VISUAL IMPACT ASSESSMENT FOR THE PROPOSED EZELSJACHT WIND ENERGY FACILITY

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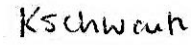

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Regulation GNR 326 of 4 December 2014, as amended 7 April 2017, Appendix 6	**Section of Report**
(a) details of the specialist who prepared the report; and the expertise of that specialist to compile a specialist report including a *curriculum vitae*;	**Section 1.1** **Appendix B**
(b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	**Appendix B**
(c) an indication of the scope of, and the purpose for which, the report was prepared;	**Section 1.1** **Appendix A**
(cA) an indication of the quality and age of base data used for the specialist report;	**Section 1.2** **Section 1.3**
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	**Section 6** **Section 8**
(d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	**Section 1.4** **Section 2**
(e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	**Section 1.2**
(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 alternatives;	**Section 6**
(g) an identification of any areas to be avoided, including buffers;	**Section 6.3** **Section 8**
(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;	**Section 6.3**
(i) a description of any assumptions made and any uncertainties or gaps in knowledge;	**Section 2**
(j) a description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives on the environment or activities;	**Section** Error! Reference source not found.
(k) any mitigation measures for inclusion in the EMPr;	**Section 8.4**
(l) any conditions for inclusion in the environmental authorisation;	No specific conditions relating to the visual environment need to be included in the environmental authorisation (EA)
(m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	**Section 8.4**
(n) a reasoned opinion— i. whether the proposed activity, activities or portions thereof should be authorised; iA. Regarding the acceptability of the proposed activity or activities; and ii. if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures	**Section 9.1**

that should be included in the EMPr or Environmental Authorization, and where applicable, the closure plan;	
(o) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	No feedback has yet been received from the public participation process regarding the visual environment
(p) any other information requested by the competent authority	No information regarding the visual study has been requested from the competent authority to date.
(2) Where a government notice gazetted 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.	**N/A**

EXECUTIVE SUMMARY

South Africa Mainstream Renewable Power Developments (Pty) Ltd (hereafter referred to as "Mainstream"), is proposing to construct the 140MW Ezelsjacht Wind Energy Facility (WEF) and associated grid connection infrastructure near De Doorns in the Western Cape Province. The proposed WEF development will be subject to a full Environmental Impact Assessment (EIA) process in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA) as amended and EIA Regulations, 2014 (as amended). Accordingly, an EIA process as contemplated in terms of the EIA Regulations (2014, as amended) is being undertaken in respect of the proposed WEF project. The competent authority for this EIA is the national Department of Forestry, Fisheries and Environment (DFFE).

The VIA has determined that the study area has a largely natural visual character with some pastoral elements. The area has seen very limited transformation or disturbance and as such the proposed Ezelsjacht WEF development is expected to alter the visual character of the area and contrast significantly with the typical land use and / or pattern and form of human elements present. The level of contrast will however be slightly reduced by the presence of the R318 Main Road and existing high voltage power lines traversing the study area.

A broad-scale assessment of visual sensitivity, based on the physical characteristics of the study area, economic activities and land use that predominates, determined that the area would have a moderate visual sensitivity. However, an important factor contributing to the visual sensitivity of an area is the presence, or absence of visual receptors that may value the aesthetic quality of the landscape and depend on it to produce revenue and create jobs.

Three formally protected areas are partially within 10km of the proposed WEF project area, these being the Matroosberg and Langeberg-Wes Mountain Catchment Areas (MCAs) and Drie Kuilen Private Nature Reserve, all of which would be considered sensitive receptors. It should be noted however that, Langeberg-Wes MCA and Drie Kuilen Private Nature Reserve are some distance from the WEF project area (8kms+) and partially outside the viewshed. Thus impacts on these two Protected Areas would be reduced. Matroosberg MCA occupies much of the western sector of the study area and adjoins a portion of the south-western boundary of the WEF project area. Much of this MCA is however outside the viewshed for the WEF project area and visual impacts would be restricted to areas located along the eastern boundary of the MCA.

Although there is limited human habitation, a total of twenty-nine (29) potentially sensitive visual receptor locations were identified within 10kms of the WEF project area boundary. Six (6) of the receptors identified were found to be linked to leisure-based (specifically nature-based) tourism and are therefore considered to be sensitive receptors. Only four (4) of these are within the project area viewshed. In addition, Ezelsjacht Guest Farm is located within the WEF project area and as such, the property owner is assumed to be in agreement with the development proposals.

The remaining twenty-three (23) receptors identified appear to be farmsteads which are regarded as potentially sensitive visual receptors as they are located within a mostly rural setting with natural vistas that will likely be altered by the proposed development. Local sentiments toward the proposed development are however unknown at this stage. Thirteen (13) of these receptors were found to be outside the viewshed for the WEF project area and all but one of the remaining receptors are more than 2km from the WEF project area and only expected to experience moderate to low impacts as a result of the WEF development.

The R318 Main Road that traverses the study area is considered to have scenic and rural value and is utilised, to some extent, for its tourism potential. As a result, it is considered to be a potentially sensitive receptor road – i.e. a road being used by motorists who may object to the potential visual intrusion of the proposed WEF and associated infrastructure. The level of impact experienced by motorists travelling along this route would depend on the positioning of the wind turbines within the WEF project area.

A preliminary assessment of overall impacts revealed that impacts associated with the proposed Ezelsjacht WEF are of **MODERATE** significance during both construction and decommissioning phases. During operation, visual impacts from the WEF would be of **MODERATE** significance with relatively few mitigation measures available to reduce the visual impact.

Five (5) additional proposed renewable energy developments and infrastructure projects were identified within a 30km radius of the Ezelsjacht WEF project. All but one of the projects are outside the assessment zone for the Ezelsjacht WEF while the remaining project, Touws River SEF is only partially inside the assessment zone. Most of these projects are located in close proximity to main roads or built-up areas and as such it is not anticipated that these developments will result in any significant cumulative impacts affecting the landscape or the visual receptors within the assessment zone for the Ezelsjacht WEF project

However, a cumulative assessment must include the proposed Ezelsjacht SEF and associated grid connection project, both of which are located in close proximity to the Ezelsjacht WEF project area. From a visual perspective, the concentration of renewable energy facilities as proposed will further change the visual character of the area and alter the inherent sense of place, extending an increasingly industrial character into the broader area, and resulting in significant cumulative impacts. It is however anticipated that these impacts could be mitigated to acceptable levels with the implementation of the recommended mitigation measures. In addition, it is possible that these developments in close proximity to each other could be seen as one large Renewable Energy Facility (REF) rather than several separate developments. Although this will not necessarily reduce impacts on the visual character of the area, it could potentially reduce the cumulative impacts on the landscape.

In light of this and the relatively low level of human habitation in the study area however, cumulative impacts have been rated as **MODERATE**.

From a visual perspective, there are no fatal flaws associated with the proposed Ezelsjacht WEF project area. However, certain areas on the site have been identified as zones of potential visually sensitivity, within which it is recommended that turbine development be limited.

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ACRONYMS AND ABBREVIATIONS

Acronym / Abbreviation	Definition
BA	Basic Assessment
DBAR	Draft Basic Assessment Report
DEIAR	Draft Environmental Impact Assessment Report
DEM	Digital Elevation Model
DFFE	Department of Forestry, Fisheries and Environment
DM	District Municipality
DSR	Draft Scoping Report
DTM	Digital Terrain Model
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
FEIAR	Final Environmental Impact Assessment Report
FSR	Final Scoping Report
GIS	Geographic Information System
I&AP	Interested and/or Affected Party
IPP	Independent Power Producer
LM	Local Municipality
kV	Kilovolt
MW	Megawatt
NGI	National Geo-Spatial Information
REF	Renewable Energy Facility
REIPPP	Renewable Energy Independent Power Producer Programme
SACAA	South African Civil Aviation Authority
SANBI	South African National Biodiversity Institute
SEF	Solar Energy Facility
VIA	Visual Impact Assessment
VR	Visual Receptor
WEF	Wind Energy Facility

DEFINITIONS

Anthropogenic feature: An unnatural feature resulting from human activity.

Cultural landscape: A representation of the combined worlds of nature and of man illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal (World Heritage Committee, 1992).

Sense of place: The unique quality or character of a place, whether natural, rural or urban. It relates to uniqueness, distinctiveness or strong identity.

Scenic route: A linear movement route, usually in the form of a scenic drive, but which could also be a railway, hiking trail, horse-riding trail or 4x4 trail.

Sensitive visual receptors: An individual, group or community that is subject to the visual influence of the proposed development and is adversely impacted by it. They will typically include locations of human habitation and tourism activities.

Sky Space: The area in which the turbine rotors would rotate.

Slope Aspect: Direction in which a hill or mountain slope faces.

Study area / Visual Assessment Zone: The area with a zone of 10km from the outer boundary of the proposed WEF application site, and 5km from the proposed grid connection corridor alternatives.

Viewpoint: A point in the landscape from where a particular project or feature can be viewed.

Viewshed / Visual Envelope: The geographical area which is visible from a particular location.

Visual character: The pattern of physical elements, landforms and land use characteristics that occur consistently in the landscape to form a distinctive visual quality or character.

Visual contrast: The degree to which the development would be congruent with the surrounding environment. It is based on whether or not the development would conform with the land use, settlement density, forms and patterns of elements that define the structure of the surrounding landscape.

Visual exposure: The relative visibility of a project or feature in the landscape.

Visual impact: The effect of an aspect of the proposed development on a specified component of the visual, aesthetic or scenic environment within a defined time and space.

Visual receptors: An individual, group or community that is subject to the visual influence of the proposed development but is not necessarily adversely impacted by it. They will typically include commercial activities, residents and motorists travelling along routes that are not regarded as scenic.

Visual sensitivity: The inherent sensitivity of an area to potential visual impacts associated with a proposed development. It is based on the physical characteristics of the area (visual character), spatial distribution of potential receptors, and the likely value judgements of these receptors towards the new development, which are usually based on the perceived aesthetic appeal of the area.

Visual Impact Assessment for the Proposed Ezelsjacht Wind Energy Facility

1. INTRODUCTION

South Africa Mainstream Renewable Power Developments (Pty) Ltd (hereafter referred to as "Mainstream"), is proposing to construct the 140MW Ezelsjacht Wind Energy Facility (WEF) and associated grid connection infrastructure near De Doorns in the Western Cape Province. The proposed WEF development will be subject to a full Environmental Impact Assessment (EIA) process in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA) as amended and EIA Regulations, 2014 (as amended). Accordingly, an EIA process as contemplated in terms of the EIA Regulations (2014, as amended) is being undertaken in respect of the proposed WEF project. The competent authority for this EIA is the national Department of Forestry, Fisheries and Environment (DFFE).

Grid connection infrastructure for the WEF will be subject to a separate Basic Assessment (BA) Process as contemplated in terms of regulation 19 and 20 of the EIA Regulations, 2014, which will be undertaken in parallel to the EIA Phase of the process.

Specialist studies have been commissioned to assess and verify the proposed development under the new Gazetted specialist protocols[1].

1.1 SCOPE AND OBJECTIVES

This Visual Impact Assessment (VIA) is being undertaken as part of the EIA process. The aim of the VIA is to identify potential visual issues associated with the development of the proposed WEF as well as to determine the potential extent of visual impacts. This will be achieved by determining the character of the visual environment and identifying areas of potential visual sensitivity that may be subject to visual impacts. The visual assessment focuses on the potentially sensitive visual receptor locations and provides an assessment of the magnitude and significance of the visual impacts associated with the WEF.

1.1 SPECIALIST CREDENTIALS

This VIA was undertaken by Kerry Schwartz, a GIS specialist with more than 25 years' experience in the application of GIS technology in various environmental, regional planning and infrastructural projects. Kerry's GIS and spatial analysis skills have been extensively utilised in projects throughout South Africa and in other African countries. Kerry has also undertaken many VIAs in recent years and the relevant VIA project experience is listed in the table below.

A Curriculum Vitae and a signed specialist statement of independence are included in Appendix A of this specialist assessment.

Table 1: Relevant Project Experience

Visual Specialist	SLR Consulting – Kerry Schwartz
Contact Details	klschwartz@slrconsulting.com
Qualifications	BA (Geography), University of Leeds 1982

[1] Formally gazetted on 20 March 2020 (GN No. 320)

VIA Expertise	• VIAs (EIAs) for the proposed Koup 1 and Koup 2 WEFs and associated Grid Connection Infrastructure, near Beaufort West, Western Cape Province. • VIA (EIA) for the proposed Oya Energy Facility near Matjiesfontein, Western Cape Province; • VIA (BA) for the proposed construction of 132kV power lines to serve the authorised Loeriesfontein 3 PV Solar Energy Facility near Loeriesfontein, Northern Cape Province; • VIA (BA) for the proposed construction of the Oya 132kV power line near Matjiesfontein, Northern and Western Cape Provinces; • VIAs (BA) for the proposed Gromis WEF and associated Grid Connection Infrastructure, near Komaggas, Northern Cape Province. • VIAs (BA) for the proposed Komas WEF and associated Grid Connection Infrastructure, near Komaggas, Northern Cape Province. • VIAs (Scoping and Impact Phase) for the proposed Mooi Plaats, Wonderheuvel and Paarde Valley solar PV plants near Noupoort in the Northern and Eastern Cape Provinces. • VIAs (Scoping and Impact Phase) for the proposed Sendawo 1, 2 and 3 solar PV energy facilities near Vryburg, North West Province. • VIAs (Scoping and Impact Phase) for the proposed Tlisitseng 1 and 2 solar PV energy facilities near Lichtenburg, North West Province. • VIA for the proposed Nokukhanya 75MW Solar PV Power Plant near Dennilton, Limpopo Province. • VIAs (Scoping and Impact Phase) for the proposed Helena 1, 2 and 3 75MW Solar PV Energy Facilities near Copperton, Northern Cape Province. • VIA (EIA) for the proposed Paulputs WEF near Pofadder in the Northern Cape Province. • VIA (EIA) for the proposed development of the Rondekop WEF near Sutherland in the Northern Cape Province. • VIA (BA) for the proposed development of the Tooverberg WEF near Touws Rivier in the Western Cape Province. • VIA (BA) for the proposed development of the Kudusberg WEF near Sutherland, Northern and Western Cape Provinces. • VIA (Scoping and Impact Phase) for the proposed development of the Kuruman Wind Energy Facility near Kuruman, Northern Cape Province. • VIA (Scoping and Impact Phase) for the proposed development of the Phezukomoya Wind Energy Facility near Noupoort, Northern Cape Province. • VIA (Scoping and Impact Phase) for the proposed development of the San Kraal Wind Energy Facility near Noupoort, Northern Cape Province. • VIAs (Scoping and Impact Phase) for the proposed Graskoppies Wind Farm near Loeriesfontein, Northern Cape Province. • VIAs (Scoping and Impact Phase) for the proposed Hartebeest Leegte Wind Farm near Loeriesfontein, Northern Cape Province. • VIAs (Scoping and Impact Phase) for the proposed Ithemba Wind Farm near Loeriesfontein, Northern Cape Province. • VIAs (Scoping and Impact Phase) for the proposed Xha! Boom Wind Farm near Loeriesfontein, Northern Cape Province

1.2 ASSESSMENT METHODOLOGY

This VIA is based on a combination of desktop-level assessment supported by field-based observation.

1.2.1 Physical landscape characteristics

Physical landscape characteristics such as topography, vegetation and land use are important factors influencing the visual character and visual sensitivity of the study area. Baseline information about the physical characteristics of the study area was initially sourced from spatial databases provided by National Geo-Spatial Information (NGI), the South African National Biodiversity Institute (SANBI) and the South African National Land Cover Dataset (Geoterraimage – 2020). The characteristics identified via desktop means were later verified during the site visit.

1.2.2 Identification of sensitive receptors

Visual receptor locations and routes that are sensitive and/or potentially sensitive to the visual intrusion of the proposed development were identified and assessed in order to determine the impact of the proposed development on these receptor locations.

1.2.3 Fieldwork and photographic review

A three (3) day site visit was undertaken between the 3rd and the 5th of October 2022 (early summer). The purpose of the site visit was to:

- verify the landscape characteristics identified via desktop means;
- conduct a photographic survey of the study area;
- verify, where possible, the sensitivity of visual receptor locations identified via desktop means;
- eliminate receptor locations that are unlikely to be influenced by the proposed development;
- identify any additional visually sensitive receptor locations within the study area; and
- inform the impact rating assessment of visually sensitive receptor locations (where possible).

1.2.4 Visual / Landscape Sensitivity

GIS technology was used to identify any specific areas of potential visual sensitivity within the Ezelsjacht WEF development site. These would be areas where the placement of wind turbines or the establishment of a new power line would result in the greatest probability of visual impacts on potentially sensitive visual receptors.

In addition, the National Environmental Screening Tool[2] was examined to determine any relative landscape sensitivity in respect of the proposed development.

1.2.5 Impact Assessment

For the purposes of the Scoping Phase report, a broad the assessment of potential visual issues / impacts resulting from the proposed Ezelsjacht WEF will be undertaken and possible mitigation measures will be provided.

A full assessment of impacts and rating matrix for the proposed development will be presented in the EIA phase VIA.

[2] https://screening. environment.gov.za/screeningtool/

1.2.6 Consultation with I&APs

Continuous consultation with Interested and Affected Parties (I&APs) undertaken during the public participation process will be used (where available) to help establish how the proposed development will be perceived by the various receptor locations and the degree to which the impact will be regarded as negative. Although I&APs have not yet provided any feedback in this regard, the EIA phase report will be updated to include relevant information as and when it becomes available.

1.3 SOURCES OF INFORMATION

The main sources of information utilised for this VIA included:

- Project description for the proposed development provided by Mainstream;
- Elevation data from 25m Digital Elevation model (DEM) from the NGI;
- 1:50 000 topographical maps of South Africa from the NGI;
- Land cover and land use data extracted from the 2020 South African National Land-Cover Dataset provided by GEOTERRAIMAGE;
- Vegetation classification data extracted from the South African National Biodiversity Institute's (SANBI's) VEGMAP 2018 dataset;
- Google Earth Satellite imagery 2021;
- South African Renewable Energy EIA Application Database from Department of Environmental Affairs (incremental release Quarter 3 2021);
- The National Web-Based Environmental Screening Tool, Department of Forestry, Fisheries and Environment (DFFE).

2. ASSUMPTIONS AND LIMITATIONS

- Wind turbines are very large structures and could impact on visual receptors that are located relatively far away, particularly in areas where the terrain is very flat. Given the nature of the receiving environment and the height of the proposed wind turbines, the study area or visual assessment zone is assumed to encompass an area of 10km from the proposed WEF – i.e. an area of 10km from the boundary of the WEF application site. The application of the 10km limit on the visual assessment zone relates to the fact that visual impacts decrease exponentially over distance. Thus although the WEF may still be visible beyond 10km, the degree of visual impact would diminish considerably. As such, the need to assess the impact on potential receptors beyond this distance would not be warranted.
- The identification of visual receptors involved a combination of desktop assessment as well as field-based observation. Initially Google Earth imagery was used to identify potential receptors within the study area. Where possible, these receptor locations were verified and assessed during a site visit which was undertaken between the 3rd and the 5th of October 2022. Due to the extent of the study area however, and the fact that many of the identified receptors are farmhouses on private property, it was not possible to visit or verify every potentially sensitive visual receptor location. As such, a number of broad assumptions have been made in terms of the likely sensitivity of the receptors to the proposed development. Sensitive receptor locations typically include sites such as tourism or recreational facilities and scenic locations within natural settings which are likely to be adversely affected by the visual intrusion of the proposed development. It should be noted however that not all receptor locations would necessarily perceive the proposed development in a negative

way. This is usually dependent on the use of the facility, the economic dependency of the occupants on the scenic quality of views from the facility and on people's perceptions of the value of "Green Energy". Thus the presence of a receptor in an area potentially affected by the proposed development does not necessarily mean that any visual impact will be experienced.

- As stated, the exact status of all the receptors could not be verified during the field investigation and as such the receptor impact rating was largely undertaken via desktop means.
- Receptors that were assumed to be farmsteads were still regarded as being potentially sensitive to the visual impacts associated with the proposed development and were thus assessed as part of the VIA.
- Where receptors have been identified within the WEF project area, it has been assumed that the land owners or residents at these locations support the proposed renewable energy development and would not view the project in a negative light.
- Based on the project description provided by Mainstream, all analysis for this VIA is based on a worst-case scenario where turbine heights are assumed to be approx. 300 m at the blade tip. Substation, Battery Energy Storage (BESS) facilities and office building heights are assumed to be less than 25m in height.
- Due to the varying scales and sources of information; maps may have minor inaccuracies. Terrain data for this area, derived from the National Geo-Spatial Information (NGI)'s 25m Digital Elevation Model (DEM), is fairly coarse and somewhat inconsistent and as such, localised topographic variations in the landscape may not be reflected on the DEM used to generate the viewshed(s) and visibility analysis conducted in respect of the proposed development.
- In addition, the viewshed / visibility analysis does not take into account any existing vegetation cover or built infrastructure which may screen views of the proposed development. This analysis should therefore be seen as a conceptual representation or a worst-case scenario.
- No feedback regarding the visual environment has been received from the public participation process to date. Any feedback from the public during the review period of the Draft Scoping Report (DSR) for the WEF will however be incorporated into further drafts of this report, if relevant.
- At the time of undertaking the visual study no information was available regarding the type and intensity of lighting that will be required for the proposed WEF and therefore the potential impact of lighting at night has not been assessed at a detailed level. However, lighting requirements are relatively similar for all WEFs and as such, general measures to mitigate the impact of additional light sources on the ambiance of the nightscape have been provided.
- At the time of undertaking the visual study no *detailed* information was available regarding the likely turbine positions and the design and layout of services and infrastructure associated with the proposed development. The potential visual impact of the typical infrastructure associated with a wind farm has therefore been assessed.
- In the light of the fact that the renewable energy industry is still relatively new in South Africa, this report draws on international literature and web material to describe the generic impacts associated with WEFs.
- Photomontages will be compiled in respect of the proposed wind turbine layout in the EIA phase of the project. A range of locations has been selected for modelling purposes to provide an indication of the possible impacts from different areas within the study area. It should be noted that these photomontages are specific to the location, and that even sites in close proximity to one another may be affected in different ways by the proposed WEF development. The visual models represent a visual environment that assumes that all vegetation cleared during construction will be restored

to its current state after the construction phase. This is however an improbable scenario as some vegetation cover may be permanently removed which may reduce the accuracy of the models generated.

- Although the on-site infrastructure associated with the WEF will not be included in the models, this is not considered to be a major limitation as the visual impact of associated infrastructure would be minor when considering the scale of the infrastructural elements in relation to wind turbines.
- The assessment of the potential cumulative impacts of other renewable energy developments on the existing landscape character and on the identified sensitive receptors will be provided in the EIA Phase VIA.
- It should be noted that the fieldwork for this study was undertaken in early October 2022, during early summer. However, the study area is typically characterised by low levels of rainfall all year round and therefore the season is not expected to affect the significance of the potential visual impact of the proposed Ezelsjacht WEF development.
- The overall weather conditions in the study area have certain visual implications and are expected to affect the visual impact of the proposed development to some degree. Clear weather conditions tend to prevail throughout the year in the study area. In these clear conditions, the wind turbines would present a greater contrast with the surrounding environment than they would on an overcast day. Clear and overcast weather conditions were experienced during the field investigation and this factor was taken into consideration when undertaking this VIA.

3. TECHNICAL DESCRIPTION

3.1 PROJECT LOCATION

The proposed WEF is located approximately 14km south-east of De Doorns in the Western Cape Province and is within the Cape Winelands District Municipality (**Figure 1**), extending across the southern boundary of the Breede Valley Local Municipality into the Langeberg Local Municipality.

The WEF application site as shown on the locality map below (**Figure 2**) is approximately 3600 hectares (ha) in extent and incorporates the following farm portions:

- Portion 1 of the Farm No 7;
- Remainder of the Farm Zout Riviers Berg No 170;
- Remainder of the Farm Ezelsjacht No 171 and
- Southern portion of Portion 6 of the Farm Ratelbosch No 149.

A smaller buildable area will however be identified as a result of the exclusion of sensitive areas as determined through various specialist studies being conducted as part of the EIA process.

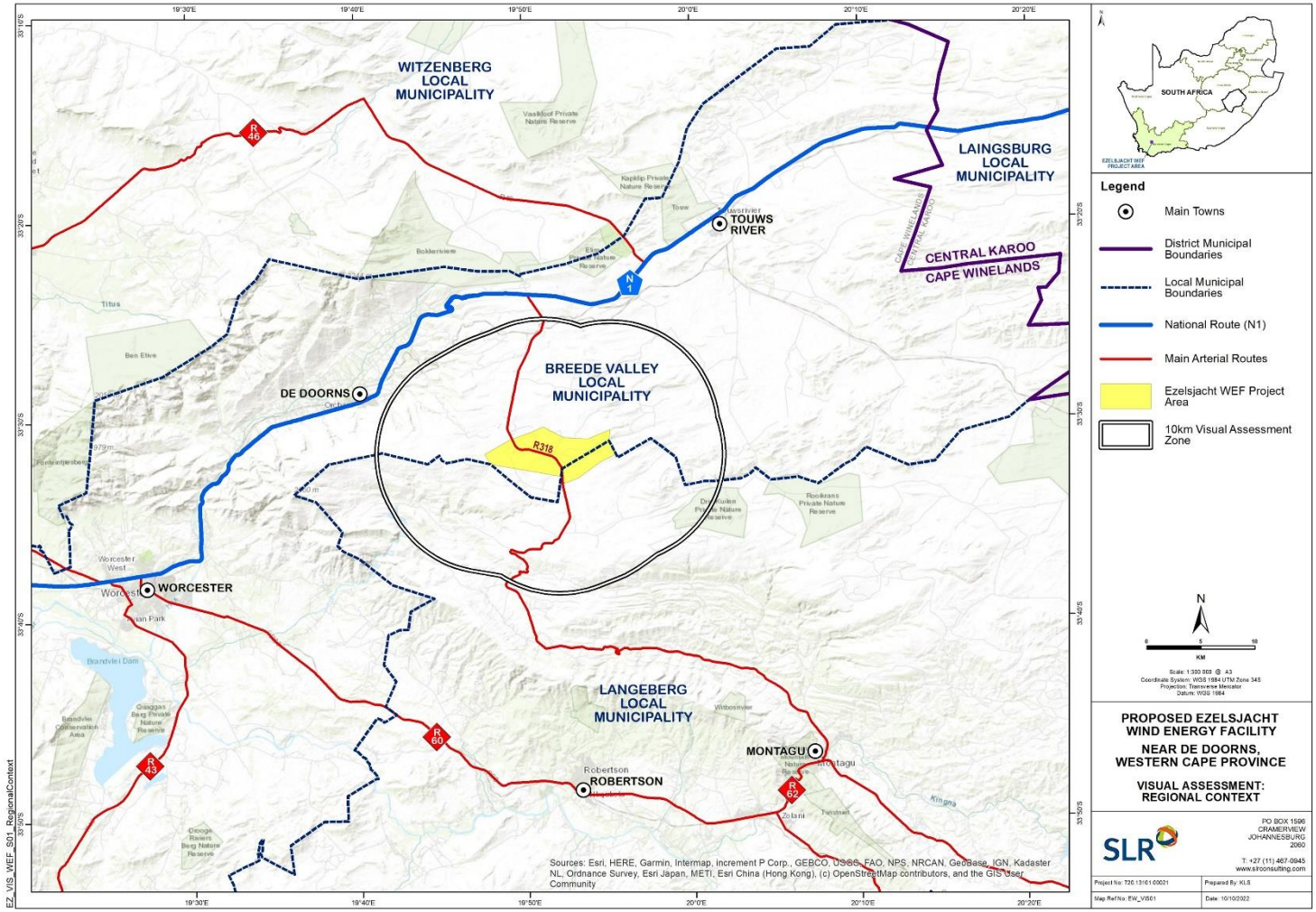

Figure 1: Ezelsjacht WEF project area in the regional context

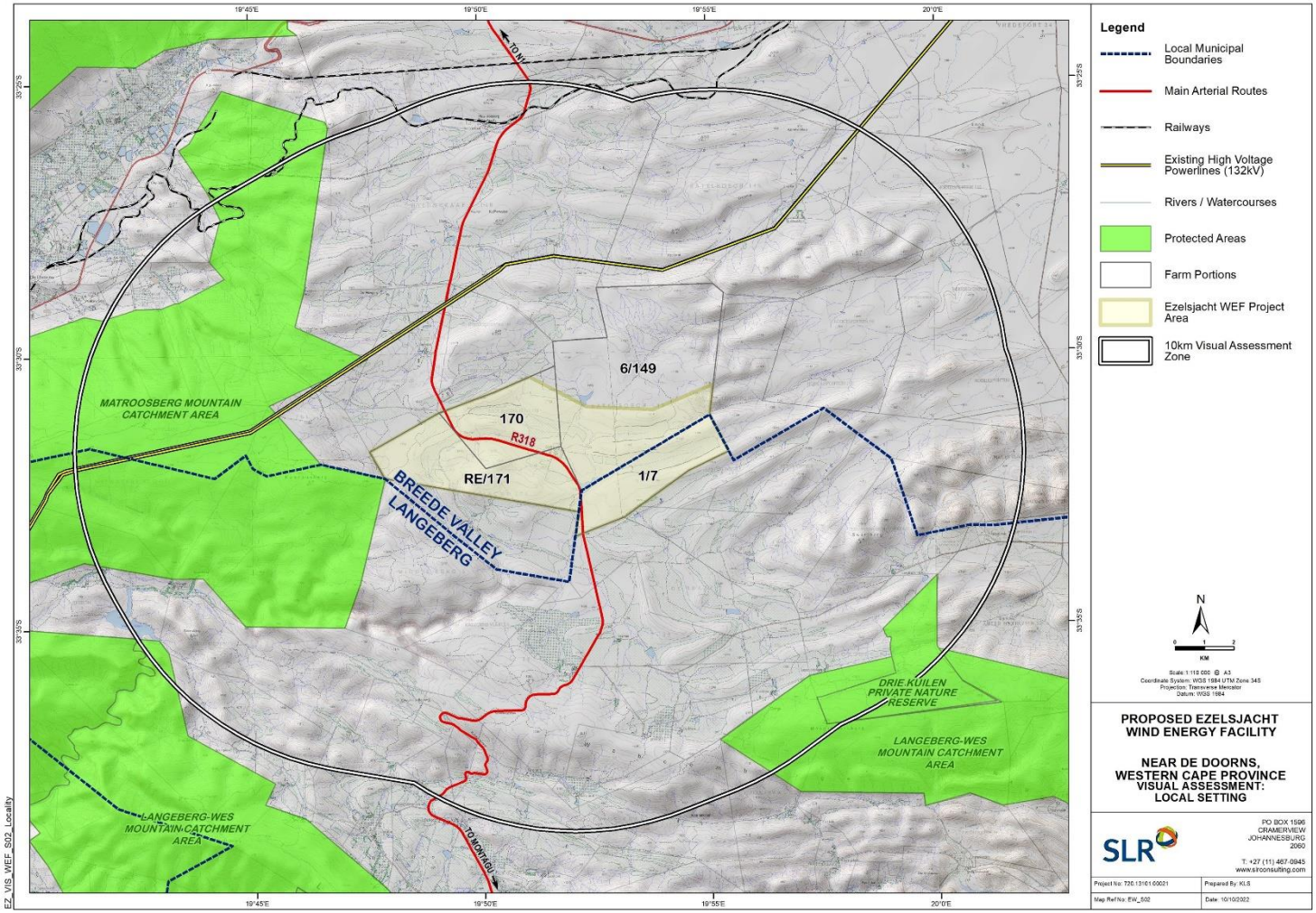

Figure 2: Ezelsjacht WEF project area site locality

3.2 PROJECT TECHNICAL DETAILS

At this stage it is proposed that the WEF project will include:

- Up to a maximum of 35 wind turbine generators (WTG), with a hub height and rotor diameter of approximately 200 m respectively (**Figure 3**).
- Internal and/or access roads (with a width of up to 12 m during construction),
- Construction laydown area/camp, and
  Operation & Maintenance (O&M) Building and Independent Power Producer (IPP) 33/132kV portion of the onsite substation.

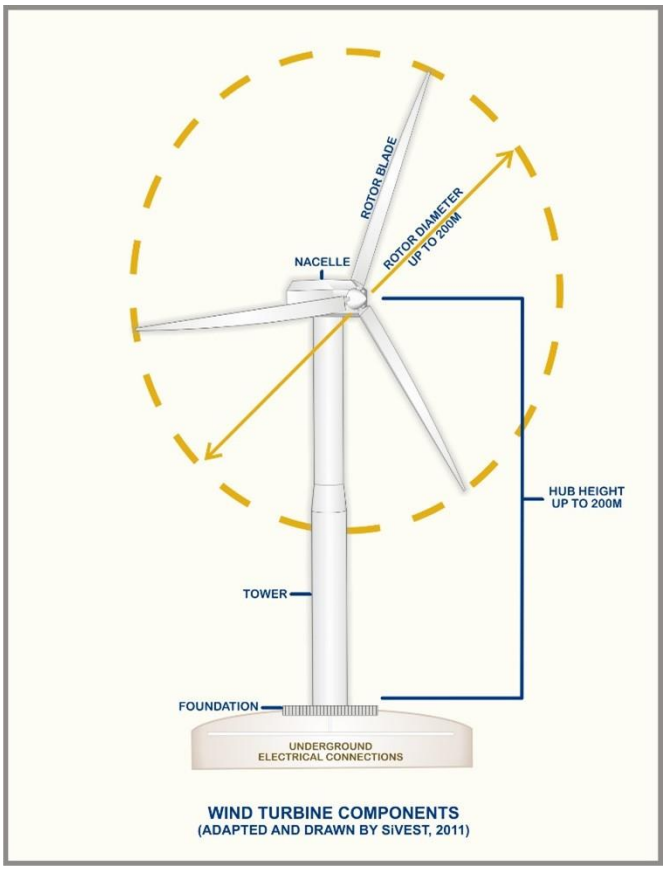

Figure 3: Typical components of a wind turbine

3.2.1 EIA Layout Alternatives

No current layout alternatives are being considered for the WEF as the location of the wind turbines will be determined based on identified sensitive and/or no-go areas. The findings of the respective specialist studies will be used to further inform the location of the wind turbines. All identified sensitive and/or no-go areas (including their respective buffers) will be avoided accordingly, as required.

However, as part of the proposed Scoping & EIA process for the WEF project, various site area / location alternatives (with sizes to be confirmed) may be assessed for the associated infrastructure such as the construction laydown area, O&M Buildings, IPP Substations and BESS. However, no site alternatives have yet been assessed.

4. LEGAL REQUIREMENTS AND GUIDELINES

Key legal requirements pertaining to the proposed WEF development are outlined below.

In terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), (NEMA) and the EIA Regulations 2014 (as amended), the proposed development includes listed activities which require a full Environmental Impact Assessment (EIA) to be undertaken. As part of the EIA process, the need for a VIA to be undertaken has been identified in order to assess the visual impact of the proposed WEF.

There is currently no legislation within South Africa that explicitly pertains to the assessment of visual impacts, however in addition to NEMA the following legislation has relevance to the protection of scenic resources:

- National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)
- National Heritage Resources Act, 1999 (Act No. 25 of 1999)

Based on these Acts protected or conservation areas and sites or routes with cultural or symbolic value have been taken into consideration when identifying sensitive and potentially sensitive receptor locations and rating the sensitivity of the study area.

Accordingly, this specialist visual assessment has been undertaken in compliance with Appendix 6 of 2014 NEMA EIA Regulations (as amended).

5. FACTORS INFLUENCING VISUAL IMPACT

The degree of visibility of an object informs the level and intensity of the visual impact, but other factors also influence the nature of the visual impact. The landscape and aesthetic context of the environment in which the object is placed, as well as the perception of the viewer are also important factors.

5.1 VISUAL ENVIRONMENT

WEF developments are not features of the natural environment but are rather a representation of human (anthropogenic) alteration. As such, these developments are likely to be perceived as visually intrusive when placed in largely undeveloped landscapes that have a natural scenic quality and where tourism activities are practised that are dependent on the enjoyment of, or exposure to, the scenic or aesthetic character of the area. Residents and visitors to these areas could perceive the development to be highly incongruous in this context and may regard the development as an unwelcome intrusion which degrades the natural character and scenic beauty of the area, and which could potentially even compromise the practising of tourism activities in the area. This is particularly important in this instance as there are formal protected areas and some leisure / nature-based tourism facilities in the broader area, thus suggesting that the area has some tourism significance.

It should however be noted that the experience of the viewer is highly subjective and there are those who may perceive wind turbines, for example, as striking elements in an otherwise barren landscape.

The presence of other anthropogenic features associated with the built environment may not only obstruct views but also influence the perception of whether a development is a visual impact. In industrial areas for example, where other infrastructure and built form already exists, the visual environment could be considered to be 'degraded' and thus the introduction of a WEF into this setting may be considered to be less visually intrusive than if there was no existing built infrastructure visible.

5.2 SUBJECTIVE EXPERIENCE OF THE VIEWER

The perception of the viewer / receptor toward an impact is highly subjective and involves 'value judgements' on behalf of the receptor. The viewer's perception is usually dependent on the age, gender, activity preferences, time spent within the landscape and traditions of the viewer (Barthwal, 2002). Thus, certain receptors may not consider a WEF and the associated grid connection infrastructure to be a negative visual impact as this type of development is often associated with employment creation, social upliftment and the general growth and progression of an area and could even have positive connotations.

5.3 TYPE OF VISUAL RECEPTOR

Visual impacts can be experienced by different types of receptors, including people living or working, or driving along roads within the viewshed of the proposed development. The receptor type in turn affects the nature of the typical 'view', with views being permanent in the case of a residence or other place of human habitation, or transient in the case of vehicles moving along a road. The nature of the view experienced affects the intensity of the visual impact experienced.

It is important to note that visual impacts are only experienced when there are receptors present to experience this impact. Thus, where there are no human receptors or viewers present, there are not likely to be any visual impacts experienced.

5.4 VIEWING DISTANCE

Viewing distance is a critical factor in the experiencing of visual impacts, as beyond a certain distance, even large developments tend to be much less visible, and difficult to differentiate from the surrounding landscape. The visibility of an object is likely to decrease exponentially as one moves away from the source of impact, with the impact at 1 000m being considerably less than the impact at a distance of 500m.

The proposed wind turbines, at a maximum height of 300m, would be the most prominent elements of the WEF facility development. Visual impacts resulting from wind turbines would be greatest within a 1km to 2km radius, and although turbines may still be visible beyond 10km, the degree of visual impact would diminish considerably at this distance (**Figure 4**).

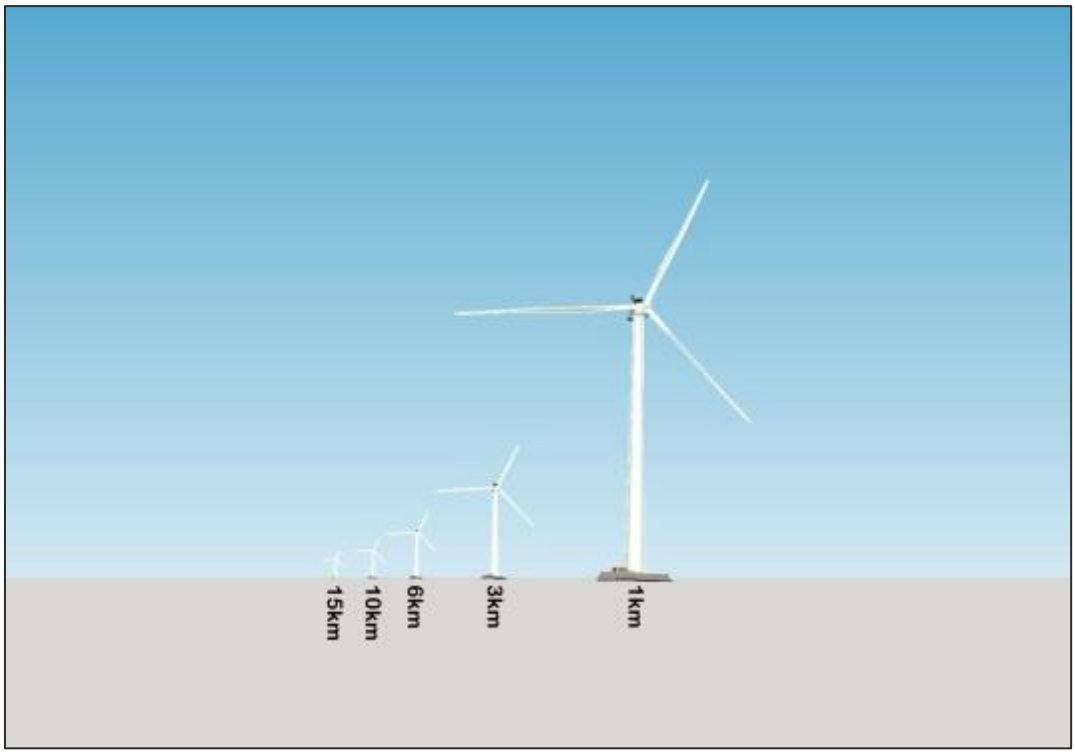

Figure 4: Conceptual representation of the diminishing visibility of a wind turbine over distance.

6. VISUAL CHARACTER AND SENSITIVITY OF THE STUDY AREA

Defining the visual character of an area is an important part of assessing visual impacts as this establishes the visual baseline or existing visual environment in which the development would be constructed. The visual impact of a development is measured by establishing the degree to which the development would contrast with, or conform to, the visual character of the surrounding area. The inherent sensitivity of the area to visual impacts or visual sensitivity is thereafter determined, based on the visual character, the economic importance of the scenic quality of the area, inherent cultural value of the area and the presence of visual receptors.

Physical and land use related characteristics, as outlined below, are important factors contributing to the visual character of an area.

6.1 PHYSICAL AND LAND USE CHARACTERISTICS

6.1.1 Topography

The site proposed for the Ezelsjacht WEF development lies to the north of the Langeberg Mountain Range at an average altitude of approximately 1200 meters above mean sea level (mamsl). The area is largely characterised by rolling hills and undulating plains (**Figure 5**). Areas of greater relief occur in the west and south-east of the study area where the Kwadousberg and Waboomberg Mountain Ranges extend into the study area (**Figure 6**), and also to the south where the Koo River valley forms a distinctive feature in the landscape. (**Figure 7**). These areas are characterised by incised valleys with steep slopes.

Maps showing the topography and slopes within and in the immediate vicinity of the WEF area are provided in **Figure 8**and **Figure 9.**

Figure 5: Typical terrain in the Ezelsjacht WEF study area including undulating plains interspersed with low ridges.

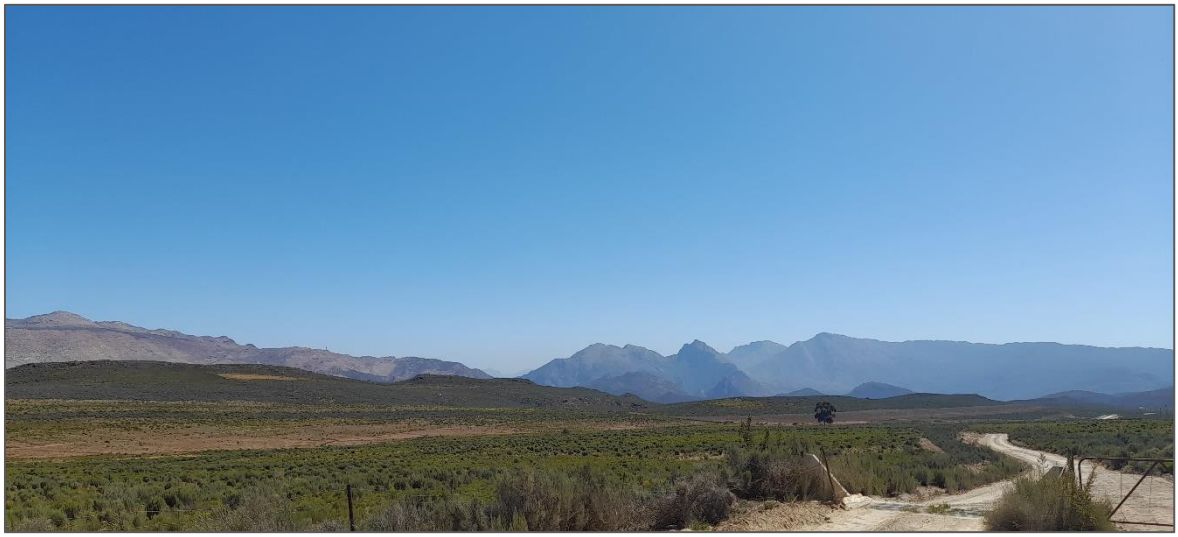

Figure 6: View east from the R318 main Road towards the Waboomberg Mountain Range.

Figure 7: View of the Koo River Valley from the R318 Main Road near the southern boundary of the study area

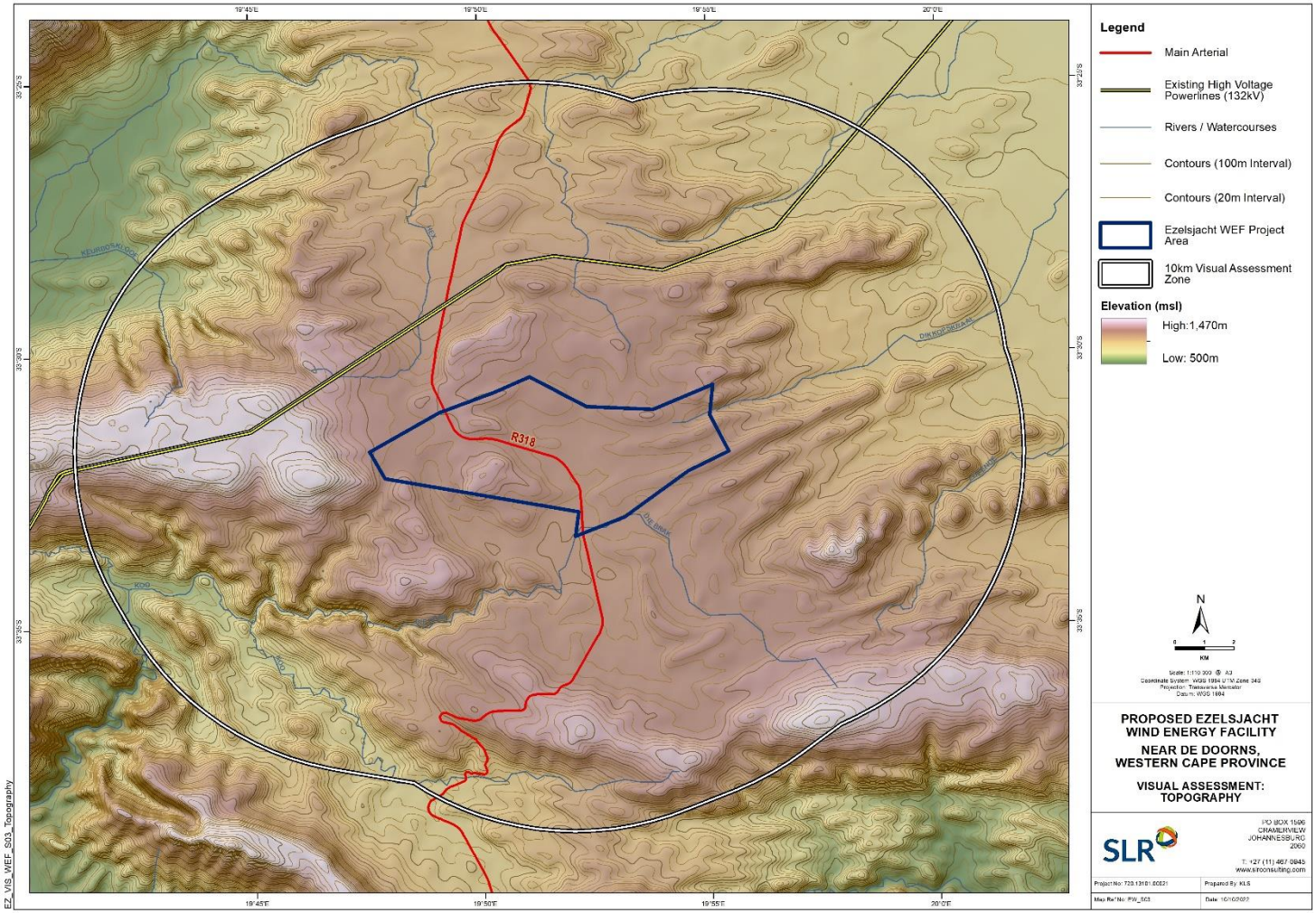

Figure 8: Topography of the study area

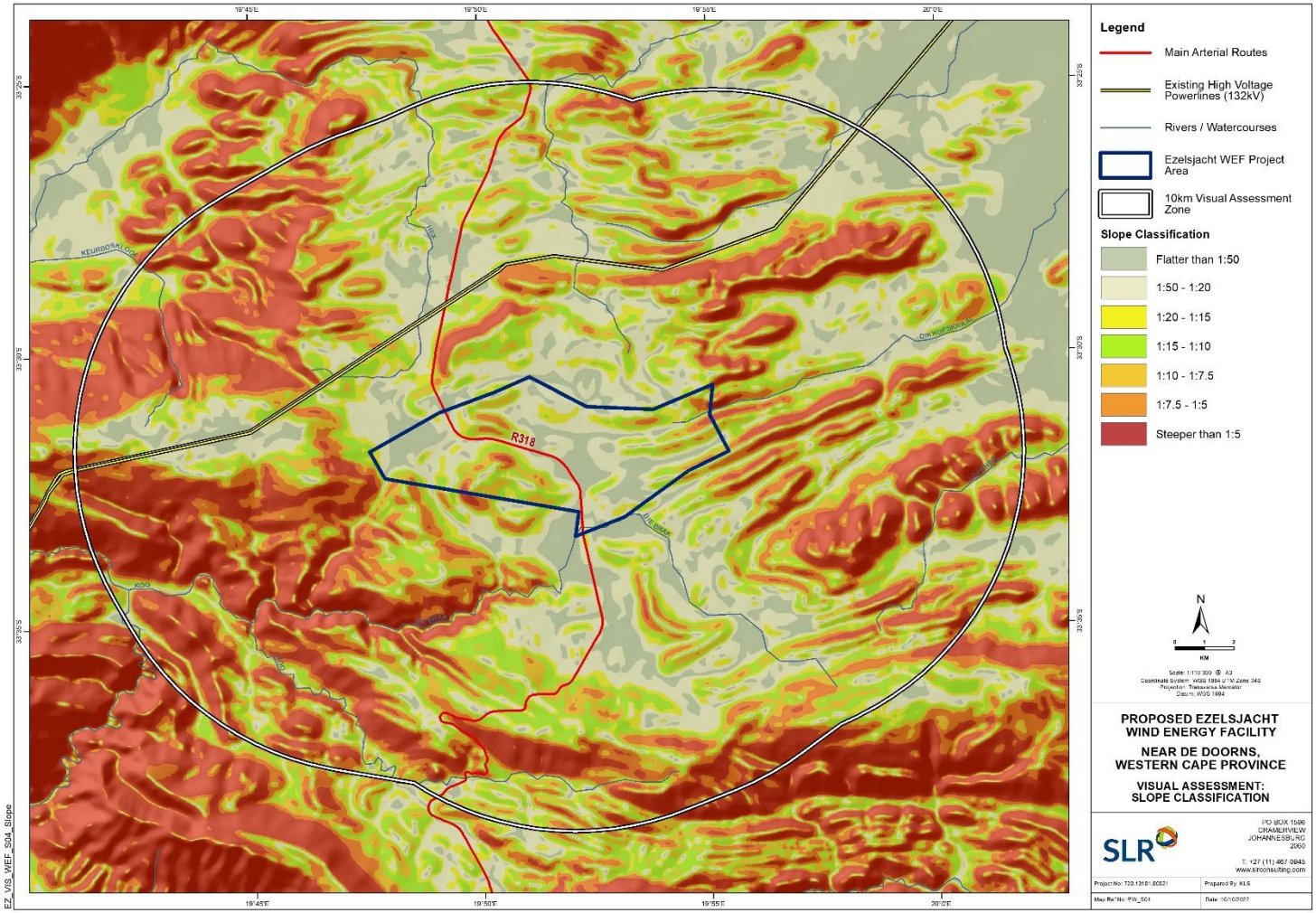

Figure 9: Slope classification within the study area.

Visual Implications

Areas of relatively flatter relief, mostly occurring through the central portion the study are, characterised by wide ranging vistas, although in general views are constrained by the rolling hills and the Kwadousberg Mountain Range which enclose the visual envelope

Bearing in mind that wind turbines are very large structures (potentially up to 300m in height including the rotor blades), these could be visible from a considerable area around the site. However, topographic shielding provided by the rolling hills across the study area would reduce the visibility of the turbines from many of the locally occurring receptor locations.

GIS technology was used to undertake a preliminary visibility analysis for the proposed WEF project area. In the absence of a turbine layout, a worst-case scenario was assumed when undertaking the analysis. This scenario assumed that turbines, with a maximum height of 300m (maximum height at blade tip) would be located across the entire site. The resulting viewshed, as shown in **Figure 10** indicates that the blade tips of wind turbines positioned on the application site would be visible from many parts of the study area. However, the hilly terrain has resulted in significant portions of the study area being outside the combined viewshed for the proposed WEF.

It should be noted that the visibility analysis is based entirely on topography and does not consider any existing vegetation cover or built infrastructure which may screen views of the proposed development. In addition, detailed topographic data was not available for the broader study area and as such the visibility analysis does not take into account any localised topographic variations which may constrain views. This analysis should therefore be seen as a conceptual representation or a worst-case scenario.

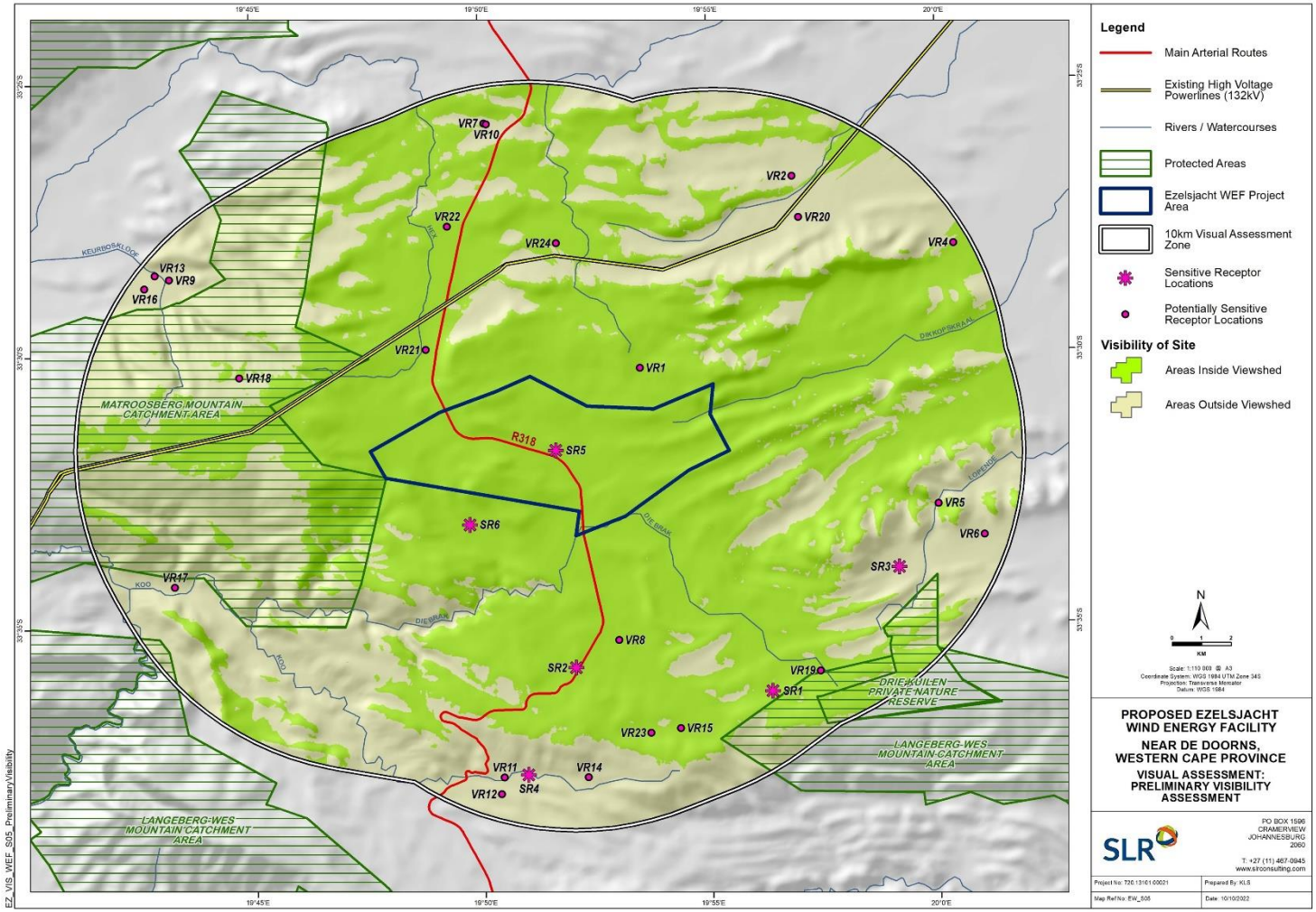

Figure 10: Potential visibility of wind turbines

6.1.2 Vegetation

According to Mucina and Rutherford (2006), the most extensive vegetation type occurring in the study area is Matjiesfontein Shale Renosterveld (**Figure 11**) which is characterised by low, open to medium dense shrubland (**Figure 12**). The other vegetation types in the study area all fall within the Fynbos Biome and species present are typically short and sparse

Other vegetation cover includes exotic tree species and other typical garden vegetation established around farmsteads (**Figure 13**).

Much of the study area however is still characterised by natural low shrubland with transformation limited to a few isolated areas where pastoral activities such as livestock rearing and/or cultivation are taking place.

Visual Implications

Vegetation cover across the study area is predominantly short and sparse and thus will not provide any visual screening. In some instances, however, tall exotic trees planted around farmhouses will restrict views from receptor locations.

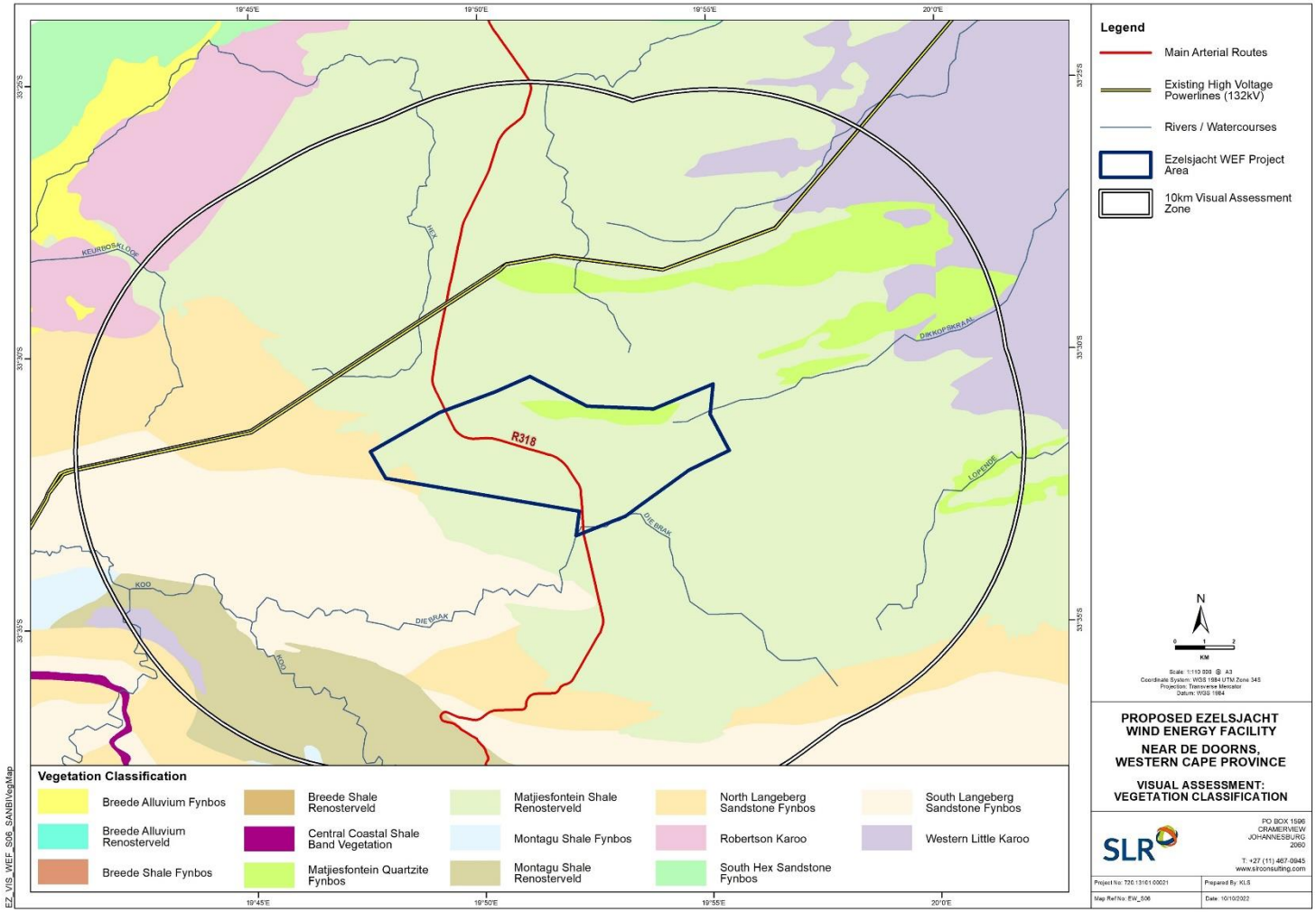

Figure 11: Vegetation classification in the Study Area.

Figure 12: Typical vegetation cover in the study area.

Figure 13: Tall tree species and other typical garden vegetation established around farmsteads

6.1.3 Land Use

According to the South African National Land Cover dataset (Geoterraimage 2018), much of the visual assessment area is classified as shrubland interspersed with patched of "Bare / Barren Land". While some of these bare / barren areas are representative of transformation due to human activity, in most cases these patches of land are merely undisturbed areas with very sparse vegetation cover. Small tracts of grassland occur in the south-west, mainly near watercourses (**Figure 14**).

Agricultural activity in the area is restricted by the arid nature of the local climate and areas of cultivation are largely concentrated in the flatter areas in the centre of the study area, with centre pivot irrigation being fairly common (**Figure 15**). As such, the natural vegetation has been retained across much of the study area. Livestock (sheep) farming is also fairly common (**Figure 16**) although farm properties are quite large and livestock densities are relatively. Thus, the area has a very low density of rural settlement, with relatively few isolated farmsteads in evidence. Built form in much of the study area is limited to isolated farmsteads,

including farm worker's dwellings and ancillary farm buildings, gravel access roads, telephone lines, fences, and windmills (**Figure 17**).

Further human influence is visible in the area in the form of the R318 main road which traverses the study area in a north to south direction (**Figure 18**). In addition, existing, electrical infrastructure, including 132kV powerlines (**Figure 19**) are also significant man-made features in an otherwise undeveloped landscape. In addition, the Touws River Solar Energy Facility (SEF) extends into a small portion of land on the northern boundary of the study area, thus forming a relatively isolated patch of transformed landscape.

The closest built-up area is the town of De Doorns which is situated approximately 14km west of the Ezelsjacht WEF application site. The town is outside the study area for this project and is thus not expected to influence the visual character of the study area.

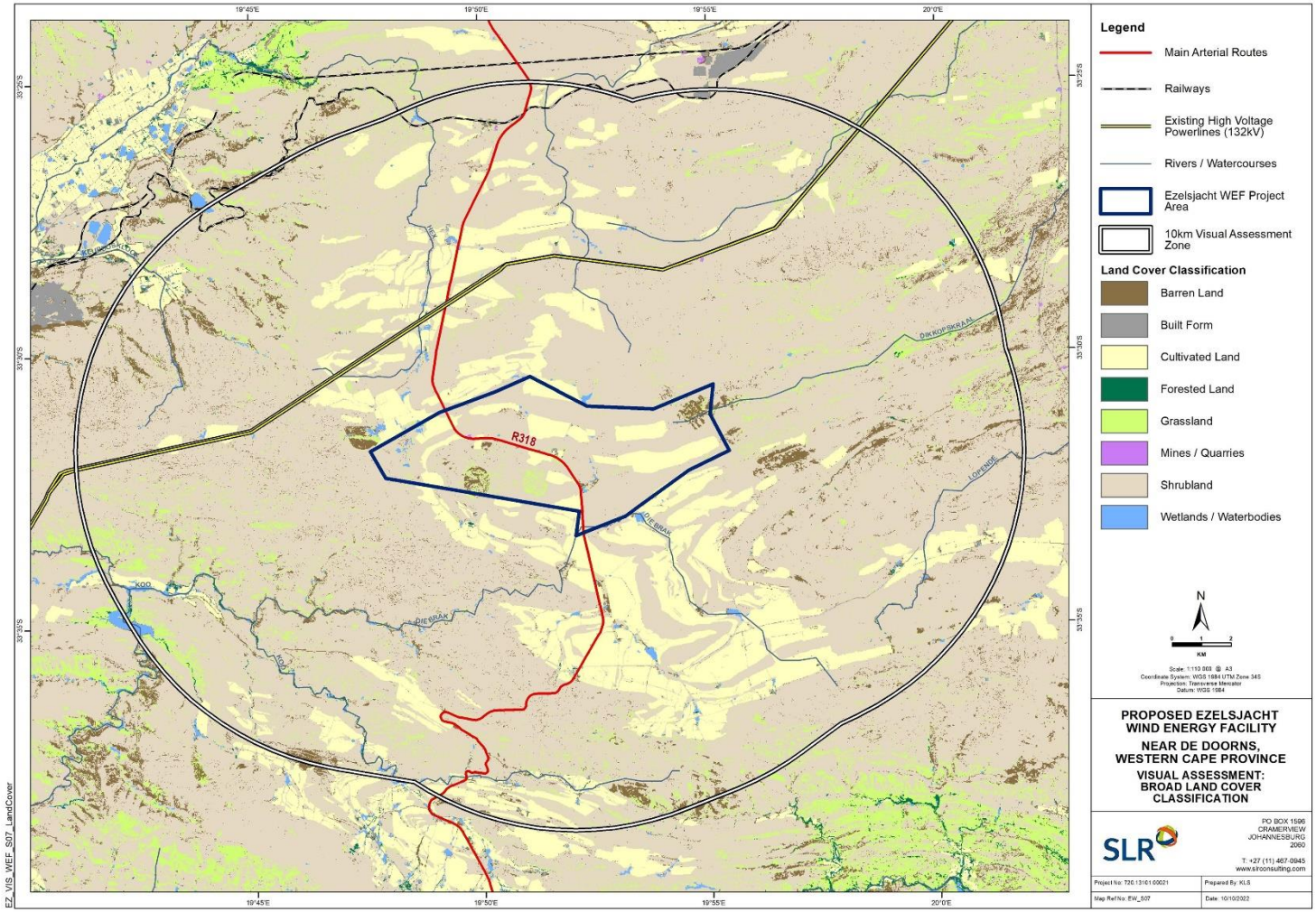

Figure 14: Land cover classification in the study area.

Figure 15: Cultivated land in the study area

Figure 16: Sheep grazing to the south of the Ezelsjacht WEF project area.

Figure 17: Typical example of farm infrastructure in the study area.

Figure 18: View northwards along the R318 Main Road which traverses the Ezelsjacht WEF study area.

Figure 19: 132kV powerlines traversing the norther sector of the study area as seen from the R318 main road (*Source: Google Earth 2022*).

Visual Implications

Sparse human habitation and the predominance of natural vegetation cover across much of the study area would give the viewer the general impression of a largely natural setting with some pastoral elements. In addition, there are no towns or settlements in the study area and thus, there are very low levels of human transformation and visual degradation across much of the study area.

The short, scrubby, or grassy vegetation that occurs over the entire study area offers no visual screening in itself, and thus terrain / topography is the most important factor in limiting vistas. Exceptions to this situation occur at some local farmsteads where trees and shrubs have been established around the farmstead, providing some screening from the surrounding areas.

The influence of the level of human transformation on the visual character of the area is described in more detail below.

6.2 VISUAL CHARACTER

The physical and land use-related characteristics of the study area as described above contribute to its overall visual character. Visual character largely depends on the level of change or transformation from a natural baseline in which there is little evidence of human transformation of the landscape. Varying degrees of human transformation of a landscape would engender differing visual characteristics to that landscape, with a highly modified urban or industrial landscape being at the opposite end of the scale to a largely natural undisturbed landscape. Visual character is also influenced by the presence of built infrastructure including buildings, roads and other objects such as telephone or electrical infrastructure. The visual character of an area largely determines the sense of place relevant to the area. This is the unique quality or character of a place, whether natural, rural or urban which results in a uniqueness, distinctiveness or strong identity.

The predominant land use in the area (sheep farming) has not transformed the natural landscape across much of the study area to any significant degree and there are no towns or built-up areas in the study area influencing the overall visual character. Thus, there are low levels of human transformation and visual degradation across a significant portion of the study area and the natural character has been retained.

There are however prominent anthropogenic elements in the study area however which include the R318 Main Road and 132kV powerlines. Other, less prominent elements present in the area include lower voltage power lines, telephone poles, windmills, gravel farm access roads and farm boundary fences. The presence of this infrastructure is an important factor in this context, as the introduction of the proposed WEF would result in less visual contrast where other anthropogenic elements are already present

The scenic quality of the landscape is also an important factor contributing to the visual character of an area or the inherent sense of place. Visual appeal is often associated with unique natural features or distinct variations in landform. As such, the largely natural landscapes which occur in the wider study area would increase the scenic appeal and visual interest in the area.

Cultural landscapes are becoming increasingly important concepts in terms of the preservation and management of rural and urban settings across the world. The concept of 'cultural landscape' is a way of looking at a place that focuses on the relationship between human activity and the biophysical environment (Breedlove, 2002). In this instance, the rural / pastoral landscape represents how the environment has shaped the predominant land use and economic activity practiced in the area, as well as the patterns of human habitation and interaction.

In light of this, it is important to assess whether the introduction of a WEF into the study area would be a degrading factor in the context of the prevailing character of the cultural landscape. Broadly speaking, it is anticipated that the proposed WEF will result in visual impacts on the cultural landscape of the broader area due to the fact that there are some tourism or nature-based facilities in the study area and that the elements of the WEF is expected to be visible from the R318 Main Road.

A more detailed assessment of the potential impacts of the proposed WEF on the cultural landscape will be included in the Heritage Impact Assessment (HIA) undertaken by Asha Consulting for the EIA Phase in respect of the proposed project.

6.3 VISUAL SENSITIVITY ANALYSIS AND VERIFICATION

Visual sensitivity can be defined as the inherent sensitivity of an area to potential visual impacts associated with a proposed development. It is based on the physical characteristics of the area (i.e. topography, landform and land cover), the spatial distribution of potential receptors, and the likely value judgements of these receptors towards a new development (Oberholzer: 2005). A viewer's perception is usually based on the perceived aesthetic appeal of an area and on the presence of economic activities (such as recreational or nature-based tourism) which may be based on this aesthetic appeal.

In order to assess the visual sensitivity of the area, a matrix has been developed based on the characteristics of the receiving environment which, according to the Guidelines for Involving Visual and Aesthetic Specialists in the EIA Processes, indicate that visibility and aesthetics are likely to be 'key issues' (Oberholzer: 2005).

Based on the criteria in the matrix (**Table 2**), the visual sensitivity of the area is classified according to the categories described below:

i. High - The introduction of a new development such as a WEF would be likely to be perceived negatively by receptors in this area; it would be considered to be a visual intrusion and may elicit opposition from these receptors.
ii. Moderate – Receptors are present, but due to the nature of the existing visual character of the area and likely value judgements of receptors, there would be limited negative perception towards the new development as a source of visual impact.
iii. Low - The introduction of a new development would not be perceived to be negative, there would be little opposition or negative perception towards it.

The table below outlines the factors used to rate the visual sensitivity of the study area. The ratings are specific to the visual context of the receiving environment within the study area.

Table 2: Environmental factors used to define visual sensitivity of the study area

FACTORS	DESCRIPTION	RATING									
		1	2	3	4	5	6	7	8	9	10
Pristine / natural / scenic character of the environment	Study area is largely natural with areas of scenic value and some pastoral elements.										
Presence of sensitive visual receptors	Sensitive receptors have been identified in the study area.										
Aesthetic sense of place / visual character	Visual character is typical of a rural / pastoral landscape.										
Irreplaceability / uniqueness / scarcity value	There are areas of scenic value within the study area.										
Cultural or symbolic meaning	Much of the area is typical of a rural / pastoral landscape.										
Protected / conservation areas in the study area	No protected or conservation areas were identified in the study area.										
Sites of special interest present in the study area	No sites of special interest were identified in the study area.										
Economic dependency on scenic quality	Tourism/leisure-based facilities in the area										
International / regional / local status of the environment	Study area is typical of rural / pastoral landscape										
**Scenic quality under threat / at risk of change	Introduction of a WEF will alter the visual character and sense of place. In addition, the development of other renewable energy facilities in the broader area as planned will introduce an increasingly industrial character, giving rise to significant cumulative impacts										

**Any rating above '5' for this specific aspect will trigger the need to undertake an assessment of cumulative visual impacts.

Low				Moderate					High
10	20	30	40	50	60	70	80	90	100

Based on the above factors, the total score for the study area is 61, which according to the scale above, would result in the area being rated as having a moderate visual sensitivity. It should be stressed however that the concept of visual sensitivity has been utilised indicatively to provide a broad-scale indication of whether the landscape is likely to be sensitive to visual impacts and is based on the physical characteristics of the study area, economic activities and land use that predominates. An important factor contributing to the visual sensitivity of an area is the presence, or absence of visual receptors that may value the aesthetic quality of the landscape and depend on it to produce revenue and create jobs.

In addition to three protected areas, six (6) sensitive receptor locations were identified in the study area, most of which are linked to leisure / nature-based tourism. Relatively few potentially sensitive receptors were however found to be present.

6.3.1 Specialist Sensitivity Assessment and verification

During the initial stages of the EIA, a site sensitivity assessment was undertaken to inform the site layout for the WEF. The aim of this exercise was to indicate any areas of the WEF application site which should be precluded from the development footprint. From a visual perspective, sensitive areas would be areas where the establishment of wind turbines would result in the greatest probability of visual impacts on sensitive or potentially sensitive visual receptors.

Using GIS-based visibility analysis, it was possible to determine that the tip of at least one turbine blade (i.e., at a maximum height of 300m) would be visible from many of the identified potentially sensitive receptors in the study area and as such, no areas on the site are significantly more visible than the remainder of the site. It should be noted however that the visual prominence of a very tall structure such as a wind turbine would be exacerbated if located on a ridge top or a relatively high lying plateau. As such, it is recommended that wind turbines should preferably not be located on the highest ridges and mountain tops within the WEF development area. While these ridges could be seen as areas of potentially higher visual sensitivity, the study area as a whole is rated as having a moderate visual sensitivity, and as such, the sensitivity rating would be reduced to “Medium-High”. Hence the ridges are not considered to be “no go areas”, but rather should be viewed as zones where turbine placement would be least preferred.

From a visual perspective, another concern is the direct visual impact of the turbines the existing residence located on the application site. Although the flicker-sensitive buffers applied in the DFFE Screening Tool are 1 km, it is believed that this is a bit excessive in this instance considering that the owners of the residence in question are assumed to be in favour of the WEF on their property. Accordingly, a 500m zone of potential visual sensitivity has been delineated around the residence. In addition, a 500m zone of potential visual sensitivity has been delineated on either side of the R318 Main Road. The limiting of turbine development within these zones would reduce the direct impact of the turbines on the occupants of the farmstead and also on passing motorists, especially those impacts related to shadow flicker (see Section 7.1.1 below).

In addition, a protected area, namely the Matroosberg Mountain Catchment Area lies on the western boundary of the Ezelsjacht WEF project area. Although no accommodation facilities associated with the Reserve were identified in this portion of the reserve, it is possible that this area is utilised for leisure-based tourism. Accordingly, a 300m zone of potential visual sensitivity has been delineated around the protected area.

It should be noted that at this stage, the zones of potential visual sensitivity are not considered "no go" areas, but rather should be viewed as zones where development should be limited. It should be stressed that these zones on the WEF development site apply to turbine development only. The visual impacts resulting from the associated on-site infrastructure are considered to have far less significance when viewed in the context of multiple wind turbines and as such the associated on-site infrastructure has been excluded from the sensitivity analysis.

The areas of potential visual sensitivity to WEF development are shown in **Figure 20**.

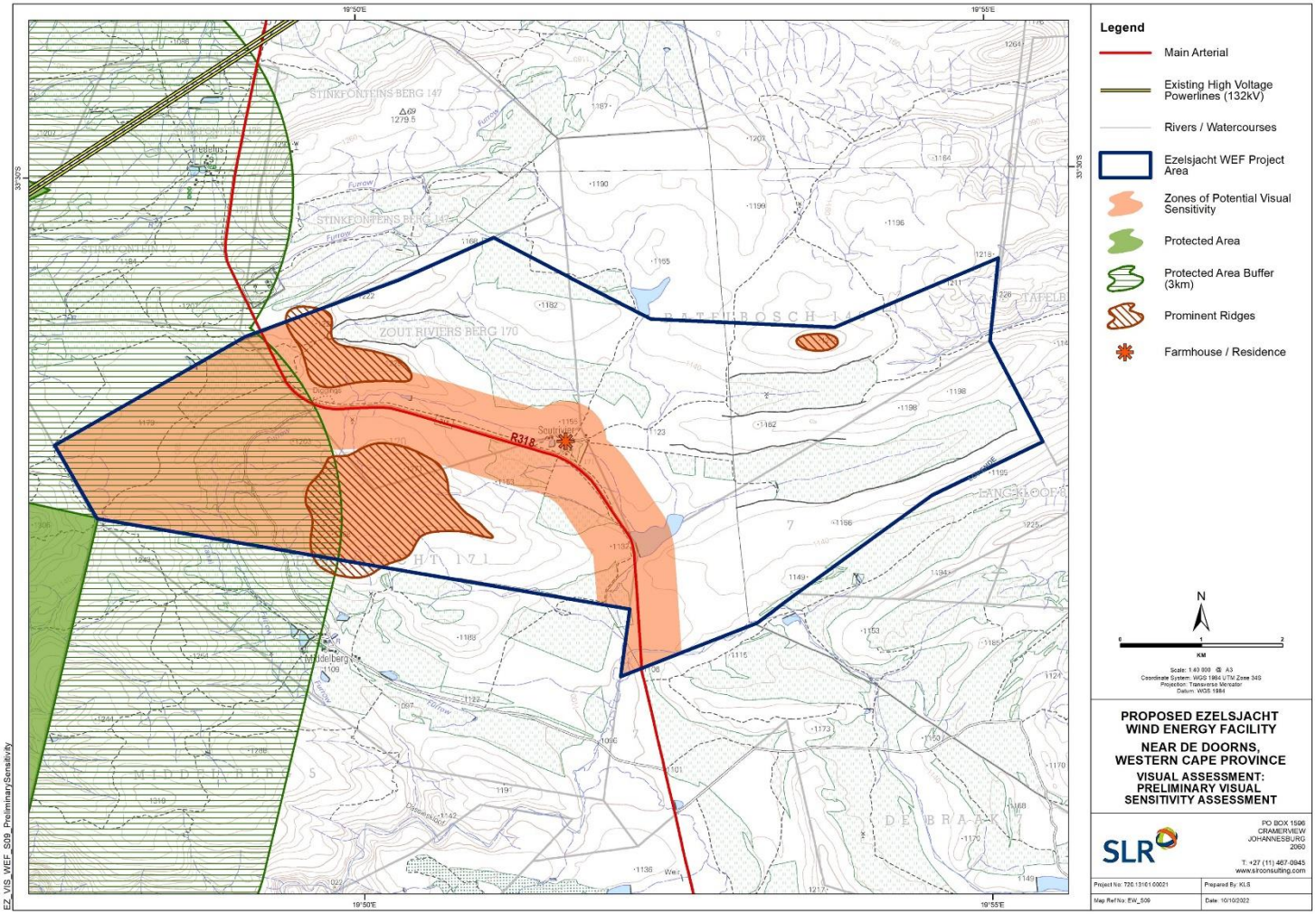

Figure 20: Potential visual sensitivity on the Ezelsjacht WEF application site.

6.3.2 Sensitivities identified by the National Screening Tool: WEF

In assessing visual sensitivity of the proposed Ezelsjacht WEF, consideration was given to the Landscape and Flicker Themes of the National Environmental Screening Tool. Under the Landscape Theme, as shown in **Figure 21** below, the tool identifies areas of Very High and High sensitivity in respect of WEF development on the Ezelsjacht WEF site. According to the Screening Tool, the high sensitivity rating applied to the WEF site is associated with the presence of natural features such as mountain tops, high ridges and steep slopes. In addition, areas within 300m of the Matroosberg Mountain Catchment Area have been assigned a very high sensitivity rating. Based on these criteria, much of the western portion of the site would be ruled out for WEF development.

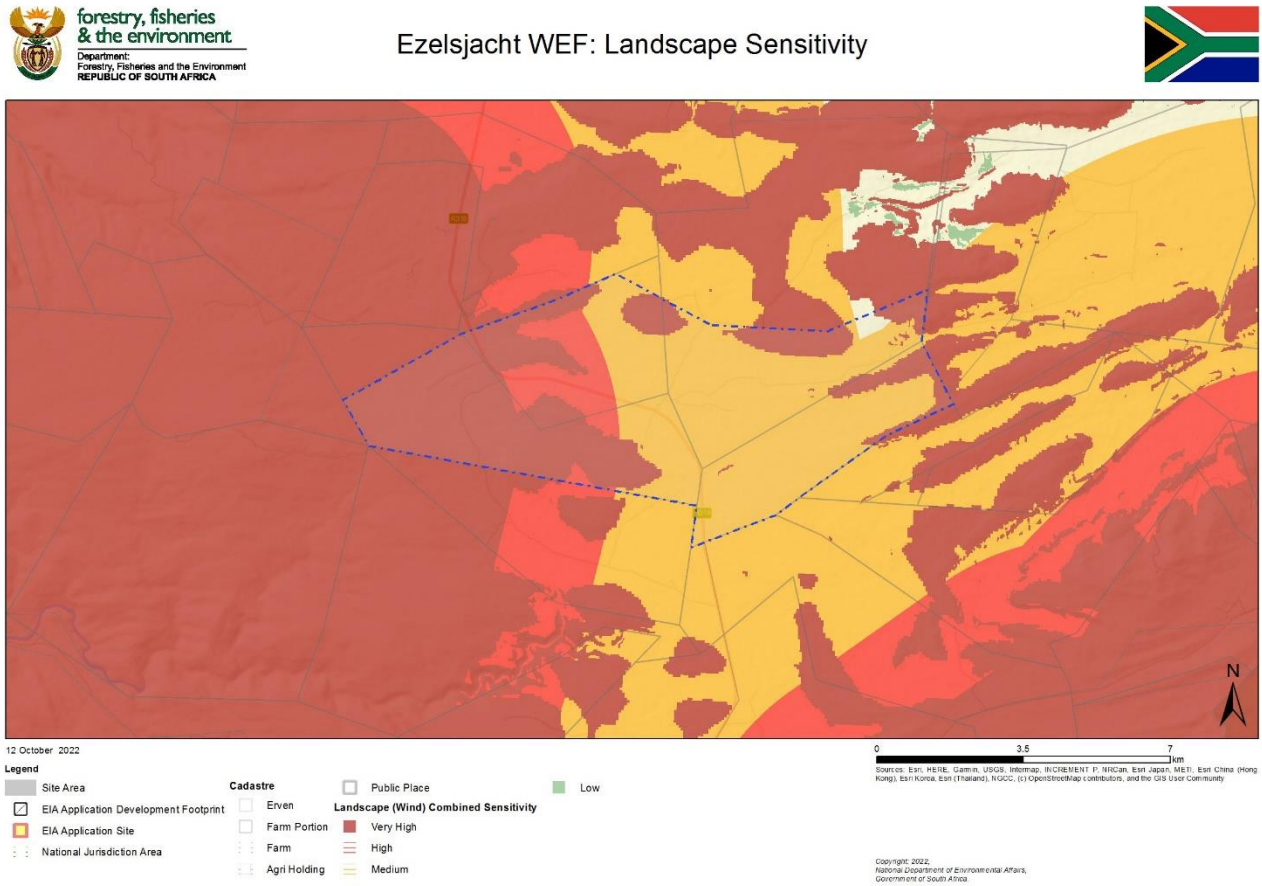

Figure 21: Relative Landscape Sensitivity (October 2022)

The flicker theme demarcates areas (1 km buffers) of sensitivity around identified receptors in the area (**Figure 22**). Under this theme, potential flicker receptors have been identified on the site, or within 1 km of the site boundary. Buffers demarcated around these receptors have been assigned a “very high” sensitivity rating.

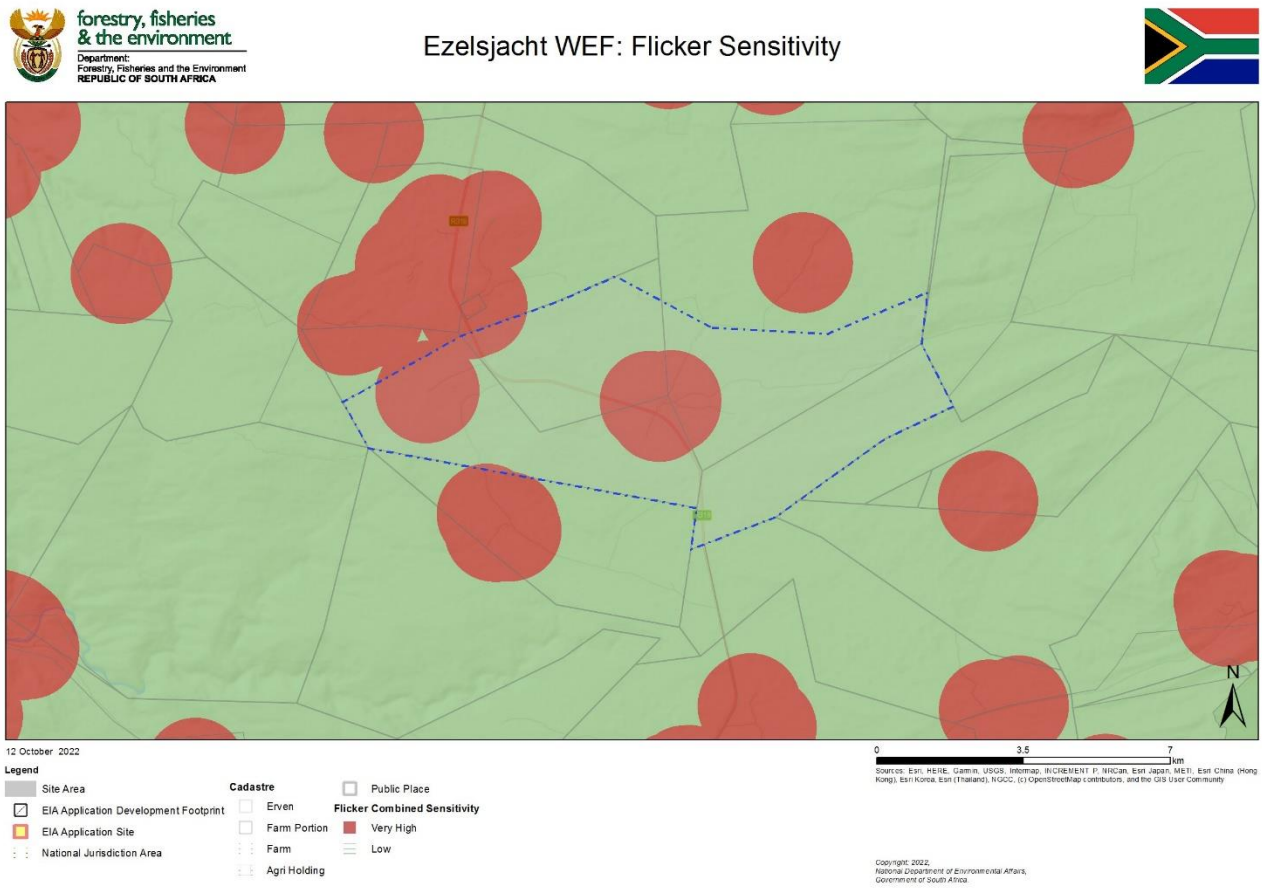

Figure 22: Flicker Sensitivity (January 2022)

The Screening Tool provides a very high level, desktop assessment and as such the results of the study must be viewed against the findings of the field investigation as well as factors affecting visual impact, such as:

- the presence of visual receptors;
- the distance of those receptors from the proposed development; and
- the likely visibility of the development from the receptor locations.

6.3.3 Sensitivity Analysis Summary for WEF Development

The areas of Very High and High Sensitivity identified by the Screening Tool in the Ezelsjacht WEF project area largely align with the ridges and mountain-tops identified in the sensitivity analysis undertaken and confirmed by the site sensitivity verification exercise (Appendix C) for this site.

The presence of receptors, within the Ezelsjacht WEF project area, or within 1km of the site boundary, was assessed and confirmed by the site sensitivity verification exercise. However, an assessment of receptor locations using Google Earth showed that there were no receptors present at some of the locations identified by the National Screening Tool. The remaining (confirmed) receptor was factored into the sensitivity analysis, together with a 500m buffer.

6.4 VISUAL ABSORPTION CAPACITY

Visual absorption capacity is the ability of the landscape to absorb a new development without any significant change in the visual character and quality of the landscape. The level of absorption capacity is largely based on the physical characteristics of the landscape (topography and vegetation cover) and the level of transformation present in the landscape.

Although the hilly nature of the topography in the study area would increase the visual absorption capacity, this would be offset by the lack of screening provided by the dominant shrubland vegetation. Portions of the study area have however undergone some transformation as a result of the farming activity, as well as high voltage powerlines and road infrastructure.

Visual absorption capacity in the study area is therefore rated as low to moderate.

7. TYPICAL VISUAL IMPACTS ASSOCIATED WITH WIND ENERGY FACILITES

In this section, the typical visual issues related to the establishment of a WEF as proposed are discussed. It is important to note that the renewable energy industry is still relatively new in South Africa and as such this report draws on international literature and web material (of which there is significant material available) to describe the generic impacts associated with WEFs.

7.1 WIND ENERGY FACILITIES

As previously mentioned, at this stage it is anticipated that the proposed project will consist of up to 35 wind turbines and associated infrastructure with a total generation capacity of up to approximately 140MW. The wind turbines will have a hub height of up to 200m and a rotor diameter of up to 200m. The height of the turbines and their location on relatively hilly terrain would result in the development typically being visible from a great distance (**Figure 23**).

Figure 23: Wind turbines at Loeriesfontein 2 WEF in the Northern Cape Province.

Internationally, studies have demonstrated that there is a direct correlation between the number of turbines and the degree of objection to a wind farm, with less opposition being encountered when fewer turbines are proposed (Devine-Wright, 2005). Certain objectors to wind farms also mention the "sky space" occupied by the rotors of a turbine, this being the area in which the rotors would rotate.

The visual prominence of wind turbines would be exacerbated within natural settings, in areas of flat terrain or if located on ridge tops. Given the height of the turbines, even dense stands of wooded vegetation are only likely to offer partial visual screening.

7.1.1 Shadow Flicker

Shadow flicker may occur when the sun is low on the horizon and shines through the rotating blades of a wind turbine, resulting in a moving shadow. The rotating blades repeatedly cast a shadow which will be perceived as a "flicker" and this flicker-effect can potentially impact on residents located near the wind turbines.

The effect of shadow flicker is however only likely to be experienced by people situated directly within the shadow cast by the rotor blades of the wind turbine. As such, shadow flicker is only expected to have an impact on and cause health risks to people residing in houses located relatively close to a wind turbine and at a specific orientation, particularly in areas where there is little screening present. Shadow flicker may also be experienced by and impact on motorists if a wind turbine is located in close proximity to an existing road.

The impact of shadow flicker can be effectively mitigated by choosing the correct site and layout for the wind turbines, taking into consideration the orientation of the turbines relative to the nearby houses and the latitude of the site. Hence appropriate development restriction zones around residences and along main

roads will reduce the adverse effects of shadow flicker, while tall structures and trees will also obstruct shadows and prevent the effect of shadow flicker from impacting on surrounding residents.

7.1.2 Motion-based visual intrusion

An important component of the visual impacts associated with wind turbines is the movement of the rotors. Labelled as motion-based visual intrusion, this refers to the tendency of the viewer to focus on discordant, moving features when scanning the landscape. Evidence from surveys of public attitudes towards wind farms however suggest that the viewing of moving blades is not necessarily perceived negatively (Bishop and Miller, 2006).

7.2 ASSOCIATED ON-SITE INFRASTRUCTURE

Typical impacts associated with the associated infrastructure (**Section** Error! Reference source not found.) are outlined below.

Substations are generally large, highly visible structures which are more industrial in character than many other components of a WEF. As they are not features of the natural environment, but are representative of human (anthropogenic) alteration, substations will be perceived to be incongruous when placed in largely natural landscapes. Conversely, the presence of other anthropogenic objects associated with the built environment, especially other substations or power lines, may result in the visual environment being considered to be 'degraded' and thus the introduction of a substation into this setting may be less of a visual impact than if there was no existing built infrastructure visible. In this instance, the substation is intended to serve the proposed Ezelsjacht WEF project and as such, is likely to be perceived as part of the greater WEF development. Thus, the visual impact of the substation will be relatively minor when compared to the visual impact associated with the WEF development as a whole.

Surface clearance for cable trenches, access roads, laydown areas and other on-site infrastructure may result in the increased visual prominence of these features, thus increasing the level of contrast with the surrounding landscape. Buildings, BESS containers and associated infrastructure placed in prominent positions such as on ridge tops may break the natural skyline, drawing the attention of the viewer. In addition, security lighting on the site may impact on the nightscape (Section 8.2).

The visual impact of the on-site infrastructure associated with a WEF is generally not regarded as a significant factor when compared to the visual impact associated with wind turbines. The infrastructure would however increase the visual "clutter" on the WEF site and magnify the visual prominence of the development if located on ridge tops or flat sites in natural settings where there is limited tall, wooded vegetation to conceal the impact.

8. SENSITIVE VISUAL RECEPTORS

A sensitive visual receptor location is defined as a location where receptors would potentially be impacted by a proposed development. Adverse impacts often arise where a new development is seen as an intrusion which alters the visual character of the area and affects the 'sense of place'. The degree of visual impact experienced will however vary from one receptor to another, as it is largely based on the viewer's perception.

A distinction must be made between a receptor location and a sensitive receptor location. A receptor location is a site from where the proposed development may be visible, but the receptor may not necessarily be adversely affected by any visual intrusion associated with the development. Less sensitive receptor locations include locations of commercial activities and certain movement corridors, such as roads that are not tourism routes. More sensitive receptor locations typically include sites that are likely to be adversely affected by the visual intrusion of the proposed development. They include tourism facilities, scenic sites and residential dwellings in natural settings.

The identification of sensitive receptors is typically based on a number of factors which include:

- the visual character of the area, especially taking into account visually scenic areas and areas of visual sensitivity;
- the presence of leisure-based (especially nature-based) tourism in an area;
- the presence of sites or routes that are valued for their scenic quality and sense of place;
- the presence of homesteads / farmsteads in a largely natural setting where the development may influence the typical character of their views; and
- feedback from interested and affected parties, as raised during the public participation process conducted as part of the EIA study.

As the visibility of the development would diminish exponentially over distance (refer to **Section 5.4** above), receptor locations which are closer to the WEF would experience greater adverse visual impacts than those located further away.

The degree of visual impact experienced will however vary from one inhabitant to another, as it is largely based on the viewer's perception. Factors influencing the degree of visual impact experienced by the viewer include the following:

- Value placed by the viewer on the natural scenic characteristics of the area.
- The viewer's sentiments toward the proposed structures. These may be positive (a symbol of progression toward a less polluted future) or negative (foreign objects degrading the natural landscape).
- Degree to which the viewer will accept a change in the typical character of the surrounding area.

8.1 RECEPTOR IDENTIFICATION

Preliminary desktop assessment of the study area for the proposed Ezelsjacht WEF identified twenty-nine (29) potentially sensitive visual receptor locations, within 10km of the WEF project area boundary. It should be noted that this assessment will be revised in the EIA phase to exclude all receptors that are located more than 10kms from the nearest turbine position.

Although the findings of the desktop assessment were largely confirmed during the field investigation, it was not possible to confirm the presence of receptors at all the identified locations due to access restrictions. Notwithstanding this limitation, all the identified receptor locations were assessed as part of the VIA as they are still regarded as being potentially sensitive to the visual impacts associated with the proposed development.

Six of the receptors identified were found to be linked to leisure-based (specifically nature-based) tourism and are therefore considered to be sensitive receptors. These receptors are as follows:

- Kopbeenskloof (SR1);
- Sandvlei Guest Farm (SR2)
- Leeuwenboschfontein Guest Farm (SR3);
- Porcupine Peak Guest Farm (SR4);
- Ezelsjacht Guest Farm (SR5), and
- Middelberg Guest Farm (SR6).

All of these receptors are within 10kms of the Ezelsjacht WEF project area boundary, although only four (4) are within the project area viewshed. Accordingly, Leeuwenboschfontein and Porcupine Peak Guest Farms have been excluded from any further assessment. In addition, Ezelsjacht Guest Farm is located within the WEF project area and as such, the property owner is assumed to be in agreement with the development proposals.

Three formally protected areas are partially within 10km of the proposed WEF project area, these being the Matroosberg and Langeberg-Wes Mountain Catchment Areas (MCAs) and Drie Kuilen Private Nature Reserve, all of which would be considered sensitive receptors. It should be noted however that, Langeberg-Wes MCA and Drie Kuilen Private Nature Reserve are some distance from the WEF project area (8kms+) and partially outside the viewshed. Thus impacts on these two Protected Areas would be reduced.

Matroosberg MCA occupies much of the western sector of the study area and adjoins a portion of the south-western boundary of the WEF project area. Much this MCA is however outside the viewshed for the WEF project area and visual impacts would be restricted to areas mostly located along the eastern boundary of the MCA.

The remaining twenty-three (23) receptors identified appear to be farmsteads which are regarded as potentially sensitive visual receptors as they are located within a mostly rural setting with natural vistas that will likely be altered by the proposed development. Local sentiments toward the proposed development are however unknown at this stage. Thirteen (13) of these receptors were found to be outside the viewshed for the WEF project area and all but one of the remaining receptors are more than 2km from the WEF project area and only expected to experience moderate to low impacts as a result of the WEF development.

Table 3 below provides a summary of receptors.

Table 3: Receptor Summary

RECEPTOR TYPE	INSIDE VIEWSHED	OUTSIDE VIEWSHED	TOTAL
SENSITIVE RECEPTORS	4	2	6
POTENTIALLY SENSITIVE RECEPTORS	10	13	23
TOTAL	***14***	***15***	***29***

In many cases, roads along which people travel, are regarded as sensitive receptors. The primary thoroughfare in the study area is the R318 Main Road which links Robertson to the south with the N1 national route to the north. This road is considered to have scenic and rural value and is utilised, to some extent, for its tourism potential. As a result, it is considered to be a potentially sensitive receptor road – i.e. a road being used by motorists who may object to the potential visual intrusion of the proposed WEF and associated infrastructure.

Other thoroughfares in the study area are primarily used as local access roads and do not form part of any scenic tourist routes. These roads are not specifically valued or utilised for their scenic or tourism potential and are therefore not regarded as visually sensitive.

The identified potentially sensitive visual receptor locations for the proposed WEF are indicated in **Figure** 24.

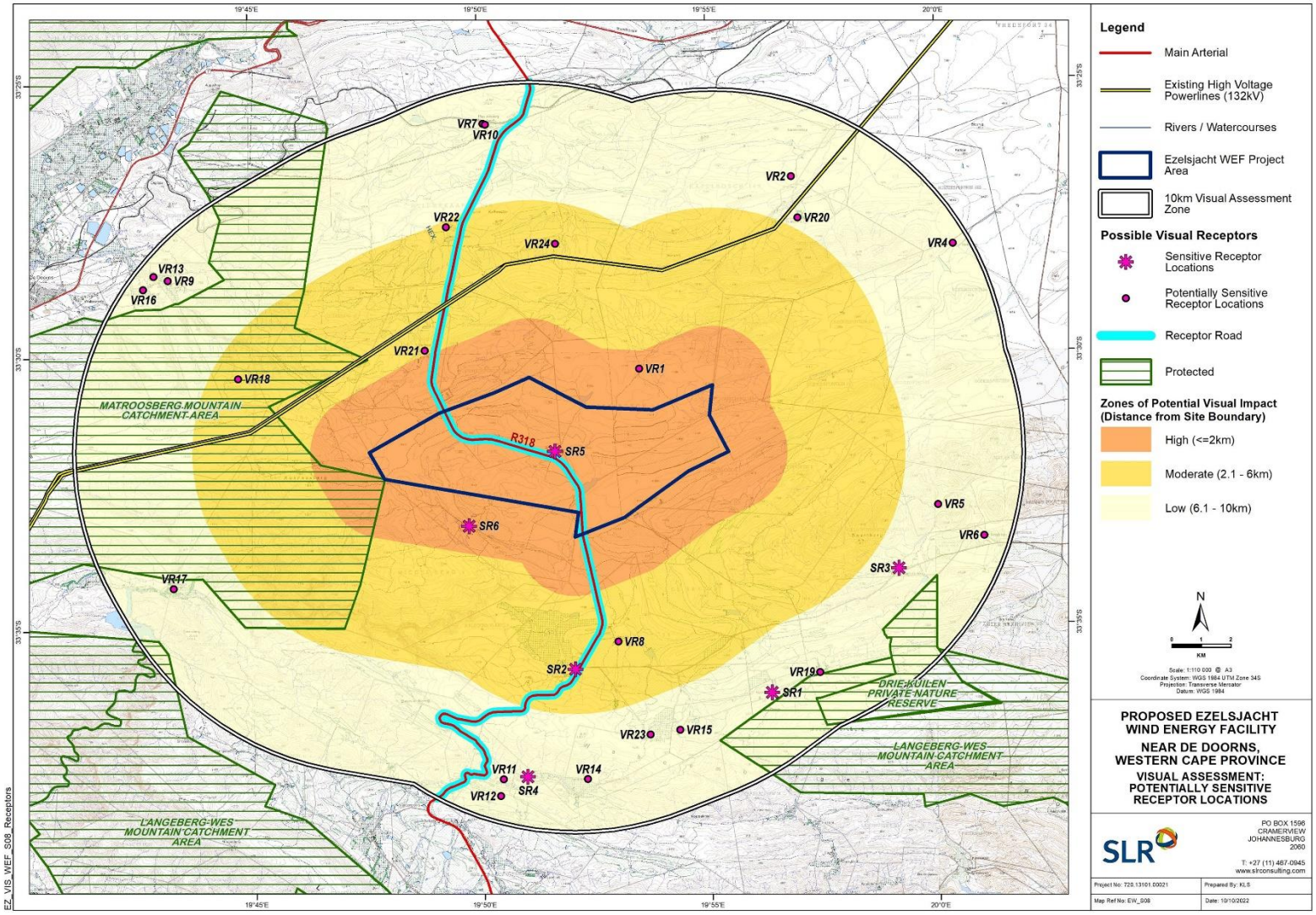

Figure 24: Potentially sensitive receptor locations within 10kms of the Ezelsjacht WEF application site

8.2 NIGHT-TIME IMPACTS

The visual impact of lighting on the nightscape is largely dependent on the existing lighting present in the surrounding area at night. The night scene in areas where there are numerous light sources will be visually degraded by the existing light pollution and therefore additional light sources are unlikely to have a significant impact on the nightscape. In contrast, introducing new light sources into a relatively dark night sky will impact on the visual quality of the area at night. It is thus important to identify a night-time visual baseline before exploring the potential visual impact of the proposed wind farm at night.

Much of the study area is characterised by natural areas with pastoral elements and low densities of human settlement. As a result, relatively few light sources are present in the broader area surrounding the proposed development site. The closest built-up area is the town of de Doorns which is situated approximately 14km west of the Ezelsjacht WEF Project Area and is thus too far away to have significant impacts on the night scene. At night, the general study area is therefore characterised by a picturesque dark starry sky and the visual character of the night environment across the broader area is largely 'unpolluted' and pristine. Sources of light in the area are limited to isolated lighting from surrounding farmsteads and transient light from the passing cars travelling along the R318 Main Road.

Given the scale of the proposed WEF, the operational and security lighting required for the proposed project is likely to intrude on the nightscape and create some glare, which will contrast with the extremely dark backdrop of the surrounding area. In addition, red hazard lights placed on top of the turbines may be particularly noticeable as their colour will differ from the few lights typically found within the environment and the flashing will draw attention to them

8.3 CUMULATIVE IMPACTS

Although it is important to assess the visual impacts of the proposed Ezelsjacht WEF specifically, it is equally important to assess the cumulative visual impact that could materialise if other renewable energy facilities (both wind and solar facilities) and associated infrastructure projects are developed in the broader area. Cumulative impacts occur where existing or planned developments, in conjunction with the proposed development, result in significant incremental changes in the broader study area. In this instance, such developments would include renewable energy facilities and associated infrastructure development.

Renewable energy facilities have the potential to cause large scale visual impacts and the location of several such developments in close proximity to each other could significantly alter the sense of place and visual character in the broader region.

Five (5) additional renewable energy projects were identified within a 30 km radius of the proposed Ezelsjacht WEF project area (**Figure 25**), using the DFFE's Renewable Energy EIA Application (REEA, 2022, Q2) Database for SA. It is assumed that all of these renewable energy developments include grid connection infrastructure, although details of this infrastructure were not available for all of the identified developments at the time of writing this report.
All of these of these projects are Solar Energy facilities (SEFs), and although SEFs are expected to have different impacts when compared to WEF projects, these renewable energy developments are however relevant as they influence the cumulative visual impact of the proposed development.

All but one of the projects are outside the assessment zone for the Ezelsjacht WEF while the remaining project, Touws River SEF is only partially inside the assessment zone. Most of these projects are located in close proximity to main roads or built-up areas and as such it is not anticipated that these developments will result in any significant cumulative impacts affecting the landscape or the visual receptors within the assessment zone for the Ezelsjacht WEF project

A cumulative assessment must include the proposed Ezelsjacht SEF and associated grid connection project, both of which are located in close proximity to the Ezelsjacht WEF project area. From a visual perspective, the concentration of renewable energy facilities as proposed will further change the visual character of the area and alter the inherent sense of place, extending an increasingly industrial character into the broader area, and resulting in significant cumulative impacts. It is however anticipated that these impacts could be mitigated to acceptable levels with the implementation of the recommended mitigation measures. In addition, it is possible that these developments in close proximity to each other could be seen as one large Renewable Energy Facility (REF) rather than several separate developments. Although this will not necessarily reduce impacts on the visual character of the area, it could potentially reduce the cumulative impacts on the landscape.

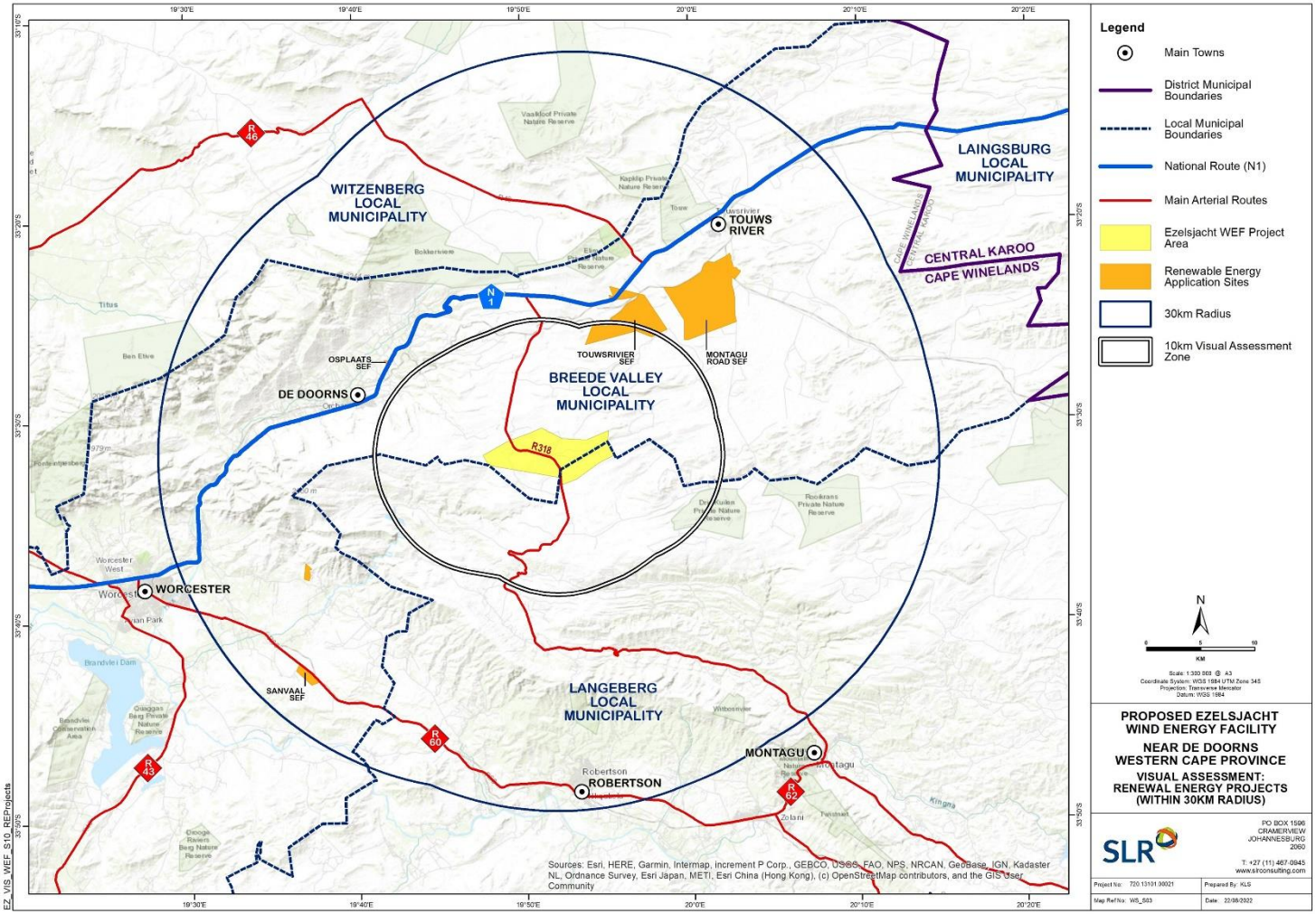

Figure 25: Renewable energy facilities proposed within a 30km radius of the Ezelsjacht WEF project area

8.4 IDENTIFICATION OF POTENTIAL IMPACTS

Potential visual issues / impacts resulting from the proposed Ezelsjacht WEF together with possible mitigation measures are outlined below.

8.4.1 Construction Phase

Nature of the impact

- Potential visual intrusion resulting from large construction vehicles and equipment;
- Potential visual effect of construction laydown areas and material stockpiles.
- Potential impacts of increased dust emissions from construction activities and related traffic;
- Potential visual scarring of the landscape as a result of site clearance and earthworks; and
- Potential visual pollution resulting from littering on the construction site

Significance of impact

The significance of visual impacts during construction are expected to be **Moderate**, but will be reduced to **Low** with the implementation of mitigation measures.

Proposed mitigation measures

- Carefully plan to minimise the construction period and avoid construction delays.
- Position laydown areas and related storage/stockpile areas in unobtrusive positions in the landscape, where possible.
- Minimise vegetation clearing and rehabilitate cleared areas as soon as possible.
- Vegetation clearing should take place in a phased manner.
- Make use of existing gravel access roads where possible.
- Limit the number of vehicles and trucks travelling to and from the proposed sites, where possible.
- Ensure that dust suppression techniques are implemented:
    - on all access roads;
    - in all areas where vegetation clearing has taken place;
    - on all soil stockpiles.
- Maintain a neat construction site by removing litter, rubble and waste materials regularly.

8.4.2 Operational Phase

Nature of the impact

- Potential alteration of the visual character of the area;
- Potential visual intrusion resulting from wind turbines dominating the skyline in a largely natural / rural area;
- Potential visual clutter caused by substation and other associated infrastructure on-site.
- Potential visual effect on surrounding farmsteads; and
- Potential alteration of the night time visual environment as a result of operational and security lighting as well as navigational lighting on top of the wind turbines.

Significance of impact

Under a worst-case scenario where turbine development occurs across the entire project area, the significance of visual impacts during operation are expected to be **High**, and although mitigation measures will result in some minor reduction of visual impacts, the degree of significance will remain **High**. This rating could be reduced to **Moderate** with an appropriate turbine layout.

Proposed mitigation measures

- Turbine colours should adhere to CAA requirements. Bright colours and logos on the turbines should be kept to a minimum.
- Inoperative turbines should be repaired promptly, as they are considered more visually appealing when the blades are rotating (or at work).
- If turbines need to be replaced for any reason, they should be replaced with turbines of the same model, or similar one of equal height and scale to lessen the visual impact.
- As far as possible, limit the number of maintenance vehicles which are allowed to access the site.
- Ensure that dust suppression techniques are implemented on all gravel access roads.
- Make use of available technology (such as pilot/radar activated lights on turbines) to minimise the visual effect of navigation lights, in compliance with CAA requirements.
- As far as possible, limit the amount of security and operational lighting present on site.
- Light fittings for security at night should reflect the light toward the ground and prevent light spill (whilst adhering to relevant safety standards).
- Lighting fixtures should make use of minimum lumen or wattage (whilst adhering to relevant safety standards).
- Mounting heights of lighting fixtures should be limited, or alternatively foot-light or bollard level lights should be used.
- If possible, make use of motion detectors on security lighting.
- Where possible, the operation and maintenance buildings should be consolidated to reduce visual clutter.
- The operations and maintenance (O&M) buildings should not be illuminated at night unless required by the relevant safety standards.
- The O&M buildings should be painted in natural tones that fit with the surrounding environment.

8.4.3 Decommissioning Phase

Nature of the impact

- Potential visual intrusion resulting from vehicles and equipment involved in the decommissioning process;
- Potential impacts of increased dust emissions from decommissioning activities and related traffic; and
- Potential visual intrusion of any remaining infrastructure on the site.

Significance of impact

The significance of visual impacts during decommissioning are expected to be **Moderate**, but will be reduced to **Low** with the implementation of mitigation measures.

Proposed mitigation measures

- All infrastructure that is not required for post-decommissioning use should be removed.
- Carefully plan to minimize the decommissioning period and avoid delays.
- Maintain a neat decommissioning site by removing rubble and waste materials regularly.
- Ensure that dust suppression procedures are maintained on all gravel access roads throughout the decommissioning phase.
- All cleared areas should be rehabilitated as soon as possible.

8.4.4 Cumulative Impacts

Nature of the impact

- Combined visual impacts from renewable energy development and associated grid connection infrastructure in the broader area could potentially alter the sense of place and visual character of the area; and
- Combined visual impacts from renewable energy development and associated grid connection infrastructure in the broader area could potentially exacerbate visual impacts on visual receptors.

Significance of impact

The significance of cumulative visual impacts are potentially **High**, but could be reduced to Moderate with the implementation of mitigation measures.

Proposed mitigation measures

- Implementation of the mitigation measures as recommended above.

8.5 OVERALL IMPACT RATING

The EIA Regulations, 2014 (as amended) require that an overall rating for visual impact be provided to allow the visual impact to be assessed alongside other environmental parameters. A full impact rating matrix for the proposed development will be presented in the EIA phase VIA.

9. CONCLUSION

A scoping level visual study was conducted to assess the magnitude and significance of the potential visual impacts associated with the development of the proposed Ezelsjacht WEF near De Doorns in the Western Cape Province. Overall, sparse human habitation and the predominance of natural vegetation cover across much of the study area would give the viewer the general impression of a largely natural setting with some pastoral elements. As such, a WEF development would alter the visual character and contrast significantly with the typical land use and/or pattern and form of human elements present across the broader study area. The level of contrast will however be slightly reduced in some areas by the presence of the R318 Main Road and existing high voltage power lines traversing the study area.

A broad-scale assessment of visual sensitivity, based on the physical characteristics of the study area, economic activities and land use that predominates, determined that the area would have a moderate visual sensitivity. However, an important factor contributing to the visual sensitivity of an area is the presence, or absence of visual receptors that may value the aesthetic quality of the landscape and depend on it to produce revenue and create jobs.

Three formally protected areas are partially within 10km of the proposed WEF project area, these being the Matroosberg and Langeberg-Wes Mountain Catchment Areas (MCAs) and Drie Kuilen Private Nature Reserve, all of which would be considered sensitive receptors. It should be noted however that, Langeberg-Wes MCA and Drie Kuilen Private Nature Reserve are some distance from the WEF project area (8kms+) and partially outside the viewshed. Thus impacts on these two Protected Areas would be reduced. Matroosberg MCA occupies much of the western sector of the study area and adjoins a portion of the south-western boundary of the WEF project area. Much of this MCA is however outside the viewshed for the WEF project area and visual impacts would be restricted to areas located along the eastern boundary of the MCA.

Although there is limited human habitation, a total of twenty-nine (29) potentially sensitive visual receptor locations were identified within 10kms of the WEF project area boundary. Six (6) of the receptors identified were found to be linked to leisure-based (specifically nature-based) tourism and are therefore considered to be sensitive receptors. Only four (4) of these are within the project area viewshed. In addition, Ezelsjacht Guest Farm is located within the WEF project area and as such, the property owner is assumed to be in agreement with the development proposals.

The remaining twenty-three (23) receptors identified appear to be farmsteads which are regarded as potentially sensitive visual receptors as they are located within a mostly rural setting with natural vistas that will likely be altered by the proposed development. Local sentiments toward the proposed development are however unknown at this stage. Thirteen (13) of these receptors were found to be outside the viewshed for the WEF project area and all but one of the remaining receptors are more than 2km from the WEF project area and only expected to experience moderate to low impacts as a result of the WEF development.

The R318 Main Road that traverses the study area is considered to have scenic and rural value and is utilised, to some extent, for its tourism potential. As a result, it is considered to be a potentially sensitive receptor road – i.e. a road being used by motorists who may object to the potential visual intrusion of the proposed

WEF and associated infrastructure. The level of impact experienced by motorists travelling along this route would depend on the positioning of the wind turbines within the WEF project area.

A preliminary assessment of overall impacts revealed that impacts associated with the proposed Ezelsjacht WEF are of **MODERATE** significance during both construction and decommissioning phases. During operation, visual impacts from the WEF would be of **MODERATE** significance with relatively few mitigation measures available to reduce the visual impact.

Five (5) additional existing and proposed renewable energy developments and infrastructure projects were identified within a 30km radius of the Ezelsjacht WEF project. All but one of the projects are outside the assessment zone for the Ezelsjacht WEF while the remaining project, Touws River SEF is only partially inside the assessment zone. Most of these projects are located in close proximity to main roads or built-up areas and as such it is not anticipated that these developments will result in any significant cumulative impacts affecting the landscape or the visual receptors within the assessment zone for the Ezelsjacht WEF project

However, a cumulative assessment must include the proposed Ezelsjacht SEF and associated grid connection project, both of which are located in close proximity to the Ezelsjacht WEF project area. From a visual perspective, the concentration of renewable energy facilities as proposed will further change the visual character of the area and alter the inherent sense of place, extending an increasingly industrial character into the broader area, and resulting in significant cumulative impacts. It is however anticipated that these impacts could be mitigated to acceptable levels with the implementation of the recommended mitigation measures. In addition, it is possible that these developments in close proximity to each other could be seen as one large Renewable Energy Facility (REF) rather than several separate developments. Although this will not necessarily reduce impacts on the visual character of the area, it could potentially reduce the cumulative impacts on the landscape.

In light of this and the relatively low level of human habitation in the study area however, cumulative impacts have been rated as **MODERATE**.

From a visual perspective, there are no fatal flaws associated with the proposed Ezelsjacht WEF project area. However, certain areas on the site have been identified as zones of potential visually sensitivity, within which it is recommended that turbine development be limited.

9.1 EIA PHASE PLAN OF STUDY

The scoping phase VIA report has adequately assessed the visual impacts of the proposed Ezelsjacht WEF and no further field investigation will be required. The focus of the EIA phase assessment will be to update the scoping phase VIA report. This will entail:

- a review of the findings of the VIA in accordance with detailed site layouts;
- a review of the comparative assessment of the layout alternatives provided;
- addressing any comments or concerns arising from the public participation process.

10. REFERENCES

- Barthwal, R. 2002. Environmental Impact Assessment. New Age International Publishes, New Delhi.
- Breedlove, G., 2002. A systematic for the South African Cultural Landscapes with a view to implementation. Thesis – University of Pretoria.
- Bishop, I.D. and Miller, D.R. (2007) Visual Assessment of Offshore Wind Turbines: The Influence of Distance, Contrast, Movement and Social Variables. Renewable Energy, 32, 814-831.
- Hull, R. Bruce, and Ian Bishop. 1988. Scenic Impacts of Electricity Transmission Towers: The Influence of Landscape Type and Observer Distance. Journal of Environmental Management Vol. 27: pp. 182-195.
- Google Earth, 2022
- DFFE, National Environmental Screening Tool 2022
- Ecotricity Website: http://www.ecotricity.co.uk.
- Mucina L., and Rutherford M.C., (eds) 2006. The Vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19. South African National Biodiversity Institute, Pretoria.
- Oberholzer, B. 2005. Guideline for involving visual & aesthetic specialists in EIA processes: Edition 1. CSIR Report No ENV-S-C 2005 053 F. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs & Development Planning, Cape Town.
- South African National Land-Cover Dataset, © GEOTERRAIMAGE - 2020
- Vissering, J., Sinclair, M., Margolis, A. 2011. State Clean Energy Program Guide: A Visual Impact Assessment Process for Wind Energy Projects. Clean Energy State Alliance.
- UNESCO. 2005. Operational Guidelines for the Implementation of the World Heritage Convention. UNESCO World Heritage Centre. Paris.

APPENDIX A: TERMS OF REFERENCE

APPENDIX B: SPECIALIST CV AND DECLARATION

APPENDIX C: SITE SENSITIVITY VERIFICATION

Prior to commencing with the specialist assessment in accordance with Appendix 6 of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) Environmental Impact Assessment (EIA) Regulations of 2014, a site sensitivity verification was undertaken in order to confirm the current land use and environmental sensitivity of the proposed Ezelsjacht Wind Energy Facility (WEF) as identified by the National Web-Based Environmental Screening Tool (Screening Tool). This site sensitivity verification was undertaken in adherence to the gazetted Environmental Assessment Protocols, specifically with 'Part A - General Protocol for the Site Sensitivity Verification and Minimum Report Content Requirements where a Specialist Assessment is required but no specific Environmental Theme Protocol has been prescribed' (GG 43110 / GNR 320, 20 March 2020),

The details of the site sensitivity verification are noted below:

Date of Site Visit	3 – 5 October 2022
Specialist Name	Assessment undertaken by Kerry Schwartz (SLR Consulting) Field investigation undertaken by Tshisevhe Tshifhango (SLR)
Professional Registration Number	South African Geomatics Council – GTc GISc 1187
Specialist Affiliation / Company	SLR Consulting (South Africa) (Pty) Ltd;

1 SITE SENSITIVITY VERIFICATION

A site sensitivity verification has been conducted in support of the Visual Impact Assessment (VIA) for the proposed Ezelsjacht WEF. The verification exercise is based on a desktop-level assessment supported by field-based observation and involved an assessment of factors as outlined below.

1.1 PHYSICAL LANDSCAPE CHARACTERISTICS

Physical landscape characteristics such as topography, vegetation and land use are important factors influencing the visual character and visual sensitivity of the study area. Baseline information about the physical characteristics of the study area was sourced from spatial databases provided by NGI, the South African National Biodiversity Institute (SANBI) and the South African National Land Cover Dataset (Geoterraimage – 2020). The characteristics identified via desktop analysis were then checked against the findings of the site visit.

1.2 IDENTIFICATION OF SENSITIVE RECEPTORS

Visual receptor locations and routes that are sensitive and / or potentially sensitive to the visual intrusion of the proposed development were identified by way of a desktop assessment as well as field-based investigation. Google Earth imagery (2022) was used to identify potential receptors within the study area and where possible, these receptor locations were then checked against the findings of the field investigation..

1.3 FIELDWORK AND PHOTOGRAPHIC REVIEW

A two (2) day site visit was undertaken between the 3rd and the 5th of October 2022 (early summer). The purpose of the site visit was to:

- verify the landscape characteristics identified via desktop means;
- conduct a photographic survey of the study area;
- verify, where possible, the sensitivity of visual receptor locations identified via desktop means;
- eliminate receptor locations that are unlikely to be influenced by the proposed development;
- identify any additional visually sensitive receptor locations within the study area; and
- inform the impact rating assessment of visually sensitive receptor locations (where possible).

1.4 SOURCE OF INFORMATION

The main sources of information utilised for this site sensitivity verification exercise included:

- Elevation data from 25m Digital Elevation model (DEM) from the National Geo-Spatial Information (NGI);
- 1:50 000 topographical maps of South Africa from the NGI;
- Land cover and land use data extracted from the 2020 South African National Land-Cover Dataset provided by GEOTERRAIMAGE;
- Vegetation classification data extracted from the South African National Biodiversity Institute's (SANBI's) VEGMAP 2018 dataset;
- Google Earth Satellite imagery 2022;
- South African Renewable Energy EIA Application Database from Department of Environmental Affairs (incremental release Quarter 2 2022);
- The National Web-Based Environmental Screening Tool, Department of Forestry, Fisheries and Environment (DFFE);

2 OUTCOME OF SITE SENSITIVITY VERIFICATION

Overall, sparse human habitation and the predominance of natural vegetation cover across much of the study area would give the viewer the general impression of a largely natural setting with some pastoral elements. As such, a WEF development would alter the visual character and contrast significantly with the typical land use and/or pattern and form of human elements present across the broader study area. The level of contrast will however be slightly reduced in some areas by the presence of the R318 Main Road and existing high voltage power lines traversing the study area.

A broad-scale assessment of landscape sensitivity, based on the physical characteristics of the study area, economic activities and land use that predominates, determined that the area would have a **MODERATE** visual sensitivity.

A site sensitivity assessment was undertaken to inform the site layout for the WEF. The aim of this exercise was to indicate any areas of the WEF application site which should be precluded from the development footprint. From a visual perspective, sensitive areas would be areas where the establishment of wind turbines would result in the greatest probability of visual impacts on sensitive or potentially sensitive visual receptors.

Using GIS-based visibility analysis, it was possible to determine that the tip of at least one turbine blade (i.e., at a maximum height of 300m) would be visible from many of the identified potentially sensitive receptors in the study area and as such, no areas on the site are significantly more visible than the remainder of the site. It should be noted however that the visual prominence of a very tall structure such as a wind turbine would be exacerbated if located on a ridge top or a relatively high lying plateau. As such, it is recommended that wind turbines should preferably not be located on the highest ridges and mountain tops within the WEF development area. While these ridges could be seen as areas of potentially higher visual sensitivity, the study area as a whole is rated as having a moderate visual sensitivity, and as such, the sensitivity rating would be reduced to "Medium-High". Hence the ridges are not considered to be "no go areas", but rather should be viewed as zones where turbine placement would be least preferred.

From a visual perspective, another concern is the direct visual impact of the turbines on any farmsteads or receptors located on the application site. Although the flicker-sensitive buffers applied in the DFFE Screening Tool are 1 km, it is believed that this is a bit excessive in this instance considering that the owners of the residence in question are assumed to be in favour of the WEF on their property. Accordingly, a 500m zone of potential visual sensitivity has been delineated around the residence. In addition, a 500m zone of potential visual sensitivity has been delineated on either side of the R318 Main Road. The limiting of turbine development within these zones would reduce the direct impact of the turbines on the occupants of the farmstead and also on passing motorists, especially those impacts related to shadow flicker

In addition, a protected area, namely the Matroosberg Mountain Catchment Area lies on the western boundary of the Ezelsjacht WEF project area. Although no accommodation facilities associated with the Reserve were identified in this portion of the reserve, it is possible that this area is utilised for leisure-based tourism. Accordingly, a 300m zone of potential visual sensitivity has been delineated around the protected area.

It should be noted that at this stage, the zones of potential visual sensitivity are not considered "no go" areas, but rather should be viewed as zones where development should be limited. It should be stressed that these zones on the WEF development site apply to turbine development only. The visual impacts resulting from the associated on-site infrastructure are considered to have far less significance when viewed in the context of multiple wind turbines and as such the associated on-site infrastructure has been excluded from the sensitivity analysis.

The areas identified as visually sensitive to WEF development are shown in **Figure 1** below.

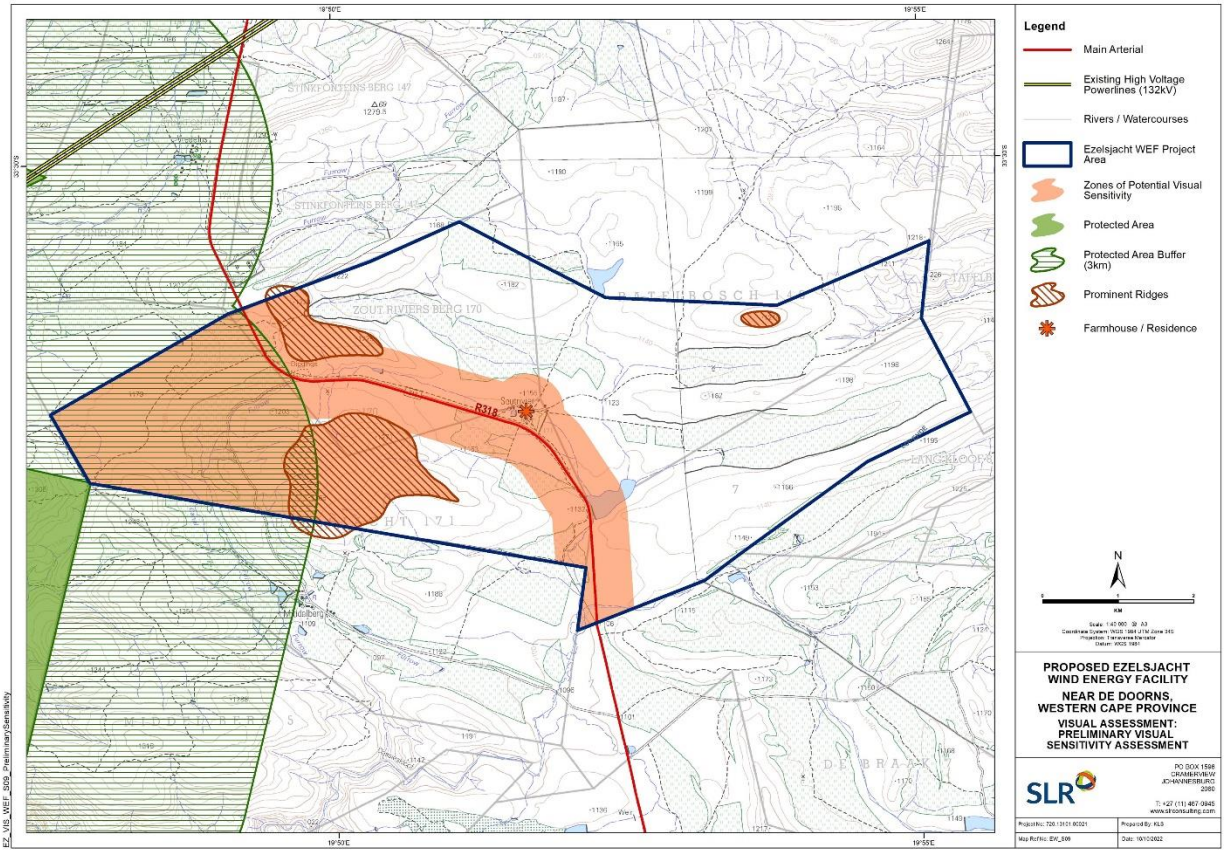

Figure 1: Areas of Potential Visual Sensitivity on the Ezelsjacht WEF Application Site

3 NATIONAL ENVIRONMENTAL SCREENING TOOL

In assessing visual sensitivity of the proposed Ezelsjacht WEF, consideration was given to the Landscape and Flicker Themes of the National Environmental Screening Tool. Under the Landscape Theme, as shown in **Figure 2** below, the tool identifies areas of Very High and High sensitivity in respect of WEF development on the Ezelsjacht WEF site. According to the Screening Tool, the high sensitivity rating applied to the WEF site is associated with the presence of natural features such as mountain tops, high ridges and steep slopes. In addition, areas within 300m of the Matroosberg Mountain Catchment Area have been assigned a very high sensitivity rating. Based on these criteria, much of the western portion of the site would be ruled out for WEF development.

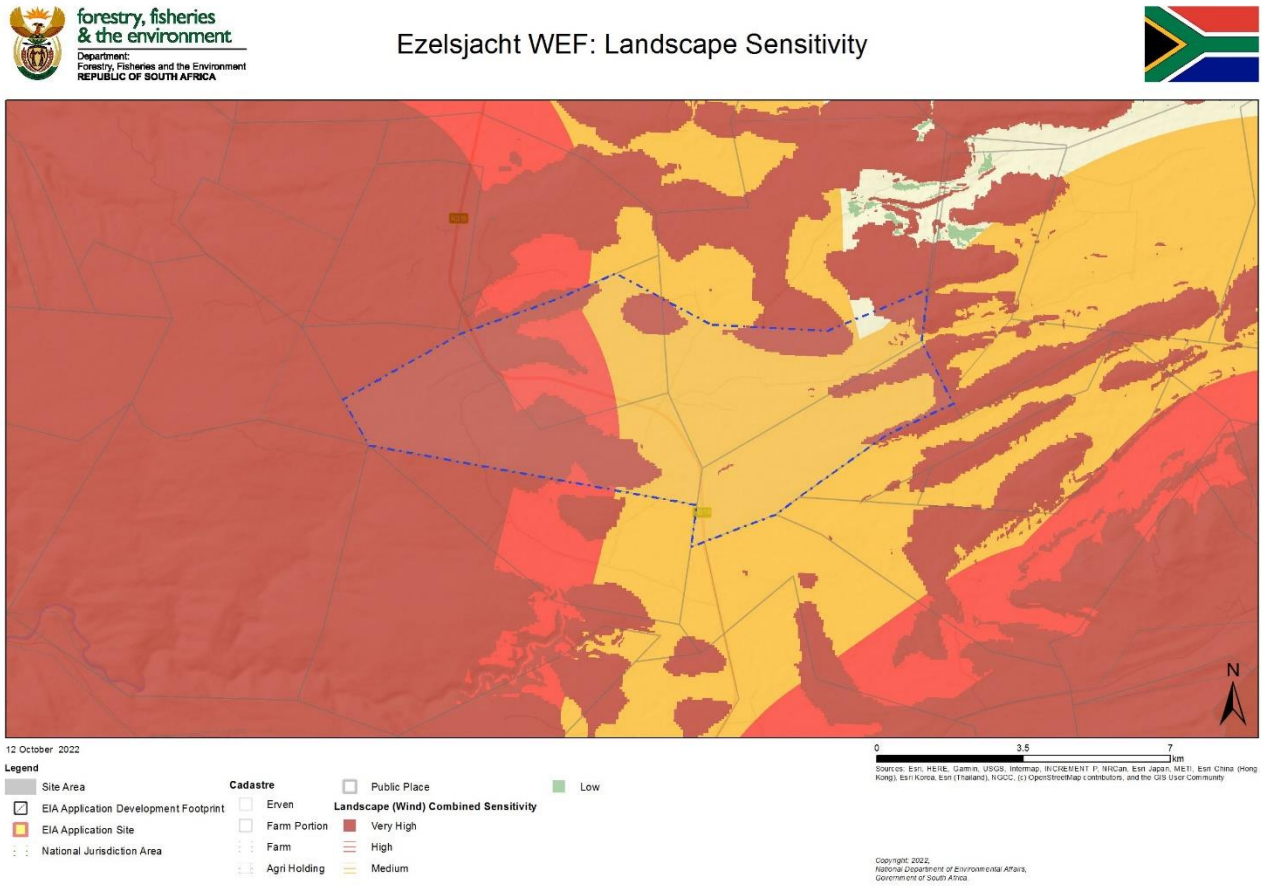

Figure 2: Relative Landscape Sensitivity (October 2022)

The flicker theme demarcates areas (1 km buffers) of sensitivity around identified receptors in the area (**Figure 3**). Under this theme, potential flicker receptors have been identified on the site, or within 1 km of the site boundary. Buffers demarcated around these receptors have been assigned a “very high” sensitivity rating.

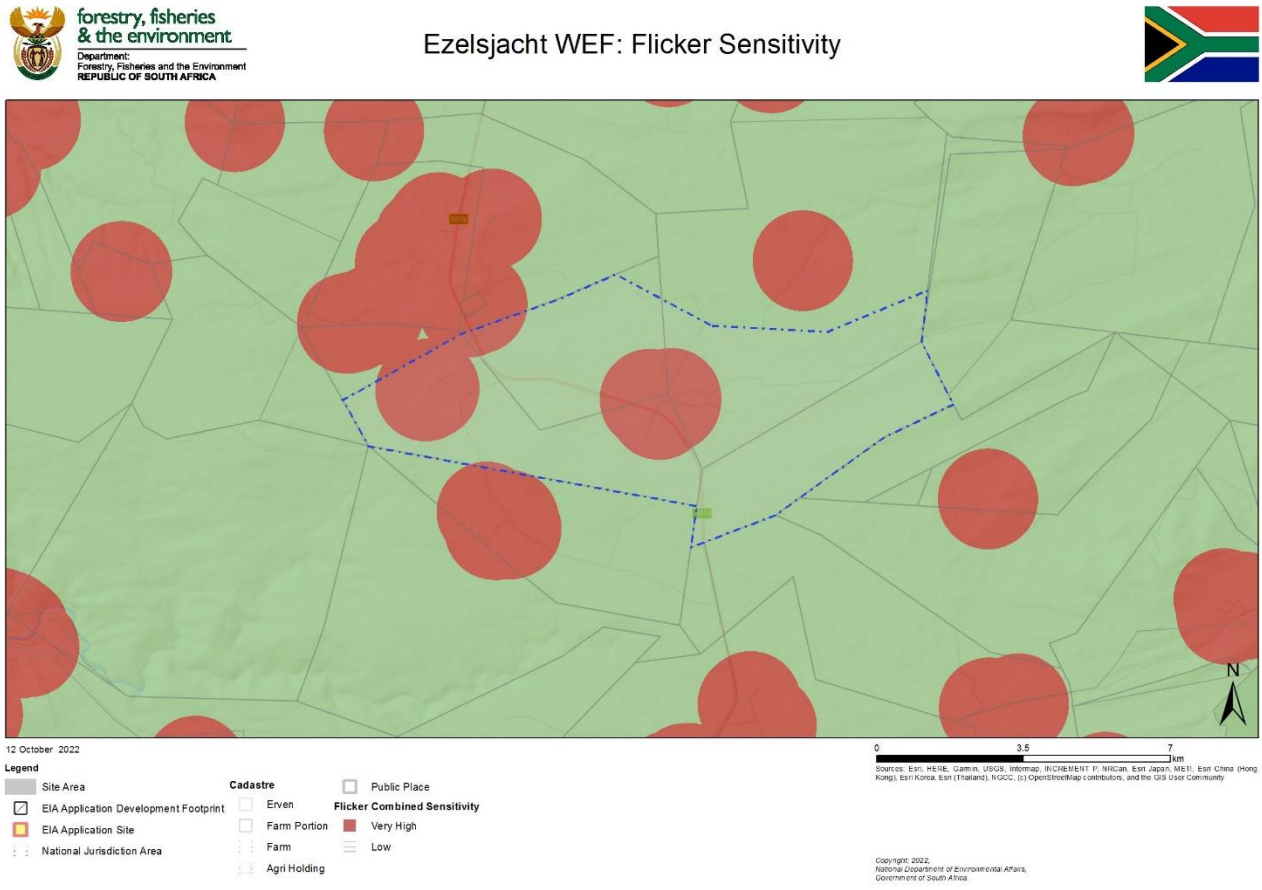

Figure 4: Flicker Sensitivity (October 2022)

The Screening Tool provides a very high level, desktop assessment and as such the results of the study must be viewed against the findings of the field investigation as well as factors affecting visual impact, such as:

- the presence of visual receptors;
- the distance of those receptors from the proposed development; and
- the likely visibility of the development from the receptor locations.

3.2 SENSITIVITY ANALYSIS SUMMARY FOR WEF DEVELOPMENT

The areas of Very High and High Sensitivity identified by the Screening Tool in the Ezelsjacht WEF project area largely align with the ridges and mountain-tops identified in the sensitivity analysis undertaken and confirmed by the site sensitivity verification exercise for this site.

The presence of receptors, within the Ezelsjacht WEF project area, or within 1km of the site boundary, was assessed and confirmed by the site sensitivity verification exercise. However, an assessment of receptor locations using Google Earth showed that there were no receptors present at some of the locations identified by the National Screening Tool. The remaining (confirmed) receptor was factored into the sensitivity analysis, together with a 500m buffer.

4 CONCLUSION

A site sensitivity verification has been conducted in respect of the Visual Impact Assessment (VIA) for the proposed 140MW Ezelsjacht WEF near De Doorns in the Western Cape Province. This verification has been based on a desktop-level assessment supported by field-based observation.

As outlined above, the sensitivities identified have been further assessed in relation to the sensitivities identified in terms of the Landscape and Flicker Themes of the National Environmental Screening Tool and the areas identified as visually sensitive during the course of the specialist Visual Impact Assessment and associated field work have been verified.

APPENDIX D: MAPS

RECORD OF REPORT DISTRIBUTION

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Client:	Mainstream

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