SOUTH AFRICA MAINSTREAM RENEWABLE POWER DEVELOPMENTS (PTY) LTD

Proposed Construction of the Karee Wind Energy Facility, Battery Energy Storage System (BESS) and Associated Grid Connection Infrastructure near Touws River, Western Cape Province

Visual Impact Assessment Report – Basic Assessment

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Client:	South Africa Mainstream Renewable Power Developments (Pty) Ltd

Confidentiality Statement

National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and Environmental Impact Assessment (EIA) Regulations, 2014 (as amended) - Requirements for Specialist Reports (Appendix 6)

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 1.3** **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 1.2** **Appendix A**
(cA) an indication of the quality and age of base data used for the specialist report;	**Section 1.4** **Section 1.5**
(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 1.4** **Appendix E**
(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 8.5** **Section 9**
(k) any mitigation measures for inclusion in the EMPr;	**Section 8.5**
(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 8.5**

(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 that should be included in the EMPr or Environmental Authorization, and where applicable, the closure plan;	**Section 10.1**
(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**

SOUTH AFRICA MAINSTREAM RENEWABLE POWER DEVELOPMENTS (PTY) LTD

PROPOSED CONSTRUCTION OF THE 200 MW KAREE WIND ENERGY FACILITY (WEF), BATTERY ENERGY STORAGE SYSTEM (BESS) AND ASSOCIATED GRID CONNECTION INFRASTRUCTURE NEAR TOUWS RIVER, WESTERN CAPE PROVINCE

VISUAL IMPACT ASSESSMENT REPORT – BASIC ASSESSMENT

Executive Summary

South Africa Mainstream Renewable Power Developments (Pty) Ltd (hereafter referred to as "Mainstream") is proposing to construct the 200MW Karee Wind Energy Facility (WEF) and associated grid connection infrastructure near Touws River in the Western Cape Province. The proposed WEF and associated grid infrastructure is located within the Komsberg Renewable Energy Development Zone (REDZ 2) and the Central Strategic Transmission Corridor, as published in terms of Section 24(5) of the National Environmental Management Act, Act 107 of 1998 (NEMA) in GN R114 and GN R113 of 16 February 2018. A Basic Assessment (BA) process as contemplated in terms of regulation 19 and 20 of the Environmental Impact Assessment (EIA) Regulations, 2014, is required for the authorisation of this large scale WEF. Accordingly, a BA 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 BA Process as contemplated in terms of regulation 19 and 20 of the EIA Regulations, 2014, which is currently being undertaken in parallel to the WEF BA process. This combined Visual Impact Assessment (VIA) is being undertaken as part of the BA processes.

The VIA has determined that the study area has a largely natural visual character with some pastoral elements. The area has however seen very limited transformation or disturbance and as such the proposed Karee 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 reduced by the presence of the Kappa Substation, high voltage power lines and road infrastructure within 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.

Although the study area is not typically known for its tourism significance, the presence of several private nature and game reserves would suggest that the area does have some tourism appeal. There is however limited human habitation resulting in relatively few sensitive or potentially sensitive receptors in the area. A total of thirty-three (33) potentially sensitive receptors were identified within the combined study area, although only nineteen of these were found to be within the viewshed for the proposed WEF. Four (4) of these receptors are considered to be sensitive receptors as they are linked to leisure/nature-based tourism activities in the area. One of the sensitive receptors that is expected to experience high levels of visual impact from the WEF facility, is the Vaalkloof Private Nature Reserve. The remaining three (3) sensitive receptors would experience moderate levels of impact.

Fifteen (15) of the receptors identified are all assumed to be farmsteads which are regarded as potentially sensitive visual receptors as they are located within a mostly rural setting and the proposed development will likely alter natural vistas experienced from these locations. Only six (6) of these receptors are expected to experience high levels of visual impact as a result of the WEF development. This sensitivity rating relates largely to the fact that these receptors are located in in close proximity to the boundary of the Karee WEF application site and they are in zones of high contrast, with little natural screening present. Two of these receptors, namely VR22 and VR49 are in fact located within the proposed Karee WEF development area and as such, these properties form part of the WEF project. Thus it is assumed that the owners have a vested interest in the WEF project and would not perceive the development in a negative light. Furthermore, none of these receptors are tourism-related facilities and as such they are not considered to be Sensitive Receptors.

Nine (9) potentially sensitive receptor locations would be subjected to moderate levels of visual impact as a result of the proposed Karee WEF development.

The only sensitive receptor (SR1) identified within 5km of the power line assessment corridors would experience only moderate levels of visual impact as a result of the proposed 132kV power line associated with the Karee WEF development.

Three (3) of the *potentially* sensitive receptor locations are expected to experience high levels of visual impact as a result of the proposed power line. The high sensitivity rating relates largely to the fact that these receptors are located in areas of high visual contrast that are also relatively close to the proposed power line route alignments. Impacts resulting from the proposed new power line are however expected to be reduced by the presence of existing high voltage power lines already visible to these receptors. In addition, one of these receptors is VR22 which is located within the proposed WEF development area and as such, this property forms part of the WEF project. The remaining four (4) potentially sensitive receptor locations would be subjected to moderate levels of visual impact as a result of the proposed power line.

Although the N1 and R356 receptor roads traverse the study area, wind turbines are only expected to be visible from the R356. Motorists travelling along this route are only expected to experience moderate impacts from the proposed Karee WEF and no impacts from the grid connection infrastructure associated with the project.

An overall impact rating was also conducted in order to allow the visual impact to be assessed alongside other environmental parameters. The assessment revealed that impacts associated with the proposed Karee WEF and associated grid connection infrastructure will be of low significance during both construction and decommissioning phases. During operation, visual impacts from the WEF would be of medium significance with relatively few mitigation measures available to reduce the visual impact. Visual impacts associated with the grid connection infrastructure during operation would be of low significance.

Although other proposed renewable energy developments and infrastructure projects were identified within a 35km radius of the Karee WEF project, it was determined that four (4) of these would have any significant impact on the landscape within the visual assessment zone, namely Perdekraal East WEF, Perdekraal West WEF, Tooverberg WEF and Patatskloof WEF. These proposed WEFs, in conjunction with the associated grid connection infrastructure, will inevitably introduce an increasingly industrial character into a largely natural, pastoral landscape, thus giving rise to significant cumulative impacts. It is however anticipated that these impacts could be mitigated to acceptable levels with the implementation of the recommendations and mitigation measures stipulated for each of these developments by the respective visual specialists. In light of this and the relatively low level of human habitation in the study area however, cumulative impacts have been rated as medium.

A comparative assessment of site alternatives for the on-site WEF infrastructure and also for the grid connection alternatives was undertaken in order to determine which of the alternatives would be preferred from a visual perspective. No fatal flaws were identified in respect of either of the site alternatives for the proposed on-site substation / BESS / laydown facilities and both alternatives were found to be favourable.

No fatal flaws were identified for either of the grid connection infrastructure alternatives. Power Line Corridor Option 2 was identified as the Preferred Alternative, while Power Line Corridor Option 2 was found to be favourable.

From a visual perspective therefore, the proposed Karee WEF and associated grid infrastructure project is deemed acceptable and the Environmental Authorisation (EA) should be granted. SiVEST is of the opinion that the visual impacts associated with the construction, operation and decommissioning phases can be mitigated to acceptable levels provided the recommended mitigation measures are implemented.

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VISUAL IMPACT ASSESSMENT REPORT – BASIC ASSESSMENT

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GLOSSARY OF TERMS

ABBREVIATIONS

BA	Basic Assessment
DBAR	Draft Basic Assessment Report
DEIAR	Draft Environmental Impact Assessment Report
DFFE	Department of Forestry, Fisheries and Environment
DM	District Municipality
DoE	Department of Energy
DSR	Draft Scoping Report
DTM	Digital Terrain Model
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
FBAR	Final Basic Assessment Report
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.

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VISUAL IMPACT ASSESSMENT REPORT – BASIC ASSESSMENT

1 INTRODUCTION

South Africa Mainstream Renewable Power Developments (Pty) Ltd (hereafter referred to as "Mainstream"), is proposing to construct the 200MW Karee Wind Energy Facility (WEF) Battery Energy Storage System (BESS) and associated grid connection infrastructure near Touws River in the Western Cape Province. The proposed WEF and associated grid infrastructure is located within the Komsberg Renewable Energy Development Zone (REDZ 2), as published in terms of Section 24(5) of the National Environmental Management Act, 1998 (NEMA) in GN R114 of 16 February 2018. A Basic Assessment (BA) process as contemplated in terms of regulation 19 and 20 of the Environmental Impact Assessment (EIA) Regulations, 2014, is required for the authorisation of this large scale WEF. Accordingly, a Basic Assessment (BA) process as contemplated in terms of the EIA Regulations (2014, as amended) is being undertaken in respect of the proposed WEF project.

Grid connection infrastructure for the WEF will be subject to a separate BA Process as contemplated in terms of regulation 19 and 20 of the EIA Regulations, 2014, which is currently being undertaken in parallel to the WEF BA 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 combined Visual Impact Assessment (VIA) considers the impact of both the WEF and the associated grid infrastructure and corridors as part of the BA processes. The aim of the VIA is to identify potential visual issues associated with the development of the proposed WEF and associated infrastructure, as well as to determine the potential extent of visual impacts. This

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

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 resulting from the WEF and the associated infrastructure.

1.2 Terms of Reference

The terms of reference for this VIA are included in **Appendix A**.

1.3 Specialist Credentials

This VIA was undertaken by Kerry Schwartz, a Geographical Information Systems (GIS) specialist with more than 20 years' experience in the application of GIS technology in various environmental, regional planning and infrastructural projects undertaken by SiVEST SA (Pty) Ltd (SiVEST). Kerry's GIS and spatial analysis skills have been extensively utilised in projects throughout South Africa and in other Southern 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- B** of this specialist assessment.

Table 1: Relevant Project Experience

Environmental Practitioner	SiVEST SA (Pty) Ltd – Kerry Schwartz
Contact Details	kerrys@sivest.co.za
Qualifications	BA (Geography), University of Leeds 1982
Expertise to carry out the Visual Impact Assessment.	**Visual Impact Assessments:** ▪ 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 ▪ Visual Impact Assessments for 5 Solar Power Plants in the Northern Cape ▪ Visual Impact Assessments for 2 Wind Farms in the Northern Cape ▪ Visual Impact Assessment for Mookodi Integration Project (132kV distribution lines)

1.4 Assessment Methodology

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

1.4.1 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.

1.4.2 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.

1.4.3 Fieldwork and photographic review

A four (4) day site visit was undertaken between the 21st and the 24th of June 2021 (mid winter). 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).

1.4.4 Visual / Landscape Sensitivity

GIS technology was used to identify any specific areas of potential visual sensitivity within the Karee WEF development site and also within the power line assessment corridors. These would be areas where the placement of wind turbines or the establishment of a new power lines 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.

1.4.5 Impact Assessment

A rating matrix was used to provide an objective evaluation of the significance of the visual impacts associated with the proposed development, both before and after implementing mitigation measures. Mitigation measures were identified (where possible) in an attempt to minimise the visual impact of the proposed development. The rating matrix considers a number of different factors including geographical extent, probability, reversibility, irreplaceable loss of resources, duration and intensity, in order to assign a level of significance to the visual impact of the project.

A separate rating matrix was used to assess the visual impact of the proposed development on each visual receptor location (both sensitive and potentially sensitive), as identified. This matrix is based on three (3) parameters, namely the distance of an identified visual receptor from the proposed development, the presence of screening factors and the degree to which the proposed development would contrast with the surrounding environment.

1.4.6 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, this report will be updated to include relevant information as and when it becomes available.

1.5 Sources of Information

The main sources of information utilised for this VIA included:

- Project description for the proposed development provided by Mainstrem Renewable Power Developments;
- 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 2021;
- South African Renewable Energy EIA Application Database from Department of Environmental Affairs (incremental release Quarter 3 2020);

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

- 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 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.
- In assessing the potential visual impacts for the proposed 132kV power line, the visual assessment zone is assumed to encompass a zone of 5km from the outer boundary of the power line assessment corridors.
- 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 21st and the 24th of June 2021. Due to the extent of the study area however, and the fact that many of the identified receptors are farm houses 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.
- The potential visual impact at each visual receptor location was assessed using a matrix developed for this purpose. The matrix is based on three main parameters relating to visual impact and, although relatively simplistic, it provides a reasonably accurate indicative assessment of the degree of visual impact likely to be experienced at each receptor location as a result of the proposed development. It is however important to note the limitations of quantitatively assessing a largely subjective or

qualitative type of impact and as such the matrix should be seen merely as a representation of the likely visual impact at a receptor location.

- The exact status of all the receptors and the level of screening present 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.
- 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 300 m at the blade tip and power line tower heights are assumed to be 25m. 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 analyses do 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 Basic Assessment Reports (DBARs) for the WEF and for the grid connection 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 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.
- Photomontages will be compiled in respect of the proposed wind turbine layout in the FBAR phase of the project.

- This study also includes an assessment of the potential cumulative impacts of other renewable energy developments on the existing landscape character and on the identified sensitive receptors. This assessment is based on the information available at the time of writing the report and where information has not been available, broad assumptions have been made as to the likely impacts of these developments.
- SiVEST has made every effort to obtain information for the surrounding planned renewable energy developments (including specialist studies, assessment reports and Environmental Management Programmes) and the available information was factored into the cumulative impact assessment (**Section 8.4**).
- Fieldwork for this study was undertaken in late June 2021, during mid-winter. 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 Karee WEF development and the associated grid connection infrastructure.
- 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. Both 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 and associated grid infrastructure are located approximately 12km and 20km north (respectively) of Touws River in the Western Cape Province (**Figure 1**) and is within the Witzenberg Local Municipality, in the Cape Winelands District Municipality.

3.1.1 WEF

The project site as shown on the locality map below (**Figure 2**) is approximately 11 841 hectares (ha) in extent and incorporates the following farm portions:

- Farm Sadawa No 239
- Farm Tierberg No 258; and
- Farm Voetpads Kloof No 253.

A smaller development area (1753.1 ha) has been identified within the project site where the WEF is planned to be located. This development area is a preliminary suitability assessment undertaken by Mainstream and this area is likely to be further refined to exclude sensitive areas determined through various specialist studies being conducted as part of the BA process.

3.1.2 Grid Connection

At this stage, it is proposed that the 132kV power lines will connect the Karee WEF 33kv/132kv shared on-site substation to the national grid via Kappa Substation. (**Figure 3**)

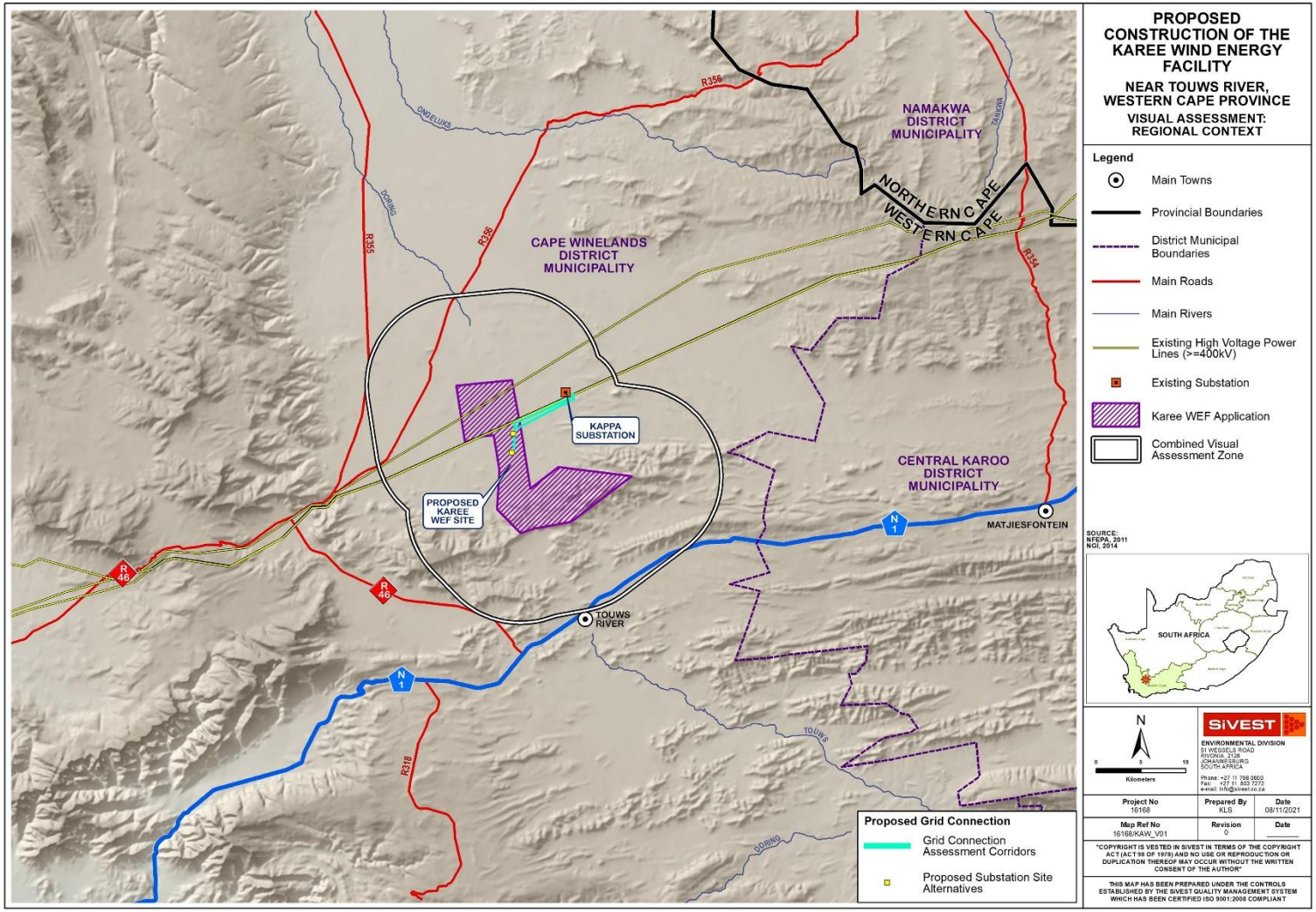


Figure 1: Karee WEF in the Regional Context

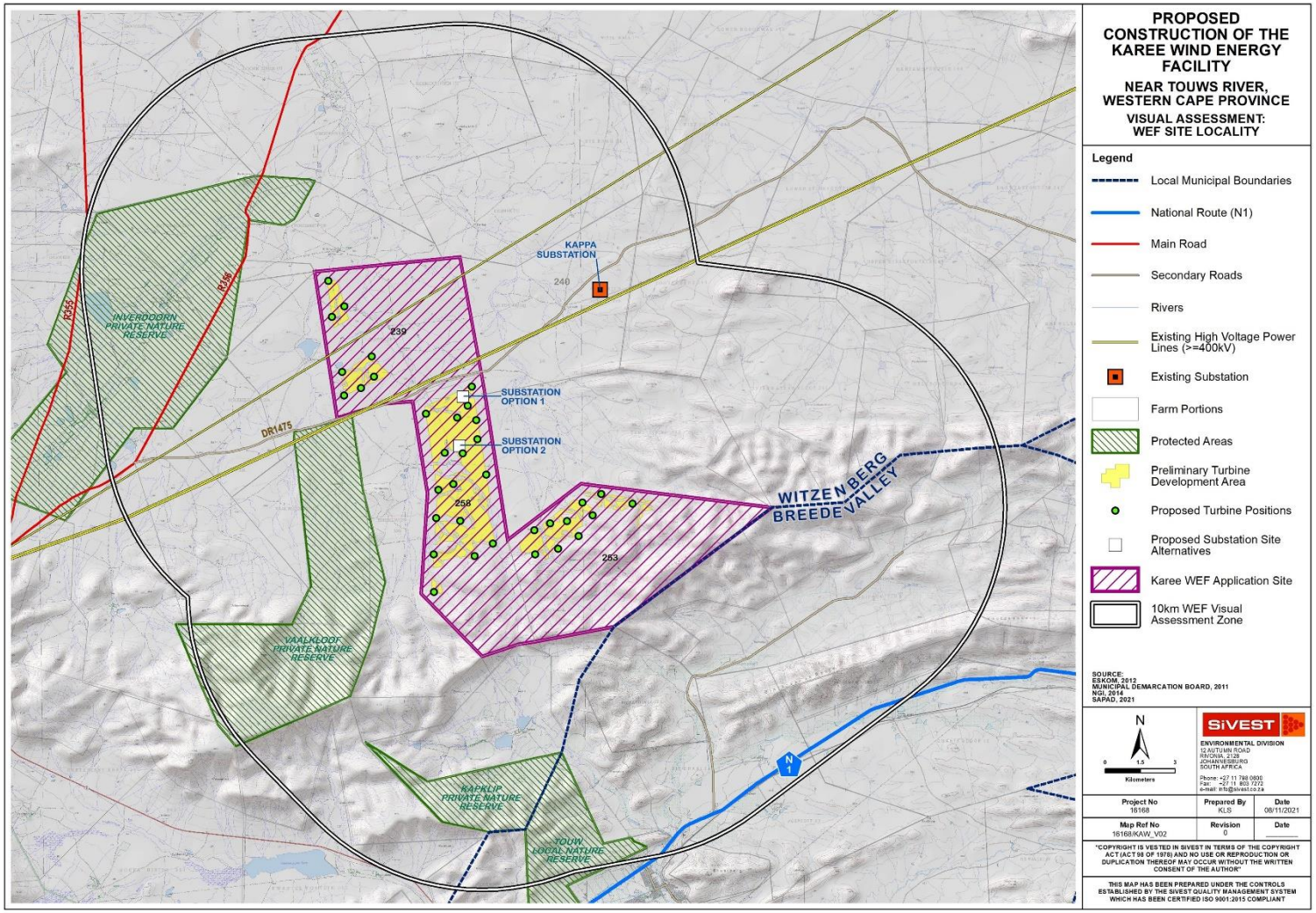


Figure 2: Karee WEF Site Locality

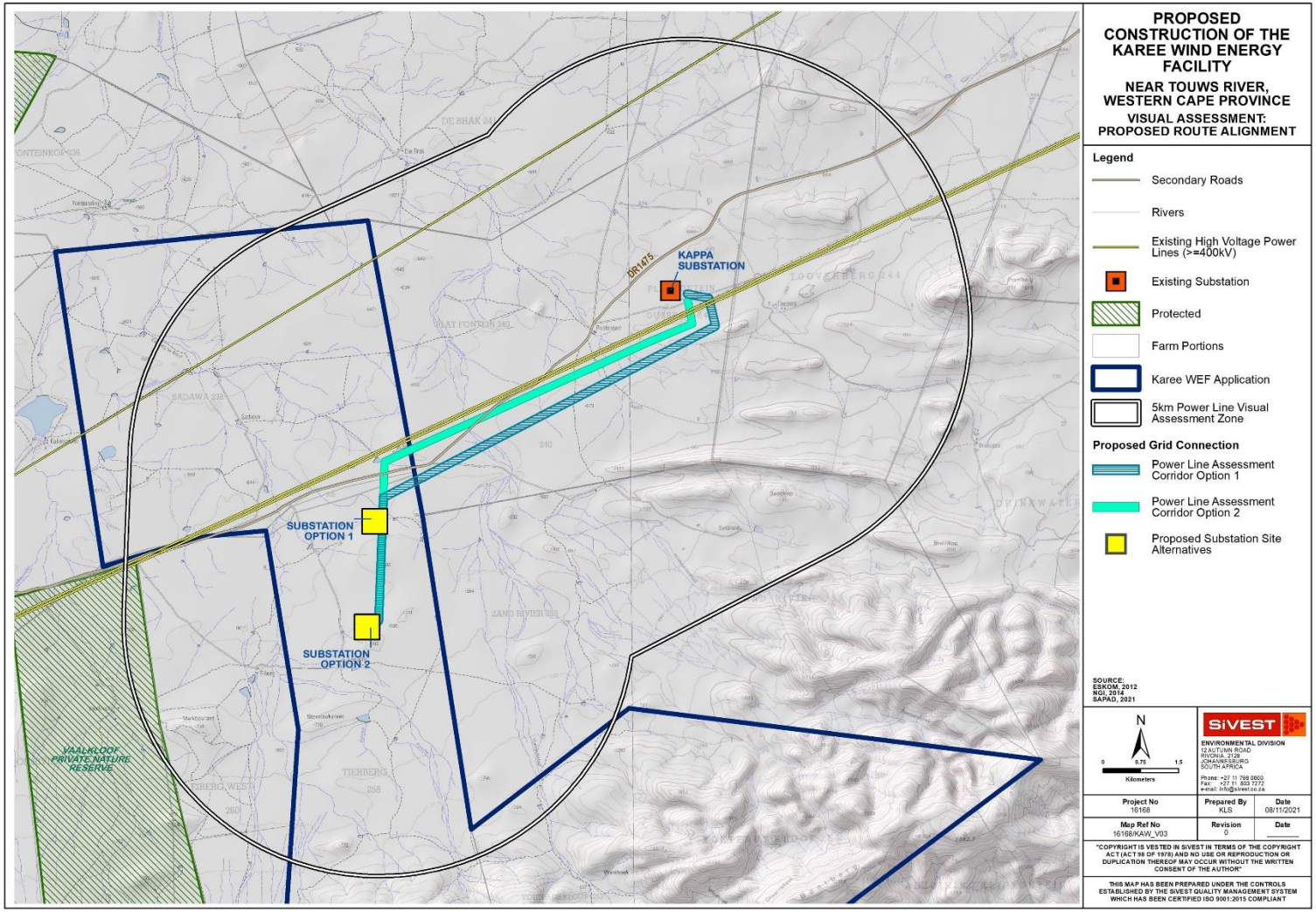


Figure 3: Proposed 132kV Power Line Route Overview

3.2 Project Technical Details

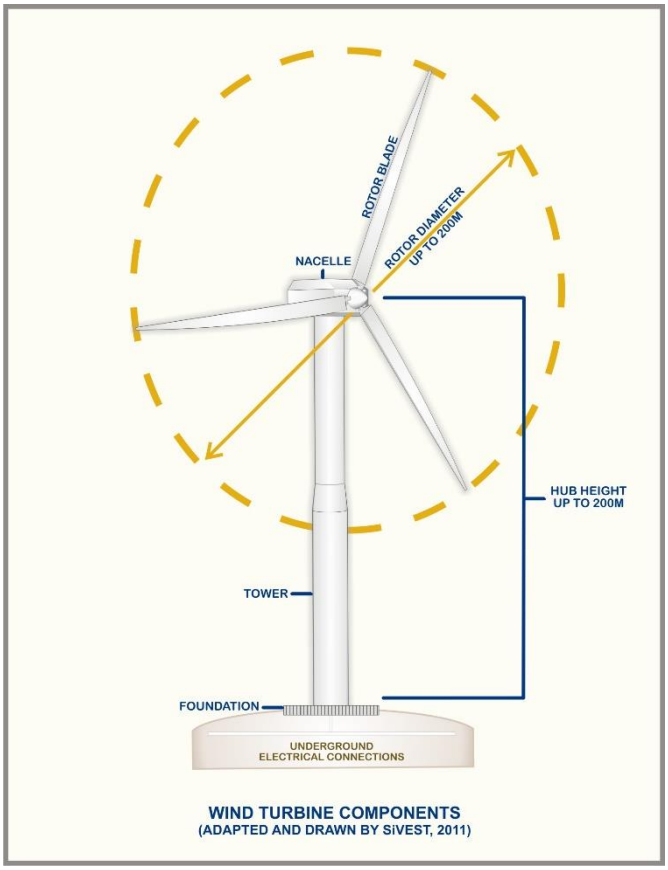
3.2.1 Wind Farm Components

At this stage it is anticipated that the proposed Karee WEF will comprise up to twenty seven (27) wind turbines with a maximum total export capacity of up to approximately 200MWac. The electricity generated by the proposed WEF development will be fed into the national grid via a 132kV overhead power line. The 132kV overhead power line will however require a separate EA and is subject to a separate BA process, which is currently being undertaken in parallel to the WEF BA process. In summary, the proposed Karee WEF will include the following components:

- Up to 35 wind turbines, each, with a maximum export capacity of approximately 200MWac. The final number of turbines and layout of the WEF will, however, be dependent on the outcome of the Specialist Studies conducted during the BA process;
- Each wind turbine will have a hub height of between 120m and 200m and rotor diameter of up to approximately 200m (**Figure 4**);
- Permanent compacted hardstanding areas / platforms (also known as crane pads) of approximately 100m x 100m (total footprint of approx. 10000m2) per turbine during construction and for on-going maintenance purposes for the lifetime of the proposed development;
- Each wind turbine will consist of a foundation of up to approximately 30m in diameter. In addition, the foundations will be up to approximately 3m in depth;
- Electrical transformers (690V/33kV) adjacent to each wind turbine (typical footprint of up to approximately 2m x 2m) to step up the voltage to between 11kV and 33kV;
- One (1) new 11kV - 33/132kV on-site substation consisting of two (2) portions: IPP portion / yard (33kv portion of the shared 33kv/132kv portion) and an Eskom portion (132kv portion of the shared 33kv/132kv portion) including associated equipment and infrastructure, occupying a total area of approximately 25ha (i.e. 250 000m^2) i.e. 15.5 ha for the IPP Portion and 15.5 ha for the Eskom Portion. The Eskom portion will be ceded over to Eskom once the IPP has constructed the onsite substation. The necessary Transfer of Rights will be lodged with DFFE when required.
- A Battery Energy Storage System (BESS) will be located next to the IPP portion / yard of the shared onsite 33/132kV substation and will be included as part of the 15.5ha. The storage capacity and type of technology would be determined at a later stage during the development phase, but most likely comprise an array of containers, outdoor cabinets and/or storage tanks;
- The wind turbines will be connected to the proposed substation via 11 to 33kV underground cabling and overhead power lines.
- Road servitude of 8m and a 20m underground cable or overhead line servitude.
- Internal roads with a width of up to approximately 5m wide will provide access to each wind turbine. Existing site roads will be used wherever possible, although new site roads will be constructed where necessary. Turns will have a radius of up to 50m for abnormal loads (especially turbine blades) to access the various wind turbine positions. It should be noted

that the proposed application site will be accessed via the DR1475 District Road and DR1475, MR316 and MR319 WCG provincial Roads;

- One (1) construction laydown / staging area of up to approximately 3ha to be located on the site identified for the substation. It should be noted that no construction camps will be required in order to house workers overnight as all workers will be accommodated in the nearby town;
- Operation and Maintenance (O&M) buildings, including offices, a guard house, operational control centre, O&M area / warehouse / workshop and ablution facilities to be located on the site identified for the substation. This will be included in the 33kv portion/yard of the substation area i.e.15.5 ha of the IPP portion of the onsite substation..
- A wind measuring lattice (approximately 120m in height) mast has already been strategically placed within the wind farm application site in order to collect data on wind conditions;
- No new fencing is envisaged at this stage. Current fencing is standard farm fence approximately 1-1.5m in height. Fencing might be upgraded (if required) to be up to approximately 2m in height; and
- Water will either be sourced from existing boreholes located within the application site or will be trucked in, should the boreholes located within the application site be limited.
- Optic fibre overhead or underground line from the Adamskraal Substation to the proposed on-site substation.



WIND TURBINE COMPONENTS
(ADAPTED AND DRAWN BY SiVEST, 2011)

Figure 4: Typical components of a wind turbine

3.2.2 Grid Connection Infrastructure

The proposed grid connection infrastructure to serve the Karee WEF will include the following components:

- One (1) new 11-33/132kV on-site substation will be a step-up substation consisting of two (2) portions: IPP portion / yard (33kv portion of the shared 33kv/132kv portion) and an Eskom portion (132kv portion of the shared 33kv/132kv portion) including associated equipment and infrastructure, occupying a total area of approximately 25ha (i.e. 250 000m^2) i.e. 15.5 ha for the IPP Portion and 15.5 ha for the Eskom Portion. The Eskom portion will be ceded over to Eskom once the IPP has constructed the onsite substation. The necessary Transfer of Rights will be lodged with DFFE when required. The applicant will remain in control of the low voltage components (i.e. 33kV components) of the substation, while the high voltage components (i.e. 132kV components) of this substation will likely be ceded to Eskom shortly after the completion of construction; and
- One (1) new 132kV overhead power line connecting the 33kv/132kv shared on-site substation to Kappa Substation and thereby feeding the electricity into the national grid. Power line towers being considered for this development include self-supporting suspension monopole structures for relatively straight sections of the line and angle strain towers where the route alignment bends to a significant degree. Maximum tower height is expected to be approximately 25m.

3.2.3 WEF Layout Alternatives

No other activity alternatives are being considered. Renewable Energy development in South Africa is highly desirable from a social, environmental and development point of view and a WEF is considered suitable for this site due to the high wind resource in this area.

Design and layout alternatives will be considered and assessed as part of the BA. These include site alternatives for the substation / BESS / Laydown facilities (**Figure** 5).

The choice of technology selected for the Karee WEF is based on environmental constraints and technical and economic considerations. No other technology alternatives are being considered as WEF are more suitable for the site than other forms of renewable energy due to the high wind resource.

The size of the wind turbines will depend on the development area and the total generation capacity that can be produced as a result. The choice of turbine to be used will ultimately be determined by technological and economic factors at a later stage. This will be confirmed once the project receives Preferred Bidder status and the Applicant undertakes the process to finalise the layout and Environmental Management Programme.

3.2.4 Grid Connection Alternatives

The grid connection infrastructure proposals include two (2) substation site alternatives, each of which are 25 hectares in extent, split into two (2) portions: The IPP portion (15.5 ha) and the Eskom Portion (15.5 ha); and two (2) power line route alignment alternatives within a 150m wide assessment corridor (75m on either side of power line) (**Figure** 6). These alternatives will be considered and assessed as part of the BA process and will be amended or refined to avoid identified environmental sensitivities.

All power line route alignments will be assessed within a 150m wide assessment corridor (75m on either side of power line). These alternatives are described below:

- Power Line Corridor Option 1 is between 8.5km and 10.5km in length, linking either Substation Option 1 or Substation Option 2 to Kappa Substation; and
- Power Line Corridor Option 2 is between 8.4km and 10.4km in length, linking either Substation Option 1 or Substation Option 2 to Kappa Substation.

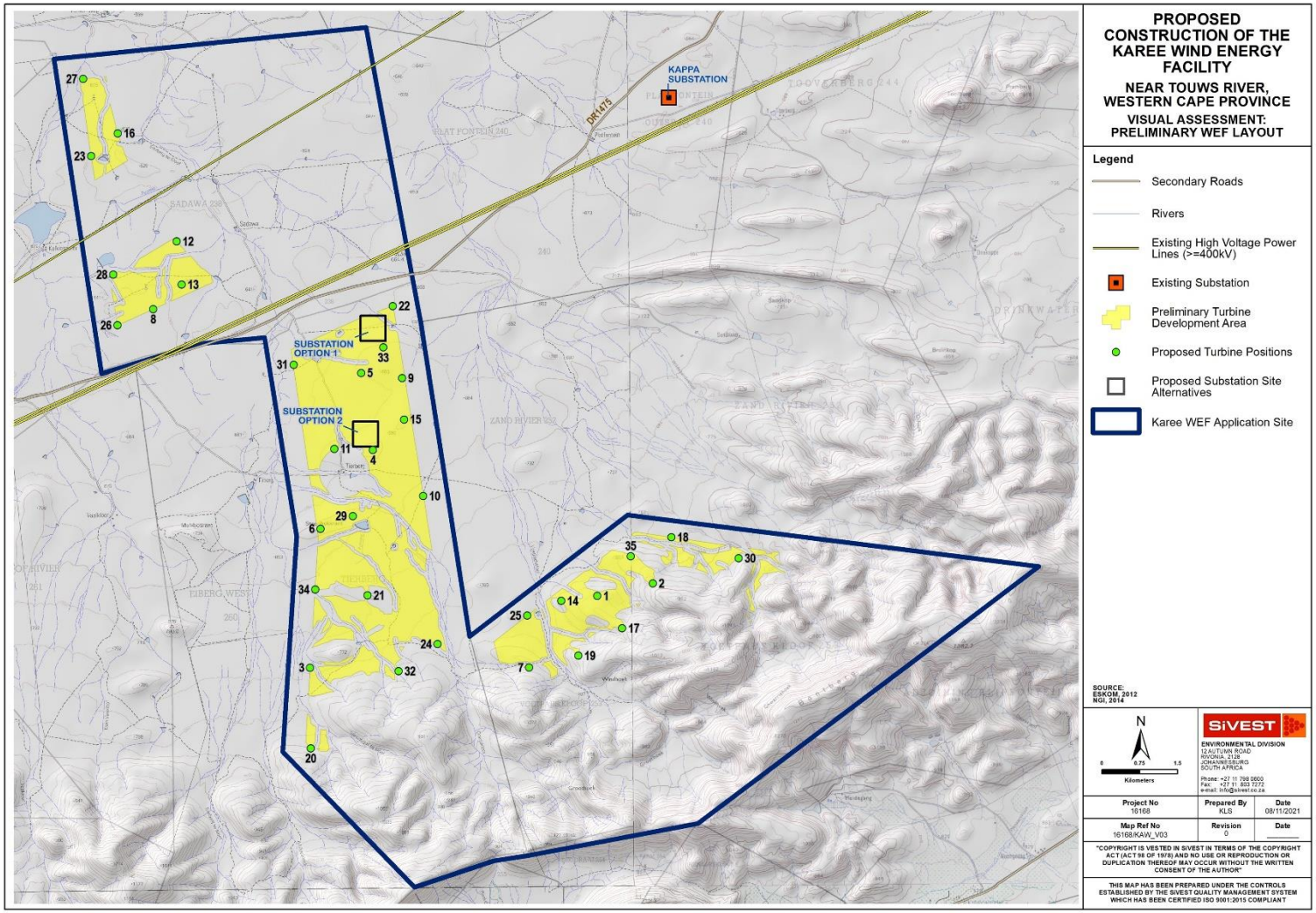


Figure 5: Preliminary Karee WEF layout

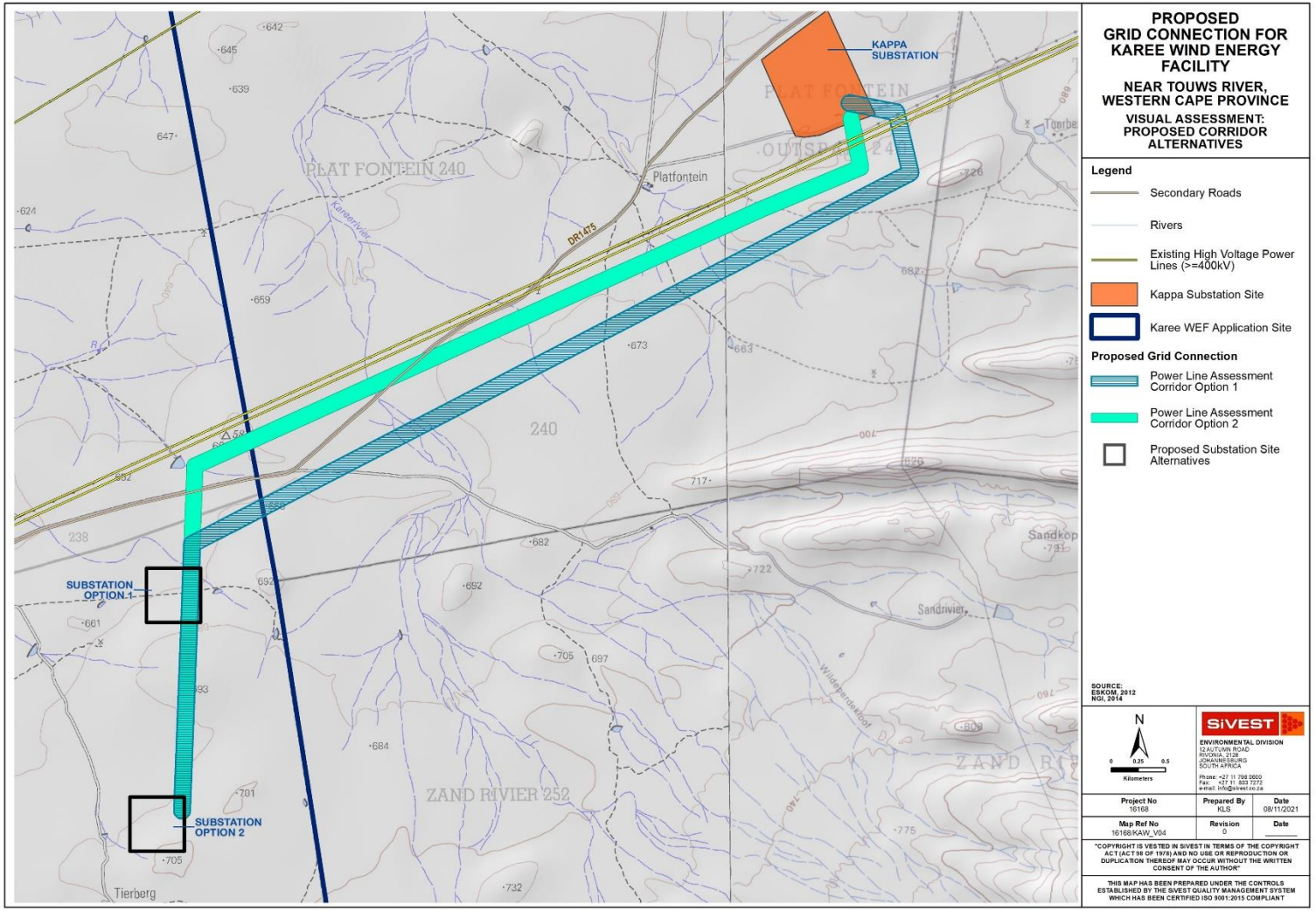


Figure 6: Grid Connection Alternatives

4 LEGAL REQUIREMENTS AND GUIDELINES

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

As previously mentioned, the proposed WEF and associated grid infrastructure is located within the Komsberg Renewable Energy Development Zone (REDZ 2), that was Gazetted on 16 February 2018 by the Minister of Environmental Affairs (GN 114). Accordingly, in terms of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) and the 2014 NEMA EIA Regulations promulgated in Government Gazette 40772 and Government Notice (GN) R326, R327, R325 and R324 on 7 April 2017, wind and solar PV projects located within a REDZs are subject to a BA process.

Grid connection infrastructure for the WEF will be subject to a separate BA Process as contemplated in terms of regulation 19 and 20 of the Environmental Impact Assessment Regulations, 2014, which is currently being undertaken in parallel to the WEF BA process.

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 and power line 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. The experience of the viewer is however highly subjective and there are those who may perceive wind turbines 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 and associated grid connection infrastructure 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 up-liftment and the general growth and progression of an area, and could even have positive connotations.

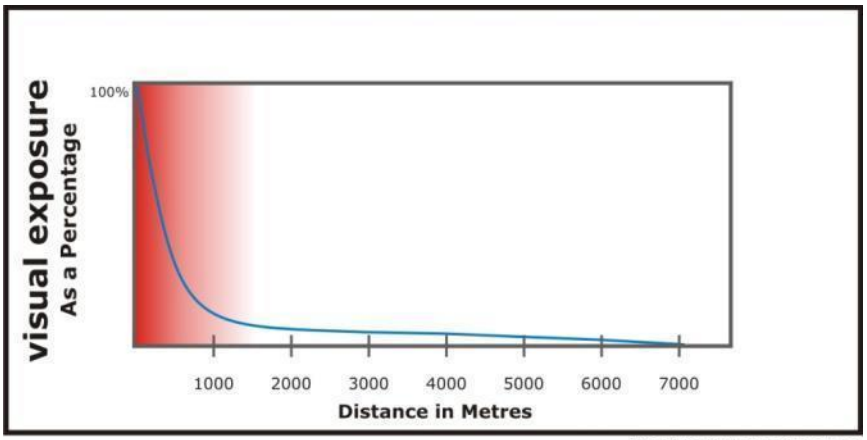
5.3 Type of visual receptor

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 **(Figure 7)**.



SOURCE: Hull, RB; Bishop, ID

Figure 7: Conceptual representation of diminishing visual exposure 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 it 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 Karee WEF development is located in the scenic Karoo region of the Western Cape which is generally associated with wide vistas and mountainous landscapes. The topography in the immediate vicinity of the site is however characterised by flat to gently undulating plains (**Figure 8)** interspersed with areas of localised hills and koppies (**Figure 8**). Areas of greater relief occur to the south and east of the study area in the form of the Bontberg and (**Figure 9**) and Roggeveld ranges characterised by incised valleys and the flatter, higher lying plateaus with steep slopes.

Maps showing the topography and slopes within and in the immediate vicinity of the combined assessment area are provided in **Figure 11** and Error! Reference source not found.**.**

Figure 8: Typical terrain in the Karee WEF study area including flat to gently undulating plains.

Figure 9: View of some of the localised hills / koppies in the study area.

Figure 10: View of the Bontberg Range to the south of the Karee WEF application site.

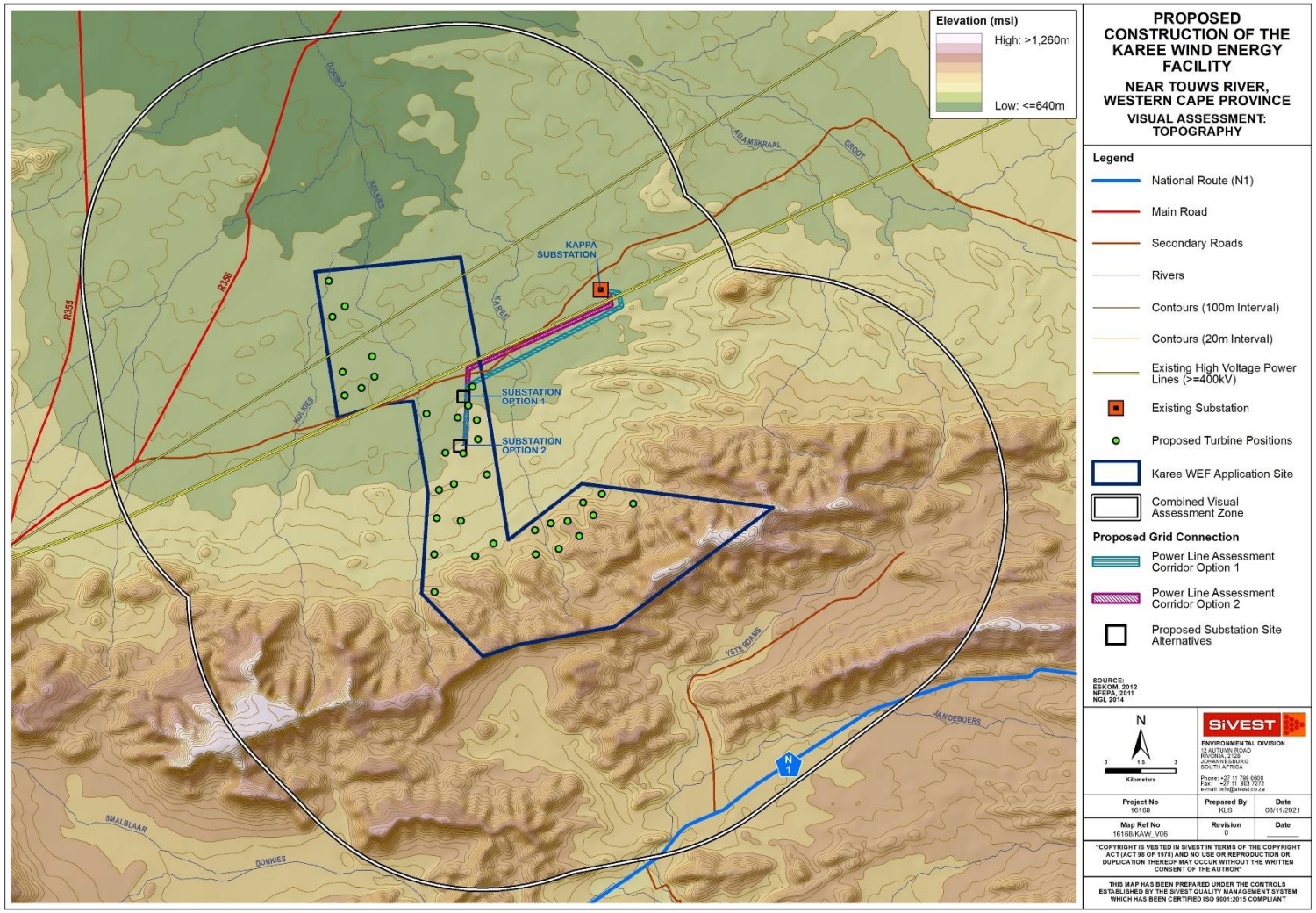


Figure 11: Topography of the study area

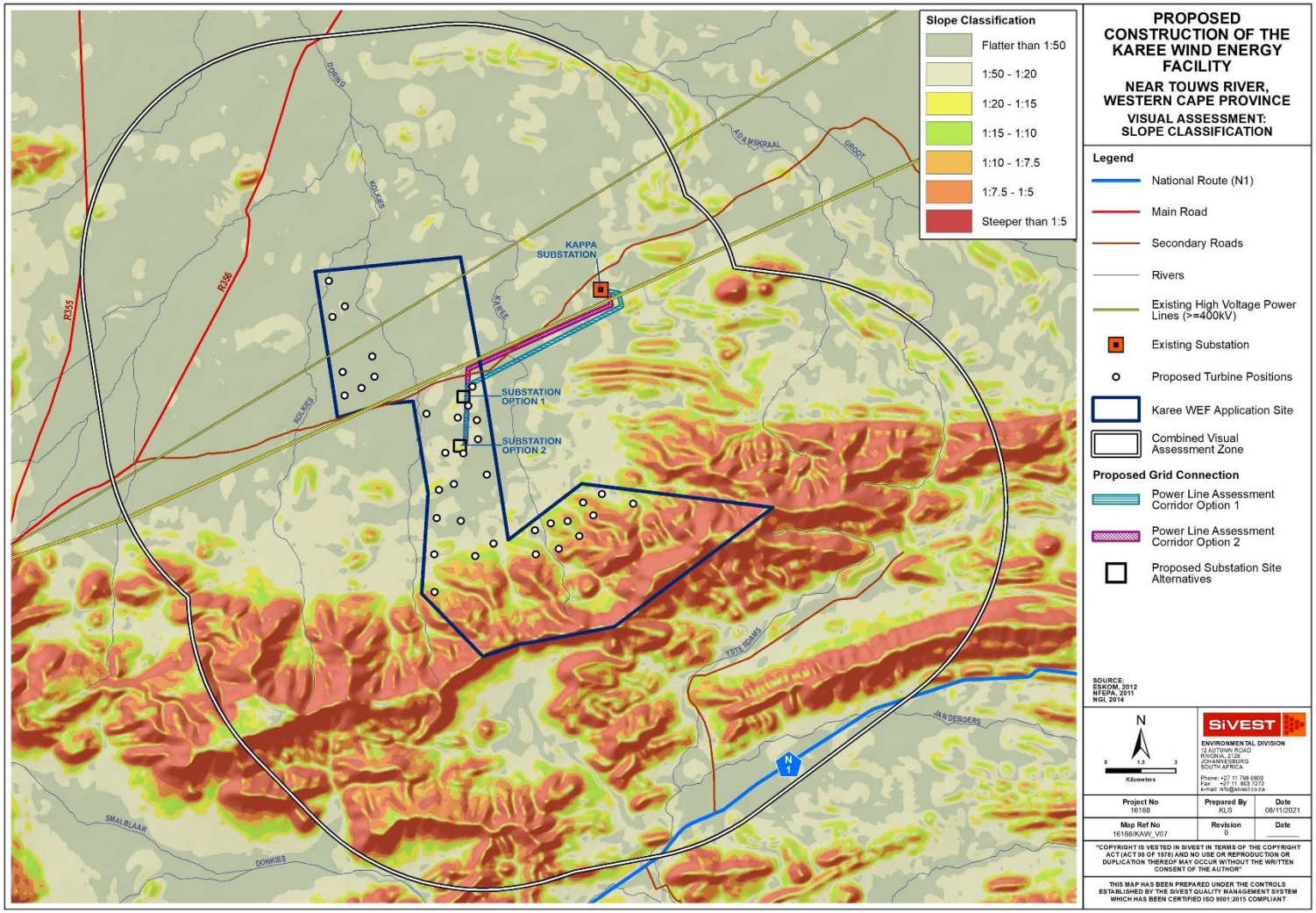


Figure 12: Slope classification

Visual Implications

Areas of flat relief, including the flat plains and higher-lying plateaus, are characterised by wide ranging vistas, although these vistas will be somewhat constrained by the surrounding hills and mountain ranges which enclose the visual envelope (**Figure 13**).

In the hillier and higher-lying terrain, the vistas will depend on the position of the viewer. Viewers located within some of the more incised valleys for example, would have limited vistas, whereas a much wider vista would be experienced by viewers on higher-lying ridge tops or slopes. Importantly in the context of this study, the same is true of objects placed at different elevations and within different landscape settings. Objects placed on high-elevation slopes or ridge tops would be highly visible, while those placed in valleys or enclosed plateaus would be far less visible.

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. Although the mountains of the Bontberg range would limit views of wind turbines from areas in the southern sector of the study area, across the remainder of the study area there would be very little topographic shielding to lessen the visual impact of the turbines from any locally-occurring receptor locations.

This assumption was confirmed by way of a preliminary visibility analysis for the proposed turbine positions as provided by Mainstream. A worst-case scenario was assumed when undertaking the analysis, in which the proposed turbines were assigned a maximum height 300 m (maximum height at blade tip). The resulting viewshed, as shown in **Figure 14** indicates that the blade tips of wind turbines positioned on the application site would be visible from most central and northern parts of the of the study area. Much of the southern sector of the study area is however outside the viewshed for the proposed turbines.

Although the power line towers and the steel structures of the proposed substation are much smaller than wind turbines, at a maximum height of 25m, they are still likely to be visible from many of the locally-occurring receptor locations. A preliminary visibility analysis was undertaken for the proposed power line routes and substation sites, based on points at 250 m intervals along the centre line of the corridor alternatives, and assuming a tower height of 25 m. The resulting viewshed as per **Figure 15** below indicates that elements of the proposed grid connection infrastructure would be visible from most parts of the study area. Small pockets of land, particularly in the eastern sector of the study area, were found to be outside the viewshed for the power lines largely due to localised topographic variations.

The visibility analysis is however based entirely on topography and does not 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.

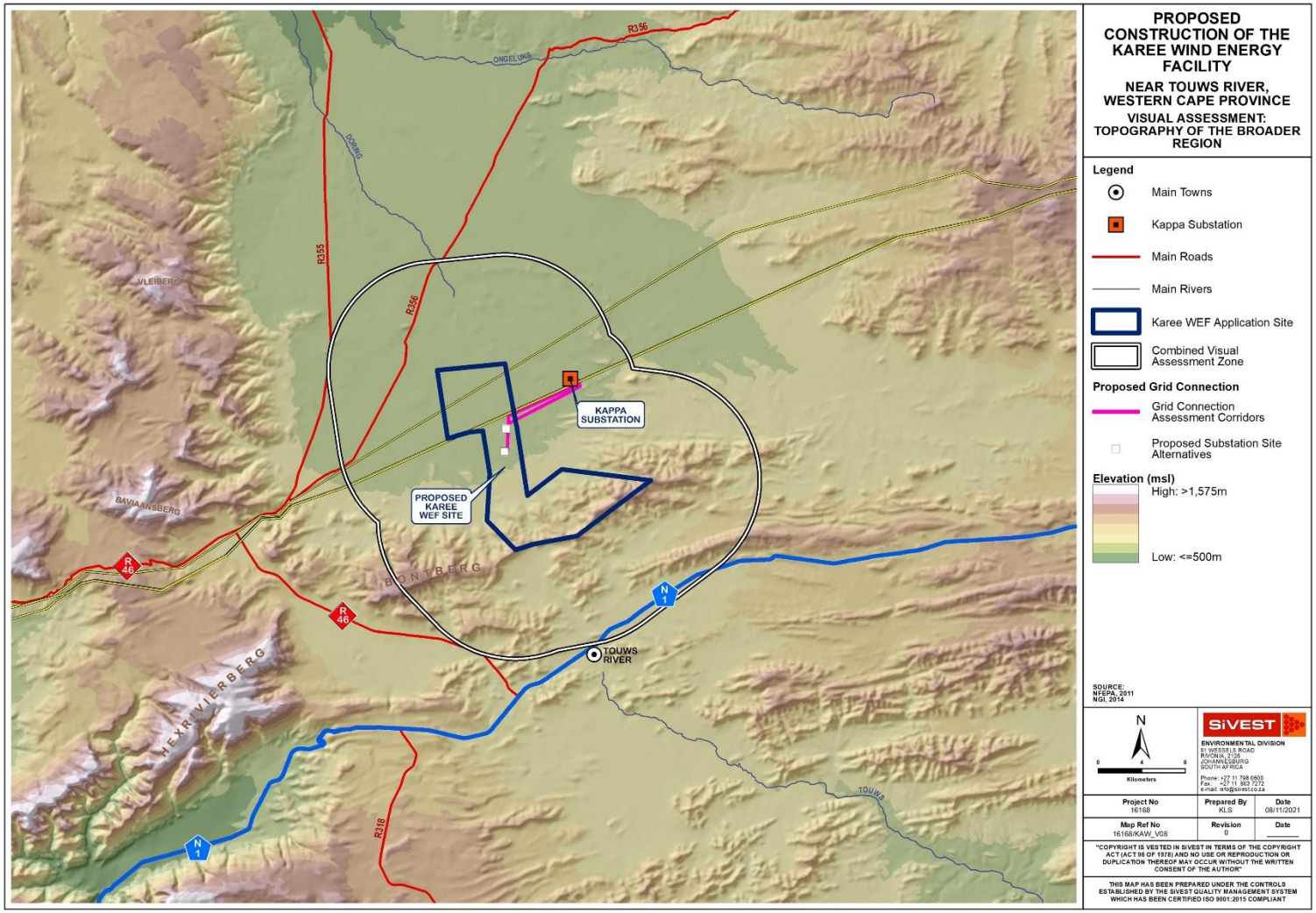


Figure 13: Topography in the broader region partially enclosing the visual envelope.

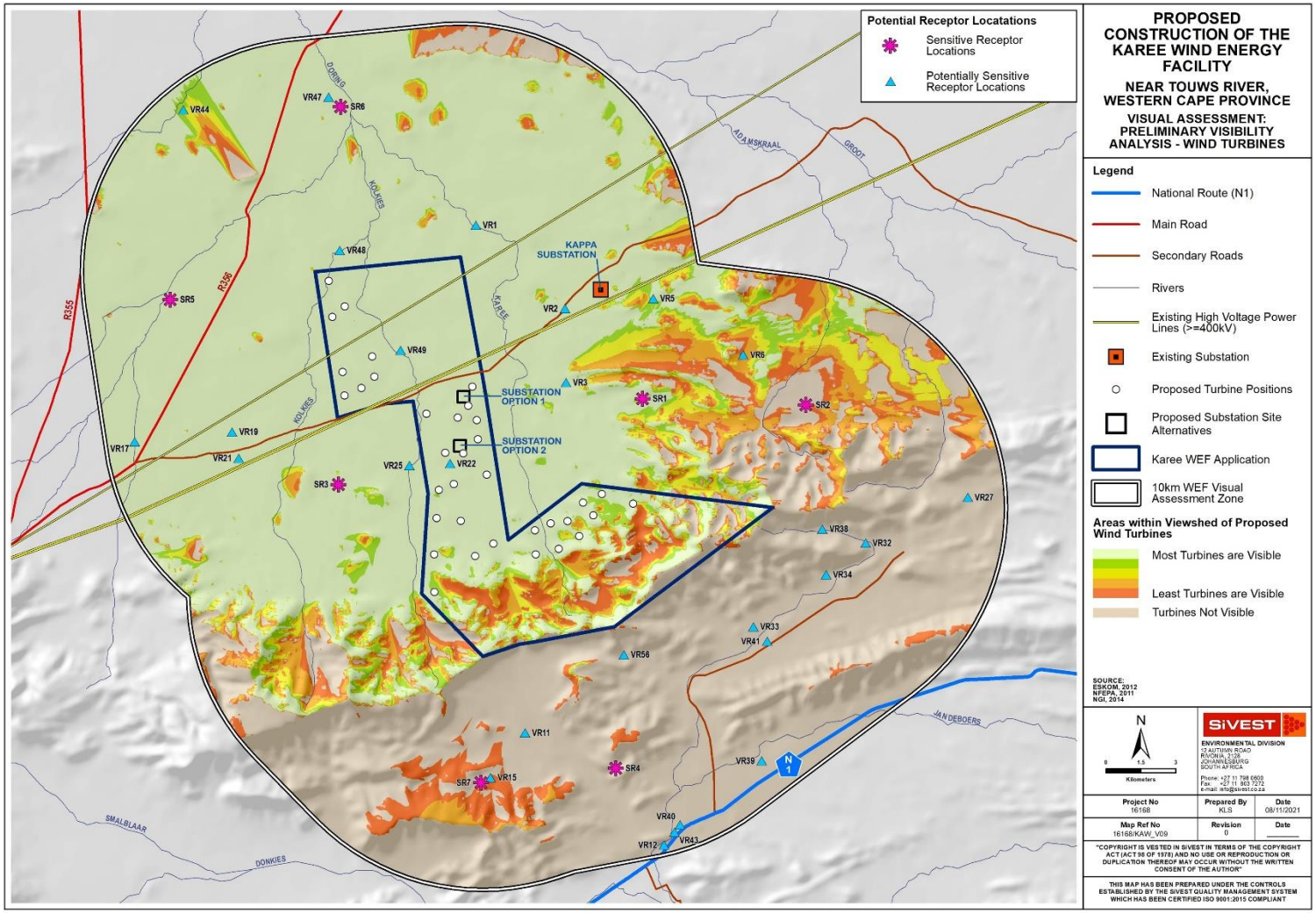


Figure 14: Potential visibility wind turbines

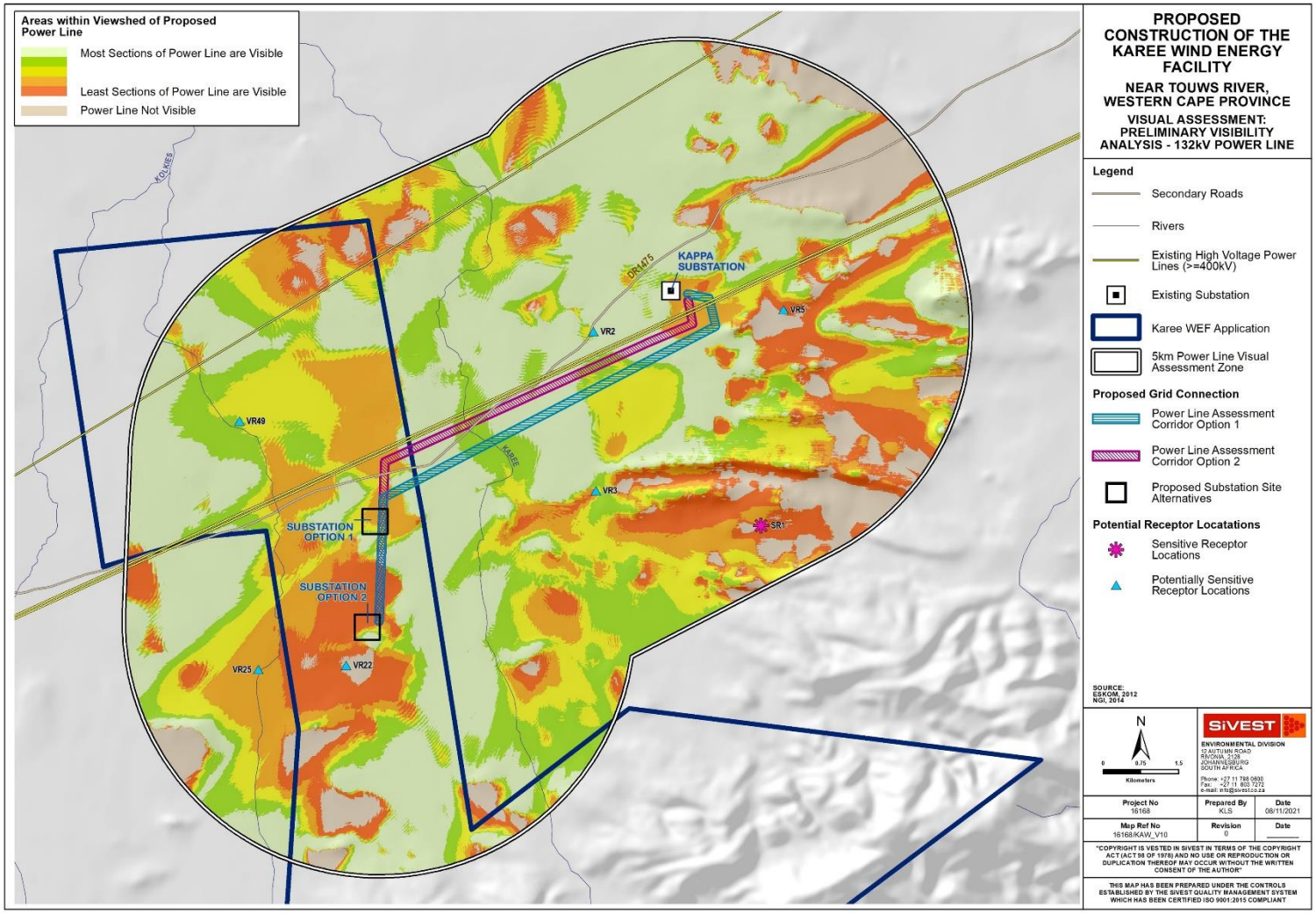


Figure 15: Potential visibility of power lines

6.1.2 Vegetation

According to Mucina and Rutherford (2006), much of the northern sector of the study area is covered by the Tanqua Karoo vegetation type which tends to occur in intra-mountain basin landscapes where slightly undulating terrain is sheltered by the steep slopes of mountain ranges (**Figure 16**). On the flatter plains which tend to be sparsely vegetated, this vegetation type comprises low succulent shrubs. The slopes of the koppies and the adjacent foothills however support medium-tall succulent shrubland (**Figure 17**).

The low mountains of the south-eastern sector of the study area are characterised by Matjiesfontein Quartzite Fynbos interspersed with bands of Matjiesfontein Shale Renosterveld. These vegetation types largely comprise medium tall, medium dense shrubland.

Some tree species are also present in the study area, particularly where exotic tree species and other typical garden vegetation has been established around farmsteads (Error! Reference source not found.).

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.

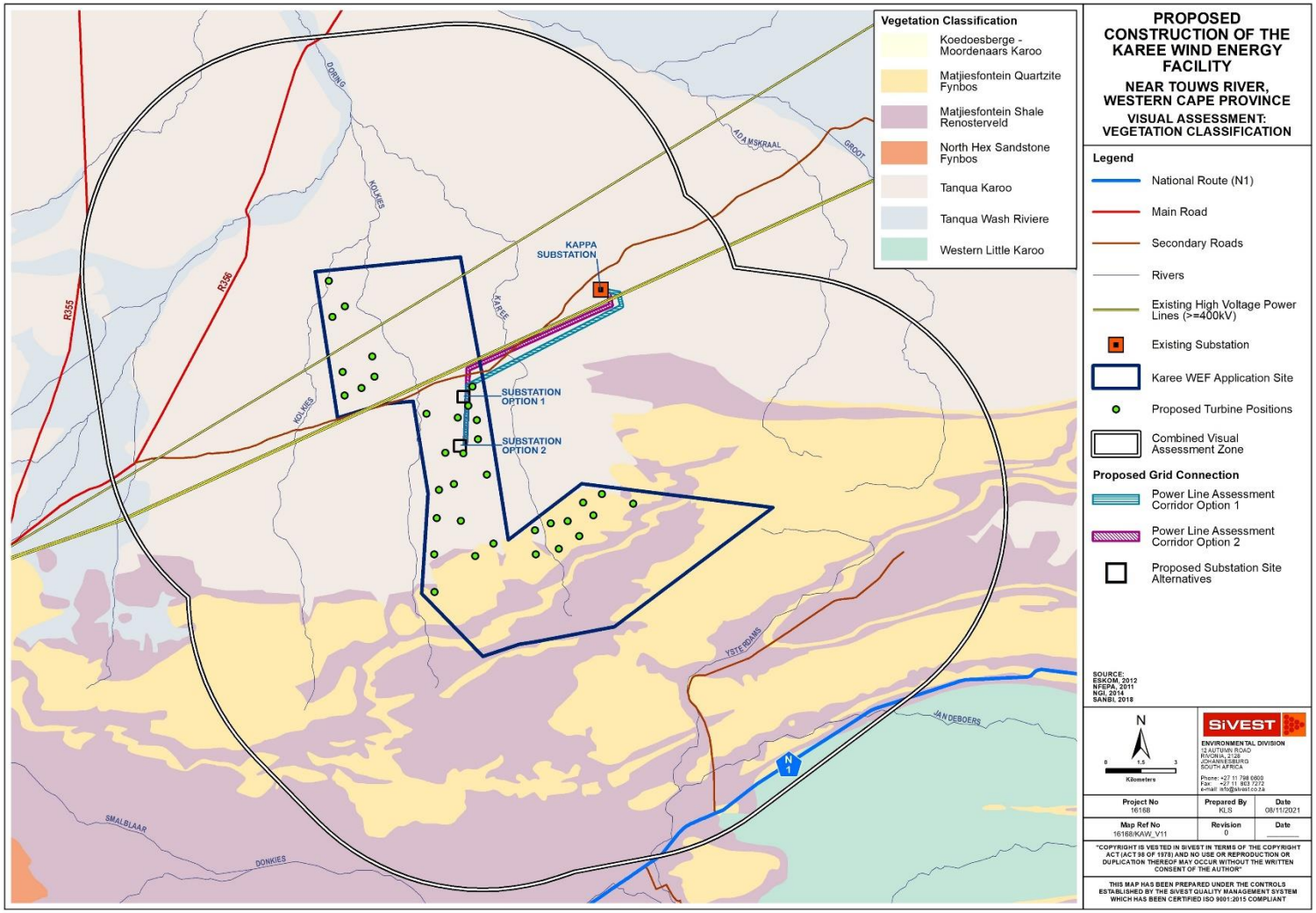


Figure 16: Vegetation Classification in the Study Area

Figure 17: Typical vegetation cover across much of the study area

Figure 18: Example of exotic 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 2020), much of the visual assessment area is characterised by natural vegetation which is dominated by low shrubland (Fynbos), interspersed with grassland (Error! Reference source not found.). Patches of land classified as “Bare / Barren Land” occur in the north-western sector of the study area. 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.

Agricultural activity in the area is restricted by the arid nature of the local climate and areas of cultivation are largely confined to small stretches of land, mostly distributed along drainage lines. As such, the natural vegetation has been retained across much of the study area. Livestock (mostly sheep) farming (**Figure 20**) is the dominant activity although the climatic and soil conditions have resulted in low densities of livestock and relatively large farm properties across the area. Thus the area has a very low density of rural settlement, with relatively few isolated farmsteads in evidence (**Figure 21**). 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.

Existing high voltage power lines in the study area however form significant man-made features in an otherwise undeveloped landscape. These power lines include 765kV power lines and 400kV power lines (**Figure** 22), all of which bisect the study area (and the application site) in a south-west to north-east alignment. In addition, the Kappa 765/400kV substation, situated 7kms north-east of the application site, is a substantial anthropogenic feature with a distinctly more industrial character, resulting in a significant degree of transformation in the landscape (**Figure** 23). The DR1475 District Road which traverses the study area is another prominent feature in the landscape, although this is a gravel road and thus largely conforms to the typical natural rural character of the study area.

Further human influence is visible in the western sector of the study area where the R356 Main Road traverses runs in a south-north direction. Additionally, the N1 national route traverses the study area in a north-west to south-east direction and the town of Touws River is located on the southern boundary of the study area. The N1 and Touws River are however physically separated from the Karee WEF development by the Bontberg range which provides a visual divide, and as such these features are not expected to influence the overall character of the study area to any significant degree.

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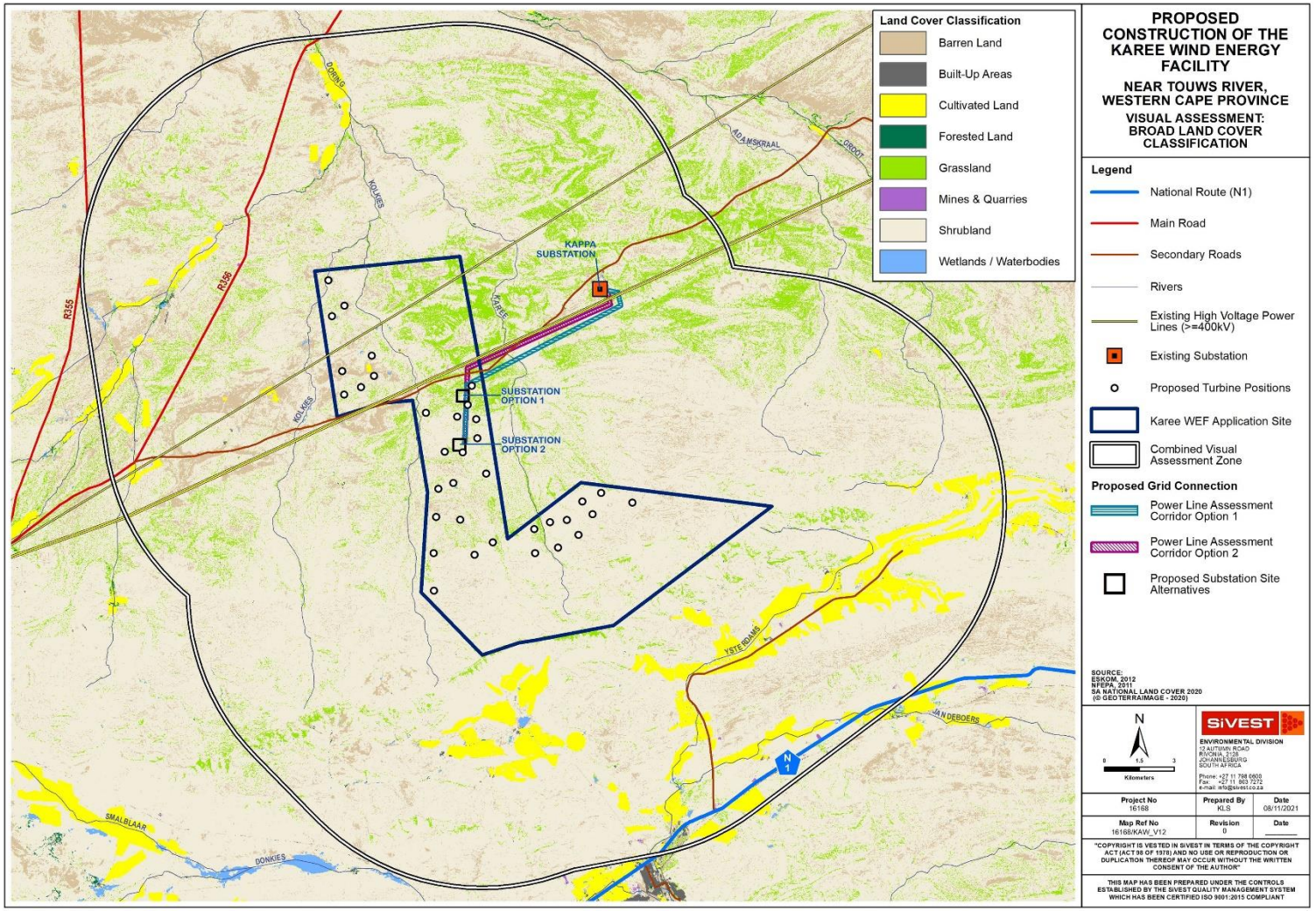

Figure 19: Land Cover Classification

Figure 20: Sheep grazing near Kappa substation

Figure 21: Isolated farmstead typical of the Karee WEF study area

Figure 22: View of high voltage power lines which traverse the study area**.**

Figure 23: Kappa Substation

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, despite the presence of Touws River on the southern boundary of the study area, there are very low levels of human transformation and visual degradation across much of the study area.

Significant elements of human transformation are however present in the vicinity of the application site, including existing high voltage power lines and Kappa Substation. These elements are considered to have degraded the visual character to some degree.

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 and Cultural Value

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 that significantly influence 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 high voltage power lines and Kappa Substation. Other, less prominent elements present in the area include lower voltage power lines, telephone poles, windmills, District Road 1475 and other 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 and associated grid connection infrastructure 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 could potentially increase the scenic appeal and visual interest in the area. Although the study area is not typically known for its tourism significance, the presence of several private nature and game reserves would suggest that the area does have some tourism appeal.

The greater area surrounding the development site is an important component when assessing visual character. The area can be considered to be a typical Karoo or “platteland” landscape that would characteristically be encountered across the high-lying dry western and central interior of South Africa. Much of South Africa’s dry Karoo interior consists of wide-open, uninhabited spaces sparsely punctuated by widely scattered farmsteads and small towns. Over the last couple of decades, an increasing number of tourism routes have been established within the Karoo, and in a context of increasing urbanisation in South Africa’s major centres,

the Karoo is being marketed as an undisturbed getaway. Examples of this may be found in the "Getaway Guide to Karoo, Namaqualand and Kalahari" (Moseley and Naude-Moseley, 2008).

The typical Karoo landscape can be considered a valuable 'cultural landscape' in the South African context. Although the cultural landscape concept is relatively new, it is becoming increasingly important in terms of the preservation and management of rural and urban settings across the world (Breedlove, 2002). In 1992 the World Heritage Committee[3] adopted the following definition for cultural landscapes:

Cultural landscapes represent 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.

Cultural Landscapes can fall into three categories (according to the Committee's Operational Guidelines):

- "a landscape designed and created intentionally by man";
- an "organically evolved landscape" which may be a "relict (or fossil) landscape" or a "continuing landscape"; and
- an "associative cultural landscape" which may be valued because of the "religious, artistic or cultural associations of the natural element".

The typical Karoo landscape consisting of wide open plains, and isolated relief, interspersed with isolated farmsteads, windmills and stock holding pens, is an important part of the cultural matrix of the South African environment. The Karoo farmstead is also a representation of how the harsh arid nature of the environment in this part of the country has shaped the predominant land use and economic activity practiced in the area, as well as the patterns of human habitation and interaction. The presence of small towns, such as Touws River and Matjiesfontein, engulfed by an otherwise rural, almost barren environment, form an integral part of the wider Karoo landscape. As such, the Karoo landscape as it exists today has value as a cultural landscape in the South African context. In terms of the types of cultural landscape listed above, the Karoo cultural landscape would fall into the second category, that of an organically evolved, "continuing" landscape.

In light of this, it is important to assess whether the introduction of a WEF and associated infrastructure into the study area would be a degrading factor in the context of the natural Karoo character of the landscape. Broadly speaking, visual impacts on the cultural landscape in the area around the proposed development would be reduced by the fact that the area is relatively remote and there are few tourism or nature-based facilities in the study area. The nearest major scenic routes (N1, R354 and R355) are some distance away and are not expected to experience any visual impacts as a result of the proposed development.

[3] UNESCO, 2005. Operational Guidelines for the Implementation of the World Heritage Convention. UNESCO World Heritage Centre. Paris

A further consideration is the fact that a number of WEFs have been developed or are likely to be developed across the Karoo, and as such it is conceivable that WEFs and their associated grid connection infrastructure may in the future become an integral part of the typical Karoo cultural landscape.

A more detailed assessment of the potential impacts of the proposed WEF and associated grid connection infrastructure on the cultural landscape has been included in the Heritage Impact Assessment (HIA) undertaken 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, SiVEST has developed a matrix 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 broken up into a number of categories, as 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	Relatively few sensitive receptors have been identified in the study area.										
Aesthetic sense of place / visual character	Visual character is typical of Karoo Cultural landscape.										
Irreplaceability / uniqueness / scarcity value	Although there are areas of scenic value within the study area, these are not rated as highly unique.										
Cultural or symbolic meaning	Much of the area is typical of a Karoo Cultural landscape.										
Protected / conservation areas in the study area	Several protected or conservation areas were identified in the broader 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	Relatively few tourism/leisure based facilities in the area										
International / regional / local status of the environment	Study area is typical of Karoo landscapes										
**Scenic quality under threat / at risk of change	Introduction of a WEF and associated infrastructure 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 50, 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 this instance, four (4) formal protected areas were identified as being partially or entirely in the study area, namely Inverdoorn Private Nature Reserve, Vaalkloof Private Nature Reserve, Kapklip Private Nature Reserve and Touw Local Nature Reserve. The latter two reserves are however located in the southern section of the study area, south of the Bontberg range, and are not expected to experience any visual impacts as a result of the proposed development. Four additional leisure-based tourism facilities were also identified in the region, most of these being private game reserves. Relatively few *potentially* sensitive receptors were however found to be present in the study area.

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

6.3.1 WEF Site Sensitivity

Using GIS-based visibility analysis, it was possible to determine that the tip of at least one turbine blade (ie at a maximum height of 300m) would be visible from most 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 or mountain-tops within the WEF development area. While these ridges could be seen as areas of potentially high 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. Accordingly, a 1km visual sensitivity zone has been delineated around the existing residences on the application site and also around the two receptors located within 1km of the site boundary. This 1km buffer is in accordance with the flicker-sensitive buffers applied in the DFFE Screening Tool. In addition, it is recommended that a 500m visual sensitivity zone is applied to the District Road DR1475 that traverses the application site:

The preclusion of turbine development from these zones would reduce the direct impact of the turbines on the occupants of the farmsteads and on passing motorists, especially those impacts related to shadow flicker (see **Section 7.1.1** below). At this stage however, the visual sensitivity zones 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 Error! Reference source not found. below.

6.3.2 Power Line Route Sensitivity

GIS-based visibility analysis was again used to determine which sectors of the grid assessment corridors would be visible to the highest numbers of receptors in the study area. However, this analysis found that no areas along the proposed route alignment are significantly more visible than any other area. As such, in terms of visibility, no areas were found to be particularly sensitive.

In determining visual sensitivity, consideration must also be given to the direct visual impact of the proposed development on any nearby farmsteads or receptors. However, investigation determined that there are no farmsteads or potentially sensitive receptors within 500 m of any elements of the power line development. As such, no areas of visual sensitivity were identified in relation to the power line alignments.

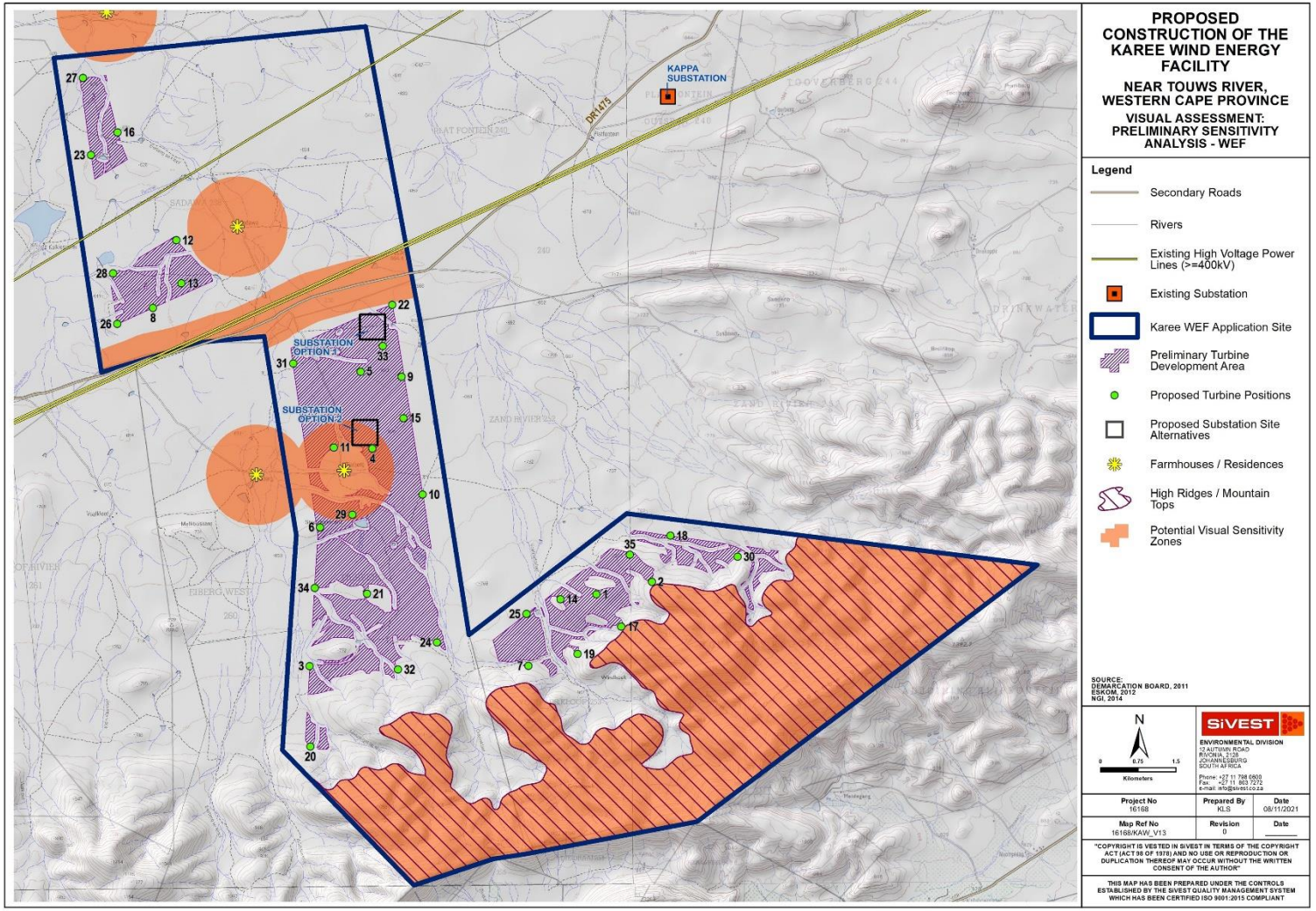

Figure 24: Visual sensitivity on the Karee WEF Site

6.3.3 Sensitivities identified by the National Screening Tool: WEF

In assessing visual sensitivity, consideration was given to the Landscape and Flicker Themes of the National Environmental Screening Tool. Under the Landscape Theme, as shown in **Figure 25** below, the tool identifies areas of Very High and High sensitivity in respect of WEF development on the Karee WEF site. According to the Screening Tool, the high sensitivity rating applied to the Karee WEF site is associated with the presence of natural features such as mountain tops, high ridges and steep slopes, as well as the nearby nature reserves. Based on these criteria, a significant portion of the site would be ruled out for WEF development.

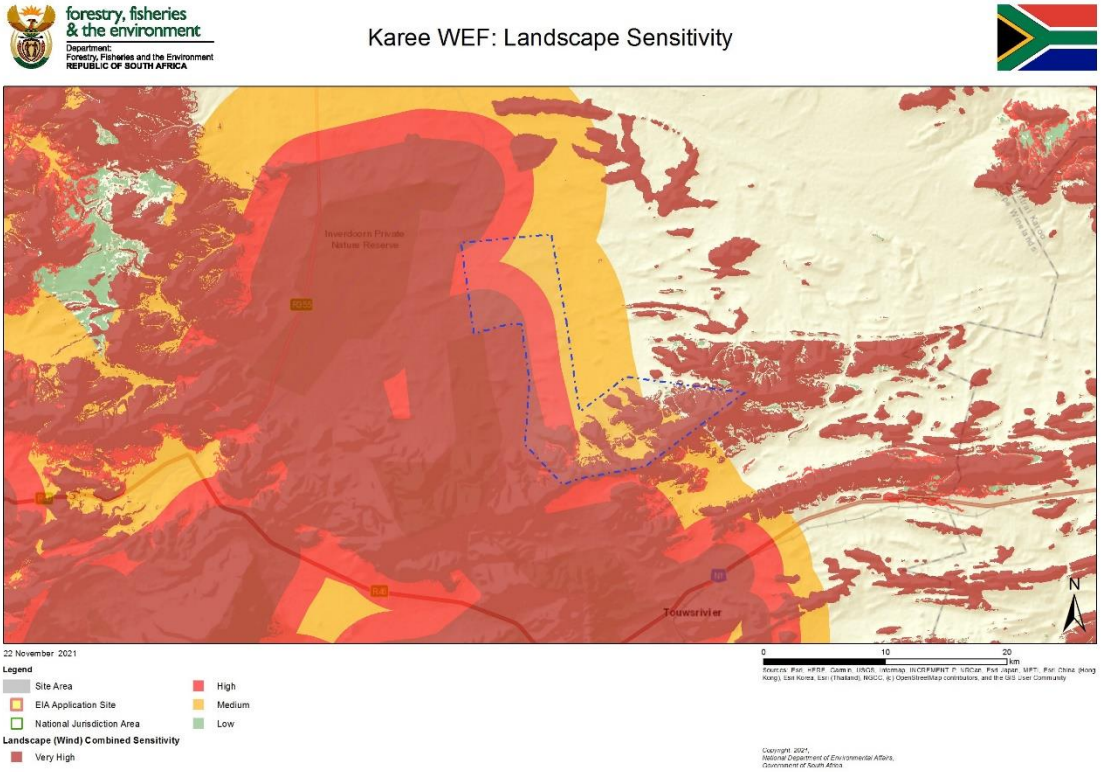

Figure 25: Relative Landscape Sensitivity (November 2021)

The flicker theme demarcates areas (1 km buffers) of sensitivity around identified receptors in the area (**Figure 26**). Under this theme, several “receptors” have been identified on the site, the majority of which are concentrated in the northern portion of the site. As a result of the buffers demarcated around these receptors, a significant portion of the site has been assigned a “very high” sensitivity rating.

Figure 26: Flicker Sensitivity (November 2021)

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.

6.3.4 Sensitivity Analysis Summary for WEF Development

The areas of Very High and High Sensitivity identified by the Screening Tool on the Karee WEF application site largely align with the ridges identified in the sensitivity analysis undertaken and confirmed by the site sensitivity verification exercise (**Appendix E**) for this site. These areas have been excluded from the preliminary WEF development area.

The presence of the nature reserves within 5kms of the Karee WEF was verified in this assessment. However, these reserves occupy relatively large tracts of land and it is not known whether the full extent of these reserves is extensively utilised for tourism or leisure activities. As such, there is insufficient evidence to support the sensitivity rating applied by the Screening Tool. Should any concerns in this regard be raised by the Stakeholders / I&APs, it may be necessary to conduct a more detailed analysis and assessment of visual impacts specific to the nature reserve.

The presence of receptors, either on the Karee WEF application site, or within 1km of the site boundary, was 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) receptors were factored into the sensitivity analysis, together with a 1km buffer.

6.3.5 Sensitivities identified by the National Screening Tool: Power Line Route Alternatives

The National Environmental Screening Tool does not identify any landscape sensitivities in respect of the proposed grid connection.

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.

The relatively flat, gently undulating topography in the study area and the relative lack of vegetation to provide screening would reduce the visual absorption capacity across much of the area. This would be offset to some degree where the landscape has already undergone significant transformation, specifically in the areas adjacent to the high voltage power lines and the Kappa Substation, thus increasing the overall visual absorption capacity of the landscape.

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

7 TYPICAL VISUAL IMPACTS ASSOCIATED WITH WIND ENERGY FACILITES

In this section, the typical visual issues related to the establishment of a WEF and associated grid connection infrastructure 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 200MWac. 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 flat to gently undulating terrain would result in the development typically being visible over a large area (**Figure 27**).

Figure 27: Wind turbines at Perdekraal East Wind Farm, near Touws River, Western 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 blade 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 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 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. It is noted that Mainstream has applied appropriate buffers in defining the buildable areas for the proposed Karee WEF.

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 suggest that the viewing of moving blades is not necessarily perceived negatively (Bishop and Miller, 2006). The authors of the study suggest two (2) possible reasons for this; firstly, when the turbines are moving they are seen as being ‘at work’, ‘doing good’ and producing energy. Conversely, when they are stationary they are regarded as a visual intrusion that has no evident purpose.

More interestingly, the second theory regarding this perception is related to the intrinsic value of wind in certain areas and how turbines may be an expression or extension of an otherwise ‘invisible’ presence. Famous winds across the world include the Mistral of the Camargue in France, the Föhn in the Alps, or the Bise in the Lavaux region of Switzerland. The wind, in these

cases, is an intrinsic component of the landscape, being expressed in the shape of trees or drifts of sands, but being otherwise invisible. Bishop and Miller (2006) argue that wind turbines in these environments give expression, when moving, to this quintessential landscape element. In a South African context, this phenomenon may well be experienced if wind farms are developed in areas where typical winds, like berg winds, or the south-easter in the Cape are an intrinsic part of the environment. In this way, it may even be possible that wind farms will, through time form part of the cultural landscape of an area, and become a representation of the opportunities presented by the natural environment.

7.2 Associated On-Site Infrastructure

The infrastructure associated with the proposed Karee WEF will include the following:

- Electrical transformers adjacent to each wind turbine;

A new shared 33/132kV on-site substation and/or combined collector substation, occupying atotal area of approximately 25 ha, split into two (2) portions: The IPP portion (15.5 ha) and the Eskom Portion (15.5 ha).

- Medium voltage (33kV) cables, buried along access roads wherever technically feasible;
- A Battery Energy Storage System (BESS) located next to the shared 33kv portion / yard of the shared 33/132kV onsite substation, comprising an array of containers, outdoor cabinets and/or storage tanks;
- Internal roads with a width of up to 5m;
- A construction laydown / staging area of up to approximately 3ha to be located on the site identified for the substation
- A permanent Operation and Maintenance (O&M) building, including an on-site spares storage building, a workshop and an operations building to be located on the site identified for the construction laydown area.
- A wind measuring lattice (approximately 120m in height) mast which has already been erected.

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 Karee 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. Where buildings, BESS containers and associated infrastructure are placed in prominent positions such as on ridge tops, they may break the natural skyline, drawing the attention of the viewer. In addition, security lighting on the site may impact on the nightscape (**Section 8.3**).

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.

7.3 Grid Connection Infrastructure

Grid connection infrastructure for this project includes an overhead 132kV power line linking the on-site substation to the National Grid.

Power line towers are by their nature very large objects and thus highly visible. It is understood that the maximum tower height envisaged for the proposed power line is expected to be 25m (approximately equivalent in height to an eight storey building). Although a tower structure would be less visible than a building, the height of the structure means that the tower would still typically be visible from a considerable distance. Visibility would be increased by the fact that the power line comprises a series of towers typically spaced approximately 200m to 400m apart in a linear alignment.

As power lines are not features of the natural environment, they could be perceived to be highly incongruous in the context of a largely natural landscape. The height and linear nature of the power line will exacerbate this incongruity, as the towers may impinge on views within the landscape. In addition, the practice of clearing taller vegetation from areas within the power line servitude can increase the visibility and incongruity of the power line. In a largely natural, bushy setting, vegetation clearance will cause fragmentation of the natural vegetation cover, thus making the power line more visible and drawing the viewer's attention to the servitude.

In this instance, the proposed grid connection infrastructure is intended to serve the proposed WEF and as such, will only be built if this project is developed go ahead. The power lines and substations are therefore likely to be perceived as part of the greater WEF development and the visual impact will be relatively minor when compared to the visual impact associated with the development as a whole.

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/BA 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 or power line would experience greater adverse visual impacts than those located further away. Zones of visual impact were therefore delineated based on distance from the outer boundary of the application site and from the combined power line corridors.

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); and
- Degree to which the viewer will accept a change in the typical Karoo character of the surrounding area.

8.1 Receptor Identification

Preliminary desktop assessment of the **combined** study area for the proposed Karee WEF and the associated grid connection infrastructure identified thirty-three (33) potentially sensitive visual receptor locations, most of which appear to be existing farmsteads. It should be noted that, at this stage, all receptors identified within 10kms of the Karee WEF application site have been included in the visual assessment. This will however be revised in the later in the BA process to exclude all receptors that are located more than 10kms from the nearest turbine position.

All of the identified receptors are located within 10kms of the Karee WEF application site, although fifteen of these were found to be outside the viewshed for the wind turbines and were excluded from any further assessment. Only seven (7) of the identified receptors are located within 5kms of the power line assessment corridors.

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

- Sand River Conservancy;
- Ibhadi Game Lodge;
- Vaalkloof Private Naure Reserve;
- Inverdoorn Game Reserve;
- Sadawa Private Game Reserve;
- Kapklip Private Nature Reserve.

Three of these receptors are however outside the viewshed for the wind turbines, namely Ibhadi Game Lodge, Kapklip Private Nature Reserve and Touw Local Nature Reserve. All three of the remaining sensitive receptors are within 10kms of the Karee WEF development, while only one is within 5kms of the power line assessment corridors, namely Sand River Conservancy.

As stated, the remaining 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.

In many cases, roads along which people travel, are regarded as sensitive receptors. Two (2) major roads affect the study area, namely the N1 national route which affects a small section of the southern sector of the study area, and the R356 Main Road which runs through the north-western sector of the study area. The N1 is a major link between Cape Town and Gauteng and sections of this road are considered to have scenic significance. Although the R356 is not a

recognised a scenic route, it is an alternative tourist link through to Sutherland. As such these routes have been classified as “receptor roads”.

There are no main or arterial roads in close proximity to the proposed development. The primary thoroughfare in the study area is the DR1475, a gravel road which traverses the study area in a south-west to north-east direction. This road is used primarily as an access route by the local farmers and is therefore not valued or utilised for its scenic or tourism potential. As a result, this road is not considered to be visually sensitive.

The identified potentially sensitive visual receptor locations for the proposed WEF and grid connection are indicated in **Figure 28** and **Figure 29** respectively.

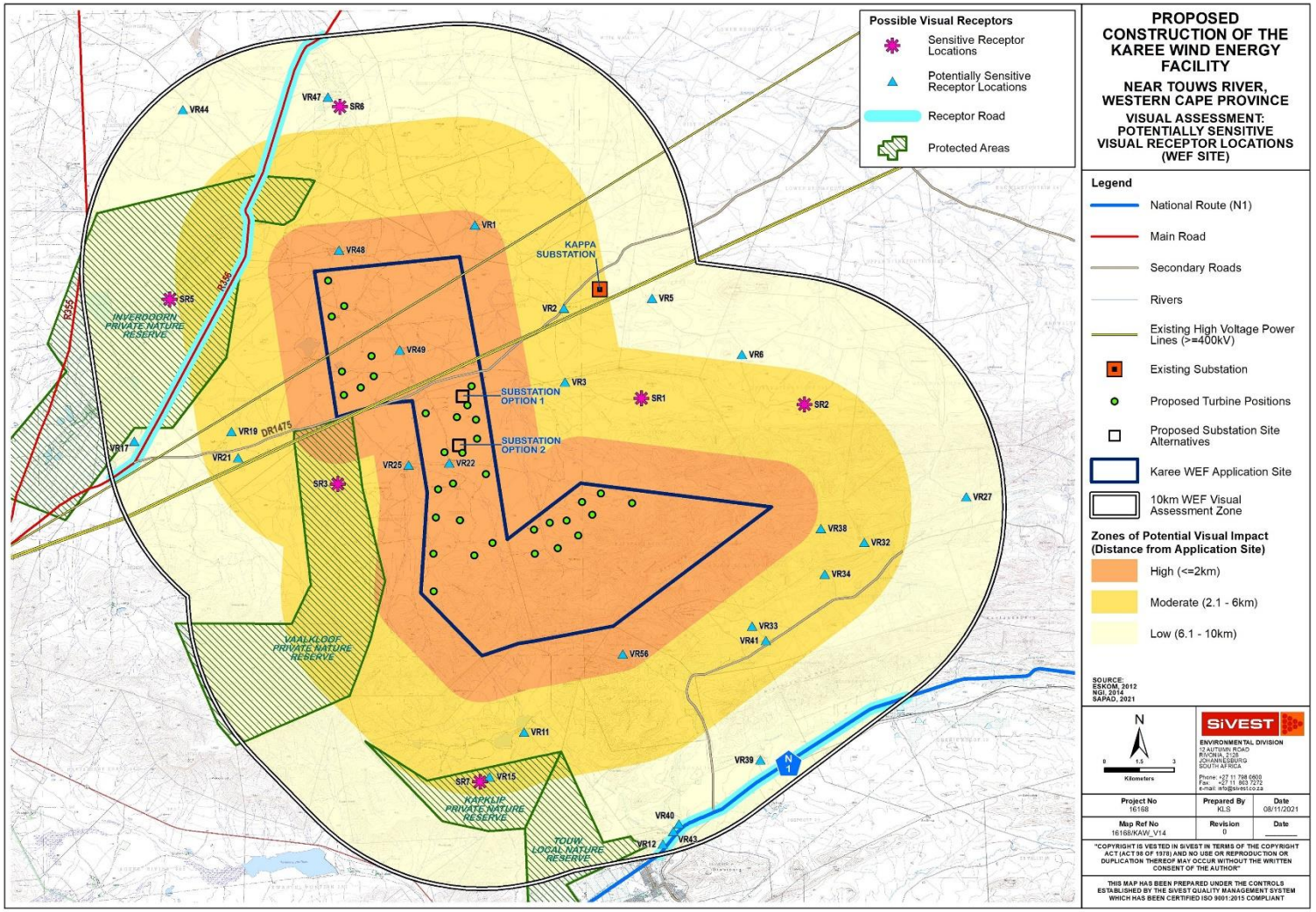

Figure 28: Potentially sensitive receptor locations within 10kms of the Karee WEF application site

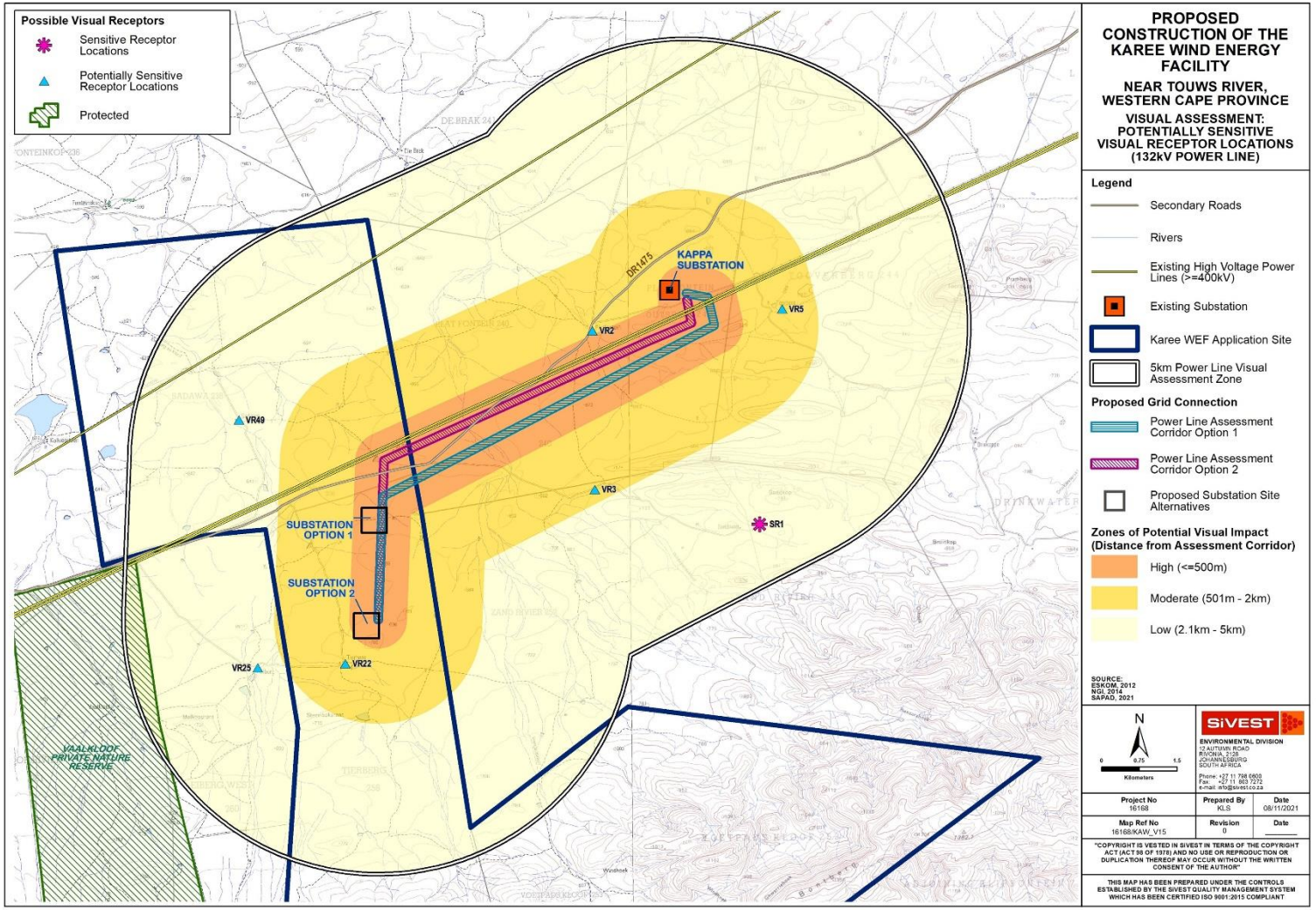

Figure 29: Potentially sensitive receptor locations within 5kms of the power line corridor

8.2 Receptor Impact Rating

In order to assess the impact of the proposed facilities on the identified potentially sensitive receptor locations, a matrix that takes into account a number of factors has been developed and is applied to each receptor location.

The matrix is based on the factors listed below:

- Distance of a receptor location away from the proposed development (zones of visual impact);
- Presence of screening elements (topography, vegetation etc.); and
- Visual contrast of the development with the landscape pattern and form.

These are considered to be the most important factors when assessing the visual impact of a proposed development on a potentially sensitive receptor location in this context. It should be noted that this rating matrix is a relatively simplified way of assigning a likely representative visual impact, which allows a number of factors to be considered. Experiencing visual impacts is however a complex and qualitative phenomenon, and is thus difficult to quantify accurately. The matrix should therefore be seen as a representation of the likely visual impact at a receptor location. Part of its limitation lies in the quantitative assessment of what is largely a qualitative or subjective impact.

8.2.1 Distance

As described above, distance of the viewer / receptor location from the development is an important factor in the context of experiencing visual impacts which will have a strong bearing on mitigating the potential visual impact. A high impact rating has been assigned to receptor locations that are located within 2km of the proposed WEF development and within 500m of the nearest power line assessment corridor. The visual impact of a WEF or power line diminishes beyond 10km and 5km respectively, as the development would appear to merge with the elements on the horizon. Any visual receptor locations beyond these distance limits have therefore not been assessed as they fall outside the study area and would not be visually influenced by the proposed development.

At this stage of the process, zones of visual impact for the proposed WEF have been delineated according to distance from the boundary of the WEF application site. Based on the height and scale of the WEF project, the distance intervals chosen for the zones of visual impact, as shown in **Figure 28**, are as follows:

- 0 – 2km (high impact zone);
- 2km – 6km (moderate impact zone);
- 6km - 10km (low impact zone).

This will however be refined during the later stages of the process when the distance from the nearest proposed turbine position will be used to determine the zones of visual impact for the identified visual receptor locations.

Zones of visual impact for the proposed power lines have been delineated according to distance from the combined power line assessment corridors. Based on the likely height of the power line towers, the distance intervals chosen for the zones of visual impact, as shown in **Figure 29** are as follows:

- 0 - 500m (high impact zone);
- 500m – 2km (moderate impact zone);
- 2km - 5km (low impact zone).

8.2.2 Screening Elements

The presence of screening elements is an equally important factor in this context. Screening elements can be vegetation, buildings and topographic features. For example, a grove of trees or a series of low hills located between a receptor location and an object could completely shield the object from the receptor.

8.2.3 Visual Contrast

The visual contrast of a development refers to the degree to which the development would be congruent with the surrounding environment. This is based on whether or not the development would conform to the land use, settlement density, structural scale, form and pattern of natural elements that define the structure of the surrounding landscape. Visual compatibility is an important factor to be considered when assessing the impact of the development on receptors within a specific context. A development that is incongruent with the surrounding area could change the visual character of the landscape and have a significant visual impact on sensitive receptors.

In order to determine the likely visual compatibility of the proposed development, the study area was classified into the following zones of visual contrast:

- **High –** undeveloped / natural / rural areas.
- **Moderate –**
    - areas within 500m of any existing power line; in undeveloped / natural / rural area;
    - areas within 100m of cultivated land
    - areas within 250m of the R356 main road.
- **Low –**
    - areas within 500m of Kappa substation;
    - areas within 100m of mines / quarries

- areas within 1km of perdekraal east development area;
- areas within 500m of the N1 national route.

These zones are depicted in **Figure 30** below.

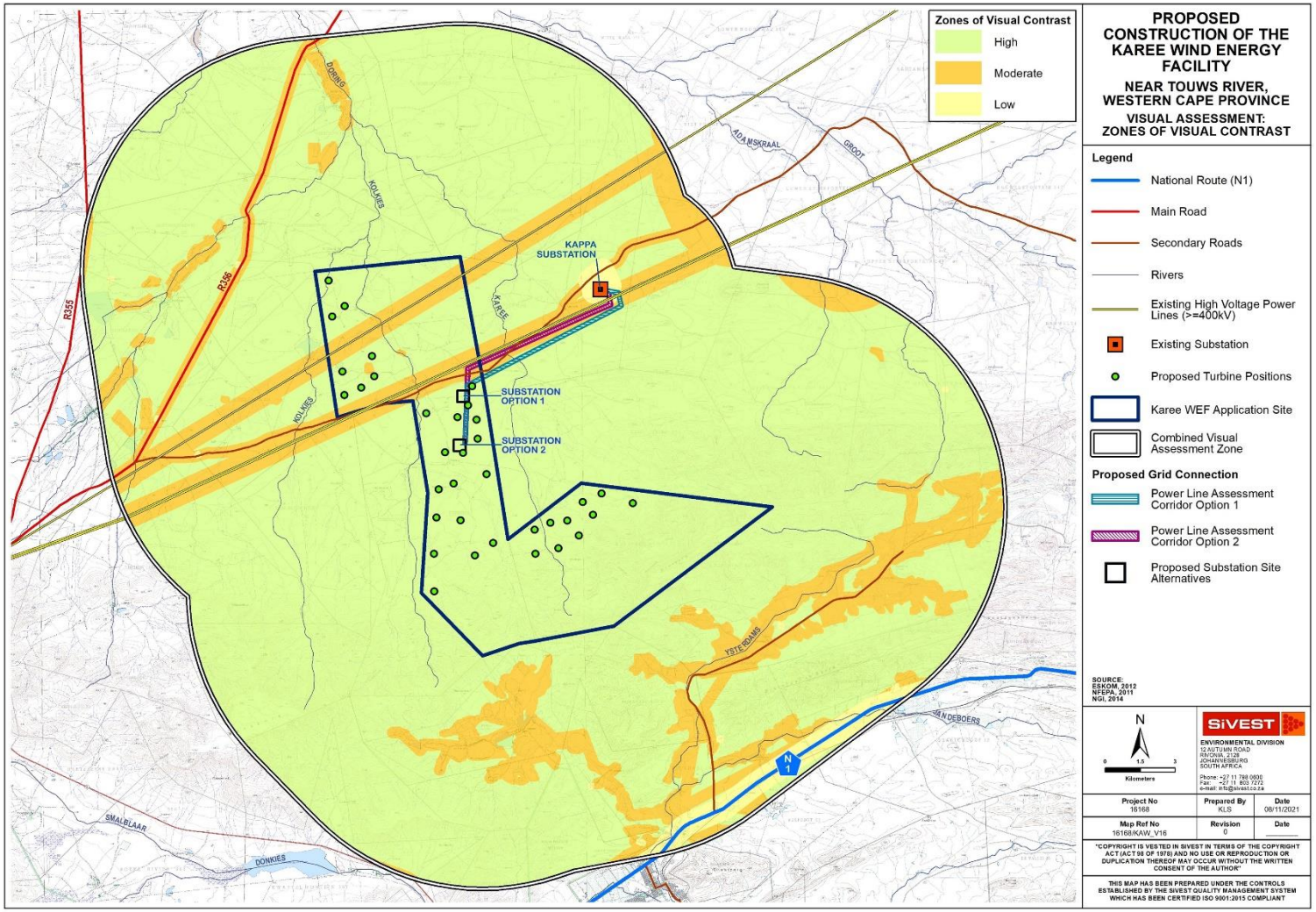

Figure 30: Zones of Visual Contrast

8.2.4 Impact Rating Matrix

The receptor impact rating matrix returns a score which in turn determines the visual impact rating assigned to each receptor location**Error! Reference source not found.**.

Table 3: Rating scores

Rating	Overall Score
High Visual Impact	8-9
Moderate Visual Impact	5-7
Low Visual Impact	3-4
Negligible Visual Impact	(overriding factor)

An explanation of the matrix is provided in **Table 4** below.

Table 4: Visual assessment matrix used to rate the impact of the proposed development on potentially sensitive receptors

	VISUAL IMPACT RATING			
VISUAL FACTOR	**HIGH**	**MODERATE**	**LOW**	**OVERRIDING FACTOR: NEGLIGIBLE**
Distance of receptor away from proposed development	WEF: <= 2km Grid: <= 500m **Score 3**	WEF: 2 - 6km Grid: 500m - 2km **Score 2**	WEF: 6km - 10km Grid: 2km - 5km **Score 1**	WEF: >10km Grid: >5km
Presence of screening factors	No / almost no screening factors – development highly visible **Score 3**	Screening factors partially obscure the development **Score 2**	Screening factors obscure most of the development **Score 1**	Screening factors completely block any views towards the development, i.e. the development is not within the viewshed
Visual Contrast	**High contrast** with the pattern and form of the natural landscape elements (vegetation and land form), typical land use and/or human elements (infrastructural form) **Score 3**	**Moderate contrast** with the pattern and form of the natural landscape elements (vegetation and land form), typical land use and/or human elements (infrastructural form) **Score 2**	**Corresponds** with the pattern and form of the natural landscape elements (vegetation and land form), typical land use and/or human elements (infrastructural form) **Score 1**	

Table 5 below presents a summary of the overall visual impact of the proposed Karee WEF on each of the potentially sensitive visual receptor locations identified within 10kms of the boundary of the Karee WEF application site.

Table 5: Receptor impact rating for the proposed Karee WEF Project

Receptor Location	Distance from WEF Site Boundary			Screening		Contrast		OVERALL IMPACT RATING	
	KMS	Rating		Rating		Rating			
SR1 - Sand River Conservancy	3.9	Mod	2	Mod	2	High	3	MODERATE	7
SR3 - Vaalkloof Private Nature Reserve	2.9	Mod	2	High	3	High	3	HIGH	8
SR5 - Inverdoorn Game Reserve	6.3	Low	1	Mod	2	High	3	MODERATE	6
SR6 - Sadawa Private Game Reserve	6.9	Low	1	Mod	2	High	3	MODERATE	6
VR1 - Farmstead	1.5	High	3	Mod	2	High	3	HIGH	8
VR2 - Farmstead	4.0	Mod	2	Mod	2	Mod	2	MODERATE	6
VR3 - Farmstead	3.5	Mod	2	High	3	High	3	HIGH	8
VR5 - Farmstead	7.8	Low	1	High	3	High	3	MODERATE	*7*
VR6 - Farmstead	6.3	Low	1	High	3	High	3	MODERATE	7
VR15 - Farmstead	5.2	Mod	2	Mod	2	Mod	2	MODERATE	6
VR17 - Farmstead	8.7	Low	1	Mod	2	Mod	2	MODERATE	5
VR19 - Farmstead	4.5	Mod	2	Low	1	High	3	MODERATE	6
VR21 - Farmstead	4.6	Mod	2	High	3	Mod	2	MODERATE	*7*
*VR22 – Farmstead**	*0.0*	*High*	*3*	*High*	*3*	*High*	*3*	*HIGH*	*9*
VR25 - Farmstead	0.6	High	3	High	3	High	3	HIGH	9
VR44 - Farmstead	8.9	Low	1	High	3	High	3	MODERATE	7
VR47 - Farmstead	7.4	Low	1	High	3	High	3	MODERATE	7
VR48 - Farmstead	0.8	High	3	Mod	2	High	3	HIGH	8
*VR49 - Farmstead**	*0.0*	*High*	*3*	*High*	*3*	*Mod*	*2*	*HIGH*	*8*

**Farmstead is located within the proposed Karee WEF application site. It is therefore assumed that the residents would have a vested interest in the development and would therefore not perceive the proposed WEF in a negative light.*

The table above shows that one of the identified sensitive receptors would experience high levels of visual impact as a result of the proposed Karee WEF development, namely Vaalkloof

Private Nature Reserve. It should be noted that the rating is largely due to the proximity of the main residence / accommodation complex within the reserve to the WEF site. However, the reserve occupies a large tract of land within the study area and it is not known whether the full extent of the reserve is extensively utilised for tourism or leisure activities. Should any concerns in this regard be raised by the Stakeholders / I&APs, it may be necessary to conduct a more detailed analysis and assessment of visual impacts specific to the nature reserve.

The remaining sensitive receptors are all expected to experience only moderate levels of visual impact. Details of the levels of tourism / leisure activity on different sectors of these farms are not known and as such, the impact rating matrix for these receptors is based on the assumed location of the main accommodation complex on each property.

Six (6) of the *potentially* sensitive receptor locations are expected to experience high levels of visual impact as a result of the proposed Karee WEF. In most instances, the high sensitivity rating relates largely to the fact that these receptors are located in in close proximity to the boundary of the Karee WEF application site and they are in zones of high contrast, with little natural screening. Two of these receptors, namely VR22 and VR49 are in fact located within the proposed WEF development area and as such, these properties form part of the WEF project. Thus it is assumed that the owners have a vested interest in the WEF development and would not perceive the development in a negative light. Furthermore, none of these receptors are tourism-related facilities and as such they are not considered to be Sensitive Receptors. Hence the high impact rating assigned to these receptors will not affect the overall impact ratings determined in **Section 8.5.**

The remaining nine (9) potentially sensitive receptor locations would be subjected to moderate levels of visual impact as a result of the proposed Karee WEF development.

It should be noted that these ratings will be re-examined in relation to the final turbine layout once this has been determined.

Table 6 below presents a summary of the overall visual impact of the proposed 132kV power line on each of the potentially sensitive visual receptor locations identified within 5kms of the boundary of the nearest assessment corridor.

Table 6: Receptor impact rating for the proposed 132kV Power Line

Receptor Location	Distance from Nearest Corridor Alternative			Screening		Contrast		OVERALL IMPACT RATING	
	KMs	Rating		Rating		Rating			
SR1 - Sand River Conservancy	3.9	Low	1	Mod	2	High	3	MODERATE	6
VR2 - Farmstead	0.6	Mod	2	Mod	2	Mod	2	MODERATE	6
VR3 - Farmstead	1.7	Mod	2	High	3	High	3	HIGH	8
VR5 - Farmstead	1.3	Mod	2	High	3	High	3	HIGH	8
*VR22 – Farmstead**	*1.0*	*Mod*	*2*	*High*	*3*	*High*	*3*	*HIGH*	*8*
VR25 - Farmstead	2.5	Low	1	High	3	High	3	MODERATE	7
*VR49 – Farmstead**	*2.9*	*Low*	*1*	*High*	*3*	*High*	*3*	*MODERATE*	*7*

**Farmstead is located within the proposed Karee WEF application site. It is therefore assumed that the residents would have a vested interest in the development and would therefore not perceive the proposed power line in a negative light.*

The only sensitive receptor (SR1) identified within 5km of the power line assessment corridors would experience only moderate levels of visual impact as a result of the proposed 132kV power line associated with the Karee WEF development.

Three (3) of the potentially sensitive receptor locations are expected to experience high levels of visual impact as a result of the proposed power line. The high sensitivity rating relates largely to the fact that these receptors are located in areas of high visual contrast that are also relatively close to the proposed power line route alignments. Impacts resulting from the proposed new power line are however expected to be reduced by the presence of existing high voltage power lines already visible to these receptors. One of these receptors, namely VR22 is in fact located within the proposed WEF development area and as such, this property forms part of the WEF project. Thus it is assumed that the owners have a vested interest in the WEF and associated grid connection infrastructure and would not perceive the development in a negative light. Furthermore, none of these receptors are tourism-related facilities and as such they are not considered to be Sensitive Receptors. Thus the high impact rating assigned will not affect the overall impact ratings determined in **Section 8.5.**

The remaining four (4) potentially sensitive receptor locations would be subjected to moderate levels of visual impact as a result of the proposed power line.

As stated above, the N1 national route and the R356 Main Road could be considered as potentially sensitive receptor roads. The N1 is however outside the viewshed for the proposed development and will not experience any visual impacts as a result of the WEF or power line development. Wind turbines are however expected to be visible to motorists travelling along R356 main road, although the likely visual impacts of the development as a whole would be reduced by the distance from the nearest turbine.

In light of this, visual impacts affecting the R356 are rated as moderate.

8.3 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 rural elements and low densities of human settlement and as a result, relatively few light sources are present in the area surrounding the proposed development site. The closest built-up area is the town of Touws River which is situated approximately 12km south of the application site and is thus too far away to have significant impacts on the night scene. At night, the general study area is characterised by a picturesque dark starry sky and the visual character of the night environment is largely 'unpolluted' and pristine. Sources of light in the area are largely limited to isolated lighting from surrounding farmsteads and transient light from the passing cars travelling along the R356 Main Road and the DR1475 District Road. Some light pollution is however likely to emanate from the operational and security lighting at Kappa substation and this would reduce the impacts of additional lighting in the area.

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 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

Power lines and associated towers or pylons are not generally lit up at night and, thus light spill associated with the proposed grid connection infrastructure is only likely to emanate from the proposed on-site substation. Lighting from this facility is therefore expected to intrude on the nightscape to some degree. It should however be noted that the grid connection infrastructure will only be constructed if the proposed WEF is developed and thus the lighting impacts from

the proposed substation would be subsumed by the glare and contrast of the lights associated with the WEF. As such, the grid connection infrastructure is not expected to result in significant lighting impacts.

8.4 Cumulative Impacts

Although it is important to assess the visual impacts of the proposed Karee WEF and grid connection infrastructure 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 as well as exacerbate the visual impacts on surrounding visual receptors, once constructed. Although power lines and substations are relatively small developments when compared to renewable energy facilities, they may still introduce a more industrial character into the landscape, thus altering the sense of place.

Eleven renewable energy projects were identified within a 35 km radius of the proposed Karee WEF and grid connection infrastructure (**Figure 31**). These projects, as listed in **Table 7** below, were identified using the DFFE's Renewable Energy EIA Application Database for SA in conjunction with information provided by Independent Power Producers operating in the broader region. 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.

Unrelated to the renewable energy developments are significant electrical infrastructure projects as listed below, which are prominent features in the landscape.

- The recently constructed Kappa 765/400kV substation near to the Karee WEF application site; and
- Two sets of high voltage power lines (765kV and 400kV), both of which bisect the study area in a south-west to north-east alignment.

Table 7: Renewable energy developments proposed within a 35km radius of the Karee WEF application site.

Applicant	Project	Technology	Capacity	Status of Application / Development
Oya Energy (Pty) Ltd	Oya Energy Facility	Hybrid (Solar / Fuel-Based)	305MW	Approved
Brandvalley Wind Farm (Pty) Ltd	Brandvalley WEF	Wind	140MW	Approved
Kudusberg Wind Farm (Pty) Ltd	Kudusberg WEF	Wind	325W	Approved
South Africa Mainstream Renewable Power Perdekraal West (Pty) Ltd	Perdekraal West WEF & Associated Grid Connection Infrastructure	Wind	150M	Approved
South Africa Mainstream Renewable Power Perdekraal East (Pty) Ltd	Perdekraal East WEF & Associated Grid Connection Infrastructure	Wind	110MW	Operational
South Africa Mainstream Renewable Power Developments (Pty) Ltd	Patatskloof WEF	Wind	250MW	EIA Process underway
Rietkloof Wind Farm (Pty) Ltd	Rietkloof WEF	Wind	186MW	Approved
ENERTRAG SA (Pty) Ltd	Tooverberg WEF & Associated Grid Connection Infrastructure	Wind	140MW	Approved
Witberg Wind Power (Pty) Ltd	Witberg WEF	Wind	120MW	Approved
Montgue Road Solar (Pty) Ltd	Montgue Road Solar	Solar PV	75MW	Approved
Touwsrivier Solar	Touwsrivier Solar	Solar PV	36MW	Approved

As can be seen from this table, two (2) of these projects are Solar Energy facilities (SEFs), one project is a hybrid energy facility (solar and fuel-based) and the remaining eight (8) projects are WEFs. Although SEFs and hybrid facilities 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.

The two (2) SEFs, namely the proposed Montague Road and Touws River SEFs are located some considerable distance from the Karee WEF application site and mostly to the south of the Bontberg mountain range. It is therefore not anticipated that these developments will result in any significant cumulative impacts affecting the landscape or the visual receptors within the Karee WEF visual assessment zone.

It should be noted that most of the WEFs identified, and Oya Energy Facility, are concentrated to the north-east of the application site, on the other side of the lower Roggeveld mountains. The nearest of these projects is Oya which is some 27kms from the Karee WEF application site. Witzenberg WEF is some 24km east of the proposed Karee WEF.

Four (4) WEFs, namely Perdekraal East WEF, Perdekraal West WEF, Tooverberg WEF and Patatskloof WEF, are all located in relatively close proximity to the Karee WEF. Perdekraal East WEF is in operation and the landscape has already undergone a noticeable change as a result. This will be exacerbated with further WEF development in the area as proposed. Impacts of this transformation will however be reduced by the fact the landscape in the vicinity of the proposed WEF developments has already been disturbed by the Kappa substation and the existing power lines.

In addition, both Tooverberg and Patatskloof WEFs and their associated grid connection infrastructure are within the 10km viewing distance of the potentially sensitive receptor locations identified in the study area. As such, the receptors would experience exacerbated visual impacts should these two (2) WEFs and the associated grid connection infrastructure be constructed, in conjunction with the Karee WEF. The severity of these impacts would however depend on the perceptions of the receptors.

These proposed WEFs, in conjunction with the associated grid connection infrastructure, will inevitably introduce an increasingly industrial character into a largely natural, pastoral landscape, thus giving rise to significant cumulative impacts.

A cursory examination of the literature available for the environmental assessments undertaken for the proposed WEFs showed that the visual impacts identified and the recommendations and mitigation measures provided are largely consistent with those identified in this report. Where additional mitigation measures were provided in respect of the other renewable energy applications, these have been incorporated into this report where relevant.

From a visual perspective, the further concentration of renewable energy facilities as proposed will inevitably change the visual character of the area and alter the inherent sense of place, introducing 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 recommendations and mitigation measures put forward by the visual specialists in their respective reports. In addition, it is possible that these developments in close proximity to each other could be seen as one large WEF 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.

It should be noted however that the study area is located within the Renewable Energy Development Zone 2 (REDZ 2) known as Komsberg, and thus the relevant authorities support the concentration of renewable energy developments in this area. In addition, it is possible that the five (5) WEFs in close proximity to each other could be seen as one large WEF rather than four 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.

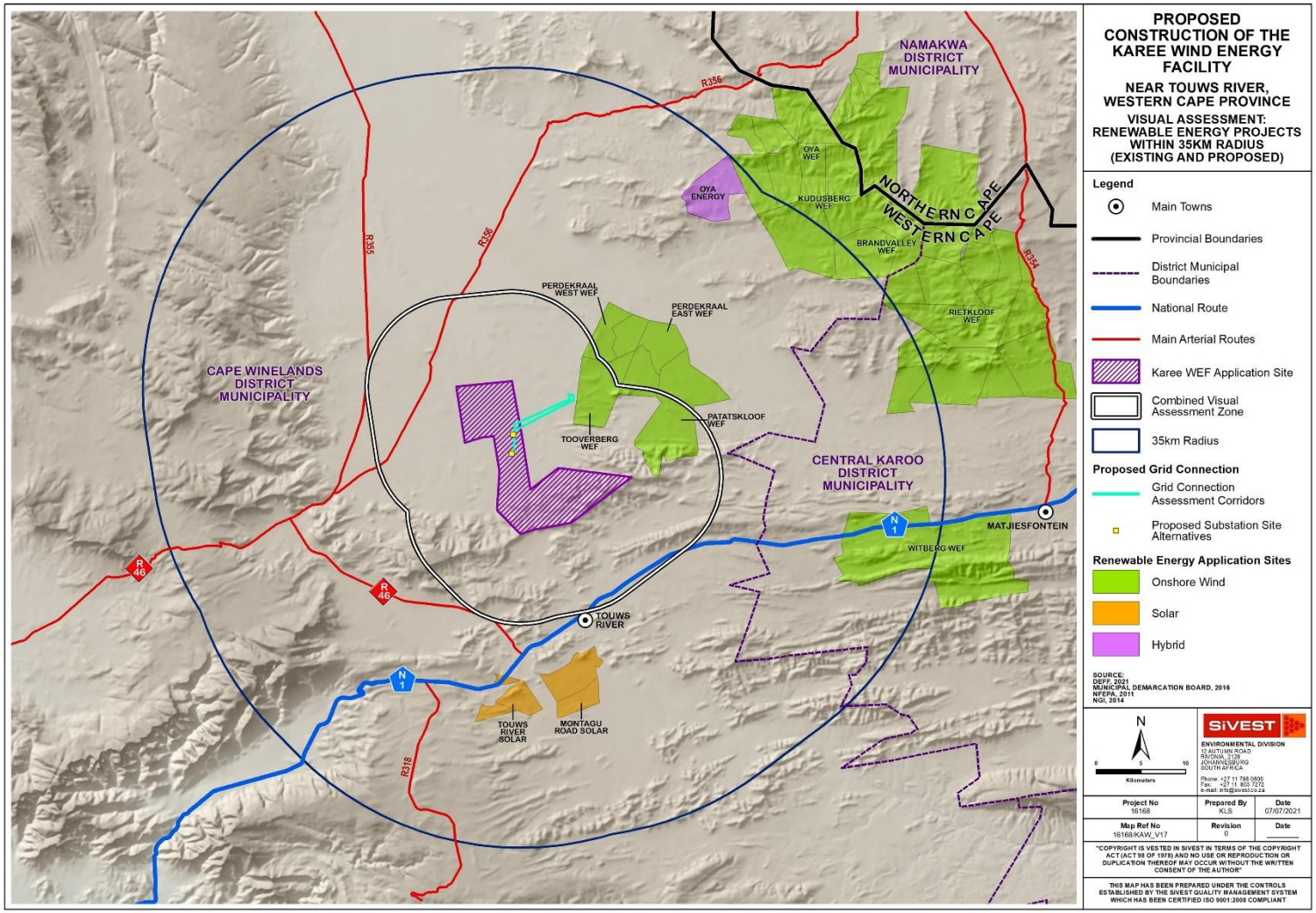

Figure 31: Renewable energy facilities proposed within a 35km radius of the Karee WEF application sites.

8.5 Overall Visual 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. The tables below present the impact matrix for visual impacts associated with the proposed construction and operation of the Karee WEF and the associated grid connection infrastructure. Preliminary mitigation measures have been determined based on best practice and literature reviews.

Please refer to **Appendix C** for an explanation of the impact rating methodology.

8.5.1 Karee WEF Project

KAREE WEF																				
ENVIRONMENTAL PARAMETER	**ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE**	**ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION**									**RECOMMENDED MITIGATION MEASURES**	**ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION**								
		E	**P**	**R**	**L**	**D**	**I / M**	**TOTAL**	**STATUS (+ OR -)**	**S**		**E**	**P**	**R**	**L**	**D**	**I / M**	**TOTAL**	**STATUS (+ OR -)**	**S**
Construction Phase																				
▪ Potential alteration of the visual character and sense of place ▪ Potential visual impact on receptors in the study area	▪ Large construction vehicles, equipment and construction material stockpiles will alter the natural character of the study area and expose visual receptors to impacts associated with construction. ▪ Construction activities may be perceived as an unwelcome visual intrusion, particularly in more natural undisturbed settings. ▪ Dust emissions and dust plumes from increased traffic on the gravel roads serving the construction site may evoke negative sentiments from surrounding viewers. ▪ Surface disturbance during construction would expose bare soil resulting in visual scarring of the landscape and increasing the level of visual contrast with the surrounding environment. ▪ Temporary stockpiling of soil during construction may alter the flat landscape. Wind blowing over these disturbed areas could result in dust which would have a visual impact.	2	3	1	2	1	2	18	-	Low	▪ Carefully plan to mimimise the construction period and avoid construction delays. ▪ Inform receptors within 1km of the WEF development area of the construction programme and schedules. ▪ Minimise vegetation clearing and rehabilitate cleared areas as soon as possible. ▪ Vegetation clearing should take place in a phased manner. ▪ Maintain a neat construction site by removing rubble and waste materials regularly. ▪ Position storage / stockpile areas in unobtrusive positions in the landscape, where possible. ▪ Where possible, underground cabling should be utilised. ▪ Make use of existing gravel access roads where possible. ▪ Limit the number of vehicles and trucks travelling to and from the construction site, 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.	2	2	1	2	1	2	16	-	Low
Operational Phase																				

▪ Potential alteration of the visual character and sense of place. ▪ Potential visual impact on receptors in the study area. ▪ Potential visual impact on the night time visual environment.	▪ The development may be perceived as an unwelcome visual intrusion, particularly in more natural undisturbed settings. ▪ The proposed WEF and associated infrastructure will alter the visual character of the surrounding area and expose potentially sensitive visual receptor locations to visual impacts. ▪ Dust emissions and dust plumes from maintenance vehicles accessing the site via gravel roads may evoke negative sentiments from surrounding viewers. ▪ The night time visual environment will be altered as a result of operational and security lighting at the proposed WEF.	2	3	3	3	3	2	28	-	Medium	<u>*Design Phase*</u> ▪ Ensure that wind turbines are not located within 1km of any farmhouses in order to minimise visual impacts on these dwellings. ▪ Where possible, fewer but larger turbines with a greater output should be utilised rather than a larger number of smaller turbines with a lower capacity. ▪ Where possible, the operation and maintenance buildings and laydown areas should be consolidated to reduce visual clutter. ▪ Where possible, underground cabling should be utilised. <u>*Operational Phase*</u> ▪ 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) (Vissering, 2011). ▪ If turbines need to be replaced for any reason, they should be replaced with the same model, or 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. ▪ 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. ▪ Lighting fixtures should make use of minimum lumen or wattage. ▪ Mounting heights of lighting fixtures should be limited, or alternatively foot-light or bollard level lights should be used.	2	3	3	2	2	2	24	-	Medium

											▪ 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. ▪ The O&M buildings should be painted in natural tones that fit with the surrounding environment.									
Decommissioning Phase																				
▪ Potential visual intrusion resulting from vehicles and equipment involved in the decommissioning process; ▪ Potential visual impacts of increased dust emissions from decommissioning activities and related traffic; and ▪ Potential visual intrusion of any remaining infrastructure on the site.	▪ Vehicles and equipment required for decommissioning will alter the natural character of the study area and expose visual receptors to visual impacts. ▪ Decommissioning activities may be perceived as an unwelcome visual intrusion. ▪ Dust emissions and dust plumes from increased traffic on the gravel roads serving the decommissioning site may evoke negative sentiments from surrounding viewers. ▪ Surface disturbance during decommissioning would expose bare soil (scarring) which could visually contrast with the surrounding environment. ▪ Temporary stockpiling of soil during decommissioning may alter the flat landscape. Wind blowing over these disturbed areas could result in dust which would have a visual impact.	2	3	1	2	1	2	18	-	Low	▪ 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. ▪ Rehabilitated areas should be monitored post-decommissioning and remedial actions implemented as required.	2	2	1	2	1	2	16	-	Low
Cumulative																				
▪ Potential alteration of the visual character and sense of place in the broader area. ▪ Potential visual impact on receptors in the study area. ▪ Potential visual impact on the night time visual environment.	▪ Additional renewable energy developments in the broader area will alter the natural character of the study area towards a more industrial landscape and expose a greater number of receptors to visual impacts. ▪ Visual intrusion of multiple renewable energy developments may be exacerbated, particularly in more natural undisturbed settings. ▪ Additional renewable energy facilities in the area would generate additional traffic on gravel roads thus resulting in	3	3	2	3	3	2	28	-	Medium	▪ 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.	3	3	2	2	2	2	24	-	Medium

	increased impacts from dust emissions and dust plumes. ▪ The night time visual environment could be altered as a result of operational and security lighting at multiple renewable energy facilities in the broader area.									▪ Where possible, the operation and maintenance buildings should be consolidated to reduce visual clutter. ▪ As far as possible, limit the number of maintenance vehicles which are allowed to access the facility. ▪ Ensure that dust suppression techniques are implemented on all gravel access roads. ▪ 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. ▪ Lighting fixtures should make use of minimum lumen or wattage. ▪ 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. ▪ The operations and maintenance (O&M) buildings should not be illuminated at night. ▪ The O&M buildings should be painted in natural tones that fit with the surrounding environment.									

8.5.2 Karee Grid Connection Infrastructure

KAREE GRID CONNECTION INFRASTRUCTURE																					
ENVIRONMENTAL PARAMETER	**ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE**	**ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION**									**RECOMMENDED MITIGATION MEASURES**	**ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION**								
		E	**P**	**R**	**L**	**D**	**I / M**	**TOTAL**	**STATUS (+ OR -)**	**S**		**E**	**P**	**R**	**L**	**D**	**I / M**	**TOTAL**	**STATUS (+ OR -)**	**S**
Construction Phase																					
▪ Potential alteration of the visual character and sense of place. ▪ Potential visual impact on receptors in the study area	▪ Large construction vehicles, equipment and construction material stockpiles will alter the natural character of the study area and expose visual receptors to impacts associated with construction. ▪ Construction activities may be perceived as an unwelcome visual intrusion, particularly in more natural undisturbed settings. ▪ Dust emissions and dust plumes from increased traffic on gravel roads serving the construction site may evoke negative sentiments from surrounding viewers. ▪ Surface disturbance during construction would expose bare soil resulting in visual scarring of the landscape and increasing the level of visual contrast with the surrounding environment. ▪ Vegetation clearance required for the construction of the proposed substation is expected to increase dust emissions and alter the natural character of the surrounding area, thus creating a visual impact. ▪ Temporary stockpiling of soil during construction may alter the flat landscape. Wind blowing over these disturbed areas could result in dust which would have a visual impact.	2	3	1	2	1	2	18	-	Low	▪ Carefully plan to minimise the construction period and avoid construction delays. ▪ Inform receptors within 500m of the proposed power line servitude of the construction programme and schedules. ▪ Minimise vegetation clearing and rehabilitate cleared areas as soon as possible. ▪ Maintain a neat construction site by removing rubble and waste materials regularly. ▪ Position storage / stockpile areas in unobtrusive positions in the landscape, where possible. ▪ Make use of existing gravel access roads where possible. ▪ Limit the number of vehicles and trucks travelling to and from the construction site, where possible. ▪ Unless there are water shortages, ensure that dust suppression techniques are implemented: ▪ on all access roads; ▪ in all areas where vegetation clearing has taken place; ▪ on all soil stockpiles.	2	2	1	1	1	2	14	-	Low

Operational Phase																				
▪ Potential alteration of the visual character and sense of place. ▪ Potential visual impact on receptors in the study area.	▪ The proposed power line and substation could alter the visual character of the surrounding area and expose sensitive visual receptor locations to visual impacts. ▪ The development may be perceived as an unwelcome visual intrusion, particularly in more natural undisturbed settings. ▪ Dust emissions and dust plumes from maintenance vehicles accessing the site via gravel roads may evoke negative sentiments from surrounding viewers. ▪ The night time visual environment could be altered as a result of operational and security lighting at the proposed substation.	2	4	2	2	3	1	13	-	Low	▪ Where possible, limit the number of maintenance vehicles using access roads. ▪ Where possible, limit the amount of security and operational lighting present at the on-site substation. ▪ Light fittings for security at night should reflect the light toward the ground and prevent light spill. ▪ Buildings on the substation site should be painted with natural tones that fit with the surrounding environment. ▪ Non-reflective surfaces should be utilised where possible.	2	4	2	2	3	1	13		Low
Decommissioning Phase																				
▪ Potential visual intrusion resulting from vehicles and equipment involved in the decommissioning process; ▪ Potential visual impacts of increased dust emissions from decommissioning activities and related traffic; and ▪ Potential visual intrusion of any remaining infrastructure on the site.	▪ Vehicles and equipment required for decommissioning will alter the natural character of the study area and expose visual receptors to visual impacts. ▪ Decommissioning activities may be perceived as an unwelcome visual intrusion. ▪ Dust emissions and dust plumes from increased traffic on the gravel roads serving the decommissioning site may evoke negative sentiments from surrounding viewers. ▪ Surface disturbance during construction would expose bare soil resulting in visual scarring of the landscape and increasing the level of visual contrast with the surrounding environment. ▪ Temporary stockpiling of soil during decommissioning may alter the flat landscape. Wind blowing over these disturbed areas could result in dust which would have a visual impact.	2	3	1	2	1	2	18	-	Low	▪ 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. ▪ Position storage / stockpile areas in unobtrusive positions in the landscape, where possible. ▪ 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. ▪ Rehabilitated areas should be monitored post-decommissioning and remedial actions implemented as required.	2	2	1	2	1	2	16	-	Low
Cumulative																				
▪ Potential alteration of the visual character and sense of place in the broader area.	▪ Additional renewable energy and associated infrastructure developments in the broader area will alter the natural character of the study area towards a more industrial	3	3	2	3	3	2	28	-	Medium	▪ Where possible, limit the number of maintenance vehicles using access roads.	3	3	2	2	2	2	24	-	Medium

▪ Potential visual impact on receptors in the study area. ▪ Potential impact on the night time visual environment.	landscape and expose a greater number of receptors to visual impacts. ▪ Visual intrusion of multiple renewable energy and infrastructure developments may be exacerbated, particularly in more natural undisturbed settings. ▪ Additional renewable energy facilities in the area would generate additional traffic on gravel roads thus resulting in increased impacts from dust emissions and dust plumes. ▪ The night time visual environment could be altered as a result of operational and security lighting at multiple renewable energy facilities in the broader area.									▪ Non-reflective surfaces should be utilised where possible. ▪ Where possible, limit the amount of security and operational lighting present at the on-site substation. ▪ Light fittings for security at night should reflect the light toward the ground and prevent light spill.								

9 COMPARATIVE ASSESSMENT OF ALTERNATIVES

The site alternatives for the proposed Karee Substation / BESS / laydown site, as shown in **Figure 5,** are comparatively assessed in **Table 8** below.

As previously stated, two (2) grid connection infrastructure alternatives (**Figure 6**) have been provided to serve the proposed Karee WEF project. These alternatives are also comparatively assessed in **Table 8** below.

The aim of the comparative assessment is to determine which of the alternatives would be preferred from a visual perspective. Preference ratings for each alternative are provided in the tables below. The alternatives are rated as preferred; favourable, least-preferred or no-preference.

The degree of visual impact and the preference rating has been determined based on the following factors:

- The location of each alternative in relation to areas of high elevation, especially ridges, koppies or hills;
- The location of each alternative in relation to sensitive visual receptor locations; and
- The location of each alternative in relation to areas of natural vegetation (clearing site for the development increases the visibility).

Key

PREFERRED	The alternative will result in a low impact / reduce the impact
FAVOURABLE	The impact will be relatively insignificant
LEAST PREFERRED	The alternative will result in a high impact / increase the impact
NO PREFERENCE	The alternative will result in equal impacts

9.1 WEF Infrastructure

Table 8: Comparative Assessment of Alternatives: WEF Infrastructure

Alternative	Preference	Reasons (incl. potential issues)
SUBSTATION AND BESS SITE		
Substation / BESS / Laydown Site Option 1	Favourable	▪ Option 1 is located on relatively flat terrain and as such would only be moderately exposed on the skyline. ▪ The closest sensitive receptor to this alternative is approximately 6.3km away, this being Vaalkloof Private Nature Reserve (SR3). The visual impacts from Option 1

Alternative	Preference	Reasons (incl. potential issues)
		affecting this receptor are therefore rated as **NEGLIGIBLE TO NONE**. ▪ The closest potentially sensitive receptor to this alternative is approximately 3km away, this being VR22. The visual impacts from Option 1 affecting this receptor are therefore rated as **LOW.** As VR22 is located within the development area for Karee WEF, it is assumed that the residents at this location would not view the development in a negative light. The remaining receptors are all more than 3kms away and would only be subjected to low or negligible levels of impact. ▪ The N1 receptor road is more than 20kms from this site alternative, and is outside the viewshed for the WEF development. The R356 receptor road is more than 11kms from this site alternative. As such, motorists using these routes are not expected to experience any visual impacts from infrastructure located on this site alternative. ▪ In light of the above, there are no fatal flaws associated with Option 1 and this alternative is considered favourable from a visual perspective.
Substation / BESS / Laydown Option 2	Favourable	▪ Option 2 is located on relatively flat terrain and as such would only be moderately exposed on the skyline. ▪ The closest sensitive receptor to this alternative is approximately 5.5km away, this being Vaalkloof Private Nature Reserve (SR3). The visual impacts from Option 2 affecting this receptor are therefore rated as **NEGLIGIBLE TO NONE**. ▪ The closest potentially sensitive receptor to this alternative is approximately 800m away, this being VR22. The visual impacts from Option 2 affecting this receptor are therefore rated as **MODERATE.** As VR22 is located within the development area for Karee WEF, it is assumed that the residents at this location would not view the development in a negative light, and this factor would reduce the level of impact. VR25 is some 2.3km away and would thus experience **LOW** levels of visual impact resulting from this site alternative. The remaining receptors are all

Alternative	Preference	Reasons (incl. potential issues)
		more than 3kms away and would only be subjected to low or negligible levels of impact. ▪ The N1 receptor road is more than 19kms from this site alternative, and is outside the viewshed for the WEF development. The R356 receptor road is more than 11kms from this site alternative. As such, motorists using these routes are not expected to experience any visual impacts from infrastructure located on this site alternative. ▪ In light of the above, there are no fatal flaws associated with Option 2 and this alternative is considered favourable from a visual perspective.

9.2 132 kV Power Line

Table 9: Comparative Assessment of Alternatives: 132kV Power Line

Alternative	Preference	Reasons (incl. potential issues)
Power Line Corridor Option 1	Favourable	▪ Corridor Option 1 is between 8.5 and 10.5km in length and a short section of the corridor is entirely within the Karee WEF development site. Hence impacts from this section of the power line would be minimal when compared with the impacts associated with the wind turbines. The remainder of the route alignment is up to 800m from the existing 400kV power lines and thus although visual impacts resulting from the new power line would be reduced by the presence of existing power lines, the separation between the power lines could potentially result in increased visual clutter in the landscape. ▪ This corridor option is located on relatively flat terrain and does not traverse any ridges. As such the power lines would only be moderately exposed on the skyline. ▪ The closest sensitive receptor to this alternative is approximately 3.9km away, this being SR1. The visual impacts from Option 1 affecting this receptor are therefore rated as **LOW.** Proximity to the existing 400kV power lines would further reduce the visual impact of a new power line.

Alternative	Preference	Reasons (incl. potential issues)
		▪ The closest potentially sensitive receptor to this alternative is approximately 900m away, this being VR2. The visual impacts from Corridor Option 1 affecting this receptor are therefore rated as moderate. The location of this receptor in close proximity to the existing 400kV power lines and the DR1475 would however reduce the significance of the impacts. The remaining receptors are all more than 800m away and would only be subjected to moderate, low or negligible levels of impact. ▪ In light of the above, there are no fatal flaws associated with Corridor Option 1 and this alternative is considered favourable from a visual perspective.
Power Line Corridor Option 2	Preferred	▪ Corridor Option 2 is between 8.4 and 10.4km in length and a short section of the corridor is entirely within the Karee WEF development site. Hence impacts from this section of the power line would be minimal when compared with the impacts associated with the wind turbines. The remainder of the route alignment is directly adjacent to the existing 400kV power lines and as such visual impacts resulting from the new power line would be reduced. ▪ This corridor option is located on relatively flat terrain and does not traverse any ridges. As such the power lines would only be moderately exposed on the skyline. ▪ The closest sensitive receptor to this alternative is approximately 4.2km away, this being SR1. The visual impacts from Option 2 affecting this receptor are therefore rated as **LOW.** Proximity to the existing 400kV power lines would further reduce the visual impact of a new power line. ▪ The closest potentially sensitive receptor to this alternative is approximately 570m away, this being VR2. The visual impacts from Corridor Option 2 affecting this receptor are therefore rated as moderate. The location of this receptor in close proximity to the existing 400kV power lines and the DR1475 would however reduce the significance of the impacts. The remaining receptors are all more than 800m away and would only be

Alternative	Preference	Reasons (incl. potential issues)
		subjected to moderate, low or negligible levels of impact. ▪ In light of the above, there are no fatal flaws associated with Corridor Option 2 and, given the proximity of this alternative to the existing 400kV power lines, this alternative is considered preferred from a visual perspective.

9.3 No-Go Alternative

The 'no-go' alternative is the option of not undertaking the proposed project. Hence, if the 'no-go' option is implemented, there would be no development. The area would thus retain its visual character and sense of place and no visual impacts would be experienced by any locally occurring receptors.

10 REVISED BUILDABLE AREA

Subsequent to the completion of all specialist studies, the developer has refined the proposed turbine development area (buildable area) for the Karee WEF in line with the recommendations of the various specialists. The refined buildable area (dated 18 October 2022) is shown in **Figure 32**, has been assessed from a visual perspective and it has been concluded that the new buildable area has taken into account the visual sensitivities identified in Section 6.3.1.and does not change the findings of this VIA.

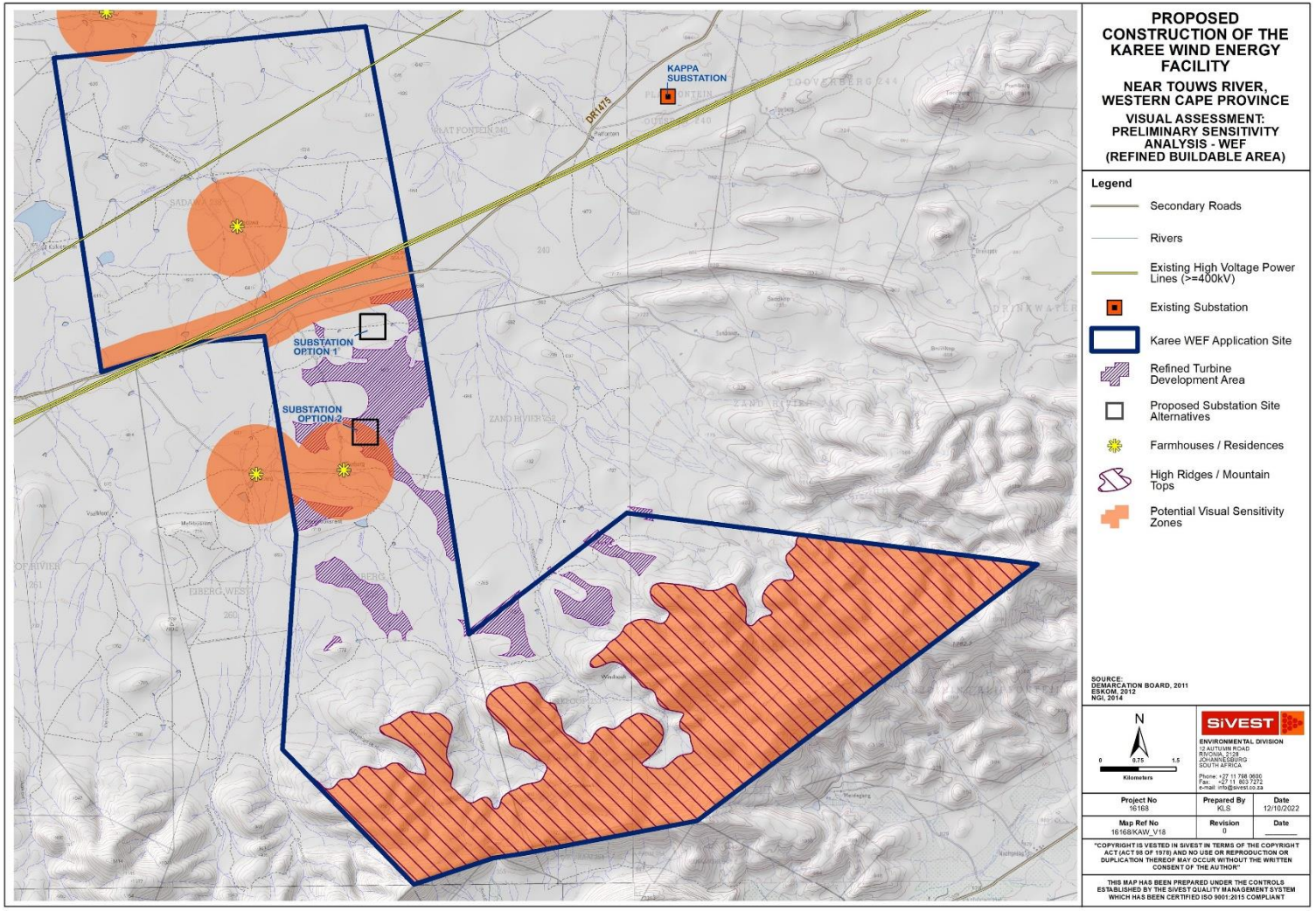

Figure 32: Refined Buildable Area

11 CONCLUSION

A VIA was conducted to assess the magnitude and significance of the potential visual impacts associated with the development of the proposed Karee WEF and associated grid connection infrastructure near Touws River 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 with associated grid connection infrastructure 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 reduced by the presence of the Kappa Substation, high voltage power lines and road infrastructure within 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.

Although the study area is not typically known for its tourism significance, the presence of several private nature and game reserves would suggest that the area does have some tourism appeal. There is however limited human habitation resulting in relatively few sensitive or potentially sensitive receptors in the area. A total of thirty-three (33) potentially sensitive receptors were identified within the combined study area, although only nineteen (19) of these were found to be within the viewshed for the proposed WEF. Four (4) of these receptors are considered to be sensitive receptors as they are linked to leisure/nature-based tourism activities in the area. One of the sensitive receptors is expected to experience high levels of visual impact from the WEF facility, namely Vaalkloof Private Nature Reserve. The remaining three (3) sensitive receptors would experience moderate levels of impact.

Fifteen (15) of the receptors identified are all assumed to be farmsteads which are regarded as potentially sensitive visual receptors as they are located within a mostly rural setting and the proposed development will likely alter natural vistas experienced from these locations. Only six (6) of these receptors are expected to experience high levels of visual impact as a result of the WEF development. This sensitivity rating relates largely to the fact that these receptors are located in in close proximity to the boundary of the Karee WEF application site and they are in zones of high contrast, with little natural screening present. Two of these receptors, namely VR22 and VR49 are in fact located within the proposed Karee WEF development area and as such, these properties form part of the WEF project. Thus it is assumed that the owners have a vested interest in the WEF project and would not perceive the development in a negative

light. Furthermore, none of these receptors are tourism-related facilities and as such they are not considered to be Sensitive Receptors.

Nine (9) potentially sensitive receptor locations would be subjected to moderate levels of visual impact as a result of the proposed Karee WEF development.

The only sensitive receptor (SR1) identified within 5km of the power line assessment corridors would experience only moderate levels of visual impact as a result of the proposed 132kV power line associated with the Karee WEF development.

Three (3) of the *potentially* sensitive receptor locations are expected to experience high levels of visual impact as a result of the proposed power line. The high sensitivity rating relates largely to the fact that these receptors are located in areas of high visual contrast that are also relatively close to the proposed power line route alignments. Impacts resulting from the proposed new power line are however expected to be reduced by the presence of existing high voltage power lines already visible to these receptors. In addition, one of these receptors is VR22 which is located within the proposed WEF development area and as such, this property forms part of the WEF project. The remaining four (4) potentially sensitive receptor locations would be subjected to moderate levels of visual impact as a result of the proposed power line.

Although the N1 and R356 receptor roads traverse the study area, wind turbines are only expected to be visible from the R356. Motorists travelling along this route are only expected to experience moderate impacts from the proposed Karee WEF and no impacts from the grid connection infrastructure are associated with the project.
An overall impact rating was also conducted in order to allow the visual impact to be assessed alongside other environmental parameters. The assessment revealed that impacts associated with the proposed **Karee WEF and associated grid connection** infrastructure will be of **low significance** during both construction and decommissioning phases. During operation, visual impacts from the WEF would be of medium significance with relatively few mitigation measures available to reduce the visual impact. Visual impacts associated with the grid connection infrastructure during operation would be of low significance.

Although other proposed renewable energy developments and infrastructure projects were identified within a 35km radius of the Karee WEF project, it was determined that only four (4) of these would have any significant impact on the landscape within the visual assessment zone, namely Perdekraal East WEF, Perdekraal West WEF, Tooverberg WEF and Patatskloof WEF. These proposed WEFs, in conjunction with the associated grid connection infrastructure, will inevitably introduce an increasingly industrial character into a largely natural, pastoral landscape, thus giving rise to significant cumulative impacts.

It is however anticipated that these impacts could be mitigated to acceptable levels with the implementation of the recommendations and mitigation measures stipulated for each of these developments by the respective visual specialists. In light of this and the relatively low level of human habitation in the study area however, cumulative impacts have been rated as medium.

A comparative assessment of site alternatives for the on-site WEF infrastructure and also for the grid connection alternatives was undertaken in order to determine which of the alternatives would be preferred from a visual perspective. No fatal flaws were identified in respect of either of the site alternatives for the proposed on-site substation / BESS / laydown facilities and both alternatives were found to be **Favourable**.

No fatal flaws were identified for either of the grid connection infrastructure alternatives. Power Line Corridor Option 2 was identified as the **Preferred Alternative**, while Power Line Corridor Option 2 was found to be **Favourable**.

11.1 Visual Impact Statement

It is SiVEST's opinion that the potential visual impacts associated with the proposed Karee WEF and associated grid infrastructure development are negative and of moderate significance. Given the low level of human habitation and the relative absence of sensitive receptors, the project is deemed acceptable from a visual perspective and the EA should be granted. SiVEST is of the opinion that the impacts associated with the construction, operation and decommissioning phases can be mitigated to acceptable levels provided the recommended mitigation measures are implemented.

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