concern on residents of two (2) homesteads, namely Geluk, located within the proposed development site, and residences located just south of the homestead Modderfontein. Of note is that the homestead Modderfontein is operational as a wedding and functions venue called Charmick Wedding and Functions Venue. They are also not located within the development site. These dwellings are expected to experience shadow flicker as a result of turbines, 03 and 24.

Since written landowner consent has been received from the landowner of Geluk the below table will only assess the impact on the residents of the residences located just south of the homestead Modderfontein (Charmick Wedding and Functions Venue), as it has been established that the residents of Geluk acknowledge and are accepting of the anticipated shadow flicker impacts.

The significance of shadow flicker is therefore anticipated to be **high** (significance rating = 64) before engagement with the residents of the homesteads south of Modderfontein and can be **low** (significance rating = 28) should one or more of the mitigation measures as outlined in Section 12 are implemented.

Table 28: Visual impact of shadow flicker on sensitive visual receptors located outside of the development site who are located within the zone of visual shadows of a proposed turbine.

Nature of Impact:		
Visual impact of shadow flicker on sensitive visual receptors located outside of the development site who are located within the zone of visual shadows of a proposed turbine.		
	Without mitigation	With mitigation
Extent	Very Short distance (4)	Very Short distance (4)
Duration	Long term (4)	Long term (4)
Magnitude	High (8)	Low (4)
Receptor sensitivity	Very High (10)	Very High (10)
Landscape character	Moderate (6)	Moderate (6)
Probability	Highly probable (4)	Improbable (2)
Significance	High (64)	Low (28)
Status (positive or negative)	Negative	Negative
Reversibility	Reversible (1)	Reversible (1)
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Generic best practise mitigation/management measures:		
<u>Planning:</u>		
<ul style="list-style-type: none"> Retain/re-establish and maintain natural vegetation in all areas outside of the development footprint/servitude, but within the project site. It is recommended that no homesteads should be located in the zone of visible shadows of any of the proposed turbine, unless otherwise agreed upon by the affected landowner, if the landowner is located within the development site. Proof of such agreement is required. Should a homestead be located within the zone of visible shadows of a proposed turbine and its fall outside the development site boundary, it is recommended that the EAP/Applicant provide documented proof of a concerted and meaningful effort to specifically contact the affected landowner, informing them of the potential shadow flicker impacts identified through this desktop-level assessment and the resultant implications thereof. This documentation should further demonstrate that the I&AP was afforded sufficient opportunity to review and comment on the anticipated impacts, in line with standard public participation requirements, and should include proof of acknowledgment of receipt of this notification by the I&AP. Should the I&AP associate with the homestead formally object to the anticipated shadow flicker impacts, the recommendations and mitigation measures as outlined in Section 12 should be followed. 		
<u>Operations:</u>		
<ul style="list-style-type: none"> Consider planting of screening vegetation at the affected homestead to limit the effect of shadow flicker, should it be required. 		
<u>Decommissioning:</u>		
<ul style="list-style-type: none"> Remove infrastructure not required for the post-decommissioning use. Rehabilitate all areas. Consult an ecologist regarding rehabilitation specifications. 		
Residual impacts:		
The visual impact will be removed after decommissioning, provided the WEF infrastructure is removed and the area rehabilitated. Failing this, the visual impact will remain.		

10.2.2.6. Potential visual impact of operational, safety and security lighting of the facility at night

The area immediately surrounding the proposed facility has a relatively low incidence of receptors and light sources, so light trespass and glare from the security and after-hours operational lighting for the facility will have some significance for visual receptors in the study area, especially those located in closer proximity to the wind turbine structures especially within 0-5km and potentially up to 20km.

Another source of glare light, albeit not as intense as flood lighting, is the aircraft warning lights mounted on top of the hub of the wind turbines. These lights are less aggravating due to the toned-down red colour but have the potential to be visible from a great distance. This is especially true due to the strobing effect of the lights, a function specifically designed to attract the observer's attention. The Civil Aviation Authority (CAA) prescribes these warning lights and the potential to mitigate their visual impacts have traditionally been very low other than to restrict the number of lights to turbines that delineate the outer perimeter of the facility.



Figure 29: Aircraft warning lights fitted to the wind turbine hubs¹²

Some ground-breaking new technology in the development of strobing lights that only activate when an aircraft is detected nearby, known as the Aircraft Detection Lighting System (ADLS), may aid in restricting light pollution at night and should be investigated and implemented by the project proponent, if available and permissible by the CAA. This new technology uses a radar system to monitor the airspace over and around the WEF airspace in order to deactivate the wind turbine's night lights when there is no flying object within the airspace of the WEF. The system relies on the active detection of aircraft by radar sensors, which relays a switch-on signal to the central wind farm control to activate the obstacle lights. See diagrams in the Figures below.

Radar Controlled Obstruction Light Control

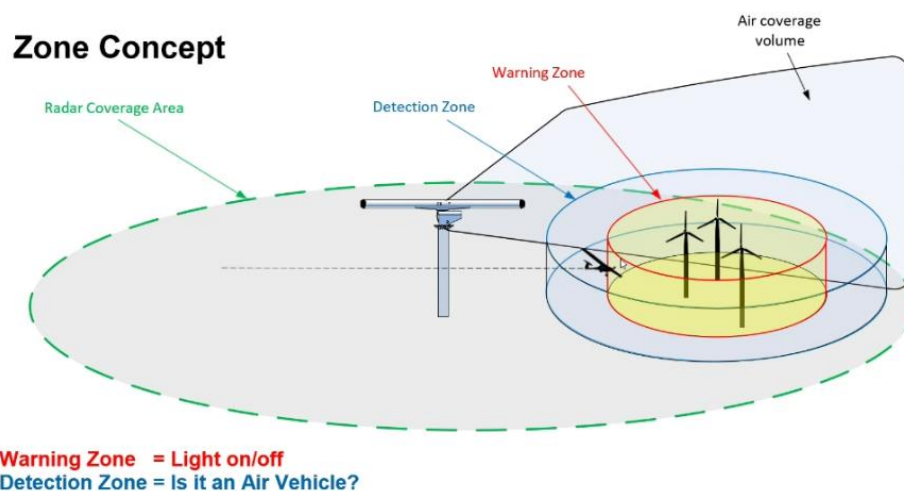


Figure 30: Detection zones of the Aircraft Detection Lighting System¹³

¹² Source: <http://www.pinchercreekecho.com/2015/04/29/md-of-pincher-creek-takes-on-wind-turbine-lights>

¹³ Source: The Terma Group, 2023

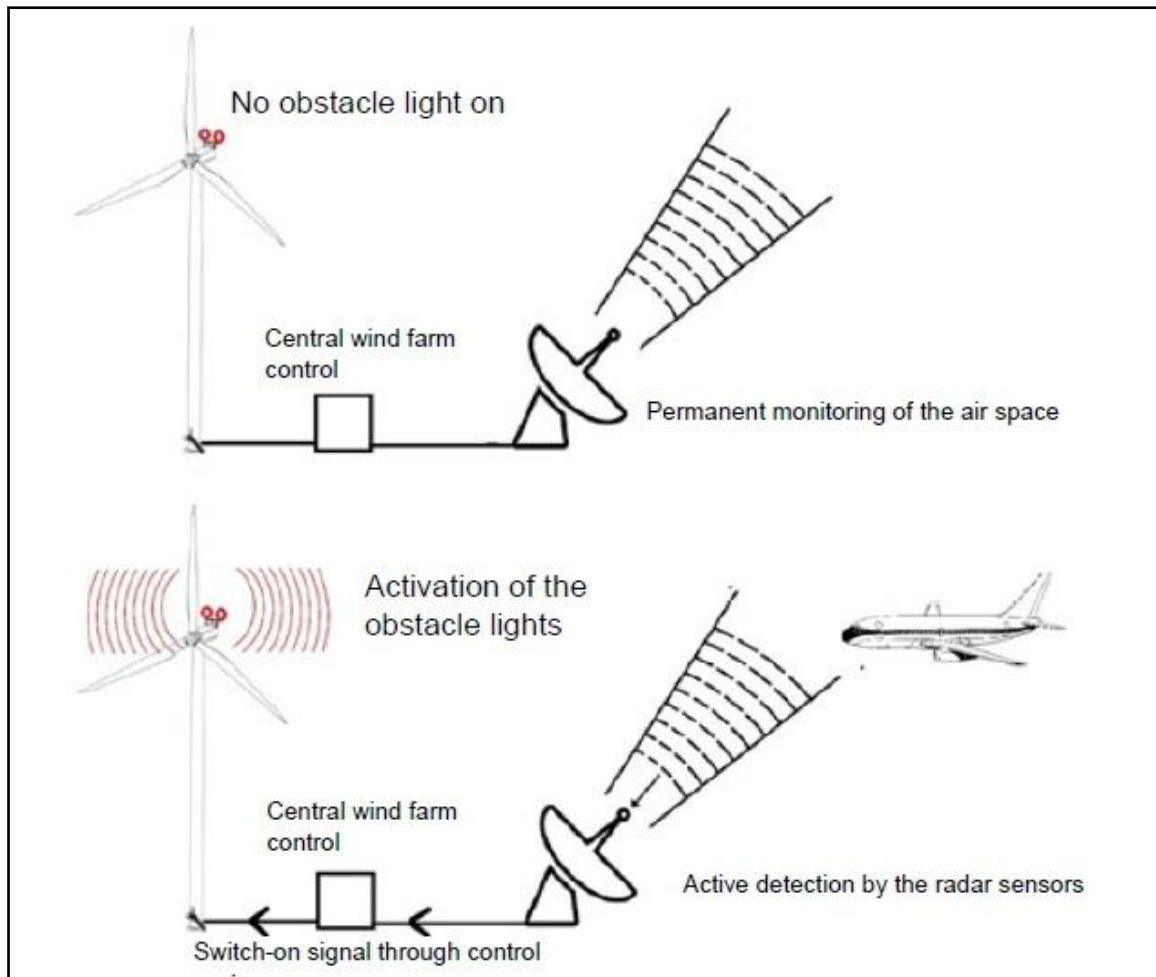


Figure 31: Diagram of the functional principle of the needs-based night lights¹⁴

Last is the potential lighting impact known as sky glow. Sky glow is the condition where the night sky is illuminated when light reflects off particles in the atmosphere such as moisture, dust or smog. The sky glow intensifies with the increase in the number of light sources. Each new light source, especially upwardly directed lighting, contributes to the increase in sky glow.

Residents of homesteads, visitors to tourist accommodation and Protected Areas

This anticipated lighting impact on residents of homesteads, visitors to tourist accommodation and Protected Areas (i.e. Alice Glockner NR) is likely to be of **very high** significance (significance rating = 83) and may be mitigated to **high** (significance rating = 62) especially within 5km and potentially up to 10km radius of the wind turbine structures.

Table 29: Impact table summarising the significance of visual impact of lighting at night on residents/ visitors to homesteads, tourist accommodation and Protected Areas in close to medium proximity (within 0-5km and potentially up to 10km) to the proposed WEF

Nature of Impact: Visual impact of lighting at night on residents and visitors to homesteads, tourist accommodation and Protected Areas within 10km from the proposed WEF		
	Without mitigation	With mitigation
Extent	Short distance (3)	Short distance (3)
Duration	Long term (4)	Long term (4)
Magnitude	Very High (10)	High (8)
Receptor sensitivity	Very High (10)	Very High (10)
Landscape character	Moderate (6)	Moderate (6)
Probability	Definite (5)	Highly probable (4)

¹⁴ Source: Nordex Energy GmbH, 2019

Significance	Very high (83)	High (62)
Status (positive or negative)	Negative	Negative
Reversibility	Reversible (1)	Reversible (1)
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Generic best practise mitigation/management measures: <u>Planning & operation:</u> <ul style="list-style-type: none"> Implement needs-based night lighting if available and considered acceptable by the CAA. Limit aircraft warning lights to the turbines on the perimeter according to CAA requirements, thereby reducing the overall impact. Shield the sources of light by physical barriers (walls, vegetation, or the structure itself). Limit mounting heights of lighting fixtures or alternatively use footlights or bollard level lights. Make use of minimum lumen or wattage in fixtures. Make use of down-lighters or shielded fixtures. Make use of Low-Pressure Sodium lighting or other types of low impact lighting. Make use of motion detectors on security lighting. This will allow the site to remain in relative darkness, until lighting is required for security or maintenance purposes. <u>Decommissioning:</u> <ul style="list-style-type: none"> Remove infrastructure not required for the post-decommissioning use. Rehabilitate all areas. Consult an ecologist regarding rehabilitation specifications. 		
Residual impacts: The visual impact will be removed after decommissioning, provided the WEF infrastructure is removed and the area rehabilitated. Failing this, the visual impact will remain.		

Observers travelling along roads

This anticipated lighting impact on observers travelling along roads is likely to be of **moderate** significance both before (significance rating = 62) and after mitigation (significance rating = 44) especially within 5km and potentially up to 10km radius of the wind turbine structures.

Table 30: Impact table summarising the significance of visual impact of lighting at night on observers travelling along roads in close to medium proximity (within 0-5km and potentially up to 10km) to the proposed WEF

Nature of Impact: Visual impact of lighting at night on observers travelling along roads within 10km from the proposed WEF		
	Without mitigation	With mitigation
Extent	Short distance (3)	Short distance (3)
Duration	Long term (4)	Long term (4)
Magnitude	Very High (10)	High (8)
Receptor sensitivity	Moderate (6)	Moderate (6)
Landscape character	Moderate (6)	Moderate (6)
Probability	Highly Probable (4)	Probable (3)
Significance	Moderate (58)	Moderate (41)
Status (positive or negative)	Negative	Negative
Reversibility	Reversible (1)	Reversible (1)
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Generic best practise mitigation/management measures: <u>Planning & operation:</u> <ul style="list-style-type: none"> Implement needs-based night lighting if available and considered acceptable by the CAA. Limit aircraft warning lights to the turbines on the perimeter according to CAA requirements, thereby reducing the overall impact. Shield the sources of light by physical barriers (walls, vegetation, or the structure itself). Limit mounting heights of lighting fixtures or alternatively use footlights or bollard level lights. Make use of minimum lumen or wattage in fixtures. Make use of down-lighters or shielded fixtures. Make use of Low-Pressure Sodium lighting or other types of low impact lighting. Make use of motion detectors on security lighting. This will allow the site to remain in relative darkness, until lighting is required for security or maintenance purposes. <u>Decommissioning:</u> <ul style="list-style-type: none"> Remove infrastructure not required for the post-decommissioning use. Rehabilitate all areas. Consult an ecologist regarding rehabilitation specifications. 		
Residual impacts:		

The visual impact will be removed after decommissioning, provided the WEF infrastructure is removed and the area rehabilitated. Failing this, the visual impact will remain.

10.2.2.7. Ancillary infrastructure

On-site ancillary infrastructure associated with the WEF includes an onsite substation, Battery Energy Storage System (BESS), underground/overhead cabling between the wind turbines, internal access roads, auxiliary buildings, etc.

No dedicated viewshed analyses have been generated for the ancillary infrastructure, as the range of visual exposure will fall within (and be overshadowed by) that of the turbines.

The anticipated visual impact resulting from this infrastructure is likely to be of **high** significance (significance rating = 62) and may be mitigated to **moderate** (significance rating = 44).

Table 31: Visual impact of the ancillary infrastructure on sensitive receptors within close proximity

Nature of Impact:		
Visual impact of the ancillary infrastructure on observers in close proximity to the structures.		
	Without mitigation	With mitigation
Extent	Short distance (3)	Short distance (3)
Duration	Long term (4)	Long term (4)
Magnitude	High (8)	Moderate (6)
Receptor sensitivity	Very High (10)	Very High (10)
Landscape character	Moderate (6)	Moderate (6)
Probability	Highly probable (4)	Probable (3)
Significance	High (62)	Moderate (44)
Status (positive or negative)	Negative	Negative
Reversibility	Reversible (1)	Reversible (1)
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Generic best practise mitigation/management measures:		
<u>Planning:</u>		
<ul style="list-style-type: none"> Retain/re-establish and maintain natural vegetation in all areas outside of the development footprint/servitude, but within the project site. Existing roads should be utilised wherever possible. New roads should be planned taking due cognisance of the topography to limit cut and fill requirements. Construction/upgrade of roads should be undertaken properly, with adequate drainage structures in place to forego potential erosion problems. In terms of onsite ancillary buildings and structures, it is recommended that it be planned so that the clearing of vegetation is minimised. This implies consolidating this infrastructure as much as possible and making use of already disturbed areas rather than undisturbed sites wherever possible. 		
<u>Operations:</u>		
<ul style="list-style-type: none"> Ensure that the maintenance of the turbines and ancillary structures and infrastructure must be undertaken to ensure that the facility does not degrade, therefore aggravating the visual impact. Roads must be maintained to forego erosion and to suppress dust, and rehabilitated areas must be monitored for rehabilitation failure. Remedial actions must be implemented as and when required. Monitor rehabilitated areas for rehabilitation failure or concerns and implement remedial action as and when required. 		
<u>Decommissioning:</u>		
<ul style="list-style-type: none"> Remove infrastructure not required for the post-decommissioning use. Rehabilitate all areas. Consult an ecologist regarding rehabilitation specifications. 		
Residual impacts:		
The visual impact will be removed after decommissioning, provided the WEF infrastructure is removed and the area rehabilitated. Failing this, the visual impact will remain.		

10.2.2.8. Blade Painting

Based on the possible avifaunal specialist recommendation that all wind turbines must have one or two blades patterned according to a SACAA approved pattern. While the addition of blade painting does make turbines more conspicuous, this change does not

fundamentally alter their overall scale, form, or prominence in the landscape. Instead, it merely represents a moderate adjustment in colour contrast.

Therefore, the anticipated visual impact resulting from blade painting is likely to be of **low** significance (significance rating = 28) especially within 0-5km and potentially up to 10km radius of the wind turbine structures.

Table 32: Visual impact of blade painting on the overall perception of the WEF by sensitive receptors especially within 0-5km and potentially up to 10km radius of the wind turbine structures.

Nature of Impact:		
Visual impact of blade painting on the overall perception of the WEF by sensitive receptors especially within 0-5km and potentially up to 10km radius of the wind turbine structures.		
	Without mitigation	With mitigation
Extent	Very short distance (4)	Very Short distance (4)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Low (4)
Receptor sensitivity	Very High (10)	Very high (10)
Landscape character	Moderate (6)	Moderate (6)
Probability	Improbable (2)	Improbable (2)
Significance	Low (28)	Low (28)
Status (positive or negative)	Negative	Negative
Reversibility	Reversible (1)	Reversible (1)
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No	No
Generic best practise mitigation/management measures:		
<u>Planning:</u>		
<ul style="list-style-type: none"> Apply blade painting only where justified by avifaunal risk assessments and in accordance with SACAA-approved patterns and the SAWEA/BLSA/BARESG guidelines. As far as possible, limit blade painting to one blade per turbine or simple broad bands (e.g., two broad stripes or $\frac{3}{4}$ solid blade) rather than multiple thin stripes to reduce visual clutter. If multiple blades are patterned, use asymmetrical placement to preserve avian conspicuity without repeating pattern symmetry that increases human noticeability. Commit to consistent pattern application across the facility (or defined subsets) to avoid patchwork appearance and public confusion. Prioritise painting on turbines located in low-sensitivity visual zones (i.e. behind ridgelines, out of primary viewer corridors) and avoid (or apply minimal treatment to) turbines sited on visually exposed ridgelines or within close proximity (<1-2 km) to sensitive receptors unless avifaunal risk compels it. Specify durable, non-reflective paints formulated for turbine use (UV-stable, abrasion resistant) to avoid patchiness, gloss/shine changes or uneven weathering that would attract visual attention. Ensure the application of blade painting is undertaken during the manufacturing process and not as an after application during the construction phase. Apply paint patterns uniformly and consistently across turbines to avoid irregular visual effects. Use non-reflective, durable paint finishes to prevent glare, fading, or patchiness that may increase visibility. Apply paint under controlled conditions with trained applicators, measured coverage, documented pattern placement, to ensure uniform visual appearance across turbines and avoid visible inconsistencies. 		
<u>Operations:</u>		
<ul style="list-style-type: none"> Implement post-construction monitoring to evaluate both avifaunal effectiveness and public perception of painted blades. It is suggested that this is implemented via two complementary monitoring programmes: (a) avifaunal collision monitoring to quantify mortality reduction (as specified by the avifaunal specialist), and (b) visual perception monitoring (stakeholder surveys/photo points) to assess community responses and any unforeseen visual intrusion. Use agreed metrics (e.g., raptor fatalities, local resident perception scores). Use monitoring results to adjust paint coverage (e.g., reduce/alter patterns where visual impacts are unacceptable or expand where avifaunal benefit is insufficient). Maintain decision-making records (trigger thresholds, remedial actions). Schedule periodic repainting to maintain uniform colour/contrast and avoid patchy or faded blades that increase attention. Use non-gloss finishes to avoid glare. Keep local communities and stakeholders informed of monitoring outcomes and any planned adjustments to painting strategy to maintain public confidence and transparency. 		
<u>Decommissioning:</u>		
<ul style="list-style-type: none"> Remove infrastructure not required for the post-decommissioning use. 		

- Restore the site to pre-construction conditions, ensuring no residual long-term visual impacts linked to painted blades.

Residual impacts:

The visual impact will be removed after decommissioning, provided the WEF infrastructure is removed and the area rehabilitated. Failing this, the visual impact will remain.

10.2.3. Decommissioning Phase

During decommissioning, there will be an increase in heavy vehicles utilising the roads to the site that may cause, at the very least, a visual nuisance to landowners in the area within 5km from the WEF site. Additionally, dust as a result of the construction activities and construction equipment (i.e. cranes), temporary laydown areas, construction camps, etc. may also be visible at the site, resulting in a visual impact occurring during decommissioning phase on the identified sensitive receptors.

10.2.3.1. Decommissioning impacts

Decommissioning activities may potentially result in a **moderate** (significance rating = 58), temporary visual impact, that may be mitigated to a slightly lower **moderate** (significance rating = 41) post mitigation on sensitive visual receptors within 5km.

Table 33: Visual impact of decommissioning activities on sensitive visual receptors within 5km to the proposed WEF.

Nature of Impact: Visual impact of decommissioning activities on sensitive visual receptors within 5km to the proposed WEF.		
	Without mitigation	With mitigation
Extent	Very short distance (4)	Very short distance (4)
Duration	Very short term (1)	Very short term (1)
Magnitude	High (8)	Moderate (6)
Receptor sensitivity	Very high (10)	Very high (10)
Landscape character	Moderate (6)	Moderate (6)
Probability	Highly Probable (4)	Probable (3)
Significance	Moderate (58)	Moderate (41)
Status (positive or negative)	Positive	Positive
Reversibility	Reversible (1)	Reversible (1)
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation: Decommissioning: <ul style="list-style-type: none"> ▪ Reduce the decommissioning period through careful logistical planning and productive implementation of resources. ▪ Plan the placement of laydown areas and temporary equipment camps in order to minimise vegetation clearing (i.e. in already disturbed areas) where possible. ▪ Restrict the activities and movement of workers and vehicles to the immediate site and existing access roads. ▪ Ensure that rubble, litter, and disused materials are appropriately stored and then disposed of regularly at licensed waste facilities. ▪ Reduce and control dust using approved dust suppression techniques as and when required (i.e. whenever dust becomes apparent). ▪ Restrict activities to daylight hours whenever possible in order to reduce the visual impacts associated with lighting. ▪ Remove infrastructure not required for the post-decommissioning use of the site. ▪ Rehabilitate all areas as per the rehabilitation plan undertaken. Consult an ecologist regarding rehabilitation specifications. ▪ Monitor rehabilitated areas post-decommissioning and implement remedial actions as required. 		
Residual impacts: None, provided that rehabilitation works are carried out as required.		

10.3 Indirect Impact Assessment

The indirect visual impacts of the proposed ABO Uvemvane WEF 1 are assessed as follows:

10.3.1. Operational Phase

10.3.1.1. The potential impact on the sense of place of the region

Sense of place refers to a unique experience of an environment by a user, based on his or her cognitive experience of the place. Visual criteria, specifically the visual character of an area (informed by a combination of aspects such as topography, level of development, vegetation, noteworthy features, cultural / historical features, etc.), play a significant role.

An impact on the sense of place is one that alters the visual landscape to such an extent that the user experiences the environment differently, and more specifically, in a less appealing or less positive light.

The greater environment with its wide open, predominately rural agricultural and undeveloped landscapes is considered to have a moderate to high visual quality. The landscape sensitivity (as discussed in Section 6.3) is considered to be moderate based on its location within the urban edge and mixture of land uses. The condition of the landscape is somewhat natural with a fair amount of built infrastructure and transformation; the landscape character is such that there is some capacity for change, which in this case would be the proposed wind turbines.

The significance of the visual impacts on the sense of place within the region (i.e. beyond a 20km radius of the development and within the greater region) is expected to be of **high** significance.

Table 34: The potential impact on the sense of place of the region

Nature of Impact:		
The potential impact on the sense of place of the region.		
	Without mitigation	With Mitigation
Extent	Long distance (1)	Long distance (1)
Duration	Long term (4)	Long term (4)
Magnitude	Very high (10)	Very high (10)
Receptor sensitivity	Very high (10)	Very high (10)
Landscape character	Moderate (6)	Moderate (6)
Probability	Definite (5)	Definite (5)
Significance	High (78)	High (82)
Status (positive or negative)	Negative	Negative
Reversibility	Reversible (1)	Reversible (1)
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No, only best practise measures can be implemented	
Generic best practise mitigation/management measures:		
<u>Planning:</u>		
<ul style="list-style-type: none">▪ Retain/re-establish and maintain natural vegetation in all areas outside of the development footprint/servitude, but within the project site.▪ Existing roads should be utilised wherever possible. New roads should be planned taking due cognisance of the topography to limit cut and fill requirements. Construction/upgrade of roads should be undertaken properly, with adequate drainage structures in place to forego potential erosion problems.▪ In terms of onsite ancillary buildings and structures, it is recommended that it be planned so that the clearing of vegetation is minimised. This implies consolidating this infrastructure as much as possible and making use of already disturbed areas rather than undisturbed sites wherever possible.		
<u>Operations:</u>		
<ul style="list-style-type: none">▪ Ensure that the maintenance of the turbines and ancillary structures and infrastructure must be undertaken to ensure that the facility does not degrade, therefore aggravating the visual impact.▪ Roads must be maintained to forego erosion and to suppress dust, and rehabilitated areas must be monitored for rehabilitation failure. Remedial actions must be implemented as and when required.▪ Monitor rehabilitated areas for rehabilitation failure or concerns and implement remedial action as and when required.		
<u>Decommissioning:</u>		
<ul style="list-style-type: none">▪ Remove infrastructure not required for the post-decommissioning use.▪ Rehabilitate all areas. Consult an ecologist regarding rehabilitation specifications.		

Residual impacts:

The visual impact will be removed after decommissioning, provided the WEF infrastructure is removed and the area rehabilitated. Failing this, the visual impact will remain.

10.4 Cumulative Impact Assessment

10.4.1. The potential cumulative visual impact of wind farms on the visual quality of the landscape

The study area is considered to have a moderate landscape character sensitivity as a result of the study area's location within the urban edge and mixture of land uses. The condition of the landscape is somewhat natural with a fair amount of built infrastructure and transformation; the landscape character is such that there is some capacity for change.

The proposed ABO Uvemvane WEF 1 and associated grid connection infrastructure is located near a number of approved Solar PV Facilities within a 50 km radius.

Although several Solar PV and Wind Energy Facilities (WEFs) have been identified within a 50 km radius, the majority are either solar installations (which have a low vertical profile and limited long-distance visibility) or projects still in early planning phases, meaning the cumulative visual exposure may not materialise to its theoretical maximum.

The potential worst-case **cumulative** visual impact of the proposed ABO Uvemvane WEF 1, together with the other authorised, constructed and in-process SEFs and EGI within a 50km radius (refer to **Section 6.6**) is expected to be **moderate**, depending on the observer's sensitivity to wind turbine structures.

Table 35: The potential cumulative visual impact of wind farms, solar farms and EGI on the visual quality of the landscape

Nature of Impact:		
The potential cumulative visual impact of wind farms, solar farms and EGI on the visual quality of the landscape.		
	Without mitigation	With Mitigation
Extent	Medium distance (2)	Medium distance (2)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Low (4)
Receptor sensitivity	Very high (10)	Very high (10)
Landscape character	Moderate (6)	Moderate (6)
Probability	Improbable (2)	Improbable (2)
Significance	Low (26)	Low (26)
Status (positive or negative)	Negative	Negative
Reversibility	Reversible (1)	Reversible (1)
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	No	
Mitigation measures: N.A.		
Residual impacts:		
The visual impact will be removed after decommissioning, provided the WEF infrastructure is removed and the area rehabilitated. Failing this, the visual impact will remain.		

10.5 Alternative Impact Assessment

10.5.1. No-go Alternative Assessment

Should the proposed ABO Uvemvane WEF 1 not be undertaken then no visual impact is expected as the status quo of the receiving environment shall remain unchanged.

10.5.2. Technology Alternative Assessment

The following BESS Technology Alternatives have been proposed for the ABO Uvemvane WEF 1:

- Preferred Technology: Lithium-Ion or Sodium-Ion (Solid state)
- Alternative Technology: Redox Flow

From a visual perspective BESS technologies vary in their design and visual characteristics, which may influence their integration into the surrounding landscape.

The preferred alternative of lithium-ion and sodium-ion (solid-state) systems are typically containerised, compact, and modular in form, often resembling standard shipping containers, which can be efficiently arranged and screened through landscaping or architectural treatments.

In contrast, redox flow battery systems generally require larger tanks and auxiliary infrastructure, resulting in a bulkier footprint and potentially greater visual intrusion. The scale, layout, and material finishes of each technology therefore directly affect the degree of visual impact and the effectiveness of mitigation measures.

No dedicated viewshed analyses have been generated for the proposed BESS Technology Alternatives, as the range of visual exposure will fall within (and be overshadowed by) that of the turbines. Additionally, the visual impact of both of these alternatives will fall within the assessment undertaken for Ancillary Infrastructure as per Section 10.2.2.7 above, which is expected to be of **high** significance pre-mitigation and may be mitigated to **moderate** significance.

While **both of the proposed BESS Technology Alternatives are acceptable from a visual perspective** the **Preferred Technology Alternative** of lithium-ion and sodium-ion (solid-state) system would **be the preferred alternative from a visual perspective** based purely on its more compact and modular form, which would be easier to mitigate.

10.5.3. Alternative 33kV route

No dedicated viewshed analyses have been generated for the 33kV, as the range of visual exposure will fall within (and be overshadowed by) that of the turbines. The anticipated visual impact resulting from this infrastructure is likely to be as assessed in Section 10.2.2.7, Table 31. It is expected to be of **high** significance and may be mitigated to **moderate** and found to be acceptable from a visual impact perspective.

11. IMPACT STATEMENT

The findings of the Visual Impact Assessment undertaken for the proposed ABO Uvemvane WEF 1 is that the visual environment surrounding the site, especially within a 5-10km radius (and potentially up to 20km), will be visually impacted upon for the anticipated operational lifespan of the facility (i.e. 20 - 25 years).

In order to determine the overall visual impact of the proposed infrastructure a value was applied to each expected significance rating. The values applied are as follows.

- Very High = 5
- High = 4
- Moderate = 3
- Low = 2
- Negligible = 1

The above values were then totalled to determine an overall score. The overall visual impact was determined as per the below score matrix:

- Negligible (0-18)
- Low (19-36)
- Moderate (37-54)

- High (55-72)
- Very High (73-90)

The tables below are a summary of the visual impacts as assessed above:

Table 36: Summary of impact significance

Significance Ratings Summary			
		Pre-mitigation impact rating	Post mitigation impact rating
Direct Impacts			
Construction Phase			
1	Potential temporary visual impact of construction on residents of homesteads visitors to tourist accommodation and Protected Areas within 5km to the proposed WEF.	High (4)	Moderate (3)
2	Potential temporary visual impact of construction on observers travelling along roads within 5km to the proposed WEF.	High (4)	Moderate (3)
Operational Phase			
3	Potential visual impact on residents of homesteads visitors to tourist accommodation and Protected Areas within 5km to the proposed WEF.	Very High (5)	Very High (5)
4	Potential visual impact on observers traveling along the roads within a 5km radius of the proposed WEF.	High (4)	High (4)
5	Potential visual impact on residents of homesteads and visitors to tourist accommodation (if present) within 5 - 10km radius of the proposed WEF.	High (4)	High (4)
6	Potential visual impact on observers travelling along the roads within a 5 - 10km radius of the proposed WEF.	High (4)	High (4)
7	Potential visual impact on residents of homesteads and visitors to tourist accommodation (if present) within 10 - 20km radius of the proposed WEF.	Moderate (3)	Moderate (3)
8	Potential visual impact on visitors to Protected Areas within 10 - 20km radius of the proposed WEF.	Moderate (3)	Moderate (3)
9	Potential visual impact on observers travelling along roads within a 10 - 20km radius of the proposed WEF.	Moderate (3)	Moderate (3)
10	Potential visual impact on residents of homesteads and visitors to tourist accommodation (if present) beyond the 20km radius of the proposed WEF.	Low (2)	Low (2)
11	Potential shadow flicker impact on residents of homesteads located outside of the development site within the shadow flicker zone of visible shadows of a proposed turbine.	High (4)	Low (2)
12	Potential visual impact of operational, safety and security lighting of the facility on residents of homesteads, visitors to tourist accommodation and Protected Areas at night, within 0-5km and potentially up to 10km to the proposed WEF.	Very High (5)	High (4)
13	Potential visual impact of operational, safety and security lighting of the facility on observers travelling along roads at night, within 0-5km and potentially up to 10km to the proposed WEF.	Moderate (3)	Moderate (3)
14	Potential visual impact of ancillary infrastructure on sensitive receptors within close proximity.	High (4)	Moderate (3)
15	Potential visual impact of blade painting on the overall perception of the WEF by sensitive receptors especially within 0-5km and potentially up to 10km radius of the wind turbine structures.	Low (2)	Low (2)
Decommissioning Phase			
16	Potential temporary visual impact of decommissioning activities on sensitive receptors within 5km to the proposed WEF.	Moderate (3)	Moderate (3)
Indirect Impacts			
Operational Phase			

17	Potential visual impact of the proposed infrastructure on the sense of place of the region.	High (4)	High (4)
Cumulative Impacts			
18	The potential cumulative visual impact of the proposed WEFs, SEFs and EGI within a 50km radius on the visual quality of the landscape.	Low (2)	Low (2)
	Overall significance rating	High 63	High 57

The anticipated visual impacts listed above (i.e. post mitigation impacts) range from **very high** to **low** significance. The **overall visual impact is anticipated to be of high significance** for the proposed ABO Uvemvane WEF 1 both pre and post mitigation.

12.THE POTENTIAL TO MITIGATE VISUAL IMPACTS

The primary visual impact, namely the appearance of the WEF (the wind turbines) is not possible to mitigate. The functional design of the turbines cannot be changed in order to reduce visual impacts. The overall potential for mitigation is therefore generally low or non-existent. The following best practice mitigations are, however, possible:

PLANNING PHASE:

General

- It is recommended that vegetation cover (i.e. either natural or cultivated) be maintained in all areas outside of the actual development footprint (but still within the project site), both during construction and operation of the proposed WEF. This will minimise visual impact as a result of cleared areas and areas denuded of vegetation.
- Existing roads should be utilised wherever possible. New roads should be planned taking due cognisance of the topography to limit cut and fill requirements. Construction/upgrade of roads should be undertaken properly, with adequate drainage structures in place to forego potential erosion problems.
- In terms of onsite ancillary buildings and structures, it is recommended that it be planned so that the clearing of vegetation is minimised. This implies consolidating this infrastructure as much as possible and making use of already disturbed areas rather than undisturbed sites wherever possible.

Shadow Flicker

- It is recommended that no homesteads should be located in the zone of visual shadows of any of the proposed turbines. Turbines located within this zone should either be removed or relocated.

Should this not be possible then the below is relevant:

Homesteads located within the development site

- It is recommended that no homesteads should be located in the zone of visible shadows of any of the proposed turbines, unless otherwise agreed upon by the affected landowner, if the landowner is located within the development site. Proof of such engagement is required.
- Should no agreement be acquired then this turbine is to be removed or relocated.

Homesteads located outside of the development site

- **Proof of engagement:** For the residences of homesteads that fall outside of the development site boundary who are within the zone of visible shadows, it is recommended that the EAP/Applicant provide documented proof of a concerted and meaningful effort to specifically contact the affected landowner, informing them of the potential shadow flicker impacts identified through this desktop-level assessment and the resultant implications thereof. This documentation should further demonstrate that the I&AP was afforded sufficient opportunity to review

and comment on the anticipated impacts, in line with standard public participation requirements, and should include proof of acknowledgment of receipt of this notification by the I&AP. Should the I&AP associated with the identified affected homestead formally object to the anticipated shadow flicker impacts, the recommendations and mitigation measures as outlined below should be followed.

- **Formal objection received:** Should the I&AP associated with the homestead in question formally object to the anticipated shadow flicker impacts, it is recommended that the following course of action be followed:
 - **Engagement and negotiation:** The EAP/Applicant should facilitate a direct engagement process with the affected I&AP to discuss the concerns raised, with the intention of reaching a mutually acceptable resolution. As a first step, the Applicant should offer and discuss lower-impact, less operationally intensive mitigation options with the I&AP, which must include, either individually or in combination the following:
 - **Vegetative or structural screening:** Establishment of appropriate vegetative buffers (e.g. fast-growing indigenous tree or shrub species) or artificial screening structures between the turbine and the affected dwelling, where topography and land use allow, to physically interrupt the line of sight.
 - **Dwelling-level physical mitigation:** Where appropriate and agreed with the affected party, modifications to the dwelling itself, such as window treatments, blinds, tinting, or changes to the orientation of window use in affected rooms, to reduce the visual effect of the flicker indoors.
 - **Review of layout alternatives:** Assessment of the feasibility of micro-siting or minor layout adjustments to that specific turbines position or alternatively the removal of the turbine completely.
 - **Financial or in-kind compensation:** Negotiated compensation to the affected I&AP for the residual impact, in line with any applicable landowner agreements or compensation frameworks.
- **Escalation should negotiations break down:** Should the I&AP and Applicant be unable to reach agreement through the measures above, and the objection pertaining to shadow flicker remains unresolved, the following escalation steps are recommended:
 - **Undertaking of specific shadow flicker modelling:** A site-specific, detailed shadow flicker model should be undertaken for the specific turbine in question, based on the actual turbine specifications, receptor coordinates, and local sun path data, to accurately quantify the predicted duration, frequency, and timing of shadow flicker at the receptor, as this has not yet been determined at the time of this assessment.
 - **Compliance with recognised international thresholds:** The outcome of this modelling should be assessed against the internationally recognised benchmark of no more than 30 hours of shadow flicker per year, or 30 minutes in any given day, as referenced in the World Bank Group's EHS Guidelines and adopted widely across international wind energy guidance, to confirm whether the predicted impact warrants further, more intensive mitigation.
 - **Operational curtailment:** Should the modelling confirm that predicted impacts exceed the above thresholds, and the less intensive measures already offered remain insufficient to resolve the objection, programmed shutdown of the turbine during the specific dates and times identified as giving rise to shadow flicker at the affected receptor should be considered, informed by the results of the specific shadow flicker modelling.
 - **Automated shadow flicker shutdown technology:** As an alternative or supplement to fixed curtailment, installation of sensor-based or software-driven control systems that automatically detect flicker-triggering conditions (sun angle, rotor alignment, and clear sky conditions) and temporarily shut down or adjust the turbine in real time, minimising unnecessary downtime compared to fixed curtailment schedules.

- **Recording of unresolved objections:** Should no resolution be reached through the application of the above measures, the objection, along with a full record of the engagement process and mitigation measures considered and rejected, must be documented and submitted as part of the environmental authorisation application, for consideration by the competent authority.
- **Right of appeal:** The I&AP should be informed of their right to raise their concerns through the formal public participation and appeals process associated with the environmental authorisation, in accordance with NEMA and its associated regulations, should they remain unsatisfied with the outcome of direct engagement.

Turbine lighting

- Install aircraft warning lights that only activate when the presence of an aircraft is detected, if available and permitted by the CAA.
- The CAA prescribes that aircraft warning lights be mounted on the turbines. However, it is possible to mount these lights on the turbines representing the outer perimeter of the facility. In this manner, fewer warning lights can be utilised to delineate the facility as one large obstruction, thereby lessening the potential visual impact.

General facility lighting

Mitigation of other lighting impacts includes the pro-active design, planning and specification lighting for the facility. The correct specification and placement of lighting and light fixtures for the proposed WEF and ancillary infrastructure will go far to contain rather than spread the light. Mitigation measures include the following:

- Shielding the sources of light by physical barriers (walls, vegetation, or the structure itself).
- Limiting mounting heights of lighting fixtures or alternatively using footlights or bollard level lights.
- Making use of minimum lumen or wattage in fixtures.
- Making use of down-lighters or shielded fixtures.
- Making use of Low-Pressure Sodium lighting or other types of low impact lighting.
- Making use of motion detectors on security lighting. This will allow the site to remain in relative darkness, until lighting is required for security or maintenance purposes.

Blade Painting

- Apply blade painting only where justified by avifaunal risk assessments and in accordance with SACAA-approved patterns and the SAWEA/BLSA/BARESG guidelines.
- As far as possible, limit blade painting to one blade per turbine or simple broad bands (e.g., two broad stripes or $\frac{3}{4}$ solid blade) rather than multiple thin stripes to reduce visual clutter. If multiple blades are patterned, use asymmetrical placement to preserve avian conspicuity without repeating pattern symmetry that increases human noticeability.
- Commit to consistent pattern application across the facility (or defined subsets) to avoid patchwork appearance and public confusion.
- Prioritise painting on turbines located in low-sensitivity visual zones (i.e. behind ridgelines, out of primary viewer corridors) and avoid (or apply minimal treatment to) turbines sited on visually exposed ridgelines or within close proximity (<1–2 km) to sensitive receptors unless avifaunal risk compels it.
- Specify durable, non-reflective paints formulated for turbine use (UV-stable, abrasion resistant) to avoid patchiness, gloss/shine changes or uneven weathering that would attract visual attention.
- Ensure the application of blade painting is undertaken during the manufacturing process and not as an after application during the construction phase.
- Apply paint under controlled conditions with trained applicators, measured coverage, documented pattern placement, to ensure uniform visual appearance across turbines and avoid visible inconsistencies.

- Apply paint patterns uniformly and consistently across turbines to avoid irregular visual effects.
- Use non-reflective, durable paint finishes to prevent glare, fading, or patchiness that may increase visibility.

CONSTRUCTION PHASE:

Mitigation of visual impacts associated with the construction phase, albeit temporary, would entail proper planning, management and rehabilitation of the construction site. Recommended mitigation measures include the following:

General

- Ensure that vegetation is not unnecessarily cleared or removed during the construction period.
- Reduce the construction period through careful logistical planning and productive implementation of resources.
- Ensure that the placement of laydown areas and any potential temporary construction camps are within the areas planned in order to minimise vegetation clearing (i.e. in already disturbed areas).
- Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads.
- Ensure that rubble, litter, and disused construction materials are appropriately stored (if not removed daily) and then disposed regularly at licensed waste facilities.
- Reduce and control construction dust through the use of approved dust suppression techniques as and when required (i.e. whenever dust becomes apparent).
- Restrict construction activities to daylight hours in order to negate or reduce the visual impacts associated with lighting.
- Rehabilitate all disturbed areas, construction areas, roads, slopes etc. immediately after the completion of construction works. If necessary, an ecologist should be consulted to assist or give input into rehabilitation specifications.

OPERATIONAL PHASE:

General

- Ensure that the maintenance of the turbines and ancillary structures and infrastructure must be undertaken to ensure that the facility does not degrade, therefore aggravating the visual impact.
- Roads must be maintained to forego erosion and to suppress dust, and rehabilitated areas must be monitored for rehabilitation failure. Remedial actions must be implemented as and when required.
- Monitor rehabilitated areas for rehabilitation failure or concerns and implement remedial action as and when required.

Shadow Flicker

- Consider planting of screening vegetation at the affected homestead to limit the effect of shadow flicker, should it be required.

Blade Painting

- Implement post-construction monitoring to evaluate both avifaunal effectiveness and public perception of painted blades. It is suggested that this is implemented via two complementary monitoring programmes: (a) avifaunal collision monitoring to quantify mortality reduction (as specified by the avifaunal specialist), and (b) visual perception monitoring (stakeholder surveys/photo points) to assess community responses and any unforeseen visual intrusion. Use agreed metrics (e.g., raptor fatalities, local resident perception scores).
- Use monitoring results to adjust paint coverage (e.g., reduce/alter patterns where visual impacts are unacceptable or expand where avifaunal benefit is insufficient). Maintain decision-making records (trigger thresholds, remedial actions).

- Schedule periodic repainting to maintain uniform colour/contrast and avoid patchy or faded blades that increase attention. Use non-gloss finishes to avoid glare.
- Keep local communities and stakeholders informed of monitoring outcomes and any planned adjustments to painting strategy to maintain public confidence and transparency.

DECOMMISSIONING PHASE:

General

- Ensure that the main facility and all associated infrastructure not required for the post rehabilitation use of the site must be removed and all disturbed areas appropriately rehabilitated. If necessary, an ecologist should be consulted to give input into rehabilitation specifications.
- All rehabilitated areas should be monitored following decommissioning, and remedial actions implemented as and when required.

Blade Painting

- Restore the site to pre-construction conditions, ensuring no residual long-term visual impacts linked to painted blades.

Secondary (indirect) impacts anticipated as a result of the proposed WEF (i.e. visual character and sense of place) are not possible to mitigate. There is also no mitigation to ameliorate the negative visual impacts on roads frequented by tourists, and which provides access to tourist destinations within the region.

Good practice requires that the mitigation of both direct and indirect visual impacts, as listed above, be implemented and maintained on an ongoing basis.

13.ENVIRONMENTAL MANAGEMENT PROGRAMME INPUTS

Key mitigation measures for the different phases of the project are identified in Section 12 of this VIA. The table below provides a summary of the mitigation measures and the proposed methods for monitoring the implementation. These measures should be included in the Environmental Management Programme (EMPr) for the project in order to mitigate the potential visual impacts. Refer to the table below.

Table 37: Proposed Management Actions and Approach to Monitoring

Impact	Mitigation/ Management Outcome	Impact Management Action	Monitoring		
			Method	Frequency	Responsibility
PLANNING AND DETAILED ENGINEERING DESIGN PHASE (PRE-CONSTRUCTION PHASE)					
Direct visual impact of the proposed WEF due to the presence of the turbine structures and associated infrastructure.	Optimal planning of infrastructure to minimise the visual impact.	<ul style="list-style-type: none">Retain/re-establish and maintain natural and / or cultivated vegetation in all areas outside of the development footprint/servitude, but within the project site, both during the construction and operational phase.	<ul style="list-style-type: none">Review site layout plans and landscaping/ rehabilitation plans to confirm retention of vegetation outside the footprint.	<ul style="list-style-type: none">Once-off, early in the planning phase	<ul style="list-style-type: none">Project DeveloperDesign ConsultantEngineering, Procurement and Construction (EPC) Contractor
		<ul style="list-style-type: none">Make use of existing roads wherever possible and plan the layout and construction of roads and infrastructure with due cognisance of the topography to limit cut and fill requirements.	<ul style="list-style-type: none">Review engineering design drawings and road layout plans to confirm use of existing roads and minimised earthworks.	<ul style="list-style-type: none">Once-off, early in the planning phase	<ul style="list-style-type: none">Project DeveloperDesign ConsultantEPC Contractor
		<ul style="list-style-type: none">Plan all ancillary buildings, laydown areas, temporary construction equipment camps, and ancillary infrastructure in such a way that clearing of vegetation is minimised (i.e. where possible, use already disturbed areas and consolidate ancillary buildings and structures as much as possible).Consolidate infrastructure and make use of already disturbed sites rather than undisturbed areas.	<ul style="list-style-type: none">Review site layout drawings, method statements, and design minutes to confirm consolidation and avoidance of undisturbed areas.	<ul style="list-style-type: none">Once-off, early in the planning phase	<ul style="list-style-type: none">Project DeveloperDesign ConsultantEPC Contractor
Direct visual impact of the proposed WEF due to the presence of turbines and their potential resultant shadow flicker impacts.		<ul style="list-style-type: none">It is recommended that no homesteads should be located in the zone of visible shadows of any of the proposed turbines. Turbines located within this zone should either be removed or relocated. Should this not be possible, the below homestead-specific measures apply.	<ul style="list-style-type: none">Review turbine layout plans to confirm no turbines are sited within the zone of visible shadows of any homestead or obtain proof of turbine	<ul style="list-style-type: none">Once-off, early in the planning phaseOngoing, as required, until any objection is resolved or the	<ul style="list-style-type: none">Project DeveloperEAP / ApplicantDesign Consultant

Impact	Mitigation/ Management Outcome	Impact Management Action	Monitoring		
			Method	Frequency	Responsibility
		<ul style="list-style-type: none"> ▪ Homesteads located within the development site: No homesteads should be located in the zone of visible shadows of any turbine, unless otherwise agreed upon by the affected landowner, if the landowner is located within the development site. Proof of such agreement is required. Should no agreement be acquired, the turbine is to be removed or relocated. ▪ Homesteads located outside the development site: <ul style="list-style-type: none"> ➢ <u>Proof of engagement:</u> The EAP/Applicant must provide documented proof of a concerted and meaningful effort to specifically contact the affected landowner, informing them of the potential shadow flicker impacts identified through this desktop-level assessment and the resultant implications thereof. This documentation must demonstrate that the I&AP was afforded sufficient opportunity to review and comment on the anticipated impacts, in line with standard public participation requirements, and must include proof of acknowledgment of receipt of this notification by the I&AP. ➢ <u>Formal objection received:</u> ➢ <u>Engagement and negotiation:</u> Should the I&AP associated with the homestead in question formally object to the anticipated shadow flicker impacts, the EAP/Applicant should facilitate a direct engagement process with the affected I&AP to discuss the concerns raised, with the intention of 	<p>relocation/removal where applicable.</p> <ul style="list-style-type: none"> ▪ <u>For homesteads within the development site:</u> Obtain proof of landowner agreement/consent, or proof of turbine removal/relocation where no agreement was reached. ▪ <u>For homesteads located outside the development site:</u> Obtain and retain documented proof of engagement with the affected landowner, including proof of acknowledgment of receipt of notification by the I&AP. ▪ <u>Where a formal objection is received:</u> Retain records of the engagement and negotiation process and the mitigation measures offered and discussed with the I&AP. ▪ <u>Where escalation occurs:</u> Obtain and review the site-specific shadow flicker modelling report and its assessment against the internationally recognised thresholds. ▪ Retain records of any operational curtailment schedules or automated shutdown system 	public participation process concludes	

Impact	Mitigation/ Management Outcome	Impact Management Action	Monitoring		
			Method	Frequency	Responsibility
		<p>reaching a mutually acceptable resolution. As a first step, the Applicant should offer and discuss lower impact, less operationally intensive mitigation options with the I&AP, which must include, either individually or in combination, the following:</p> <p>(a) <i>Vegetative or structural screening:</i> Establishment of appropriate vegetative buffers (e.g. fast-growing indigenous tree or shrub species) or artificial screening structures between the turbine and the affected dwelling, where topography and land use allow, to physically interrupt the line of sight.</p> <p>(b) <i>Dwelling-level physical mitigation:</i> Where appropriate and agreed with the affected party, modifications to the dwelling itself, such as window treatments, blinds, tinting, or changes to the orientation of window use in affected rooms, to reduce the visual effect of the flicker indoors.</p> <p>(c) <i>Review of layout alternatives:</i> Assessment of the feasibility of micro-siting or minor layout adjustments to that specific turbine's position, or alternatively the removal of the turbine completely.</p> <p>(d) <i>Financial or in-kind compensation:</i> Negotiated compensation to the affected I&AP for the residual impact, in line with any applicable landowner</p>	<p>specifications implemented as mitigation.</p> <ul style="list-style-type: none"> Retain a full record of any unresolved objections and mitigation measures considered and rejected, as submitted as part of the environmental authorisation application. Confirm that the I&AP was informed, in writing, of their right of appeal in accordance with NEMA and its associated regulations. 		

Impact	Mitigation/ Management Outcome	Impact Management Action	Monitoring		
			Method	Frequency	Responsibility
		<p>agreements or compensation frameworks.</p> <ul style="list-style-type: none"> ➤ <u>Escalation should negotiations break down:</u> Should the I&AP and Applicant be unable to reach agreement through the measures above, and the objection pertaining to shadow flicker remains unresolved, undertake a site-specific, detailed shadow flicker model for the specific turbine in question, based on the actual turbine specifications, receptor coordinates, and local sun path data, to accurately quantify the predicted duration, frequency, and timing of shadow flicker at the receptor, as this has not yet been determined at the time of this assessment. ➤ <u>Compliance with recognised international thresholds:</u> Assess the outcome of the modelling against the internationally recognised benchmark of no more than 30 hours of shadow flicker per year, or 30 minutes in any given day, as referenced in the World Bank Group's EHS Guidelines and adopted widely across international wind energy guidance, to confirm whether the predicted impact warrants further, more intensive mitigation. ➤ <u>Operational curtailment:</u> Should the modelling confirm that predicted impacts exceed the above thresholds, and the less intensive measures already offered remain insufficient to resolve the objection, consider programmed shutdown of the turbine during the specific dates and times 			

Impact	Mitigation/ Management Outcome	Impact Management Action	Monitoring		
			Method	Frequency	Responsibility
		<p>identified as giving rise to shadow flicker at the affected receptor, informed by the results of the specific shadow flicker modelling.</p> <ul style="list-style-type: none"> ➤ <u>Automated shadow flicker shutdown technology</u>: As an alternative or supplement to fixed curtailment, install sensor-based or software-driven control systems that automatically detect flicker-triggering conditions (sun angle, rotor alignment, and clear sky conditions) and temporarily shut down or adjust the turbine in real time, minimising unnecessary downtime compared to fixed curtailment schedules. ▪ <u>Recording of unresolved objections</u>: Should no resolution be reached through the application of the above measures, the objection, along with a full record of the engagement process and mitigation measures considered and rejected, must be documented and submitted as part of the environmental authorisation application, for consideration by the competent authority. ▪ <u>Right of appeal</u>: The I&AP should be informed of their right to raise their concerns through the formal public participation and appeals process associated with the environmental authorisation, in accordance with NEMA and its associated regulations, should they remain unsatisfied with the outcome of direct engagement. 			

Impact	Mitigation/ Management Outcome	Impact Management Action	Monitoring		
			Method	Frequency	Responsibility
Direct visual impact of the proposed WEF due to the presence of turbine lighting at night.	Minimise night-time lighting impacts through sensitive design and specification.	<p>Consult a lighting engineer, as well as the CAA in the design and planning of turbine lighting to ensure the correct specification, technology and placement of lighting on the turbines of the WEF. The following is recommended:</p> <ul style="list-style-type: none"> ▪ Install aircraft warning lights that only activate when the presence of an aircraft is detected, if available and permitted by the CAA. ▪ If possible, limit aircraft warning lights for the proposed WEF to the turbines on the outer perimeter of the WEF, thereby reducing the overall requirement and impact (i.e. fewer warning lights can be utilised to delineate the facility as one large obstruction, thereby lessening the potential visual impact) (CAA regulations/conditions permitting). 	<ul style="list-style-type: none"> ▪ Review and obtain permission from the CAA to confirm inclusion of mitigation measures, where possible. 	<ul style="list-style-type: none"> ▪ Once-off, early in the planning phase 	<ul style="list-style-type: none"> ▪ Project Developer ▪ Design Consultant ▪ EPC Contractor
Direct visual impact of the proposed WEF due to the presence of general facility lighting at night.		<p>Consult a lighting engineer in the design and planning of lighting to ensure the correct specification and placement of lighting and light fixtures for the WEF and the ancillary infrastructure. The following is recommended:</p> <ul style="list-style-type: none"> ▪ Shield the sources of light by physical barriers (walls, vegetation, or the structure itself). ▪ Limit mounting heights of fixtures or use footlights or bollard lights. ▪ Make use of minimum lumen or wattage in fixtures. ▪ Make use of down-lighters or shielded fixtures. ▪ Make use of Low-Pressure Sodium lighting or other low impact lighting. ▪ Make use of motion detectors on security lighting, so allowing the site to remain in 	<ul style="list-style-type: none"> ▪ Review lighting design report and electrical specifications to confirm inclusion of mitigation measures. 	<ul style="list-style-type: none"> ▪ Once-off, early in the planning phase 	<ul style="list-style-type: none"> ▪ Project Developer ▪ Design Consultant ▪ EPC Contractor

Impact	Mitigation/ Management Outcome	Impact Management Action	Monitoring		
			Method	Frequency	Responsibility
		darkness until lighting is required for security or maintenance purposes.			
Direct visual impact of the proposed avifaunal specialist blade painting recommendations.	Ensure blade painting is implemented only where justified and in a visually consistent manner.	<ul style="list-style-type: none"> ▪ Apply blade painting only where justified by avifaunal risk assessments and in accordance with SACAA-approved patterns and the SAWEA/BLSA/BARESG guidelines. ▪ As far as possible, limit blade painting to one blade per turbine or simple broad bands (e.g., two broad stripes or $\frac{3}{4}$ solid blade) rather than multiple thin stripes to reduce visual clutter. If multiple blades are patterned, use asymmetrical placement to preserve avian conspicuity without repeating pattern symmetry that increases human noticeability. ▪ Commit to consistent pattern application across the facility (or defined subsets) to avoid patchwork appearance and public confusion. ▪ Prioritise painting on turbines located in low-sensitivity visual zones (i.e. behind ridgelines, out of primary viewer corridors) and avoid (or apply minimal treatment to) turbines sited on visually exposed ridgelines or within close proximity (<1–2 km) to sensitive receptors unless avifaunal risk compels it. ▪ Specify durable, non-reflective paints formulated for turbine use (UV-stable, abrasion resistant) to avoid patchiness, gloss/shine changes or uneven weathering that would attract visual attention. ▪ Ensure the application of blade painting is undertaken during the manufacturing process 	<ul style="list-style-type: none"> ▪ Review blade painting design report and specifications to confirm inclusion of mitigation measures. ▪ Inspect turbine blades upon delivery to site to confirm paint quality and consistency. 	<ul style="list-style-type: none"> ▪ Once-off, early in the planning phase ▪ Once-off, during blade component delivery. 	<ul style="list-style-type: none"> ▪ Project Developer ▪ Design Consultant ▪ EPC Contractor

Impact	Mitigation/ Management Outcome	Impact Management Action	Monitoring		
			Method	Frequency	Responsibility
		<p>and not as an after application during the construction phase.</p> <ul style="list-style-type: none"> ▪ Apply paint under controlled conditions with trained applicators, measured coverage, documented pattern placement, to ensure uniform visual appearance across turbines and avoid visible inconsistencies. ▪ Apply paint patterns uniformly and consistently across turbines to avoid irregular visual effects. ▪ Use non-reflective, durable paint finishes to prevent glare, fading, or patchiness that may increase visibility. 			
CONSTRUCTION PHASE					
Visual impact of general construction activities, and the potential scarring of the landscape due to vegetation clearing and resulting erosion.	Minimal visual intrusion by construction activities and intact vegetation cover outside of immediate construction work areas.	<ul style="list-style-type: none"> ▪ Ensure that vegetation is not unnecessarily cleared or removed during the construction period. 	<ul style="list-style-type: none"> ▪ Conduct site inspections and maintain a photographic record of the construction footprint. 	<ul style="list-style-type: none"> ▪ Ongoing during active clearing 	<ul style="list-style-type: none"> ▪ ECO ▪ EPC Contractor
		<ul style="list-style-type: none"> ▪ Reduce the construction period through careful logistical planning and productive implementation of resources. 	<ul style="list-style-type: none"> ▪ Review the construction schedule, method statements, and progress reports. 	<ul style="list-style-type: none"> ▪ Monthly 	<ul style="list-style-type: none"> ▪ Project Developer ▪ EPC Contractor
		<ul style="list-style-type: none"> ▪ Ensure that the placement of laydown areas and temporary construction equipment camps are located in their planned areas, ensuring minimal vegetation clearing. 	<ul style="list-style-type: none"> ▪ Conduct site inspections to confirm the placement. 	<ul style="list-style-type: none"> ▪ Monthly 	<ul style="list-style-type: none"> ▪ ECO
		<ul style="list-style-type: none"> ▪ Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads. 	<ul style="list-style-type: none"> ▪ Conduct spot checks/visual inspections to ensure strict control over the behaviour of staff in order to restrict activities to within demarcated areas. 	<ul style="list-style-type: none"> ▪ Weekly 	<ul style="list-style-type: none"> ▪ ECO ▪ EPC Contractor

Impact	Mitigation/ Management Outcome	Impact Management Action	Monitoring		
			Method	Frequency	Responsibility
		<ul style="list-style-type: none">Ensure that rubble, litter, and disused construction materials are appropriately stored and then disposed of regularly at licensed waste facilities.	<ul style="list-style-type: none">Obtain and retain proof of waste disposal slips (or waybills) on file.Monitor waste disposal slips via site audits and record non-compliance.	<ul style="list-style-type: none">OngoingWeekly	<ul style="list-style-type: none">ECOEPC Contractor
		<ul style="list-style-type: none">Construction/ upgrade of roads should be undertaken properly, with adequate drainage structures in place to forego potential erosion problems.	<ul style="list-style-type: none">Conduct an inspection of road works and review engineering drawings.	<ul style="list-style-type: none">Monthly during road construction	<ul style="list-style-type: none">ECOEPC Contractor
		<ul style="list-style-type: none">Reduce and control construction dust using approved dust suppression techniques as and when required (i.e. whenever dust becomes apparent).	<ul style="list-style-type: none">Conduct site inspections to monitor the implementation of suitable dust suppression techniques.Ensure that continuous observation is undertaken.Take remedial action as and when required.	<ul style="list-style-type: none">Ongoing	<ul style="list-style-type: none">ECOEPC Contractor
		<ul style="list-style-type: none">Restrict construction activities to daylight hours in order to reduce the visual impacts associated with lighting.	<ul style="list-style-type: none">Review construction schedule.	<ul style="list-style-type: none">Monthly	<ul style="list-style-type: none">ECOEPC Contractor
		<ul style="list-style-type: none">Rehabilitate all disturbed areas, construction areas, servitudes etc. immediately after the completion of construction works. If necessary, an ecologist should be consulted to assist or give input into rehabilitation specifications.	<ul style="list-style-type: none">Inspect rehabilitated areas and maintain a photographic record.Review the appointed ecologist’s reports.	<ul style="list-style-type: none">Monthly during rehabilitation, then quarterly for at least 1 year.	<ul style="list-style-type: none">ECOEPC ContractorSuitably qualified ecologist
OPERATIONAL PAHSE					
Visual impact of facility degradation (including operational wind turbines) and	Well maintained and neat facility.	<ul style="list-style-type: none">Maintain the general appearance of the facility as a whole, including the turbines, servitudes and the ancillary structures, buildings and infrastructure to ensure that the facility does not degrade.	<ul style="list-style-type: none">Conduct site maintenance inspections.Maintain and repair degraded infrastructure.Keep maintenance logs.	<ul style="list-style-type: none">MonthlyAs requiredOngoing	<ul style="list-style-type: none">Facility Manager

Impact	Mitigation/ Management Outcome	Impact Management Action	Monitoring		
			Method	Frequency	Responsibility
vegetation rehabilitation failure.		<ul style="list-style-type: none"> Maintain roads and servitudes to forego erosion and to suppress dust. 	<ul style="list-style-type: none"> Conduct road condition inspections. Review the road maintenance records. 	<ul style="list-style-type: none"> Monthly Quarterly 	<ul style="list-style-type: none"> Facility Manager
		<ul style="list-style-type: none"> Monitor rehabilitated areas for rehabilitation failure or concerns and implement remedial action as and when required. 	<ul style="list-style-type: none"> Compare vegetation establishment on rehabilitated areas to surroundings natural vegetation by keeping a photographic record. 	<ul style="list-style-type: none"> Monthly during rehabilitation, then quarterly for at least 1 year. 	<ul style="list-style-type: none"> ECO Suitably qualified ecologist
Visual impact of blade painting.	Maintain visually consistent and acceptable painted blades while ensuring avifaunal effectiveness.	<ul style="list-style-type: none"> Implement post-construction monitoring to evaluate both avifaunal effectiveness and public perception of painted blades. It is suggested that this is implemented via two complementary monitoring programmes: (a) avifaunal collision monitoring to quantify mortality reduction (as specified by the avifaunal specialist), and (b) visual perception monitoring (stakeholder surveys/photo points) to assess community responses and any unforeseen visual intrusion. Use agreed metrics (e.g., local resident perception scores). 	<ul style="list-style-type: none"> Undertake and implement visual perception monitoring via structured stakeholder surveys, photographic monitoring from fixed viewpoints, and public complaints log review. 	<ul style="list-style-type: none"> Annually for first 3 years, then every 2–3 years or when patterns are altered. 	<ul style="list-style-type: none"> Facility Manager ECO Independent Avifaunal Specialist
		<ul style="list-style-type: none"> Use monitoring results to adjust paint coverage (e.g., reduce/alter patterns where visual impacts are unacceptable or expand where avifaunal benefit is insufficient). Maintain decision-making records (trigger thresholds, remedial actions). 	<ul style="list-style-type: none"> Review avifaunal mortality statistics and stakeholder perception reports against predefined trigger thresholds (e.g., specified avifaunal collision rates, or significant stakeholder dissatisfaction). Maintain a record of remedial actions and decisions. 	<ul style="list-style-type: none"> Annual review of monitoring data; ad hoc review when thresholds are exceeded. 	<ul style="list-style-type: none"> ECO Facility Manager

Impact	Mitigation/ Management Outcome	Impact Management Action	Monitoring		
			Method	Frequency	Responsibility
		<ul style="list-style-type: none"> Keep local communities and stakeholders informed of monitoring outcomes and any planned adjustments to painting strategy to maintain public confidence and transparency. 	<ul style="list-style-type: none"> Record stakeholder engagement (minutes, newsletters, feedback forms). Share monitoring results and planned adjustments in public forums, website updates, or community liaison meetings. 	<ul style="list-style-type: none"> Annually, more frequent updates when adjustments to painting strategy are made. 	<ul style="list-style-type: none"> ECO Facility Manager
	Well maintained and neat facility.	<ul style="list-style-type: none"> Schedule periodic repainting to maintain uniform colour/contrast and avoid patchy or faded blades that increase attention. Use non-gloss finishes to avoid glare. 	<ul style="list-style-type: none"> Physical inspections of blade surfaces for fading, patchiness, or glare. Compare with original colour/contrast specifications. 	<ul style="list-style-type: none"> Every 5 years (aligned with turbine servicing), or earlier if monitoring identifies deterioration. 	<ul style="list-style-type: none"> Facility Manager
DECOMMISSIONING PHASE					
Visual impact of residual visual scarring and vegetation rehabilitation failure.	Only retain the infrastructure required for post decommissioning use of the site and rehabilitate vegetation in all disturbed areas.	<ul style="list-style-type: none"> Remove infrastructure not required for the post-decommissioning use of the site. This may include the turbines, substations, ancillary buildings, masts etc. 	<ul style="list-style-type: none"> Conduct site inspections and maintain a photographic record of the decommissioning process. 	<ul style="list-style-type: none"> Once-off per infrastructure removal 	<ul style="list-style-type: none"> ECO EPC Contractor
		<ul style="list-style-type: none"> All rehabilitated areas should be monitored following decommissioning, and remedial actions implemented as and when required. 	<ul style="list-style-type: none"> Inspect rehabilitated areas and maintain a photographic record. Review the appointed ecologist's reports. 	<ul style="list-style-type: none"> Monthly during rehabilitation, then quarterly for at least 1 year. 	<ul style="list-style-type: none"> ECO EPC Contractor Suitably qualified ecologist
Residual visual impact of blade painting post-decommissioning.	Restore site to pre-construction conditions and remove any long-term blade	<ul style="list-style-type: none"> Remove all turbine blades with painted surfaces. Ensure site rehabilitation eliminates any residual visual scarring, or colour impacts from blades. 	<ul style="list-style-type: none"> Conduct site inspections and maintain photographic records of blade removal and rehabilitation. 	<ul style="list-style-type: none"> Once-off during decommissioning 	<ul style="list-style-type: none"> EPC Contractor ECO Facility Manager

Impact	Mitigation/ Management Outcome	Impact Management Action	Monitoring		
			Method	Frequency	Responsibility
	painting impacts.				

14. COMMENTS AND RESPONSES – INTERESTED AND AFFECTED PARTIES

Comments related to visual impacts associated with the proposed project were raised by Interested and Affected Parties during the review period of the Draft Scoping Report. These comments were considered during the Scoping Phase and addressed accordingly. These comments are summarised below with corresponding responses.

UMVEMVANE WEF			
NO.	DATE OF COMMENT, FORMAT OF COMMENT, NAME OF ORGANISATION/ I&AP	COMMENT	RESPONSE FROM THE VISUAL SPECIALISTS AND EAP (UNLESS STATED OTHERWISE)
SCOPING PHASE			
1.	Werner van Der Merwe 17 April 2026 Letter (via Email to the EAP)	<p>Visual and landscape impacts are likely to be severe and long-term. The report describes the area as having a rural character interspersed with commercial agricultural activities and identifies visual sensitivity. The screening sensitivity table further records very high visual sensitivity at screening level and high sensitivity on specialist verification, including because the development lies on a topographical feature, close to numerous inhabited homesteads, hydrological features, mountains and tall hills.</p> <p>Turbines of up to 180 m hub height and 200 m rotor diameter will become dominant visual structures over a very wide area. This is not merely a change in view. It is the industrialisation of a rural landscape and a permanent alteration of sense of place, visual amenity and rural character.</p> <p>The VIA workplan itself recognises the need to assess scenic quality, visual absorption capacity, shadow flicker, cumulative visibility and photo simulations. That is a sign of the seriousness of the issue, not a sign that the issue is minor.</p>	<p>EAP: The EAP acknowledges this comment and confirms that these concerns will be considered in visual impact assessment during the EIA phase and will be addressed through suitable mitigation measures that will be included in the EMPr.</p>
2.	Christie Minnaar 15 April 2026 Letter (Via Email to the EAP)	<p>Visual impact concerns: It is noted that the impact will be high regarding visual impacts, due to the height, size and movement of the wind turbines. It is noted in the report that these impacts cannot be mitigated, due to the sheer size of the turbines. This will have a permanent impact of the sense of place of the area and diminish the tourism value of the region and furthermore impact the potential expansion of protected areas.</p>	<p>Visual/ Landscape Specialist: Agreed: "The operation of the ABO Uvemvane WEF 1 is expected to have a very high visual impact on sensitive receptors within a 5km radius of the wind turbine structures."</p> <p>The visual impact on the sense of place will be addressed during the EIA Phase.</p> <p>The visual specialist cannot authoritatively speculate on the potential economic impact on tourism or impact on PA expansion (these fall within other specialist fields), but existing tourist accommodation, venues and attractions are included as potential sensitive visual receptors within the VIA.</p>

3.	Jaun Venter 15 April 2026 (Via Email to the EAP)	Impact on Quality of Life: International evidence highlights concerns around noise pollution, including infrasound, as well as shadow flicker caused by turbine blades. These factors may negatively affect the wellbeing, sleep patterns, and general quality of life of nearby residents.	Visual Specialist: A shadow flicker risk assessment was undertaken for the wind turbine layout as provided by the client at the start of the Scoping Phase. Identified residences are mentioned in the VIA report. A similar shadow flicker risk assessment will be undertaken for the revised turbine layout during the EIA Phase.
		Visual and Rural Landscape Impact: The scale of the proposed turbines will significantly alter the natural and rural character of the Heidelberg and Balfour area, which is valued for its open landscapes and environmental appeal.	Visual Specialist: Noted. The significance of the visual impact on the sense of place (and landscape character) will be addressed / determined during the EIA Phase. Also refer to the first comment / response.

15.CONCLUSION AND RECOMMENDATIONS

The visual impact assessment (VIA) practitioner takes great care to ensure that all the spatial analyses and mapping is as accurate as possible. The intention is to quantify, using visibility analyses, proximity analyses, photo simulations and the identification of sensitive receptors, the potential visual impacts associated with the proposed **ABO Uvemvane WEF 1**. These processes are deemed to be transparent and scientifically defensible when interrogated.

However, visual impact is ultimately a subjective concept. The *subjects* in this case are the residents of, and visitors to the region. The author has attempted to accurately capture the location of these *subjects* (i.e. sensitive visual receptors and areas of likely visual impact) to the best of their ability, drawing on years of experience as a VIA practitioner. The VIA further adopts a risk averse approach in so far as to assume that the perception of most (if not all) of the sensitive visual receptors (bar the landowners of the properties earmarked for the development), would be predominantly negative towards the development of a WEF in the region.

Having said the above, there are likely to be supporters of the ABO Uvemvane WEF 1 (as renewable energy generation is a global priority) amongst the population of the larger region, but they are normally expected to be indifferent to the construction of the WEF and not as vocal in their support for the wind farm as potential detractors thereof. Objections have been raised with regards to this project.

The potential visual changes as a result of the proposed development have been defined as far as possible in this report. However, the significance of these changes did require a certain level of qualitative (subjective) judgements to be made. The conclusions therefore combined the objective measurement and subjective professional interpretation.

The following findings have been considered by the author of this report in evaluating whether the proposed development should be authorised:

Landscape and receptor sensitivity: The region has moderate landscape character sensitivity consisting of open, rural, agricultural land with scattered settlements and several protected areas (none within the development site; closest is Alice Glockner Nature Reserve, approx. 3km away). Population density is higher in the north (Gauteng) than south (Mpumalanga). The DFFE Screening Tool rated both Landscape and Flicker themes as very high sensitivity; the specialist assessment revised Landscape sensitivity down to high but confirmed Flicker sensitivity as very high.

Turbine layout: Under the current layout, 4 turbines fall within mountain/tall hill terrain, 6 within the N3's 1km buffer, and 2 (turbines 03 and 24) within shadow flicker zones affecting the Geluk and Modderfontein homesteads. Only turbine 24 overlaps two sensitivity buffers.

Cumulative impact: Rated low. The facility is "transformative" as the first WEF in the area, but the landscape can accommodate the proposed WEF without leading to an unacceptable loss of visual resource or overwhelming the viewer's experience from a cumulative perspective.

Shadow flicker: Consent has been obtained for Geluk (turbine 03), resolving that concern. Modderfontein (Charmick Wedding and Functions Venue, turbine 24) requires documented landowner engagement; if objections arise, the Section 12 mitigation hierarchy applies.

Overall significance: High, both pre- and post-mitigation, driven mainly by unmitigable turbine visibility within 0–10km and very-high night lighting impacts (reducing only to high post-mitigation). Conventional mitigation (e.g., screening) is largely ineffective against the primary impact; mitigation is only meaningfully effective for lighting and construction-phase impacts.

Despite high significance ratings, the assessment concludes **no fatal flaw exists**, because:

- Visual impact is subjective/receptor-based, not a loss of an irreplaceable resource.
- The impact is reversible upon decommissioning.
- Affected receptors are limited and spatially defined; layout has already been revised to reduce exposure.
- Shadow flicker is largely resolved or has a clear resolution pathway.
- Cumulative impact is only moderate.
- Effective mitigation exists for secondary impacts (lighting, blade painting, construction/decommissioning).

No visual fatal flaws preclude authorisation, provided mitigation measures are implemented and maintained, and the Modderfontein shadow flicker engagement is concluded per the report's recommendations.

A number of best practice mitigation measures have been proposed for the proposed ABO Uvemvane WEF 1 in order to limit the impacts of the proposed development (**Section 12**). Conventional mitigation (e.g. such as screening of the structures) of the potential visual impacts is highly unlikely to succeed due to the nature of the development and the receiving environment. The proposed mitigation measures will primarily be effective in terms of mitigating lighting and construction phase visual impacts only.

Regardless of whether or not mitigation measures will reduce the significance of the anticipated visual impacts, they are considered to be good practice and should all be implemented and maintained throughout the construction, operation and decommissioning phases of the proposed facility.

In light of the above assessment and the outcomes determined thereof, the author is of the opinion that the **visual impacts** associated with the proposed **ABO Uvemvane WEF 1** are **within acceptable limits** when considering the nature of the proposed infrastructure from a visual perspective

It should be noted that the results/deductions in this report are based solely from a visual perspective in relation to potential visual impacts and sensitive visual receptors and exclude any potential issues/comments/fatal flaws identified by other specialist studies.

16. REFERENCES / DATA SOURCES

Bega, S. on behalf of the Mail & Guardian (2023). *Wind farms to trial painted blades in bid to prevent bird strikes.* <https://mg.co.za/the-green-guardian/2023-10-17-wind-farms-to-trial-painted-blades-in-bid-to-prevent-bird-strikes/>

Chief Directorate National Geo-Spatial Information, varying dates. *1:50 000 Topographical Maps and Data.*

CSIR, 2015. *The Strategic Environmental Assessment for wind and solar photovoltaic energy in South Africa.*

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DEA&DP, 2011. Provincial Government of the Western Cape. *Guideline on Generic Terms of Reference for EAPS and Project Schedules.*

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DFFE, 2025. *South African Renewable Energy EIA Application Database (REEA_OR_2025_Q1)*.

<http://www.pinchercreekecho.com/2015/04/29/md-of-pincher-creek-takes-on-wind-turbine-lights>

<https://www.windpowerengineering.com/projects/site-assessment/assessing-cumulative-visual-impacts-for-wind-projects/>

Landscape Institute, 2018. *Guidelines for Landscape and Visual Impact Assessment (3rd edition)*.

LUC (Environmental Planning, Design and Management), 2014. *Cumulative Landscape and Visual Assessment of Wind Energy in Caithness*.

Moir Landscape Architecture Pty Ltd, 2025. *Shadow Flicker Assessment: Tall Tree Wind Farm*.

Morkel, D., Cervantes, F., Clarke, C., et al. (2023) *Considerations for Blade Patterning as a Mitigation Measure to Reduce Avifaunal Collisions with Wind Turbines in South Africa*

NASA, 2018. *Earth Observing System Data and Information System (EOSDIS)*.

17.1 Appendix A – Curriculum Vitae (CVs) of the Project Team

Lourens du Plessis

Professional GISc Practitioner | Visual Impact Assessment Specialist

**Personal Information:**

- Date of Birth: 1969-11-13
- Marital Status: Married
- Nationality: South African
- Contact no: 082 922 9019
- Email: lourens@logis.co.za
- Web: logis.co.za

Years of Industry Experience

- 34 years'

Countries of Experience

- South Africa; Lesotho; Swaziland; Mozambique; Botswana; Zimbabwe; Namibia; Angola; Guinea; Ghana; Uganda; Madagascar; Saudi Arabia

Qualifications and Memberships

- BA (University of Pretoria) Geography and Anthropology (Majors), 1993
- Professional Geo-Information Sciences (GISc) Practitioner registered with the South African Geomatics Council (SAGC). Membership no. PGP0147
- Member: Geo-Information Society of South Africa (GISSA)

Key Skills and Competencies

- Arc/Info and ArcGIS
- Arcview
- QGIS
- Postflight Terra 3D
- PlanetGIS
- Vistapro
- Various GIS support applications
- Microsoft (Word/Excel/Access)

Professional Overview

Lourens provides professional **Geographical Information Systems (GIS)** services to a wide range of clients that require the processing, analysis and presentation of geospatial data. His overarching function is the application of GIS in environmental management and planning, impact assessments and spatial modelling, but his services often extend to a much broader range of business sectors. These include the application of GIS in:

- Agriculture
- Bulk service providers and utilities
- The renewable energy sector
- Electricity generation and distribution
- Mining and exploration
- Urban and rural development planning
- Conservation and tourism
- Strategic integrated planning
- Environmental education and social awareness
- Engineering, transport and infrastructure development

He is an accomplished **Visual Impact Assessment (VIA)** specialist who has successfully undertaken over 130 visual impact assessments for a wide variety of developments, ranging from mining, renewable energy facilities, power lines to roads and lodges.

Lourens has a multi-disciplinary approach to projects and therefore specialises in creating synergy between planning professionals and project specialists (regardless of the type of project) in order to provide uniform, quality spatial data products, solutions and services.

Experience and Expertise

- Data sourcing and acquisition
- Data capture and processing
- Data evaluation, conversion and transfer
- Geodatabase development/implementation/maintenance
- System design and development
- Spatial analysis/modelling (visibility, slope, aspect, etc.)
- Digital terrain modelling
- Terrain evaluation and site screening
- Image processing and analysis
- Impact assessment and impact management
- Environmental management
- GIS-based decision support systems development
- Project management and report writing
- Map production, display, queries and reporting
- Environmental sciences expertise
- Process development
- Visual impact assessment
- GPS fieldwork and aerial surveys
- Drone data processing

Project Experience

Miscellaneous projects *(A brief description of some prominent and relevant projects)*

GIS mapping and database for Black Eagle habitats and flight patterns in the Karoo National Park

Environmental planning and development control schemes for the Drakensberg Babangibone, Cathkin Peak and Garden Castle development nodes

Goukou River (Stilbaai) Environmental Structure Plan

Conservation and open space proposals for the Umhlanga Forest

Grootvlei mine water pumping operation (Blesbokspruit sub-catchment)

GIS services for the Saldanha steel plant

ENPAT Provincial (1:250,000 scale GIS decision support systems) based on an inventory of environmental and socio-economic geographical data

- ENPAT Northern Province (Limpopo Province)
- ENPAT Mpumalanga
- ENPAT North-West

ENPAT Metropolitan (1:50,000 scale GIS decision support systems) containing environmental and socio-economic geographical data that were evaluated for conservation opportunities, development constraints and agricultural constraints

- ENPAT Gauteng
- ENPAT Cape Town
- ENPAT Durban Functional Region (DFR)
- ENPAT Bloemfontein/Botshabello
- ENPAT Port Elizabeth

ENPAT National (1:1,000,000 scale GIS decision support system) and ENPAT publication

Environmental Management Frameworks (EMF). Frameworks of spatially represented information connected to environmental management parameters designed to aid in the pro-active identification of potential conflict between development proposals and critical and/or sensitive environments

- EMF Northern Province (Limpopo Province)
- EMF Mpumalanga
- EMF North-West

Spatial Development Initiatives (SDI). The fast tracking of the EMF concept for priority SDI's

- Lubombo Corridor SDI
- Coega Industrial Development Zone (IDZ)
- Wild Coast SDI
- West Coast Investment Initiative

Sigma colliery: North-West strip operation

Development masterplan for the Tswaing Crater Museum

Conservation plan for the Rietvlei Nature Reserve

GIS services for the planning and management of the Chobe National Park (Botswana)

GIS services for an environmental overview of South Africa

Demarcation/delineation of regions in South Africa

Orange-Vaal (ORVAAL) transfer scheme - Caledon cascades scheme

ENPAT Provincial (1:250,000 scale GIS decision support systems) based on an inventory of environmental and socio-economic geographical data

- ENPAT Eastern Cape
- ENPAT Free State
- ENPAT Kwa-Zulu Natal

Environmental Management Frameworks (EMF). Frameworks of spatially represented information connected to environmental management parameters designed to aid in the pro-active identification of potential conflict between development proposals and critical and/or sensitive environments

- EMF Eastern Cape
- EMF Free State
- EMF Kwa-Zulu Natal

Hennops River EMF (environmental inventory and management proposals in Centurion)

The Important Bird Areas (IBA) of South Africa map and database

Centurion Metropolitan Substructure Environmental Management Framework (EMF)

Alexandra renewal project EMF

Carbon Sinks and Sequestration - Eastern Cape Wild Coast. Information maps for the "Carbon Sinks - A Rehabilitation Option for South Africa's Natural Environment" report

Prince Edward and Marion Islands. Maps for the World Heritage Site (WHS) bid document

Theewaterskloof and Genadendal - Integrated spatial data management system

Gauteng Communication Network Strategy (GAUCONS). Environmental zones for the control of the construction of telecommunication structures

Gauteng Industries Buffer Zones. The mapping of industrial and mining activities, the creation of buffer control zones and the development of a GIS-based decision support system for the Gauteng Province

Limpopo National Park (LNP) Mozambique. Base maps for fieldwork and planning

Schmidtsdrift Environmental Management Program Report (EMPR)

Loch Vaal Environmental Management Framework (EMF)

Rustenburg - Strategic Environmental Assessment (SEA). The creation of environmental control zones, a GIS-based decision support system and information poster

Faerie Glen Nature Reserve Strategic Environmental Assessment (SEA)

Willow Quarries - Environmental Impact Assessment (EIA). Modelling of mining expansion plan and the potential impact on Golden Mole habitats

Ekurhuleni Metropolitan Municipality (EMM) Environmental Management Framework (EMF)

Limpopo - State of the Environment Report (SoER)

Windhoek (Namibia) - Environmental Structure Plan (ESP)

Gauteng Supplementation and Implementation of EIA Regulations Project (EIA SIP)

Siyanda District Municipality Environmental Management Framework (EMF)

Olifants and Letaba River Catchments Environmental Management Framework (EMF)

Barberton Nature Reserve environmental sensitivity mapping and land use zoning plan

Kapama Private Game Reserve map

Gauteng EMF and landscape character assessment

Majuba CCGT environmental screening

MTPA Nature Reserves (Manyeleti, Mthethomusha, Mkombo, Mdala, Mabusa and Loskop) Integrated Management Planning (IMP)

Ugu District Municipality EMF and landscape character assessment

Greater Lakenvlei Protected Environment resource mapping

North West (Coetzersdam, Pomfret, Buxton, Taung Station, Pudimoe, Lotlhakane Village and Delareyville) environmental sensitivity mapping for PV facilities

Bayside Aluminium Smelter Water Use License Application

CESVI (African Ivory Route) resource mapping for Nthubu, Blouberg, Mutale Falls, Funduze, Modjadji, Baleni, Mtomeni, Mafefe and Manyeleti Camps

Master Plan for Kaloum and Loose Islands, Conakry, Guinea

Ekurhuleni Open Space mapping

Kumba Heuningkranz and Kolomela mines concept study

Joburg Property Company land strategy – inner city transformation roadmap

Bioregional Plan for the Mopani District

N2 Corridor Strategic Corridor Development Plan and landscape character assessment

Polokwane outfall sewer route and waste water treatment works

Ghana Northern Regions environmental overview

Rand Water disaster risk assessment

Redstone Solar Thermal Power Plant environmental sensitivity mapping

Landscape/Land use character maps for Ladysmith and Estcourt, Durban and Pietermaritzburg, Newcastle and Dundee

Oil and Gas Industrial Park, Hoima District, Uganda

Waterberg District EMF

Boegoebaai Port Development environmental screening

Lonmin Marikana Mining Operations environmental overview

Moses Kotane Local Municipality Integrated Environmental Management Plan

Vhembe District Bioregional Plan

Capricorn District Bioregional Plan

Sekhukhune District Bioregional Plan

Tourist maps for 12 provincial nature reserves in Limpopo

Afgri Grain Management spatial database

Eskom land cover and Isopleths (SO₂)

Gamma-Kappa transmission line corridors GIS and mapping

Nseleni Independent Floating Power Plant GIS and mapping

Regional Strategic Environmental Assessments (Regional Assessments)

Regional assessment for the Eskom Wind Energy Facility (Sere) in the Western Cape

Regional assessments for the Eskom Wind Integration Project (WIP)

- Area 1: West Coast (Saldanha to Garies)
- Area 2: Overberg Region

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- Area 3: Beaufort West region
 - Area 4: Eastern Cape (Tsitsikamma to Port Elizabeth)
 - Area 5: Northern Cape (Hondeklipbaai to Port Nolloth)

Sandveld Wind Energy Regional Assessment

West Coast National Park (Saldanha area) Regional Assessment

Regional Assessment for the Theewaterskloof Municipal area

Brand-se-Baai (Exxaro) wind energy regional assessment

Overberg (BioTherm) wind energy regional assessments

- Area 1: Gordons Bay to Pearly Beach)
- Area 2: Napier RA (Agulhas NP/Swellendam region)

Suurplaat/Sutherland (Investec Wind Energy Development) Regional Assessment

Waterberg (Limpopo) Concentrating Solar Power (CSP) Regional Assessment (Exxaro)

Western Cape Province Regional SEA for Wind Energy Facility developments

ISS Global Mining Regional SEA for Power Station Developments in Mpumalanga Province

Northern Cape Province Regional SEA for Wind Energy Facility developments

Bosjesmansberg Regional SEA for solar PV projects

Delmas Regional SEA for Power Station Developments in Mpumalanga

Limpopo Regional SEA for solar PV projects

Slangkop Regional SEA for Wind Energy Facility developments

Bakenskop, Trouberg and Harpuisberg Regional SEA for WEFs

Wolf Wind (Addo Elephant NP) regional assessment

Nelson Mandela Bay Metropolitan Municipality SEA for WEFs

Umuziwabantu Local Municipality SEA

Visual Impact Assessments (VIA), viewshed analyses and visual assessments

- Coal strip mining in Zimbabwe viewshed analyses
- Viewshed analyses and sensitivity mapping for telecommunication masts in the northern provinces (Limpopo, Mpumalanga and North-West)
- Siemens 3rd license cellular communications infrastructure EIAs. Viewshed analyses and sensitivity mapping for over 4,000 telecommunication mast sites in all major metropolitan areas of South Africa.
- CSIR high mast viewshed analysis and sensitivity mapping

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- Atlantis Open Cycle Gas Turbine power station VIA
 - Kynoch Gypsum Tailings dam extension VIA
 - N1 Western Bypass Shell service station VIA
 - Coega regional hazardous waste processing facility VIA
 - Robinson Deep landfill extension VIA
 - Hazardous waste blending platform VIA
 - Mercury-Ferrum-Garona transmission line integration VIA
 - Matimba B (Medupi) coal-fired power station VIA
 - Concentrating Solar Power (CSP) plant in Upington VIA
 - Zeus to Mercury transmission line (comparative viewshed analyses)
 - Mmamabula (Botswana) transmission line and power station viewshed analyses
 - Petronet new multi-products pipeline VIA
 - Wind energy facility (Sere) in the Western Cape province VIA
 - Ankerlig power station conversion and transmission line VIA
 - Gourikwa power station conversion and transmission line VIA
 - Kyalami strengthening project VIA
 - Steelpoort integration project VIA
 - Medupi reservoir and telecommunication mast VIA
 - VIA's for Basic Assessment Reports (wind monitoring masts)
 - Cookhouse, Hopefield, Amakhala, Caledon, Worcester, Tulbach, Overberg, Britannia Bay, Brand-se-Baai, Deep River, Happy Valley, River Bank, Uiekraal, Beaufort West, Laingsburg, Rheboksfontein, Suurplaat and West Coast
 - Cookhouse wind energy facility VIA
 - Hopefield wind energy facility VIA
 - Mokopane Integration Project VIA
 - Cradle of Humankind World Heritage Site (WHS) viewshed protection zone, visual character assessment and visual zonation plan
 - Indwe wind energy facility VIA
 - Amakhala wind energy facility VIA
 - Boontjieskraal wind energy facility VIA
 - Britannia Bay wind energy facility VIA
 - Brand-se-Baai wind energy facility VIA
 - Upington and Pofadder solar thermal facilities VIAs
 - Dorper wind energy facility VIA
 - Flagging Trees wind energy facility VIA
 - Rheboksfontein, Suurplaat and West Coast wind energy facilities VIAs
 - Riverbank wind energy facility VIA
 - Waterberg photovoltaic plant VIA
 - Eskom wind intergration projects VIAs
 - Welgedacht water care works VIA
 - Aberdeen wind energy facility
 - Aggeneis-Oranjemund power line integration
 - Project Blue wind energy facility
 - Inca De Aar solar energy facility
 - Aced De Aar solar energy facility
 - Exxaro Lephalale solar energy facility
 - Happy Valley wind energy facility
 - Hendrina power station ash dam extension
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- Hidden Valley wind energy facility
 - Kakamas photovoltaic plant
 - Karoo renewable energy facility
 - Ilanga (Karoskraal) solar thermal power plant
 - Keimoes photovoltaic plants (Sonnenberg, Ofir and Geelkop)
 - Kimberley photovoltaic solar plant
 - Kleinbegin photovoltaic plant
 - Kleinzee wind energy facility
 - Koingnaas wind energy facility
 - Kabi Vaalkop (Orkney) PV solar energy facility
 - Oyster Bay wind energy facility
 - Ilanga Lethemba (Paardevelei) PV solar energy facility
 - Upington photovoltaic solar facility
 - Rampehele (Ritchie) PV solar energy facility
 - Rodicon PV solar energy facility
 - Ruukie (Mpumalanga) coal fired power station
 - Saldanha Steel wind energy facility
 - Kathu, Sishen and San Solar PV solar energy facilities
 - Christiana, Morgenzon and Hertzogville PV solar energy facilities
 - Namaqua and Voëlkip PV solar energy facilities
 - Denhami (Struisbaai) wind energy facility
 - Spitskop wind energy facility
 - Tsitsikamma community wind energy facility
 - Uyekraal wind energy facility
 - Veldrift and Saldanha wind energy facilities
 - Vredendal photovoltaic solar energy facility
 - Wag'nBiekiespan solar energy facility
 - Walker Bay wind energy facility
 - Riemvasmaak (Augrabies) hydroelectric facility
 - Bosjesmansberg solar energy facility
 - Everest, Grootkop, Watershed and Oryx PV solar energy facilities
 - Garob to Kronos power line
 - Graafwater PV solar energy facility
 - Kgabalatsane solar energy facility
 - Kheis solar park project
 - Gihon and Kison solar energy facilities
 - New Dimensions PV solar park in Mafikeng
 - Goereesoe (Outeniqua) wind farm
 - Burchell, Cuprum to Mooidraai power line
 - Rheboksfontein WEF power line
 - Ruuki power station
 - Sirius Solar PV projects
 - Tiger solar energy facility
 - Uyekraal WEF
 - Velddrif WEF
 - Zen WEF
 - Zoutpan (Olifants River) WEF
 - Gunsfontein and Stormberg WEFs
-

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- Aberdeen WEF
 - Albertinia WEF
 - Exxaro Baseload Power Station Lephalale
 - Blue Wave (Wolmaransstad) PV SEF
 - Castle WEF
 - East Power Line (Hotazel)
 - Elliot WEF
 - Exheredo Renewable Energy projects
 - Kareebosch WEF
 - Koeberg to Ankerlig Power Line
 - Mainstream Pofadder renewable energy facility
 - Stuart Coal Weltevreden coal mine
 - Transalloys Coal-fired power plant
 - Colenso Power Station and Mine
 - Lonmin Mooiwool landfill extension
 - Metsimatala Concentrating Solar Power facility
 - Matjhabeng PV Solar Energy Facility
 - Modderfontein Solar Thermal PV Plants (Ekhurhuleni)
 - iSimangaliso Wetland Park viewshed analysis
 - Melkspruit substation to Rouxville substation power line
 - Muhlava mine
 - Tina Falls hydropower project
 - Boulders Wind Farm
 - Allepad PV 1- 4 SEFs
 - Lichtenburg PV 1 - 3 SEFs
 - Namas and Zonnequa WEFs and overhead power lines
 - Wobben wind energy converter
 - Haga Haga WEF
 - Hyperion power line
 - Jagdlust overhead power lines and substation
 - Ilanga (Karoshoek) Solar Park
 - Calodex PV SEF
 - Kolkies and Sadawa PV SEFs
 - Kotulo Tsatsi PV SEFs
 - CBE WEF near Toalagnaro in Madagascar
 - Richards Bay Gas to Power Project
 - Grid connection infrastructure for the Frontier Power Gas to Power Project
 - Vrede and Rondavel PV SEFs
 - Vygenhoek Platinum Mine
 - Various comparative viewshed analyses and reviews for Part 2 Amendments

Professional History

4/2017: Professional GISc and VIA Practitioner (sole proprietor/self-employed)

1/2016 – 3/2017: SMEC South Africa, Pretoria – Technical Specialist

11/1999 – 12/2015: MetroGIS (Pty) Ltd, Pretoria – Director

10/1997 – 10/1999: GISBS (GIS Business Solutions - Q Data Consulting) – Project Manager

4/1990 - 9/1997: GisLAB CC (GIS Laboratory - University of Pretoria) – Member / Project Manager

Courses & Conferences attended

1997 ESRI International User Conference – United States of America

Publications & Papers presented

Name: Gateway to Kruger Map and Guide

Authors: Andy Tinker Photography

Publisher: ATP Publishing

Date: 2010

Name: Kruger National Park Map and Photographic Guide

Authors: Andy Tinker Photography

Publisher: ATP Publishing

Date: 2007

Name: Lowveld and Kruger Guide

Authors: High Branching Team

Publisher: Jacana Media (Pty) Ltd

Date: 2004

Name: Heights to Homes to Oceans (H2O) Water Wise information poster

Authors: Rand Water

Publisher: Rand Water

Date: 2004

Name: Garden Route - Still Bay to Storms River (Discover the Magic)

Authors: Jacana

Publisher: Jacana Media (Pty) Ltd

Date: 2003

Name: KwaZulu-Natal - A celebration of biodiversity

Authors: Jacana

Publisher: Jacana Media (Pty) Ltd

Date: 2001

Name: Pilanesberg Official Map and Park Guide

Authors: North-West Parks & Tourism Board and Jacana

Publisher: Jacana Media (Pty) Ltd

Date: 2001

Name: ESRI Map Book (Volume 13)

Authors: Various

Publisher: Environmental Systems Research Institute (ESRI)

Date: 1998

Name: Environmental Potential Atlas for South Africa

Authors: W. van Riet, J. van Rensburg, P. Claassen, L. du Plessis and T. van Viegen

Publisher: J.L. van Schaik

Date: 1997

Awards

Award: Best South African Environmental Technical Paper

Awarded for: Environmental Potential Atlas for South Africa (Publication)

Awarded by: Environmental Planning Professions Interdisciplinary Committee (EPPIC)

Date: 1998

Award: QDC Performance Award

Awarded for: ENPAT Development

Awarded by: Q Data Consulting

Date: 1998

Award: Best Cartographic Map Gallery Competition - 3rd Place

Awarded for: Environmental Potential Atlas for South Africa (Publication)

Awarded by: Environmental Systems Research Institute (ESRI)

Date: 1998 International ESRI User Conference

Award: Map Gallery Most Analytical Competition - 3rd Place

Awarded for: Environmental Potential Atlas for South Africa

Awarded by: Environmental Systems Research Institute (ESRI)

Date: 1997 International ESRI User Conference

Award: Best South African Environmental Technical Paper

Awarded for: National Environmental Potential Atlas (ENPAT National)

Awarded by: Environmental Planning Professions Interdisciplinary Committee (EPPIC)

Date: 1995

Language Skills

Mother Tongue:	Afrikaans		
Languages	Speak	Read	Write
English	Good	Good	Good
Afrikaans	Good	Good	Good



Lourens du Plessis (PrGISc)

Curriculum Vitae
TOSCA DINA DE VILLIERS

PERSONAL INFORMATION



Full Name:	Tosca Dina de Villiers
Maiden name	Grünewald
Date of Birth:	1988-07-24
Gender:	Female
Nationality:	South African
Race:	White
Language(s):	English and Afrikaans (Written and spoken)
Marital Status:	Married
Dependents:	0
Driver's License:	Code 08
Telephone number:	072 478 8856
Email address:	tosca@nuleafsa.co.za

FORMAL EDUCATION

Date	Qualification	Institution
2006	Grade 12	Christian Brothers College, Pretoria
2010	Baccalaureus in Landscape Architecture (BL)	University of Pretoria
2012	Baccalaureus Honorius in Landscape Architecture	University of Pretoria
2013	Masters in Landscape Architecture (ML)	University of Pretoria

MEMBERSHIPS & AFFILIATIONS

- Professional Landscape Architect: South African Council for the Landscape Architectural Profession (SACLAP). Registration No. 20421
- Registered Environmental Assessment Practitioner: Environmental Assessment Practitioners Association of South Africa (EAPASA). Registration No. 2019/1582
- Member of the International Association for Impact Assessment South Africa (IAIASa)

TECHNICAL SKILLS

Software	Skill level
MS Word	Proficient
MS Excel	Proficient
MS Outlook	Proficient
MS PowerPoint	Proficient
Corel DRAW	Proficient
Adobe Photoshop, Illustrator & InDesign	Proficient
AutoCAD	Proficient
Google Sketchup	Capable
Global Mapper GIS	Proficient
Locus Maps	Proficient
Wind Pro, Basic & Photo Montage Modules	Proficient

BRIEF SUMMARY OF CORE COMPETENCIES

Tosca is a registered Professional Landscape Architect (PrLArch) with her Master's Degree in Landscape Architecture from the University of Pretoria, and over 10 years of experience. Tosca has specialised in Landscape and Environmental Planning and Design and has worked in multi-disciplinary teams on a wide range of projects. Tosca has extensive experience in Visual Impact Assessment and is registered with the Environmental Assessment Practitioners of South Africa (EAPASA), South African Council for the Landscape Architectural Profession (SACLAP), as well as a member of the International Association of Impact Assessment South Africa (IAIASA).

CAREER HISTORY

Date	Company / Organization	Position
Oct 2014 - present	Nuleaf Planning and Environmental (Pty) Ltd	Landscape Architect, Environmental Practitioner and Visual Specialist
Jan 2014 – Aug 2014	Interdesign Landscape Architects	Candidate Landscape Architect
2010	Grow Wild Indigenous Nursery	Consultation and Sales

RELEVANT WORK EXPERIENCE (KEY PROJECTS)

(All projects in South Africa unless otherwise stated)

COMPANY	YEAR	PROJECT NAME	CLIENT	DESCRIPTION OF DUTIES
LOGIS	2024	Hugo & Khoe Wind Energy Facilities	ERM	Photo Simulations
LOGIS	2024	Karoo Cluster Wind Energy Facility	SES Environmental Services	Photo Simulations
Nuleaf Planning & Environmental	2024	Buffelsfontein Solar PV Facility	CES - Environmental and social advisory services	Visual Impact Assessment
LOGIS	2024	Clear Horizon Solar PV Facility	Savannah Environmental (Pty) Ltd	Photo Simulations
LOGIS	2024	Swartfontein Solar PV Facility	Savannah Environmental (Pty) Ltd	Visual Impact Assessment
LOGIS	2024	Dwarskersbos 2 Solar PV Facility	Savannah Environmental (Pty) Ltd	Scoping Phase Visual Impact Assessment
Nuleaf Planning & Environmental	2024	Vryheid Wind Energy Facility & OHL	CES - Environmental and social advisory services	Site Sensitivity Verification
Nuleaf Planning & Environmental	2024	Soutrivier – Gamma OHL	CES - Environmental and social advisory services	Visual Impact Assessment
Nuleaf Planning & Environmental	2024	Hamburg Solar PV Facility	NALA Environmental Consulting Firm	Site Sensitivity Verification
LOGIS	2024	Eskom Blanco Network Strengthening Narina Mts Droerivier – Proteus 400kV Lilo Lines	Environmental Impact Management Services (Pty) Ltd	Visual Impact Assessment
LOGIS	2024	Makhado 1, 2 and 3 PV Solar and BESS Facilities	Dzimuzwo Consulting (Pty) Ltd	Visual Impact Assessment
Nuleaf Planning & Environmental	2023 - 2024	Stillfontein Solar PV Facilities and Overhead Lines	CES - Environmental and social advisory services	Visual Impact Assessment Site Sensitivity Verification, Project Management
Nuleaf Planning & Environmental	2023 - 2024	Eswatini Solar PV Facility, Eswatini	CES - Environmental and social advisory services	Visual Impact Assessment
Nuleaf Planning & Environmental	2023 - 2024	Albany Wind Energy Facility	CES - Environmental and social advisory services	Visual Impact Ground-truthing and Comparative Assessment
Nuleaf Planning & Environmental	2023	Ravenna Solar PV Facility and Associated Infrastructure	CES - Environmental and social advisory services	Visual Impact Assessment
LOGIS	2023	Tshimollo PV Solar Energy Facility	Savannah Environmental (Pty) Ltd	Visual Impact Assessment
Nuleaf Planning & Environmental	2023	Hosting Area on the Tinga/Narina Concession, Kruger National Park	Steve Henwood	Review of a Basic Assessment
Nuleaf Planning & Environmental	2023	Paardevelei Solar PV and BESS	JG Afrika (Pty) Ltd	Visual Impact Assessment
Nuleaf Planning & Environmental	2023	Gamma MTS	African Clean Energy Developments (Pty) Ltd	Visual Opinion Letter
Nuleaf Planning & Environmental / LOGIS	2023	Angora Wind Energy Facility	Savannah Environmental (Pty) Ltd	Visual Impact Assessment IA&P site visit regarding concerns Management of photo simulations
LOGIS	2023	AMSA Vanderbijlpark PV Facility	Savannah Environmental (Pty) Ltd	Visual Impact Assessment
Nuleaf Planning & Environmental	2023	Sinoville Shopping Centre LDP	RANFT Architects	Landscape Site Development Plans
Nuleaf Planning & Environmental	2023	Marataba Various Amendments	Marataba Conservation (Pty) Ltd	Team Leader, Project coordinator, EAP
LOGIS	2023	Quantum PV Facility	Savannah Environmental (Pty) Ltd	Visual Impact Assessment
LOGIS	2023	Aberdeen Kudu & Tango Wind Energy Facilities	Savannah Environmental (Pty) Ltd	Visual Impact Assessment
LOGIS	2023	Kleinzee & Daisy PV Grid Connection Infrastructure	Savannah Environmental (Pty) Ltd	Visual Impact Assessment
LOGIS	2023	Salika PV Facilities & Overhead Lines	Savannah Environmental (Pty) Ltd	Visual Impact Assessment
Nuleaf Planning & Environmental	2023	Adara Wolmaransstad Overhead Lines	Savannah Environmental (Pty) Ltd	Visual Impact Assessment
Nuleaf Planning & Environmental	2023	Qwabi Section 24G	SARPHC Properties (Pty) Ltd	EMPr
Nuleaf Planning & Environmental	2023	Bethulie PV Facility	Launch	Visual Impact Assessment
LOGIS	2023	Aberdeen PV Facility	Cape EAPrac Environmental Consultants	Visual Impact Assessment
Nuleaf Planning & Environmental	2023	Goldwind Concrete Batching Plant	NALA Environmental Consulting Firm	Visual Impact Assessment
LOGIS	2023	Genesis Renewable Energy Cluster	Genesis Eco-Energy Developments (Pty) Ltd	Visual Impact Assessment, Photo Simulations
LOGIS	2023	Aberdeen Wind Energy Facilities	Savannah Environmental (Pty) Ltd	Visual Impact Assessment
LOGIS	2023	Komati PV & BESS	Eskom Holdings SOC (Ltd) / WSP Group Africa (Pty) Ltd	Visual Impact Assessment

Nuleaf Planning & Environmental	2023	Aries – Juno 765kV Powerline Corridor	Eskom Holdings SOC Limited / JG Afrika (Pty) Ltd	Visual Impact Assessment
Nuleaf Planning & Environmental	2023	Juno - Sterrekus 765kV Powerline Corridor	Eskom Holdings SOC Limited / Naledzi Environmental Consultants (Pty) Ltd	Visual Impact Assessment
Nuleaf Planning & Environmental	2023	Verkykerskop Wind Energy Facility	Mulilo Renewable Project Developments	Visual Screening
Nuleaf Planning & Environmental	2023	Lapalala Wilderness School Amendment	Mapula Trust	Team Leader, Project coordinator, EAP
Nuleaf Planning & Environmental	2023	Gamma Substation	NALA Environmental Consulting Firm	Comparative Visual Assessment & Site Sensitivity Verification
Nuleaf Planning & Environmental	2023	Loeriesfontein PV & Grid	NALA Environmental Consulting Firm	Comparative Visual Assessment & Site Sensitivity Verification
Nuleaf Planning & Environmental	2021	Maroelana LDP	Struland Property Development (Pty) Ltd	Landscape Site Development Plans
LOGIS	2022	Highveld PV & Grid	Savannah Environmental (Pty) Ltd	Visual Impact Assessment
LOGIS	2022	Kiara PV Facility	Savannah Environmental (Pty) Ltd	Visual Impact Assessment
Nuleaf Planning & Environmental	2022	Kwa Maritane Extensions Basic Assessment	Pilanesberg Resorts (Pty) Ltd	Team Leader, Project coordinator
LOGIS	2022 - 2023	Northam / Zondereinde PV Facility	Savannah Environmental (Pty) Ltd	Visual Impact Assessment
LOGIS	2022	Crossroads (Hydra B) PV Cluster	Savannah Environmental (Pty) Ltd	Visual Impact Assessment
Nuleaf Planning & Environmental	2022 - 2023	Ngxwabangu Wind Energy Facility	CES - Environmental and social advisory services	Visual Impact Assessment
LOGIS	2022	Transalloys PV Facility	Savannah Environmental (Pty) Ltd	Visual Impact Assessment
LOGIS	2022 - 2023	Hydra B PV Facilities	Savannah Environmental (Pty) Ltd	Visual Impact Assessment
Nuleaf Planning & Environmental	2022	Potters Hill Wind Energy Facility	Mulilo Renewable Project Developments	Visual Screening
Nuleaf Planning & Environmental	2022	Msege Emoyeni Grid Connection	NALA Environmental Consulting Firm	Visual Impact Assessment
Nuleaf Planning & Environmental	2022	Latrodex WEF Grid Connection	CES - Environmental and social advisory services	Visual Impact Assessment
Nuleaf Planning & Environmental	2022 - 2023	Britstown Wind Energy Facility	CES - Environmental and social advisory services	Visual Impact Assessment
Nuleaf Planning & Environmental	2022 - 2023	Arengo Mine: EIA Commenting and Appeal	Marakele Park (Pty) Ltd	Review of EIA documents and compilation of comments for submission. Lodge of an Appeal
Nuleaf Planning & Environmental	2022	Cradle of Humankind World Heritage Site Tourism Development Framework	Department of Tourism (South Africa) Urban Econ	Sub consultant to Urban Econ for the development of a conservation zoning plan and tourism development framework for the COHWHS.
University of Pretoria	2021	Third Year Environmental External Examiner	University of Pretoria – Department of Built Environment	External Examiner
Nuleaf Planning & Environmental	2021	Monte Acres LDP	Sinovich Group	Landscape Site Development Plans
Nuleaf Planning & Environmental	2021 - 2022	Victoria West Wind Energy Facility	CES - Environmental and social advisory services	Visual Impact Assessment
Nuleaf Planning & Environmental	2021	Wild Coast Abalone Expansion	CES - Environmental and social advisory services	Visual Impact Assessment
Nuleaf Planning & Environmental	2021	Latrodex Wind Energy Facility	CES - Environmental and social advisory services	Visual Impact Assessment
Nuleaf Planning & Environmental	2021 - 2022	Waaioek VIA Amendment	CES - Environmental and social advisory services	Visual Impact Assessment - Amendment and Comparative Assessment
Nuleaf Planning & Environmental	2020 - 2021	Finfoot Estate BAR (EIA)	Sandton Sales (Pty)Ltd	Basic Assessment (EIA) process for expansion of the Finfoot Estate, Vaalkop Dam, North-West Province.
Nuleaf Planning & Environmental	2021	Crescent Corner LDP	Rainbow Junction Development Company (Pty) Ltd	Landscape Site Development Plans
LoGIS	2021	EIMS GIS Database	Environmental Impact Management Services	GIS data sourcing and collation
Nuleaf Planning & Environmental	2021 - 2022	Lapalala Wilderness School & Access Road ECO	Mapula Trust	Environmental Control Officer
Nuleaf Planning & Environmental	2021	Engen Garage Zambezi LDP	Sinovich Group	Landscape Site Development Plans
Nuleaf Planning & Environmental	2021	Peer Review: Albany Wind Energy Facility Visual Impact Assessment Report	CES - Environmental and social advisory services	Peer Review of the Visual Impact Assessment (VIA) undertaken by CES for the Albany WEF
Nuleaf Planning & Environmental	2021	Lapalala Wilderness School & Access Road	Mapula Trust	Application for Protected Tree removal permit
Nuleaf Planning & Environmental	2020 - 2021	Finfoot Estate BAR (EIA)	Sandton Sales (Pty)Ltd	Basic Assessment (EIA) process for expansion of the Finfoot Estate, Vaalkop Dam, North-West Province.
Nuleaf Planning & Environmental	2019 - 2021	Kaba Water Use License Application	Grace Management Services	Team Leader, Project coordinator
Nuleaf Planning & Environmental	2020	KABA Proclamation Process	Grace Management Services (Pty) Ltd	Preparation and submission of application documentation for the proclamation of Kaba farm as a Protected Area in terms of the NEMA:PAA.

Nuleaf Planning & Environmental	2019 - 2021	Tuna Park development Master Plan, EIA and WULA	Silverhorns Consulting	Team Leader, Project coordinator
Nuleaf Planning & Environmental	2019	Bakubung Lifestyle Villas Compliance with Environmental Authorisation Letter	Pilanesberg Resorts (Pty) Ltd	Environmental Control Officer
Nuleaf Planning & Environmental	2019	Limpopo Nature Reserves: Mapping	Limpopo Department of Economic Development, Environment and Tourism	Development of a GIS database, mapping and production of information and map brochures for 12 provincial nature reserves.
Nuleaf Planning & Environmental	2019	City of Tshwane Landscape Specification Document	City of Tshwane	Team Leader, Project coordinator. Development of standardized landscape specifications and details for the City of Tshwane to provide Landscape Contractors
Nuleaf Planning & Environmental	2019	Rainbow Junction Mixed Use Development: Phase 1a	Rainbow Junction Development Company (Pty) Ltd	Development of landscape master plan for public and private open space components of the project.
Nuleaf Planning & Environmental	2019	Rietspruit Rehabilitation / Development Master Plan and Sketch Plan	Silverhorns Consulting	Development of a landscape master plan and sketch plan for the Rietspruit open space / wetland area, Gauteng Province.
Nuleaf Planning & Environmental	2019	Kapama Game Reserve Section 24(G) Application	Kapama Game Reserve	Visual Impact Assessment
Nuleaf Planning & Environmental	2019	Marataba Staff Accommodation & Roads ECO	Marakele Park (Pty) Ltd	Environmental Control Officer
Nuleaf Planning & Environmental	2015 - 2019	Various Landscape Development Plans (LDP) for group housing	Various	Landscape Site Development Plans, BoQ and preliminary costing
Nuleaf Planning & Environmental	2018	Natalspruit landscape development master plan	Silverhorns Consulting	Development of a landscape master plan for the Natalspruit open space / wetland area, Gauteng Province.
Nuleaf Planning & Environmental	2018	Juikskei Illiondale landscape development master plan	Silverhorns Consulting	Development of a landscape master plan for the Juikskei-Illiondale open space / wetland area, Gauteng Province.
Nuleaf Planning & Environmental	2018	Bakubung Reservoir Basic Assessment	Pilanesberg Resorts (Pty) Ltd	Environmental Control Officer
Nuleaf Planning & Environmental	2018 - 2019	Bakubung Villa	Pilanesberg Resorts (Pty) Ltd	Environmental Control Officer
Nuleaf Planning & Environmental	2018	Ngwenya Lodge VIA	Quality Time Marketing (Pty) Ltd	Team Leader, Project coordinator
Nuleaf Planning & Environmental	2018	Kaba Private Homes Basic Assessment	Quality Time Marketing (Pty) Ltd	Team Leader, Project coordinator
Nuleaf Planning & Environmental	2018	Ngwenya Lodge WWTS Basic Assessment Process	Quality Time Marketing (Pty) Ltd	Project Leader
Nuleaf Planning & Environmental	2017	Kaba Private Homes Basic Assessment	Grace Management Services	Team Leader, Project coordinator
Nuleaf Planning & Environmental	2017	Bakubung Reservoir Basic Assessment	Pilanesberg Resorts (Pty) Ltd	Team Leader, Project coordinator
Nuleaf Planning & Environmental	2017	Bakubung Villa Sewage Amendment	Pilanesberg Resorts (Pty) Ltd	Team Leader, Project coordinator
Nuleaf Planning & Environmental	2017	Marataba Section of the Marakele National Park – additional game viewing roads – Basic Assessment Process	Marakele Park (Pty) Ltd	Project Leader
Nuleaf Planning & Environmental	2017	Witsieshoek Mountain Lodge - Mountain Bike Trails mapping	Witsieshoek Mountain Lodge (Pty) Ltd	Project Leader
Nuleaf Planning & Environmental	2017	SMEC Landscape	Rowbow Investments	Landscape Design
Nuleaf Planning & Environmental	2017	Sasol Filling Stations	Rainbow Junction Company (Pty) Ltd	Landscape Design
Nuleaf Planning & Environmental	2017	Lapalala Wilderness School Basic Assessment	Mapula Trust	Environmental Impact Assessment
Nuleaf Planning & Environmental	2017	Commettre Gardens	Commettre	Landscape Design
Nuleaf Planning & Environmental	2017	Maropeng Interpretation Centre	GAPP	Environmental Control Officer
Nuleaf Planning & Environmental	2016	Master Plan Framework for the Klipspruit Soweto Water Management Unit	Silverhorns Consulting	Landscape Master Plan

Nuleaf Planning & Environmental	2016	Master Plan Framework for the Rehabilitation of the Jukskei Alexandra Water management Unit	Silverhorns Consulting	Landscape Master Plan
Nuleaf Planning & Environmental	2016	Tourism Master Plan and Management Plan for Sani Top and Semonkong, Lesotho	Lesotho Tourism and Development Corporation	Tourism / Landscape Master Plan
Nuleaf Planning & Environmental	2015 - 2016	Various landscape SDP's for group housing	Various	Landscape Site Development Plans, BoQ and preliminary costing
Nuleaf Planning & Environmental	2015 - 2016	EIA for the proposed Kaalspruit Open Space Project, Tembisa, Gauteng	Silverhorns Consulting	Environmental Impact Assessment
Nuleaf Planning & Environmental	2015 - 2016	Master Plan Framework for the Rehabilitation of the Kaalspruit	Silverhorns Consulting	Landscape Master Plan
Nuleaf Planning & Environmental	2015	Wonderboom Junction Phase 2 Shopping Centre	Rainbow Junction Company (Pty) Ltd	Peer review of Environmental Impact Assessment Process and lodging of environmental complaint
Nuleaf Planning & Environmental	2015	AIR Resource Mapping and Management Planning	CESVI / European Commission	Resource mapping and development of management guidelines for 10 African Ivory Routes camps and Community areas in Limpopo Province.
Nuleaf Planning & Environmental	2015	Rehabilitation specification and landscape audit for Union Buildings south lawn	Red Bull	Specification and auditing
Nuleaf Planning & Environmental	2015	IMP: Greater Lakenvlei Protected Environment (GLPE).	Mpumalanga Tourism and Parks Agency	Preparation of an Integrated Management Plan, including zoning, tourism master plan and management plan, for the GLPE, Dullstroom area.
Nuleaf Planning & Environmental	2015	Buccleuch ext.9 wetland design	Seaton Thompson Consulting	Landscape design
Nuleaf Planning & Environmental	2015	South Zambezi landscape design, Samrand	Khato Civils	Landscape design
Nuleaf Planning & Environmental	2014 - 2015	Various landscape LDP's for group housing	Sinovich Group	Landscape Site Development Plans, BoQ and preliminary costing
Nuleaf Planning & Environmental	2014 - 2015	Concept Master Plan for the proposed Banghazi Lake Development	African Safari Foundation	Concept Master Plan and development vision
Nuleaf Planning & Environmental	2014 - 2015	EIA for the proposed expansion of the Bhundu Inn Hotel, Nkangala District	Paul Mojapelo	EIA Mapping
Nuleaf Planning & Environmental	2014 - 2015	EIA for a proposed spa at Bakubung Lodge, Pilanesberg Game Reserve	Pilanesberg Resorts Pty Ltd	Environmental Control Officer auditing construction
Nuleaf Planning & Environmental	2014 - 2015	EIA for the proposed Malelane Safari Lodge near the Malelane gate, Kruger National Park	Marakele Safari Resort Investments Pty Ltd	EIA Mapping
Nuleaf Planning & Environmental	2014 - 2015	EIA for proposed tourism infrastructure at Marakele Park Pty Ltd	Marakele Park Pty Ltd	Environmental Control Officer auditing construction
Nuleaf Planning & Environmental	2014 - 2015	EIA for proposed upgrades to the Maropeng Interpretation Centre	GAPP	EIA Mapping
Nuleaf Planning & Environmental	2014 - 2015	Visual Impact Assessment for the proposed upgrades to the Maropeng Interpretation Centre	GAPP	Visual Impact Assessment
Nuleaf Planning & Environmental	2014	Visual Impact Assessment for the proposed Exheredo Solar Energy Facility	Savannah Environmental	Visual Impact Assessment
Interdesign Landscape Architects	2014	Rustenburg Open Space and Heritage Management Plan (ROSHMAP)	Rustenburg Local Municipality	Open Space and Heritage Management
Interdesign Landscape Architects	2014	LDP - ASCO Warehouse and Offices, Midrand	ASCO	Landscape Site Development Plans, project management, design inputs, drafting and client liaison
Interdesign Landscape Architects	2014	LDP - Garden Antonites	Mr & Mrs Antonites	Landscape Site Development Plans, project management, design inputs, drafting and client liaison

Interdesign Landscape Architects	2014	Hazeldean Office Park Landscape Audit	Abland	As-built Landscape Plan
Interdesign Landscape Architects	2014	LDP - Rietvalleirand	Unknown	Landscape Site Development Plans, project management, design inputs, drafting and client liaison
Interdesign Landscape Architects	2014	LDP – Throntree Place	Unknown	Landscape Site Development Plans, project management, design inputs, drafting and client liaison
Interdesign Landscape Architects	2014	LDP – House Bester	Unknown	Landscape Site Development Plans, project management, design inputs, drafting and client liaison
Interdesign Landscape Architects	2014	LDP – Chueu Chambers	Unknown	Landscape Site Development Plans, project management, design inputs, drafting and client liaison
Interdesign Landscape Architects	2014	LDP – Northern Views	Unknown	Landscape Site Development Plans, project management, design inputs, drafting and client liaison
Interdesign Landscape Architects	2014	LDP – Wierdapark Erf 380	Unknown	Landscape Site Development Plans, project management, design inputs, drafting and client liaison
Interdesign Landscape Architects	2014	LDP – House Nhlapo	Unknown	Landscape Site Development Plans, project management, design inputs, drafting and client liaison
Interdesign Landscape Architects	2014	LDP – Eldoraigae x76	Unknown	Landscape Site Development Plans, project management, design inputs, drafting and client liaison
Interdesign Landscape Architects	2014	LDP – Marman Trust Garden	Unknown	Landscape Site Development Plans, project management, design inputs, drafting and client liaison

17.2 Appendix B – Landowner Consent

ACKNOWLEDGEMENT OF PROPOSED TURBINE LOCATIONS AND ANTICIPATED IMPACTS AS ASSESSED IN THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESSES CONDUCTED IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (NEMA) (ACT NO. 107 OF 1998), AS AMENDED FOR THE PROPOSED ABO UVMVANE WIND ENERGY FACILITY 1 NEAR BALFOUR IN THE MPUMPALANGA PROVINCE AND HEIDELBERG IN THE GAUTENG PROVINCE

ABO Uvemvane Wind Energy Facility 1 (Pty) Ltd (a Special Purpose Vehicle established by ABO Energy South Africa (Pty) Ltd)) is proposing the development of the ABO Uvemvane Wind Energy Facility 1 and its associated infrastructure, near Balfour in the Mpumalanga Province and Heidelberg in the Gauteng Province.

I, the undersigned, **HENDRINA JOHANNA ROSENTHAL** as the lawful owner of the following farm portion:

- Portion 17 of the Farm Lagerspoort Number 406 (TOIR00000000040600017)

confirm the following:

- 1) I consent to the Environmental Impact Assessment process for the proposed ABO Uvemvane Wind Energy Facility 1, including the preliminary location of components of the layout (i.e., turbines, specifically turbine 3) on my property and nearby the building 8 depicted in Figure 1 below.

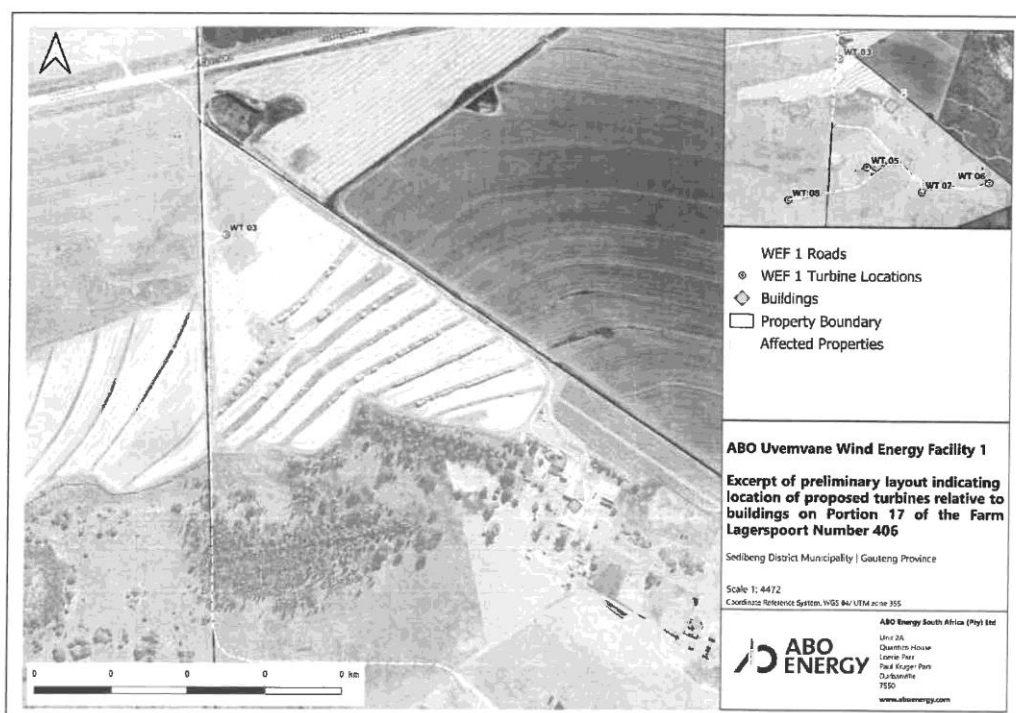


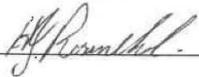
Figure 1: Proposed ABO Uvemvane Wind Energy Facility 1 – Excerpt of preliminary layout indicating proposed location of turbines in relation to buildings (created using QGIS Desktop 3.30.3)

- 2) I consider the potential impacts associated with the proposed development, including those associated with visual (such as the visual impact of construction, operational visual impacts, and shadow flicker, etc) as acceptable.
- 3) I anticipate benefitting from positive economic impacts via receipt of an additional income resulting from the proposed development.

Name of landowner/s: HENDRINA JOHANNA ROSENTHAL

Telephone number: 064 884 4417

Email address: jcqsrosenthal@gmail.com

_____

Landowner

Signed at: HEIDELBERG (GP)

Date: 20/11/2025