

# **Proposed Jessa M, Jessa S and Jessa Z Wind Energy Facilities and Associated Infrastructure**

## **Visual Impact Assessment**



### **DFFE Reference:**

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<b>Issue Date:</b>	17 January 2022
<b>Version No.:</b>	Version 2.0

## **EXECUTIVE SUMMARY**

The current visual assessment is based on the preliminary layout of the three proposed Jessa Wind Energy Facilities (WEFs), being Jessa M, Jessa S and Jessa Z. The visual assessment of the grid connection forms part of a separate visual specialist assessment.

The study area consists of a flat plain known as 'Die Vlake' with few scenic resources on or in close proximity to the site, the main feature being the dry Boeteka River, which cuts across the site from east to west.

The general area is sparsely populated, although there are a number of visual receptors in close proximity to the proposed WEFs, these being mainly farmsteads, some of which have guest accommodation. The field trip revealed that a few of the farmsteads are no longer occupied or are derelict.

The overall visual impact significance for the wind turbines on all three of the proposed WEFs has been rated as high, before and after mitigation, given that there will be a significant change in character to the area. The visual impact significance for related infrastructure has been rated as medium, and therefore not considered visually intrusive in relative terms.

The cumulative visual impact significance of the three proposed Jessa WEFs, seen in combination with other wind and solar renewable energy projects within 35km, has been rated as high, given the change in character to the Karoo landscape and the proximity of the N12 National Road.

The layouts of the three Jessa WEFs largely avoid visual 'no-go' areas, and micro-siting of the turbines should be relatively easy. Where a situation exists that not all the turbines would be required, consideration should be given to removing or relocating outlier turbines and those that are in the 'high' visual sensitivity category (mostly steep slopes), as well as those closest to the N12 National Road.

It is not anticipated that the three proposed WEFs would present a potential fatal flaw in visual terms, particularly as the proposed project lies within the Beaufort West Renewable Energy Development Zone (REDZ 11), and could be seen as part of a renewable energy node.

**NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998) AND ENVIRONMENTAL IMPACT REGULATIONS, 2014 (AS AMENDED) - REQUIREMENTS FOR SPECIALIST REPORTS (APPENDIX 6)**

<b>Regulation GNR 326 of 4 December 2014, as amended 7 April 2017, Appendix 6</b>	<b>Section of Report</b>
1. (1) A specialist report prepared in terms of these Regulations must contain-	Page v and Appendix A
a) details of-	
i. the specialist who prepared the report; and	
ii. the expertise of that specialist to compile a specialist report including a curriculum vitae;	
b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Page iv and v
c) an indication of the scope of, and the purpose for which, the report was prepared;	Section 2
(cA) an indication of the quality and age of base data used for the specialist report;	Section 2
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 7
d) the date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Section 5
e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 2
f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 7
g) an identification of any areas to be avoided, including buffers;	Sections 7, 8 and 9
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;	Maps 6 to 10
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 7
k) any mitigation measures for inclusion in the EMPr;	Section 8
l) any conditions for inclusion in the environmental authorisation;	Section 8
m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Section 8
n) a reasoned opinion-	Section 9
i. (as to) 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, and where applicable, the closure plan;	
o) a description of any consultation process that was undertaken during the course of preparing the specialist report;	N/A
p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	N/A
q) any other information requested by the competent authority.	N/A
2) Where a government notice <i>gazetted</i> 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



## forestry, fisheries & the environment

Department:  
Forestry, Fisheries and the Environment  
REPUBLIC OF SOUTH AFRICA

### APPLICATION FORM FOR ENVIRONMENTAL AUTHORISATION

Application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

#### PROJECT TITLE

PROPOSED JESSA WIND ENERGY FACILITIES:  
Jessa M, Jessa S and Jessa Z Wind Energy Facilities and Associated Infrastructure

Indicate if the **DRAFT** report accompanies the application

Yes ☐  
No ☐

#### PRE-APPLICATION CONSULTATION

Was a pre-application meeting held	Yes		No	
Date of the pre-application meeting				
Reference number of pre-application meeting held				
Was minutes compiled and submitted to the Department for approval	Yes		No	

A copy of the pre-application meeting minutes must be appended to this application.

#### Kindly note the following:

1. This form must always be used for applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting where this Department is the Competent Authority.
2. This application form is current as of **April 2021**. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at <https://www.environment.gov.za/documents/forms>.
3. The onus is on the Applicant/EAP to determine all applicable listed activities that would require Environmental Authorisation prior to the commencement of the construction activities. Should any revision of your development comprise any other activities that constitute a listed activity/ies as defined in Listing Notice 1, 2, or 3 of the EIA Regulations, 2014 as amended, it must also form part of the Application for Environmental Authorisation.
4. An application fee is applicable. Proof of payment must accompany this application. The application will not be processed without proof of payment unless one of the exclusions provided for in the Fee Regulations is applicable AND such information in the exclusion section of this application form has been confirmed by this Department.
5. A cover letter on your company letterhead indicating the nature of this application must be appended to this form i.e. new application for Environmental Authorisation, updated application for Environmental Authorisation.
6. An electronic copy of the signed application form must be submitted of both the Applicant and EAP.
7. This form must be marked **“for Attention: Chief Director: Integrated Environmental Authorisations”** and submitted to the Department at the format as prescribed in the process to upload documents form.
8. The required information must be typed within the spaces provided in the form. The sizes of the spaces provided are not necessarily indicative of the amount of information to be provided. Spaces are provided in tabular format and will extend automatically when each space is filled with typing. A legible font type and size must be used when completing the form. The font size should not be smaller than 10pt (e.g. Arial 10).
9. Where applicable black out the boxes that are not applicable in the form.



10. The use of the phrase “not applicable” in the form must be done with circumspection. Where it is used in respect of material information that is required by the Competent Authority for assessing the application, this may result in the rejection of the application as provided for in the Regulations.
11. Unless protected by law, all information contained in and attached to this application, will become public information on receipt by the Competent Authority. Upon request during any stage of the application process, the Applicant / EAP must provide any registered interested and affected party with the information contained in and attached to this application.
12. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report and declaration of interest of the specialist must also be submitted.
13. Please note that this form must be copied to the relevant Provincial Environmental Department(s)
14. An application for Environmental Authorisation lapses if the applicant fails to meet any of the timeframes prescribed in terms of the EIA Regulations, 2014, as amended.
15. An application for environmental authorisation must be accompanied by a report generated by the web based environmental screening tool (in Appendix 11). This has been stipulated as a requirement for the submission of applications for environmental assessment in the Environmental Impact Assessment Regulations. The Screening Tool allows for the generation of a Screening Report referred to in Regulation 16(1)(v) of the Environmental Impact Assessment Regulations 2014, as amended, whereby a Screening Report is required to accompany any application for Environmental Authorisation.

#### **Departmental Details**

**Online Submission:**

EIAApplications@environment.gov.za or <https://sfiler.environment.gov.za:8443/>.

**Please read the process for uploading files to determine how files are to be submitted to this Department.**

**Postal address:**

Department of Forestry, Fisheries and the Environment  
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Arcadia

Queries must be directed to the Directorate: Coordination, Strategic Planning and Support at:  
Email: [EIAAdmin@environment.gov.za](mailto:EIAAdmin@environment.gov.za)

## SPECIALIST INFORMATION

Specialist Company Name:			
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)		Percentage Procurement recognition
Specialist name:			
Specialist Qualifications:			
Professional affiliation/registration:			
Physical address:			
Postal address:			
Postal code:		Cell:	
Telephone:		Fax:	
E-mail:			

## DECLARATION BY THE SPECIALIST

I, \_\_\_\_\_, declare that –

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

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Signature of the Specialist

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Name of Company:

Date

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Photomontages (6 montages)

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## Abbreviations and Glossary

### List of Abbreviations

CAA	Civil Aviation Authority
DFFE	Department of Forestry, Fisheries and Environment
DEM	Digital Elevation Model
EAP	Environmental assessment practitioner
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
GN	Government Notice
GPS	Global Positioning System
NEMA	National Environmental Management Act
NFEPA	National Freshwater Ecosystem Priority Areas
O&M	Operations and maintenance
REDZ	Renewable Energy Development Zone
REEA	Renewable Energy EIA Application Database
SACAA	South African Civil Aviation Authority
SACAD	South African Conservation Areas Database
SAPAD	South African Protected Areas Database
VIA	Visual Impact Assessment
WEF	Wind energy facility

### Glossary

Definitions	
Receptor	Individuals, groups or communities who are subject to the visual influence of a particular project.
Viewpoint	A selected point in the landscape from which views of the project are ascertained.
Viewshed	The outer boundary defining a view catchment area, used to determine the zone of visual influence.
View shadow	An area within the view catchment visually obscured from the project, usually by topography.
Visual absorption capacity	The ability of an area to visually absorb development by means of screening topography, vegetation or buildings.

# 1. INTRODUCTION

Quinton Lawson and Bernard Oberholzer (see Appendix A for CVs) have been appointed by SLR South Africa Consulting (PTY) Ltd, on behalf of ENERTRAG South Africa (Pty) Ltd hereafter referred to as “ESA”, to undertake a visual impact assessment for the proposed construction of three wind energy facilities and associated grid connection (together known as the Jessa Projects) near Beaufort West in the Western Cape Province, South Africa, (see Figure 1).

In terms of the EIA Regulations various aspects of the proposed development may have an impact on the environment and are considered to be listed activities. These activities require authorisation from the National Competent Authority (CA), namely the Department of Forestry, Fisheries and the Environment (DFFE), prior to the commencement thereof. Specialist studies have been commissioned to verify the sensitivity and assess the impacts of the wind farms under the Gazetted specialist protocols (GN R 320 and GN R 1150 of 2020). The scope of this report covers the Jessa M, Jessa S, and Jessa Z Wind Energy Facilities. Even though these are three separate applications they will be considered in the same specialist report.

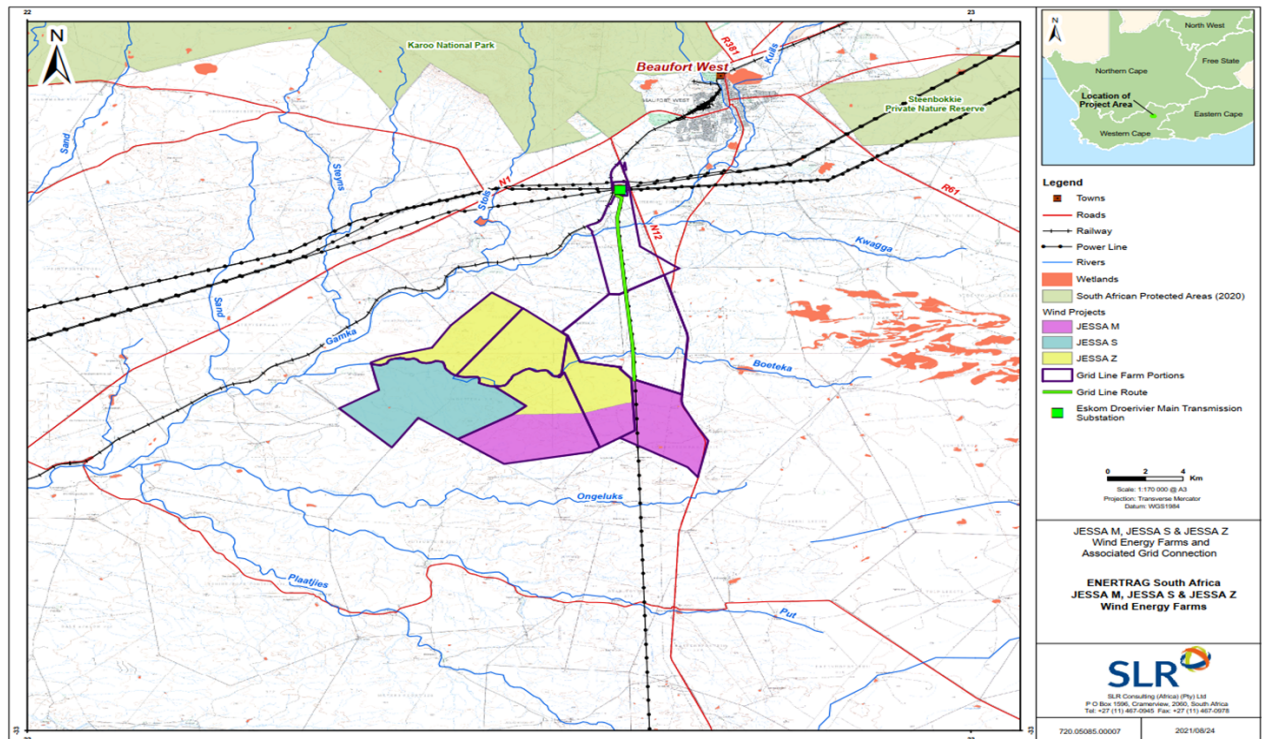


Figure 1: Regional context map

## 2. ASSESSMENT METHODOLOGY

### 2.1 Terms of Reference

A Terms of Reference has been provided by SLR (2021), which includes a template for the specialist assessment reports, a detailed project description and an impact rating methodology, included here as Appendix B.

### 2.2 Approach

The visual assessment methodology included the following steps:

- A 3D digital terrain model of the study area was prepared in order to determine the viewshed of the project, based on the latest layout provided by ESA.

- Potential sensitive receptors, such as farmsteads outside the site, were identified using the viewshed map and Google Earth.
- Landscape features and sensitive receptors were mapped together with recommended buffers on the base maps. The buffers for wind turbines, buildings, roads and powerlines were separately mapped.
- Field work was used to verify the existence and significance of the landscape features and receptors in order to refine the visual mapping layers.
- A photographic record was made with the emphasis on views from potential sensitive receptors (mainly surrounding farmsteads) of the proposed project at varying distances.
- The panoramic photographs, which included their GPS positions, were then used to create the post – mitigation photomontages.
- Potential visual impacts relating to the proposed WEFs for construction, operational and decommissioning phases of the project were assessed along with their relative significance.
- Mitigation measures to avoid or minimise potential negative visual impacts were formulated.
- Cumulative visual impacts in relation to other existing and proposed wind energy facilities in the area were assessed.
- Impact significance ratings were determined based on the methodology provided by SLR.

Site visits were carried out on 22 to 24 September 2021. The track used during the fieldwork is indicated on Map 4. The season was not a consideration for the visual survey, but clear visibility was required.

### 2.3 Assumptions and Limitations

The actual turbine model that may be used has not been determined at this stage, but a worst-case scenario from a visual perspective has been used in this visual assessment (in terms of height and rotor diameter). Assumptions were made regarding the footprint and height of the proposed substation (including associated battery facility) and operation and management (O&M) buildings, relating to the proposed project as detailed design of these would only become available at a later stage.

## 3. LEGAL REQUIREMENT AND GUIDELINES

Legal and policy documents relating to visual and scenic resources are described below. These tend to fall under the National Heritage legislation, the natural heritage being part of the 'national estate', and therefore the VIA Report needs to be read in conjunction with the HIA.

<i>National Heritage Resources Act (Act 25 of 1999 NHRA)</i>	The Act includes protection of national and provincial heritage sites, as well as areas of environmental or cultural value, and proclaimed scenic routes. Natural heritage, including scenic resources, form part of the 'national estate'.
<i>Provincial Government of the Western Cape 2005: Guideline for Involving Visual and Aesthetic Specialists in EIA Processes. B. Oberholzer.</i>	A guideline document for specialist visual input with respect to determining potential visual impacts, along with criteria for rating the significance of impacts.
<i>Provincial Government of the Western Cape, 2006: Strategic Initiative to Introduce Commercial and Land Based Wind Energy Development to the W. Cape.</i>	A broad guiding framework for the location of wind energy facilities based on the sensitivity and capacity of landscape types and the scale of the project.
<i>CSIR, 2018. Draft National Wind and Solar SEA Phase 2: Visual and Scenic Resources Chapter, B. Oberholzer and Q. Lawson.</i>	Phase 2 Wind and Solar PV SEA provides a high-level visual assessment of focus areas, building on the previous Phase 1 Wind and Solar PV SEA, 2015.



## 4. PROJECT DESCRIPTION

### 4.1 Project Location

The proposed project is located approximately 15km south of the town Beaufort West in the Beaufort West Local Municipality, Western Cape. The site is also located adjacent to the N12 road as shown on Map 1.

### 4.2 Wind Energy Facilities components

Each wind farm consists of wind turbines, roads, underground cables and overhead medium voltage power lines (up to 33 kV), a substation (including an operations and maintenance area), and a battery storage facility in the vicinity of the substation.

Table 1 below represents the various wind farm components and their specifications that have visual implications. Temporary areas necessary for construction are also included. The layout of these components for each wind farm site is shown on Map 4.

*Table 1: Summary of components and approximate footprint of Jessa Wind Energy Facilities*

Components	Description	JESSA Z	JESSA M	JESSA S
<b>Location</b>	Central coordinates:			
<b>Access</b>	The proposed site is located next to the N12. Access road/s to the site and internal roads between project components to be developed within a 20m corridor, cable trenches, stormwater channels and turning circle/bypass areas.			
<b>Extent</b>	The total area of the site being considered for developing each wind facility:			
<b>Number of wind turbines and generation capacity</b>	Maximum of 40 wind turbines per wind farm.	35	29	28
	Targeted nameplate generation capacity for each wind farm 220 MW.	220 MW	220 MW	203.5 MW
<b>Wind turbine specifications</b>	Rotor diameter: up to 200m Hub height: up to 200m Rotor top tip height: up to 300m	-	-	-
<b>Turbine Foundations, hardstands and laydown areas</b>	Diameter up to 25m, alongside 1500m <sup>2</sup> hardstand. Permanent total footprint as indicated.	31 ha (permanent) 30 ha (temporary)	31 ha (permanent) 30 ha (temporary)	31 ha (permanent) 30 ha (temporary)
<b>Wind farm Substations</b>	33 kV portion up to 3ha including switching station.	1.5 ha	1,5 ha	1.5 ha
<b>Battery energy storage system (BESS)</b>	BESS up to 200 MW / 800 MWh Total footprint up to 10ha (on-site substation included), including internal roads, temporary construction laydown area and firebreak.	3 ha	3 ha	3 ha
<b>Cabling</b>	Turbines connected to on-site substation via 33 kV cables laid underground in trenches mainly adjacent to proposed internal roads. In some instances, cables would deviate from the road.			
<b>Operations and maintenance (O&amp;M) area</b>	The O&M area, including offices, stores, workshops and laydown area.	500m <sup>2</sup>	500m <sup>2</sup>	500m <sup>2</sup>
<b>Security</b>	Security gate and hut installed at most entrances to wind farm site (estimated 4 entrances each at 20m <sup>2</sup> ). Existing fencing around perimeter of properties to remain. Temporary and permanent yard areas enclosed with 2.4m high fence.	80m <sup>2</sup>	80m <sup>2</sup>	80m <sup>2</sup>
<b>Temporary areas required for construction</b>	Temporary site camp/s. Temporary staff accommodation. Batching plant area. Temporary and permanent laydown areas for assembly.			

### 4.3 Turbine specifications

Since the turbine technology is continually evolving it is not possible for the developer, at this early stage in the development process, to specify the exact turbine model and specification.

Assumptions have therefore been made as to the maximum possible area of impact by the potential turbine blades based on a range of turbine sizes. This area of impact is referred to as the “exaggerated rotor swept area envelope”, as it 1) takes into account multiple turbine size scenarios at once, and 2) assumes each turbine has the largest blade it can from the lowest hub height and extends this all the way up to the highest hub height (see Figure 2). This reflects an exaggerated worst-case scenario.

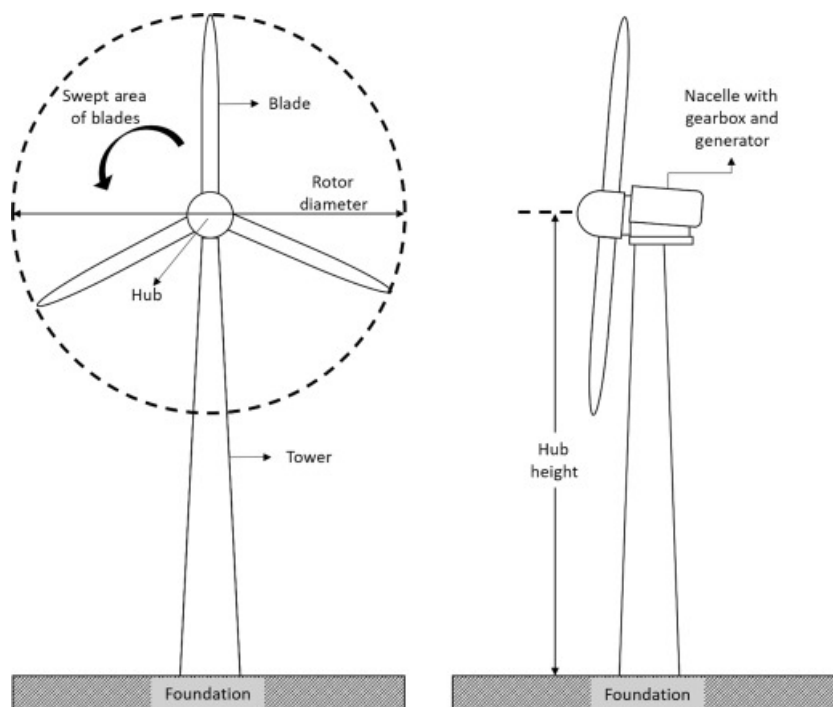


Figure 2: Exaggerated rotor swept area envelope

### 4.4 Power transmission

#### 4.4.1 Cables

Each turbine will be connected to their respective Wind Farm substation via 132kV power lines. For the most part cables will be laid underground in trenches (~1 m deep), generally running alongside existing or proposed internal roads, but sometimes deviating from these. In limited instances, where burying of cables is not possible due to technical, geological, environmental or topographical constraints, then short overhead power lines will be erected to traverse these constrained areas.

Internal overhead power lines will be spanned using short 132 kV type monopoles of not more than 20m in height. The typical design for the proposed internal overhead power line monopoles is depicted in Figure 3 below.

Maps 4 and 5 depict the site layout and visual features for Hoogland 3 and 4 WEFs. Maps 6 to 10 indicate the respective sensitivity levels for wind turbines, buildings (including substations and BESS), internal overhead powerlines and roads and underground cables.

The Jessa Wind Energy Facilities would connect to the Eskom Droerivier Main Transmission Substation via a 132kV transmission line (either single circuit or double circuit) from each WEF substation.



However, the specific technology will be determined following Engineering Procurement Construction (EPC) procurement. A brief description of some of the battery technology is provided below.

### **Lithium-Ion**

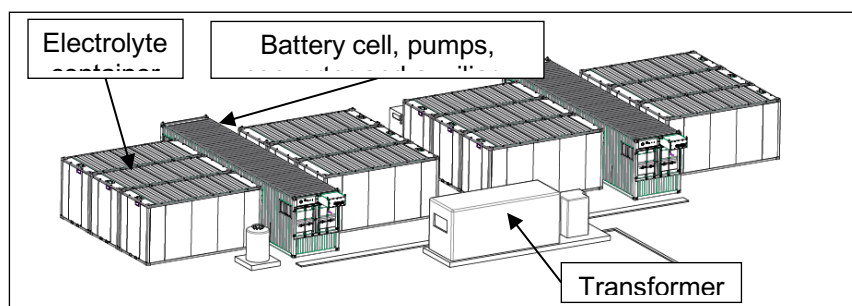
Lithium-Ion battery containers are normally a standard size of about 12m long x 2.5m wide x 2.7 to 3m high. Multiple containers (e.g. approximately 240, with an extra 3-5 containers for electrical connections and controls), would be required (Figure 4 indicates an example).



*Figure 4: Example of a Lithium-Ion BESS installation*

### **Redox Flow**

specially designed steel containers would house the batteries. Adjacent to these is another container housing the conversion and auxiliary systems (Figure 5). The height of the installation will not exceed 3m.



*Figure 5: Indicative layout of a Flow battery of approximately 0.1 ha*

## **4.5 Site Layouts**

The site layout for each wind farm has been through various iterations during the Screening and initial design phases. The current layout makes provision for a number of potential turbine positions specific to each wind energy facility (as detailed in Table 1 above), with associated infrastructure as shown on Map 4.

## **4.6 Alternatives**

An iterative design process is being followed to inform the respective Jessa WEF projects. This integrated design approach negates the need for the assessment of alternatives in the detailed Environmental Impact Assessment (EIA). The 'no-go' alternative is the option of not constructing the Project where the status quo of the current farming activities on the site would prevail.



## 5. BASELINE DESCRIPTION OF THE RECEIVING ENVIRONMENT

A brief description of the landscape and scenic features of the study area are given below, and in the accompanying photographs. Landscape features are indicated on Map 5.

### Landscape setting

The proposed wind energy facilities are located on a flat plain, known as 'Die Vlakte', and also 'Die Koup' in the southern part of the Great Karoo. The Karoo National Park boundary is about 10 km to the north of the proposed wind farms. The site lies on the western side of the N12 National Route, about 14 km south of the town of Beaufort West. Scattered farmsteads, about 5 to 10km apart, and often more, occupy the open plains. Some of the farms in the surrounding area are game farms or have lodges / guest accommodation.



Figure 6: Boeteka farmstead on the proposed Jessa wind energy site

### Geology and landforms

The geology for this area consists of the Middleton Formation of the Beaufort Group mudstones and sandstones (Cape Farm Mapper 6 Dec. 2021), the layers of which are visible in the road cuts along the N12 Route. The soils are thin and stony, except for the sandy bottomlands along drainage courses. The flattish to slightly undulating plains vary from 800 to 825m elevation.

The Boetekarivier drainage course cuts east-west roughly across the middle of the site, with a small, scenically attractive gorge near the Boeteka farmstead. The rivers of the general area are mostly dry, and flow only during storm events. There are no prominent *koppies* or other water features, except for small tributaries, on the sites of the three proposed WEFs.



Figure 7: Beaufort Group sandstones, shales and mudstone visible in road cuts along the N12 Route





*Figure 8: Small gorge with eroded cliffs along the Boeteka River, on the proposed Jessa wind energy site*

### **Vegetation cover**

The vegetation type is Gamka Karoo of the Nama-Karoo Biome dominated by Karoo dwarf, sometimes spiny, shrubs and drought-resistant grasses. The area has low rainfall, being in the rain shadow of the Cape Fold Mountains to the south. (Mucina and Rutherford, 2006). Sweet thorn (*Acacia karoo*) is found along the dry river courses.



*Figure 9: The sparse vegetation of the arid Karoo landscape*

### **Land use**

There are only two farmsteads, Boeteka and Besville, on the proposed Jessa WEF site. Farmsteads surrounding the site are on average 5 to 10km plus apart, linked by narrow gravel roads. A list of surrounding farmsteads, and their distances from the proposed wind farms are given in Table 2.

Farmsteads are sheltered by exotic gum trees, palms, cypresses and pepper trees, as well as the local sweet thorn. A few of the farmsteads in the area seemed unoccupied or derelict. Agricultural activities include game farms and grazing with merino and dorper sheep, although the low rainfall is a limiting factor.

The nearby Olive Grove Guest Farm, to the east of the N12 Route, has large plantations of olive trees, while across the N12, the 'Boeteka Padstal' offers refreshments and memorabilia.

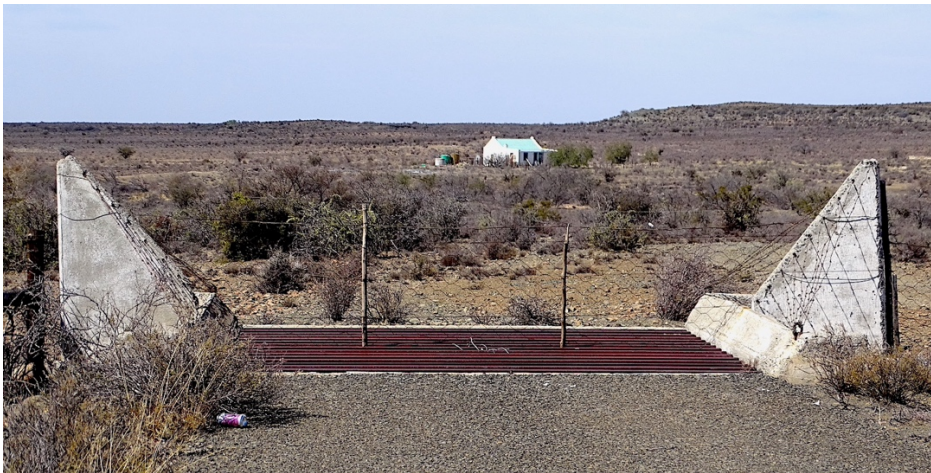




*Figure 6: Extensive olive groves along the Boeteka River / Lombaardskraal River Valley*

### **Sense of place**

As the name of the region 'Die Vlakte' implies, the landscape is vast and fairly featureless in terms of topography. It is also known for its Karoo stillness, even during the day, and for dark nights with starry skies. Small, isolated farmsteads form green oases in the semi-arid landscape, sheltered from the heat by largely exotic trees. The dry-packed stone walls, constructed from the local shales, were historically used for small *kraals*, and are a characteristic feature of the region.



*Figure 7: Bothasdale farmstead on the N12 National Road*



*Figure 8: Traditional dry-packed stone walls used for kraals in the region*



## 6. VISUAL SENSITIVITY MAPPING

### Viewsheds and Viewpoints

A preliminary viewshed of the draft wind turbine layouts is indicated on Map 3 being the zone of visual influence of the turbines for the three WEFs, while the white areas are in a view shadow and therefore not visually affected. (The viewshed is based on the tip height of the turbines).

Viewpoints identified during the field trip are indicated on Map 2. These are based on potentially sensitive receptors, mainly surrounding farmsteads, some of which have guest accommodation. In addition, the viewpoints were selected to represent a range of distances from the proposed wind farms to give an idea of their relative visibility.

Viewpoints visited on the field trip are listed in Table 2 below, together with distances to the nearest wind turbine and the potential level of visibility of the proposed wind farms. Distances to other farmsteads within the viewshed are listed in **Error! Reference source not found.**, these having varying visibility of the proposed wind farms.

Table 2: Viewpoints: Farmsteads Outside the Proposed Jessa WEF sites

Viewpoint	Name	Latitude	Longitude	Distance	Visibility
W1	N1 Karoo National Park	-32.381300	22.519400	10.83km	Marginal visibility, Eskom powerlines in foreground
W2*	N1 Teri-Lemveli entrance	-32.414700	22.461600	6.18km	Moderate visibility
W3	Steynskraal	-32.479200	22.395300	4.17km	High visibility
W4	Die Skooltjie	-32.504200	22.375200	3.16km	High visibility
W5	Railway crossing	-32.573600	22.279900	4.28km	High visibility
W6	Klein Heuninglaagte	-32.625200	22.350500	13.09km	Marginal visibility, partly screened by trees
W7	Kroonplaas	-32.599675	22.317222	10.69km	In a view shadow screened by topography
W8	Plaatjiesrivier 1	-32.626734	22.344413	10.93km	Marginal visibility, partly screened by topography
W9*	Quaggasfontein guest farm	-32.502900	22.561700	9.60km	Moderate visibility, partly screened
W10	Boeteka padstal	-32.504489	22.555600	2.57km	High visibility
W11	N12 opp. Lapaix	-32.529500	22.561200	672m	Very high visibility
W12	N12 opp. Nobelsfontein	-32.589800	22.563400	3.11km	High visibility
W13	Jonkersleegte gate	-32.643300	22.583100	9.14km	Moderate visibility
W14	Moerbeifontein	-32.646800	22.554800	9.42km	Moderate visibility
W15	Brakwater	-32.643800	22.528900	9.66km	Moderate visibility
W16	Helderstroom	-32.639900	22.488200	9.02km	Moderate visibility
W17	Putvlei	-32.628900	22.467800	7.84km	Moderate visibility
W18*	Elandsfontein gate (Zoetvlei)	-32.591800	22.447400	4.53km	High visibility
W19	De Puts	-32.648700	22.423600	11.12km	Marginal visibility
W20	Skilpadfontein	-32.637800	22.378800	10.85km	Marginal visibility
W21	Plaatjiesrivier 2	-32.639200	22.386700	10.75km	In a view shadow screened by topography
W22	Putfontein	-32.623300	22.439900	7.91km	Moderate visibility
W23	N12 Skeurfontein gate	-32.685900	22.559200	13.71km	Marginal visibility, in a hollow
W24	N12 Skeurfontein padstal	-32.693400	22.564000	14.53km	Marginal visibility
W25	N12 Good Hope gate	-32.715084	22.568025	16.78km	Marginal visibility, screened by trees
W26	N12 Bothasdale gate	-32.742800	22.579700	20.06km	Marginal visibility, in a hollow
W27*	Olive Grove Guest Farm	-32.502000	22.573400	3.35km	High visibility, screened by trees

W28	Beaufort West outskirts	-32.375900	22.589900	15.16km	Marginal visibility, foreground clutter
Receptors in close proximity not visited because of lack of access					
R1	Klipbanksfontein	-32.431707	22.461721	4.32km	High visibility
R2	Bellevue	-32.468764	22.411292	4.79km	High visibility
R3	Vergenoeg	-32.511463	22.402284	1.70km	Very high visibility
R4	Nooitgedacht	-32.516036	22.367230	4.57km	High visibility
R5	Leeufontein 1	-32.541711	22.396251	1.49km	Very high visibility
R6	Leeufontein 2	-32.551869	22.360968	5.10km	Moderate visibility
R7	Cypherfontein	-32.561164	22.528771	1.38km	Very high visibility
R8	Nobelsfontein	-32.588040	22.522743	4.04km	High visibility

\* Game farms, guest accommodation

V. high visibility:	Prominent feature within the observer's viewframe 0-2.5km
High visibility:	Relatively prominent within observer's viewframe 2.5-5km
Moderate visibility:	Only prominent with clear visibility as part of the wider landscape 5-10km
Marginal visibility:	Seen in very clear visibility as a minor element in the landscape 10-20km

### Visual Sensitivity Mapping Criteria

Landscape features of visual or scenic value, along with potential sensitive receptors in the surroundings, are described in

Table below. These provide a visual baseline for the study area. (See Map 5).

Table 3: SEA Visual Sensitivity Mapping Criteria

Scenic Resources	
Topographic features	Landscape features contribute to scenic and natural heritage value. These include features that provide visual interest or contrast in the landscape such as ridges, escarpments, steep slopes and geological features. Intact wilderness or rural landscapes tend to have higher scenic value and greater sensitivity to development.
Water Features	Rivers, dams and wetlands generally have aesthetic, scenic and amenity value. Sensitivity relates to their national, regional or local significance.
Cultural landscapes	Cultural landscapes tend to have rural scenic value and historical or cultural significance. These need to be correlated with the Heritage Assessment.
Sensitive Receptors	(includes residents, commuters, visitors and tourists)
Protected Areas	These include, National Parks and Nature Reserves, which have wilderness and scenic attributes in addition to their biological conservation role, serving as important visitor / tourist destinations. Visual significance is increased by their protection status. (The Karoo National Park is about 10km from the site).
Game reserves and resorts	Private nature reserves, game farms, recreation resorts and guest accommodation are important for the local economy, and tend to be sensitive to loss or degradation of scenic quality. (There are a few game farms / guest farms in close proximity to the site).
Heritage sites	These form part of the heritage study, but could have visual sensitivity implications.
Human settlements	Towns and farmsteads tend to be sensitive to visual intrusions, including an effect on property values and tourism. Farmsteads within the site would not be visually sensitive. (Beaufort West is about 14km from the site).
Scenic routes and arterial roads	National, provincial and main district roads, used by commuters, visitors and tourists are sensitive visual corridors. (The N12 runs along the eastern border of the site).
Airfields and airports	Small local airfields and major airports have visual restrictions regulated by the CAA. (Beaufort West aerodrome is 25km from the site).

### Recommended Buffers for Wind farms

Guidelines prepared in the past for buffers around wind energy farms are indicated in Table below. These are, however, intended for regional scale mapping purposes and have been adapted at the local project scale for individual wind farms (Table 5). For example, buffers vary depending on viewshed mapping, actual site conditions and the design height of wind turbines, which have become taller in recent years.

*Table 4: Visual Guidelines for Wind Turbines*

Landscape features	PGWC Guidelines <sup>1</sup>	SEA Visual Guidelines <sup>2</sup>	Comment
Project area boundary	-	-	Usually 1.5 times height of the proposed turbines.
Prominent topographic features	500m	500m	Includes prominent ridgelines, peaks and scarps.
Steep slopes	>1:4	>1:4 and >1:10	Generally avoid slopes >1:10.
Perennial rivers, large dams,	500m	250 - 500m	Subject to specialist freshwater assessment.
National roads	3 km	1 to 3 km	Depends on local context, e.g. rural or urban areas.
Provincial / arterial roads	500m	500m to 1 km	Depends on local context, e.g. rural or urban areas.
Scenic routes and passes	2.5 km	1 to 2,5 km	Could be less if in a view shadow.
National parks/ protected areas	2 km	3 to 5 km	Could be less if in a view shadow.
Private reserves/ game farms	500m	1,5 to 3 km	Could be less if in a view shadow.
Farmsteads	400m (noise)	500m	General literature recommends 500m to 2 km.
Settlements	800m	2 to 4 km	Could be less if in a view shadow.
Cultural landscapes/	500m	500m	Subject to heritage assessments.

<sup>1</sup> Provincial Government of the Western Cape, 2006. Recommended Criteria Thresholds for Regional and Site Level Assessment.

<sup>2</sup> CSIR, 2018. SEA for Wind and Solar Photovoltaic Energy in SA, Phase 2. Visual and Scenic Resources Chapter prepared by B. Oberholzer and Q. Lawson.

Scenic resources and sensitive receptors within the study area have been categorised into no-go, high sensitivity, medium and low visual sensitivity zones, as indicated in Table to Table below. The visual sensitivity mapping categories for wind turbines, buildings (including substations and BESS), internal roads and internal overhead powerlines are indicated on Maps 6 to 10.

*Table 5: Visual Sensitivity Mapping Categories for Wind Turbines (Maps 6 and 7)*

Scenic Resources	No-go areas	High visual sensitivity	Medium visual sensitivity	Low visual sensitivity
Topographic feature: prominent scarps, peaks and ridges	Feature	within 250m	within 500m	-
Topographic feature: minor ridges, scarps and outcrops	Feature	within 150m	-	-
Steep slopes	Slopes > 1:10	Slopes 1:10 - 1:20	-	-
Scenic water features	within 250m	within 500m	-	-
Cultural landscapes <sup>1</sup>	Refer to HIA		-	-
<b>Protected Landscapes / Sensitive Receptors</b>				
National Parks (Karoo NP)	within 5km	within 10km	within 15km	-
Private reserves / game farms outside the WEF sites	Within 1,5km	within 3 km	within 5 km	-
Settlements/ towns	within 2 km	within 4 km	within 6 km	-
Farmsteads outside site	within 1 km	within 1,5 km	within 2 km	-
Farmsteads inside site	within 500m	within 750m	within 1 km	-
National N12 Route	within 1 km	within 2 km	within 3 km	
Main district roads	within 250m	within 500m	within 1 km	-
Landing strips	within 3 km	-	-	-
Airports	within 8 km	-	-	-

<sup>1</sup>Cultural Landscapes are the areas defined by the heritage specialists around important cultural feature/s as presented in the heritage report. Visual implications and sense of place need to be considered.



Table 6: Visual Sensitivity Mapping for Buildings, Substation and Battery Facility (Map 8)

Scenic Resources	No-go areas	High visual sensitivity	Medium visual sensitivity	Low visual sensitivity
Topographic feature: prominent scarps, peaks and ridges	within 100m	within 150m	-	-
Minor ridges, scarps and outcrops	within 50m	within 100m	-	-
Steep slopes	Slopes > 1:4	Slopes > 1:10	-	-
Scenic water features	within 100m	within 150m	within 250m	-
Cultural landscapes <sup>1</sup>	Refer to HIA		-	-
<b>Protected Landscapes / Sensitive Receptors</b>				
National Park (Karoo NP)	within 1 km	within 1,5 km	within 2 km	-
Private reserves / game farms	within 500m	within 1 km	within 1,5 km	-
Settlements, towns	within 500m	within 1 km	within 1,5 km	
Farmsteads outside	within 250m	within 500m	Within 1 km	-
Farmsteads inside	within 150m	within 250m	within 500m	-
National N12 Route	within 500m	within 1,5 km	within 2 km	-
Main district roads	within 250m	within 500m	Within 1 km	-

Table 7: Visual sensitivity mapping categories for internal overhead powerlines (Map 9)

Scenic Resources	No-go areas	High visual sensitivity	Medium visual sensitivity	Low visual sensitivity
Topographic feature: prominent scarps, peaks and ridges	Feature	within 100m	within 150m	-
Minor ridges, scarps and outcrops	Feature	within 50m	within 100m	-
Steep slopes	-	Slopes > 1:4	Slopes > 1:10	-
Scenic water features	within 100m	within 150m	-	-
Cultural landscapes	Refer to HIA			
<b>Protected Landscapes / Sensitive Receptors</b>				
National Parks	within 500 m	within 1 km	-	-
Private reserves / game farms	within 150 m	within 250 m	-	-
Settlements / towns	within 100 m	within 150 m	-	
Farmsteads outside	within 150 m	within 250 m	-	-
farmsteads inside	within 100 m	within 150 m	-	-
National N12 Route	within 250m	within 500 m	-	-
Main district roads	within 50 m	within 100 m	-	-

Exceptions would apply where internal overhead power lines ascend/descend scarps at right angles.

Table 8: Visual sensitivity mapping categories for internal access roads (Map 10)

Scenic Resources	No-go areas	High visual sensitivity	Medium visual sensitivity	Low visual sensitivity
Topographic feature: prominent scarps, peaks and ridges	Feature	within 50m	-	-
Minor ridges, scarps and outcrops	Feature	Feature	-	-
Steep slopes	Slopes > 1:4	Slopes > 1:10	-	-
Scenic water features	within 50m	within 100m	-	-
Cultural landscapes <sup>1</sup>	Refer to HIA			
<b>Protected Landscapes / Sensitive Receptors</b>				
National Parks (Karoo NP)	-	-	-	-
Private reserves / game farms	-	-	-	-
Settlements / towns	-	-	-	
Farmsteads outside	within 100m	within 150m	within 200m	-
farmsteads inside	within 50m	within 100m	within 150m	-
National N12 Route	-	-	-	-
Main district roads	-	-	-	-

## 7. VISUAL IMPACT ASSESSMENT

### 7.1 Impact assessment

The visual assessments of the proposed WEFs are based on a number of quantitative and qualitative criteria to determine potential visual impacts, as well as their relative significance, including the considerations described below.

#### Visual Exposure

A viewshed of the proposed WEFs is indicated on Map 3, being the potential zone of visual influence of the current layout of the turbine locations. The white areas on the maps are in a view shadow and therefore not visually affected by the proposed WEFs. Visual exposure tends to be pronounced in the open plains, as can be seen on the viewshed map.

#### Visibility

A number of significant viewpoints have been identified, together with their relative distances and anticipated visibility of the proposed WEFs in Table 2. The viewpoints were selected based on proximity to the WEFs and the potential sensitivity of identified receptors, including users of the N12 National Road, as well as guest farms and farmsteads.

Degrees of visibility would depend on the number of turbines in the view field and their position in the landscape, as well as on foreground screening provided by topography or trees. See Figure 13 below for a comparison of visibility of turbines at various distances.

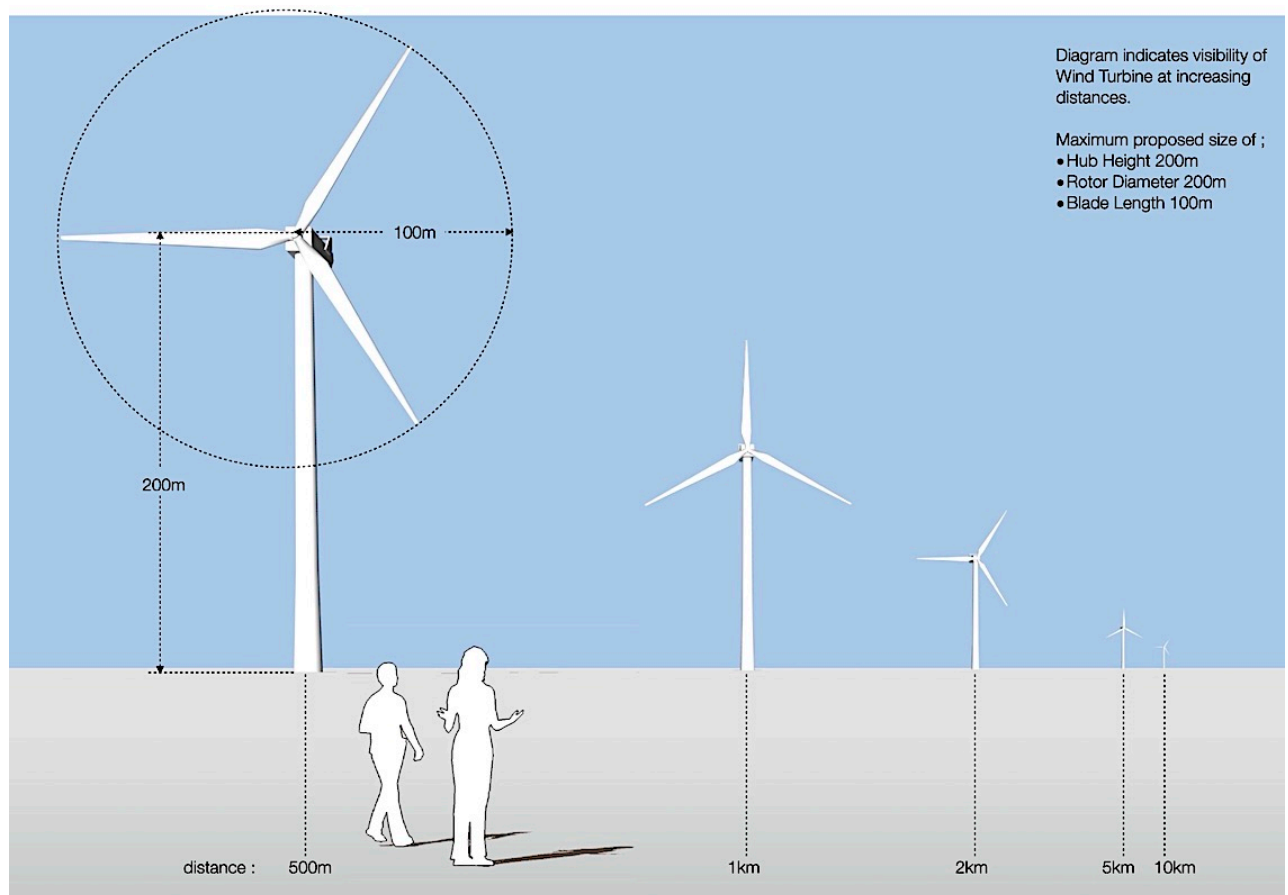


Figure 13: Comparison of visibility of wind turbines at various distances

#### Visual Absorption Capacity (VAC)

This relates to the potential of the landscape to screen the proposed WEFs from view. Wind turbines tend to be more exposed in the open plains. Turbines located on elevated landforms tend to be more visible in the

landscape, particularly when seen in silhouette. The sparse Karoo vegetation provides little screening effect. However dense clumps of trees around farmsteads tend to reduce visibility by receptors.

### Shadow Flicker Effect

Receptors falling within the shadow flicker envelope could potentially be affected by shadow flicker from the rotating wind turbine blades when the sun is low in the sky. However, the blades would need to be orientated toward the receptor, they would need to be rotating and the weather would need to be clear with bright sunlight to cast shadows. The orientation of buildings, as well as topography and trees would all determine the potential flicker effect.

There are a few farmsteads within 2km of the proposed WEFs that could potentially be affected (see Map 11), but incidences of flicker are expected to be low and can potentially be mitigated.

### Landscape Integrity

Landscape integrity tends to be enhanced by scenic or rural quality and intactness of the landscape, as well as absence of other visual intrusions. Natural or pristine landscapes tend to have higher visual quality and therefore higher value. Cultural landscapes, such as rural or farming scenes also have visual or scenic value. On the other hand, industrial activity and visual 'clutter', including substations and power lines, detract from these scenes.

Most of the site for the proposed WEFs has an uncluttered, expansive landscape with pastoral scenes, for which the Karoo is renowned, except for the Eskom powerline that runs parallel with the N12 Route.

### Visually Sensitive Resources

Natural and cultural landscapes, or scenic resources, form part of the 'National Estate' and may have local, regional or even national significance, usually, but not only, of tourism importance. Map 5 indicates features of interest.

### Visual Impact Intensity

The overall potential visual impact intensity is determined in Table 10 below by combining all the factors above, namely visual exposure, visibility, visual absorption capacity, landscape integrity and visually sensitive resources. Visual impact intensity is in turn used to assess visual impact consequence of the three proposed WEFs and related infrastructure, such as the substation (including associated battery facility), buildings, internal overhead powerlines and access roads.

Table 9: Visual Impact Intensity

Visual Criteria	Comments	Wind turbines	Related infrastructure
<b>Visual exposure</b>	Extensive viewshed relating to large scale and number of wind turbines.	High	Low
<b>Visibility</b>	Visible from the N12 Route, main district roads, and a number of farmsteads and guest farms.	High	Low
<b>Visual absorption capacity (VAC)</b>	Visually exposed plain, and therefore low VAC.	High	Medium
<b>Shadow flicker</b>	Limited to receptors within 2km.	Low	n/a
<b>Landscape integrity / intactness</b>	Effect on rural farming character and Karoo landscape.	Medium	Medium
<b>Landscape / scenic sensitivity</b>	Effect on scenic resources.	Medium	Low
<b>Impact intensity</b>	Summary	<b>High</b>	<b>Medium</b>

The quantification of overall visual impact significance for the proposed Jessa M, Jessa S and Jessa Z Wind Energy Facilities is based on the methodology provided by SLR (2021), as used in Tables 10 to 14 below. The assessment criteria are included in Appendix B of this report.



From the desktop and fieldwork studies, it was determined that the visual impacts would be similar for each of the three proposed WEFs, and therefore the visual impact assessment tables for these have not be separated and are applicable for all three WEFs equally.

*Table 3: Visual Impact Assessment – Construction Phase (All 3 WEFs)*

<b>Issue:</b> Visual intrusion of construction activities on the Karoo landscape.		
<b>Description of Impact:</b>		
Visual intrusion of cranes, heavy vehicles and construction activities required for the erection of wind turbines, and related infrastructure. Temporary construction areas e.g. camps and batching plants. Visual scarring from earthworks for assembly platforms. Soil/ rubble stockpiles from earthworks. Litter generated from construction site. Noise and dust from construction activity affecting the Karoo's sense of place.		
Type of Impact	Direct	
Nature of Impact	Negative	
Phases	Construction	
Criteria	Without Mitigation	With Mitigation
Intensity	High	Medium
Duration	Short-term	Short-term
Extent	Local	Local
Consequence	Medium	Medium
Probability	Definite/ Continuous	Probable
Significance	Medium -	Medium -
Degree to which impact can be reversed	The impact is reversible by means of site rehabilitation after construction and removal of construction equipment.	
Degree to which impact may cause irreplaceable loss of resources	Scenic resources are not damaged irreparably.	
Degree to which impact can be mitigated	There is some scope for mitigation as per the recommended mitigation measures below.	
<b>Mitigation actions</b>		
The following mitigations are recommended	Disturbed areas to be rehabilitated / revegetated as soon as possible during the construction phase. Temporary laydown and areas and batching plants to be located away from arterial or district roads. Stockpiles to be demarcated and located within approved construction footprints. Recycling and refuse bins to be provided to eliminate litter from the site.	
<b>Monitoring</b>		
The following monitoring is recommended	Ensure visual management measures are included in EMP, monitored by an Environmental Control Officer (ECO), including siting of any construction camps stockpiles, temporary laydown areas and batching plants outside of identified no-go areas, unless otherwise approved by the visual specialists, as well as the implementation of dust suppression and litter control measures.	
<b>Cumulative impacts</b>		
Nature of cumulative impacts	Cumulative visual impacts would occur if construction takes place simultaneously on all 3 proposed WEFs resulting in a short term disturbance to the stillness of the area.	
Rating of cumulative impacts	Without mitigation	With mitigation
	Medium -	Medium -

*Table 4: Visual Impact Assessment – Operation Phase: Turbines (All 3 WEFs)*

<b>Issue:</b> Visual intrusion of wind turbines on the Karoo landscape.	
<b>Description of Impact</b>	
Potential visual intrusion of the tall wind turbines on the rural landscape, scenic resources and sensitive receptors. Change in the pastoral Karoo character and sense of place of the local area.	
Type of Impact	Direct
Nature of Impact	Negative

Phases	Operational	
Criteria	Without Mitigation	With Mitigation
Intensity	High (see Table 9)	High
Duration	Long-term	Long-term
Extent	Local	Local
Consequence	High	High
Probability	Definite/ Continuous	Definite/ Continuous
Significance	High -	High -
Degree to which impact can be reversed	The impact could be reversible at the decommissioning phase by means of dismantling the turbines and site rehabilitation.	
Degree to which impact may cause irreplaceable loss of resources	Scenic resources are not damaged irreparably.	
Degree to which impact can be mitigated	Some potential for visual mitigation of wind turbines through relocation or micro-siting of turbines.	
Mitigation actions		
The following mitigations are recommended	Mitigation achievable by means of avoidance of no-go and high visual sensitivity areas in siting turbines, including turbines within 2km of N12. Consideration given to avoiding 'outlier' turbines.	
Monitoring		
The following monitoring is recommended	Visual mitigation measures to be monitored by management on an on-going basis, including maintenance of rehabilitated areas.	
Cumulative impacts		
Nature of cumulative impacts	Cumulative visual impacts would arise from the visual combination of the turbines for three WEFs, as well as the proposed grid connection, resulting in a change to the largely rural character and sense of place of the area. However, the proposed project is located within a REDZ.	
Rating of cumulative impacts	Without mitigation	With mitigation
	High -	High -

*Table 5: Visual Impact Assessment – Operation Phase: Substation and BESS (All 3 WEFs)*

<b>Issue:</b> Visual intrusion of infrastructure on the Karoo landscape.		
<b>Description of Impact</b>		
Visual effect of industrial-type substations and BESS on the rural Karoo landscape. Visual intrusion of internal overhead powerlines, including silhouette effect on skylines of ridges/ koppies. Visual intrusion of internal access roads and hardstands in the local area.		
Type of Impact	Direct	
Nature of Impact	Negative	
Phases	Operational	
Criteria	Without Mitigation	With Mitigation
Intensity	Medium (see Table 10)	Low
Duration	Long-term	Long-term
Extent	Local	Local
Consequence	Medium	Medium
Probability	Definite/ Continuous	Definite/ Continuous
Significance	Medium -	Medium -
Degree to which impact can be reversed	The impact could be reversible at the decommissioning phase by means of dismantling the infrastructure and implementing site rehabilitation.	
Degree to which impact may cause irreplaceable loss of resources	Scenic resources are not damaged irreparably.	
Degree to which impact can be mitigated	Some mitigation is achievable through careful siting and screening of infrastructure.	
Mitigation actions		
The following mitigations are recommended	Substations and O&M Buildings to be located in unobtrusive low-lying areas away from the N12 and district roads where possible. On-site signage to be discrete, and billboards prohibited. Signage to be fixed	

	as low as possible, preferably against a backdrop to avoid intrusion on the skyline. Powerlines to follow valleys and avoid peaks/ridges where possible. (Final route of internal lines needs to be reviewed by the specialist/s). Security and other outdoor lighting to be fitted with reflectors to conceal the light source and prevent light spillage.	
Monitoring		
The following monitoring is recommended	Visual mitigation measures to be monitored by management on an on-going basis, including control of signage, lighting and wastes, with interim inspections by an environmental officer.	
Cumulative impacts		
Nature of cumulative impacts	Cumulative visual impacts would arise from the visual combination of the turbines and related infrastructure for three WEFs, as well as the proposed grid connection, resulting in a change to the largely rural character and sense of place of the area.	
Rating of cumulative impacts	Without mitigation	With mitigation
	High -	High -

Table 6: Visual Impact Assessment – Operation Phase: Lighting at night (All 3 WEFs)

<b>Issue:</b> Visual intrusion of lighting at night.		
<b>Description of Impact</b>		
Visual effect on the dark skies of the Karoo created by lights on turbines for aircraft navigation. Visual intrusion of area and security lighting around the substations and O&M buildings.		
Type of Impact	Direct	
Nature of Impact	Negative	
Phases	Operational	
Criteria	Without Mitigation	With Mitigation
Intensity	Medium	Low
Duration	Long-term	Long-term
Extent	Local	Local
Consequence	Medium	Medium
Probability	Definite/ Continuous	Definite/ Continuous
Significance	Medium -	Medium -
Degree to which impact can be reversed	The impact could be reversible at the decommissioning phase by means of dismantling the turbines and other infrastructure and site rehabilitation.	
Degree to which impact may cause irreplaceable loss of resources	Scenic resources are not damaged irreparably.	
Degree to which impact can be mitigated	Some mitigation achievable for navigation lights by means of technological advances. Security and other outdoor lighting can be fitted with reflectors.	
<b>Mitigation actions</b>		
The following mitigations are recommended	Use of available technology to minimise the visual effect of navigation lights, conforming with CAA requirements. Use of reflectors on general area and security lighting to conceal light sources.	
<b>Monitoring</b>		
The following monitoring is recommended	Visual mitigation measures to be monitored by management on an on-going basis, including control of lighting.	
<b>Cumulative impacts</b>		
Nature of cumulative impacts	Cumulative visual impacts would arise from the visual combination of navigation lights for three WEFs, and to a lesser extent security lighting, resulting in a change to the largely rural character and sense of place of the area.	
Rating of cumulative impacts	Without mitigation	With mitigation
	Medium -	Medium -

Table 7: Visual Impact Assessment – Operation Phase: Shadow Flicker Effect (All 3 WEFs)

<b>Issue:</b> Visual disturbance caused by shadow flicker from wind turbines on nearby receptors.		
<b>Description of Impact</b>		
Receptors falling within the shadow flicker envelope could potentially be affected by shadow flicker from the rotating wind turbine blades when the sun is low in the sky. The effect is generally limited to receptors within 2km of the proposed turbines.		
Type of Impact	Direct	
Nature of Impact	Negative	
Phases	Operational	
Criteria	Without Mitigation	With Mitigation
Intensity	Medium	Low
Duration	Long-term	Long-term
Extent	Local	Local
Consequence	Medium	Medium
Probability	Definite/ Continuous	Definite/ Continuous
Significance	Medium -	Medium -
Degree to which impact can be reversed	The impact could be reversible at the decommissioning phase by means of dismantling the turbines.	
Degree to which impact may cause irreplaceable loss of resources	Scenic resources are not affected.	
Degree to which impact can be mitigated	Mitigation is generally achievable for shadow flicker effect.	
<b>Mitigation actions</b>		
The following mitigations are recommended	Shadow flicker effect can be mitigated by means of screen planting. (Most farmsteads are already surrounded by trees). Window blinds in buildings can be used to block shadow flicker.	
<b>Monitoring</b>		
The following monitoring is recommended	Potential shadow flicker to be monitored by the Developer during the construction phase to determine if mitigation measures are required.	
<b>Cumulative impacts</b>		
Nature of cumulative impacts	Cumulative shadow flicker effects are expected to be low as most receptors are more than 2km from the proposed wind turbines.	
Rating of cumulative impacts	Without mitigation	With mitigation
	Low -	Low -

Table 8: Visual Impact Assessment – Decommissioning Phase (All 3 WEFs)

<b>Issue:</b> Visual intrusion of activities to remove infrastructure.		
<b>Description of Impact</b>		
Visual effect of construction activities to remove infrastructure at the end of the life of the project, including wind turbines, substation, buildings, internal overhead powerlines and access roads.		
Type of Impact	Direct	
Nature of Impact	Negative	
Phases	Decommissioning	
Criteria	Without Mitigation	With Mitigation
Intensity	High	Medium
Duration	Very short-term	Very short-term
Extent	Local	Local
Consequence	Medium	Medium
Probability	Probable	Probable
Significance	Medium -	Medium -
Degree to which impact can be reversed	The impact is reversible by means of site rehabilitation after construction and removal of construction equipment.	

Degree to which impact may cause irreplaceable loss of resources	Scenic resources are not damaged irreparably.	
Degree to which impact can be mitigated	There is some scope for mitigation as per the recommended mitigation measures below.	
Mitigation actions		
The following mitigations are recommended	Disturbed areas to be rehabilitated / revegetated as soon as possible after the decommissioning phase. Wind turbines and building structures removed at the end of the life of the project. Hardstands and access roads no longer required to be ripped and regraded. Exposed or disturbed areas to be revegetated and returned to grazing pasture or natural veld to blend with the surroundings.	
Monitoring		
The following monitoring is recommended	Procedures for the removal of wind turbines and building structures during decommissioning to be implemented, including recycling of materials and rehabilitation of the site to a visually acceptable standard, and signed off by the delegated authority. Access roads and concrete pads no longer required should be ripped and vegetation or grazing cover reinstated.	
Cumulative impacts		
Nature of cumulative impacts	Some cumulative visual impacts could occur while decommissioning construction takes place, resulting in short term disturbance to the stillness of the area. Impacts would be reduced with construction mitigations.	
Rating of cumulative impacts	With mitigation	With mitigation
	Medium -	Low -

## 7.2 Alternatives

An iterative design process is being undertaken to inform the respective Wind Farm layouts and associated infrastructure for the three Jessa Wind Energy Facilities. Therefore, no site or layout alternatives are being assessed, as initial layout alternatives were screened out of the project in the early Screening Phase.

However, the preferred layouts of the proposed WEFs, and respective Grid Corridors, are assessed against the '**no-go**' alternative. The '**no-go**' alternative is the option of not constructing the Project, where the status quo of the current farming activities on the site would prevail.

The no-go alternative would mean that there would be no additional visual intrusion on the rural landscape and on farmsteads in the area by wind turbines and related infrastructure. Scenic features and the overall sense of place would therefore remain intact. The downside is that no renewable energy would be produced.

It is envisaged that the potential visual impact significance of the no-go alternative would be neutral as the status quo would likely continue and there would be no further visual impacts.

## 7.3 Cumulative Impacts

Other than the current three proposed Jessa WEFs, there are several other proposed or approved renewable energy projects within a 35km radius of the project site, (see Map 1). These include:

Beaufort West Wind Energy Facilities at  $\pm 35$  km.

Trakas Wind Energy Facility at  $\pm 25$  km.

Steenrotsfontein Photovoltaic Park, to the south of Beaufort West.

Kuilspoort Solar Power Plant, to the north-west of Beaufort West.

Beaufort West Solar Power Plant Sites 1, 2 and 3 south of Beaufort West.

The cumulative impact would therefore be the collective impact of the three proposed Jessa WEFs and Grid Connection applications, together with the renewable energy projects mentioned above, which, if developed would result in a change to the largely rural character and sense of place of the area. This could result in the

cumulative visual impact for the combined projects being of high visual impact significance, as indicated in the assessment tables in Section 7.1 above. However, following factors need to be taken into account:

- The nature of the topography would result in some visual screening between the three proposed Jessa WEFs, as well as the other more remote WEFs.
- The other proposed or approved wind farms are fairly distant at 25 to 35 km away, and it is unlikely that they would be seen in combination with the proposed Jessa WEFs.
- Several solar power facilities near Beaufort West are closer to the Jessa site ( $\pm 8$ km), but have a smaller footprint and viewshed, and would therefore also not be seen in combination with the proposed Jessa WEFs.
- Finally, all of the abovementioned projects, including the Jessa WEFs, fall within the Wind and Solar Renewable Energy Development Zone 11 (REDZ 11), Beaufort West, as indicated on Map 1, and therefore it is reasonable to assume that applications for renewable energy would occur in this Zone.

## **8. MITIGATION AND EMPR REQUIREMENTS**

Mitigation measures have been recommended for the siting of wind turbines and related infrastructure in the tables above, in order to minimise visual impacts on scenic resources and sensitive receptors. Some mitigation, through avoidance, can be achieved in further iterations to the layout by either removing or micro-siting certain turbines.

### **Environmental Management Programme**

Visual input into the Environmental Management Programme (EMPr) is discussed below. This should be included in the Environmental Authorisation for the project.

#### **Construction Phase Monitoring:**

Ensure that visual management measures are included as part of the EMPr, monitored by an Environmental Control Officer (ECO), including siting of any construction camps, stockpiles, temporary laydown areas and batching plants outside of identified no-go areas unless otherwise approved by the visual specialists (see mitigation measures in Section 7.1 above), as well as the implementation of dust suppression and litter control measures. Rehabilitation efforts to commence immediately after construction activities are completed.

**Responsibility:** ECO / Contractor.

**Timeframe:** Preparation of EMPr during the planning phase. Monitoring during the construction phase.

#### **Operation Phase Monitoring:**

Ensure that visual mitigation measures are monitored by management on an on-going basis, including the maintenance of rehabilitated areas, as well as control of any signage, lighting and wastes at the proposed wind farm, with interim inspections by the environmental officer based on site.

**Responsibility:** Wind Farm Operator and ECO.

**Timeframe:** During the operational life of the project.

#### **Decommissioning Phase Monitoring:**

Ensure that procedures for the removal of wind turbines and building structures during decommissioning are implemented, including recycling of materials and rehabilitation of the site to a visually acceptable standard, and signed off by the delegated authority.

It is assumed that some access roads and concrete pads would remain. Those that are not required should be ripped and the vegetation or grazing cover reinstated.

The revegetation measures are not described here as they would fall under the auspices of the vegetation/ biodiversity specialist.

**Responsibility:** ECO / Contractor / qualified rehabilitation ecologist or horticulturist.

**Timeframe:** During the decommissioning contract phase, as well as a prescribed maintenance period thereafter (usually one year).

## **9. SUMMARY AND CONCLUSION**

### **9.1 Summary of Findings**

The current visual assessment is based on a preliminary turbine layout for the three Jessa WEFs, being Jessa M, Jessa S and Jessa Z. Mitigation measures have been recommended in this Draft Visual Impact Assessment and these should be included where possible in future iterations of the layouts. Visual photomontages have been prepared to depict the current layout.

The preliminary visual assessment findings are the following:

- The viewshed is fairly extensive in all directions given the visually open nature of the plains.
- There are a number of visual receptors in close proximity to the proposed WEFs (see Table 2, and Map 2), these being mainly farmsteads, as well as guest accommodation at some farms.
- Two or three wind turbines are located in very high (no-go) visual sensitivity areas, and several more in the 'high' visual sensitivity area, which should ideally be micro-sited to minimize potential visual impacts, particularly those turbines closest to the N12 Route.
- The overall visual impact significance for the wind turbines has been rated as high, both before and after mitigation, as there would be a significant change in character to the area. However, some potential exists for mitigation, and the project is not regarded as a fatal flaw in visual terms.
- The visual impact significance for related infrastructure, (such as substations, BESS and O&M buildings) has been rated as medium, and therefore not considered visually intrusive in relative terms.
- The visual impact significance for navigation lights at night has been rated as medium, with some potential for mitigation depending on the technology used.
- The visual impact significance for potential shadow flicker effect is considered to be low, given the distance from most receptors, varied topography and trees around buildings.
- The cumulative visual impact significance of the three proposed Jessa WEFs, seen in combination with the proposed grid connection and other renewable energy projects in the area has been rated as high. However, the location of the Jessa WEFs within the Beaufort West REDZ could mean that the wider area becomes a renewable energy node in the future.
- Effective mitigation for the three proposed WEFs is mainly 'avoidance'. This could include the removal or micro-siting of wind turbines in the 'very high' and 'high' visual sensitivity categories. Where possible consideration should also be given to removing or relocating 'outlier' turbines, which extend the zone of visual influence.

### **9.2 Conclusion and Impact Statement**

The layouts of the three Jessa WEFs are subject to an iterative planning process, based on the various specialist findings, including the mapping of scenic resources and sensitive receptors. The currently proposed layouts succeed in largely avoiding most visual 'no-go' areas indicated on the visual sensitivity maps. Further refinements to the layouts have been recommended to minimise potential visual impacts.

The cumulative visual impact of the three proposed WEFs and related infrastructure, such as the substations, associated battery facilities and grid connection powerlines, could affect the rural quality, or sense of place of the general area, particularly when seen in combination. The other known wind farms planned within 35km of the Jessa WEFs, are considered to be too far away to significantly increase cumulative visual impacts.

Where a choice exists between turbines to be dropped or relocated, priority should be given to outlier turbines (that extend the zone of visual influence and detract from the visual cohesion of the proposed WEFs) and those in the 'high' visual sensitivity areas, particularly in proximity to the N12 Route.

It is the opinion of the Visual Specialists that while the three Jessa WEFs could have a 'high' visual impact significance, the layouts have avoided most of the scenic resources and visual receptors of the area. Provided the recommended mitigation measures are implemented (specifically the turbines in visual no-go areas), the project would not present a potential fatal flaw in visual terms. The final layouts of the three WEFs and related infrastructure, including access roads, would need to be assessed.



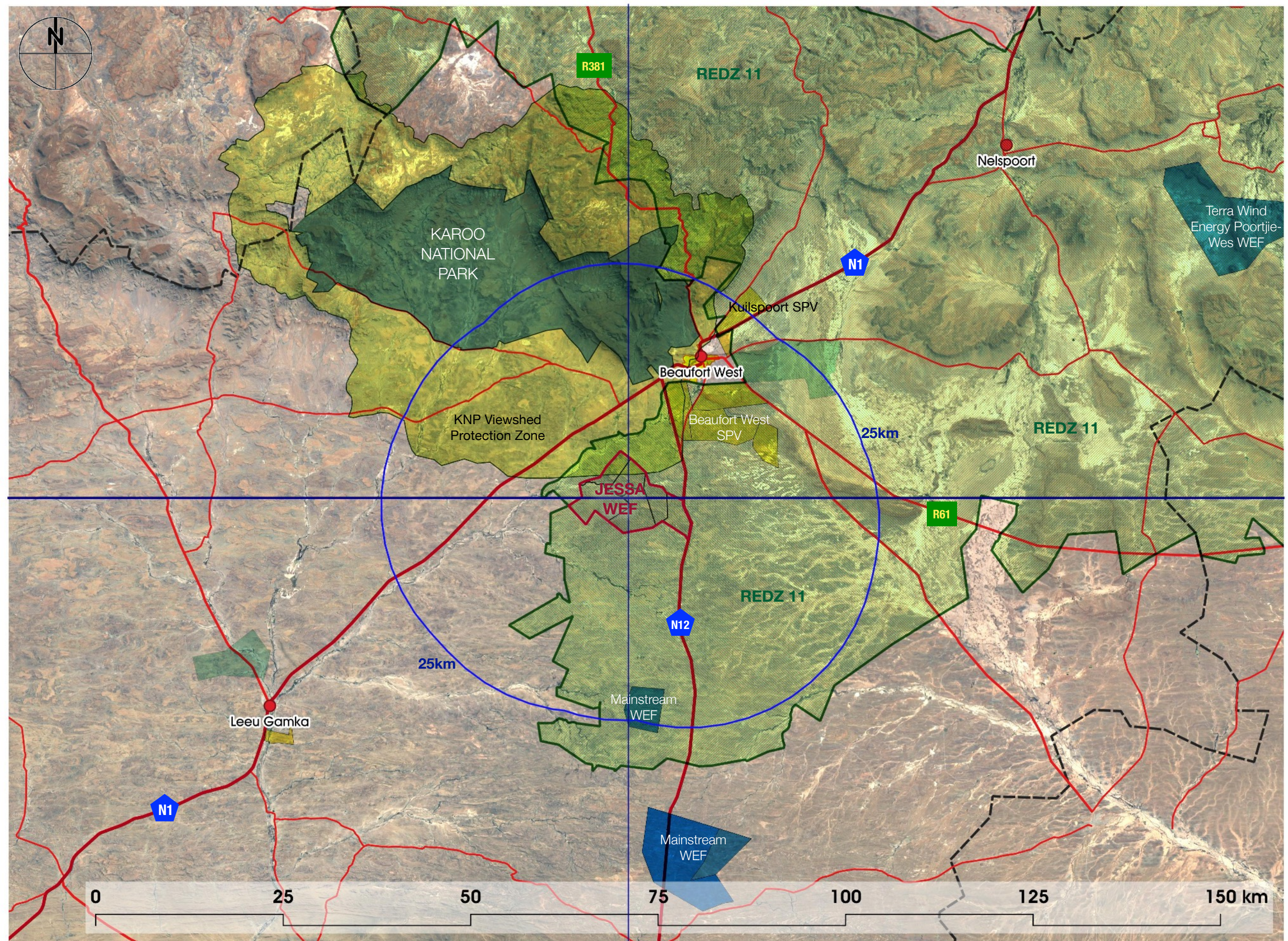
## **10. REFERENCES**

SLR, 2021. ENERTRAG South Africa, Jessa Cluster Wind Energy Facilities: Terms of Reference for Specialist Studies.

Mucina, L. and Rutherford, M.C. (eds) 2006. The Vegetation of South Africa, Lesotho and Swaziland. *Strelizia* 19. South African National Biodiversity Institute, Pretoria.

Oberholzer, B. 2005. Guideline for Involving Visual and Aesthetic Specialists in EIA Processes. Edition 1. Provincial Government of the Western Cape.





base map : Google Earth 2021

**Map 1 : Proposed JESSA WEF : Regional Locality, REDZ and REEA**



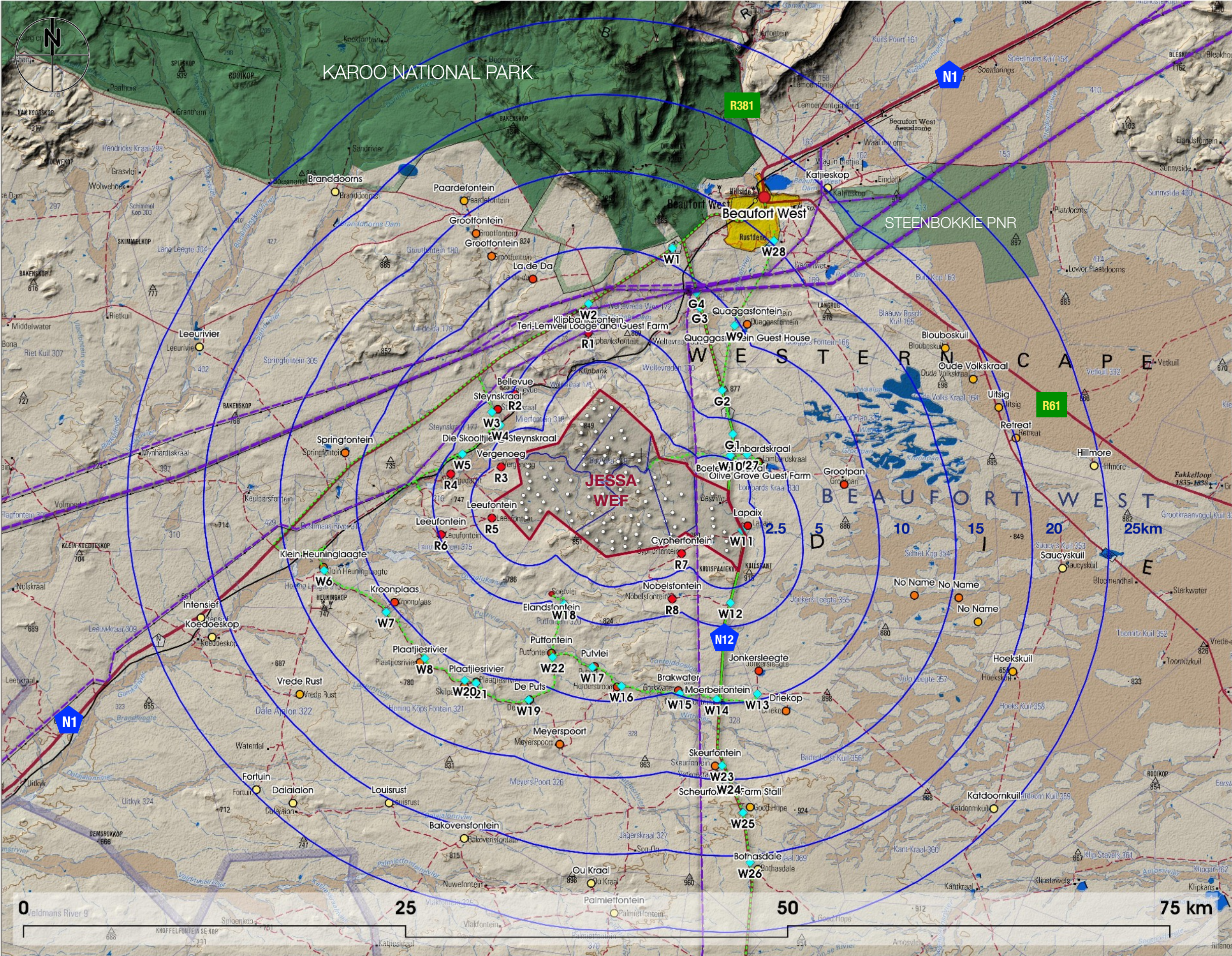
Legend :

Field Track

Viewpoints

Farmsteads,  
Guest/Game Farms

Existing ESKOM  
Powerlines

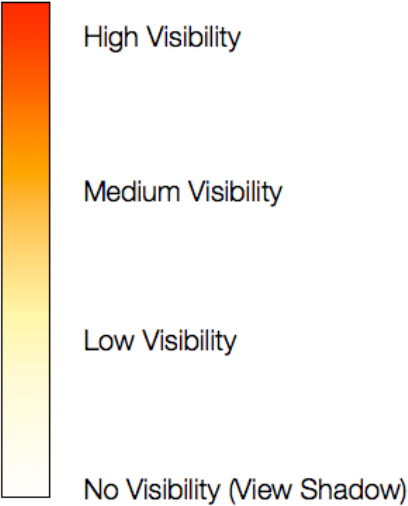


base map : NGI 1:250K Topo-Cadastral Series : 3222 Beaufort West

Map 2 : Proposed JESSA WEF : Local Context, Fieldwork and Viewpoints

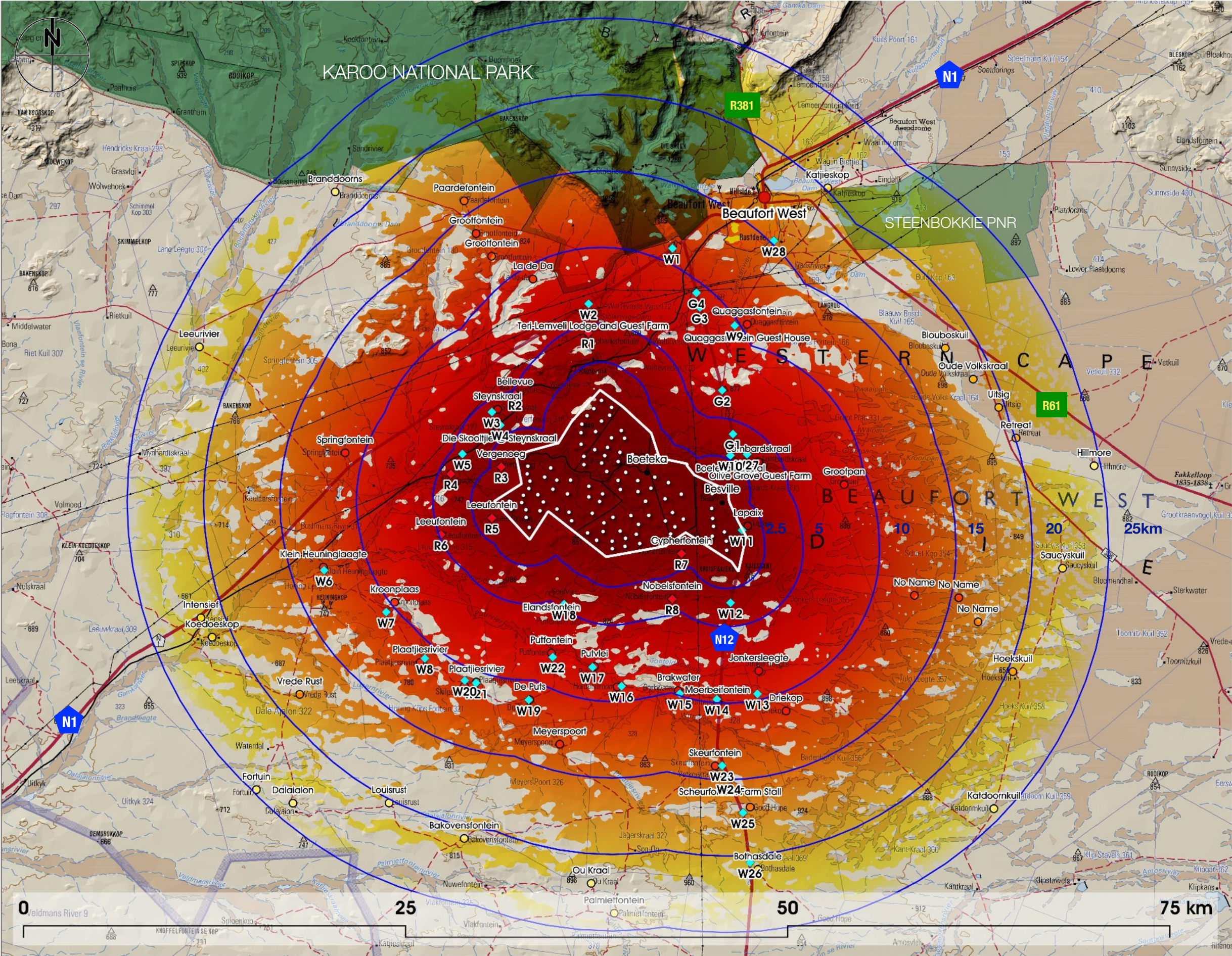


**Viewshed Legend :**



Viewshed based on Wind Turbine Generator (WTG) with a Hub Height of 200m and Rotor Diameter of 200m.

Rotor Blade Tip Height of 300m



base map : NGI 1:250K Topo-Cadastral Series : 3222 Beaufort West

**Map 3 : Proposed JESSA WEF : Nominal Combined Viewshed of Hub Height 200m**

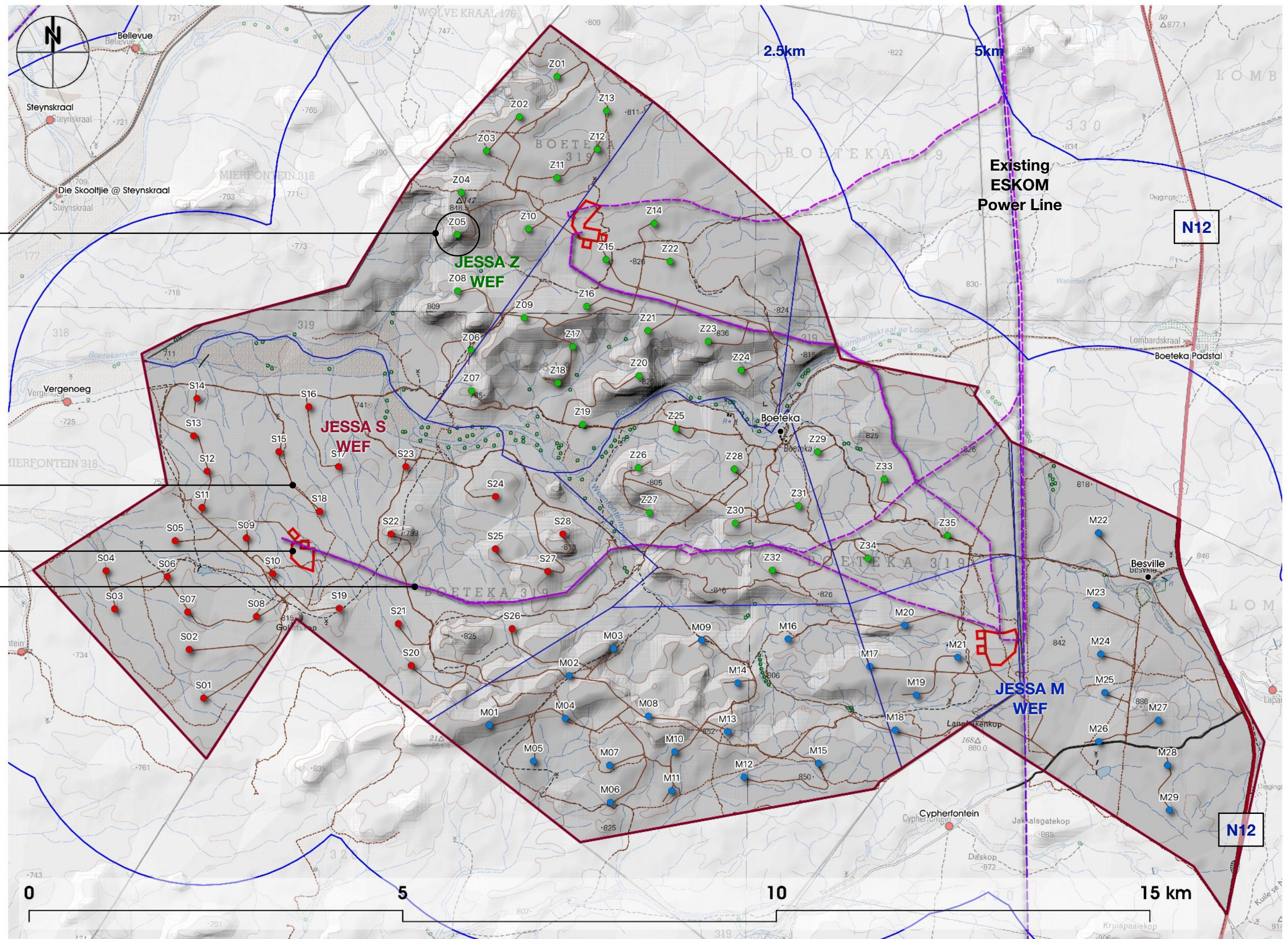


WTG Locations

Internal Roads

Substation, BESS Locations

Internal Connecting Powerline  
route alternatives








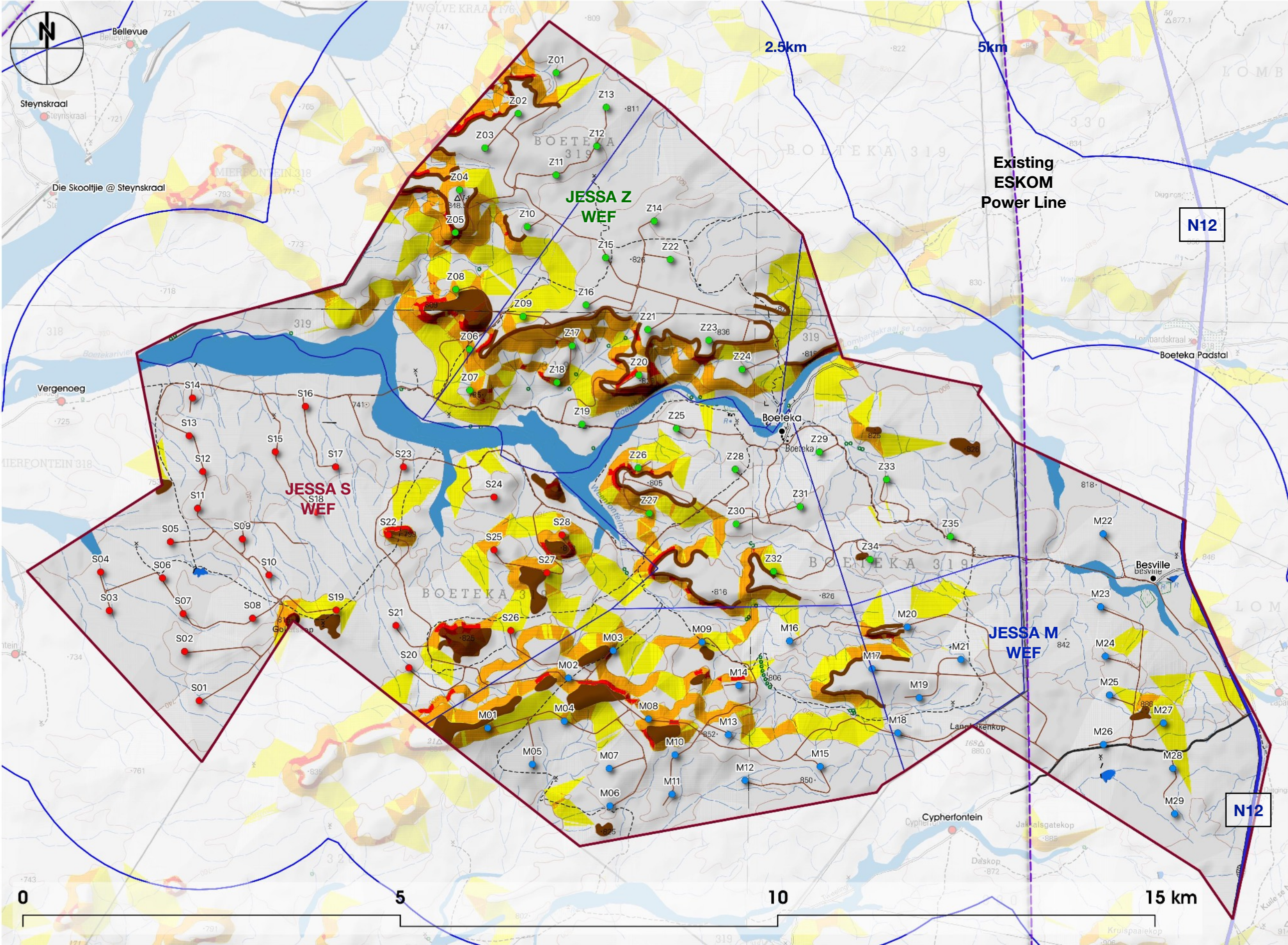
base map : NGI 1:50k Topographic Series : 3222AD Klipbank,, 3222BC Beaufort West, 3222CB Letjiesbos , 3222DA Moerbeifontein

**Map 4 : Proposed JESSA WEF : Wind Turbine, Facilities Layout 08/11/2021**



Feature Legend :

-  Topographic Features, Ridgelines, Scarps
-  Steep Slopes  
> 1:20 (yellow) >1:10 (orange) > 1:4 (red)
-  River Area, Wetlands, Major Dams
-  Farmsteads within the site
-  N12 National Road

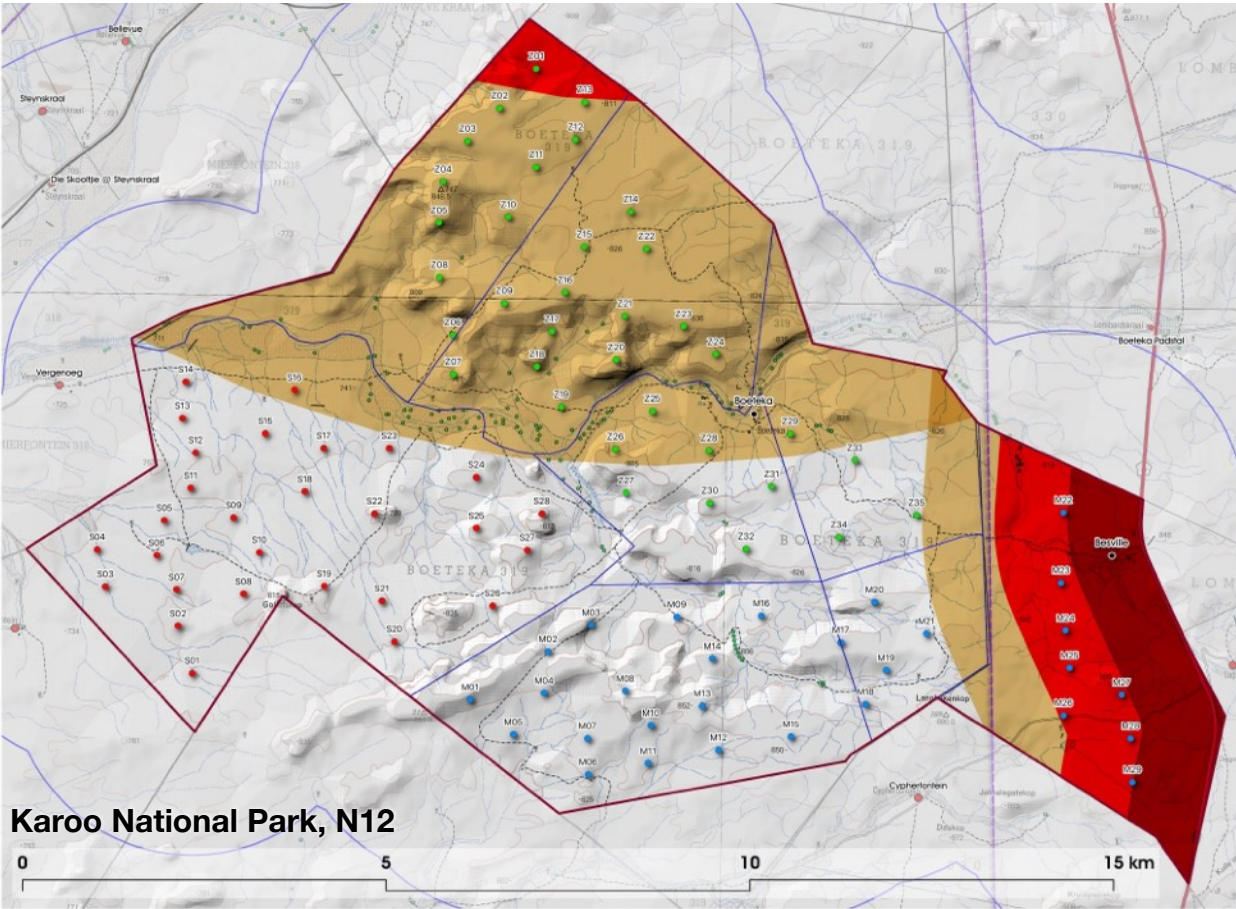
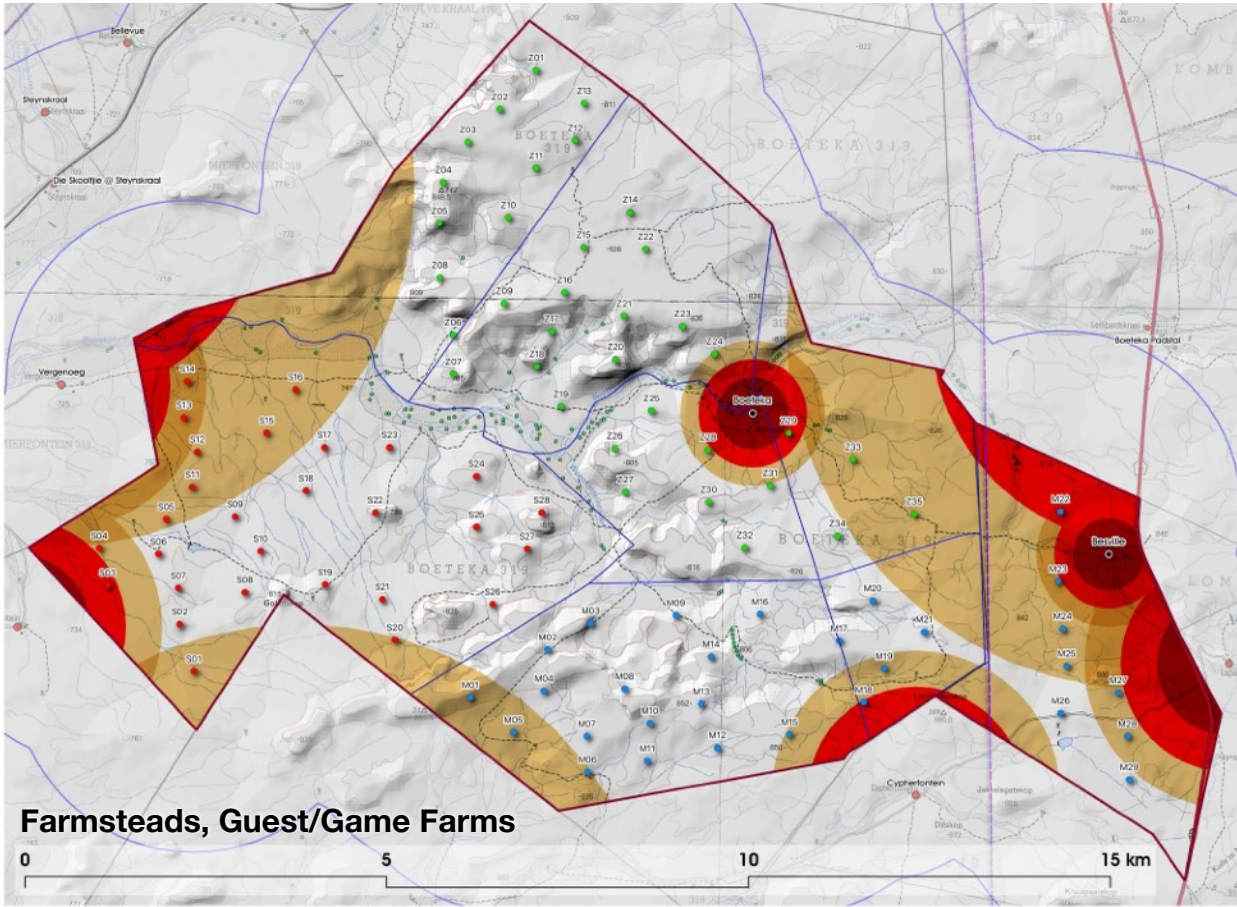
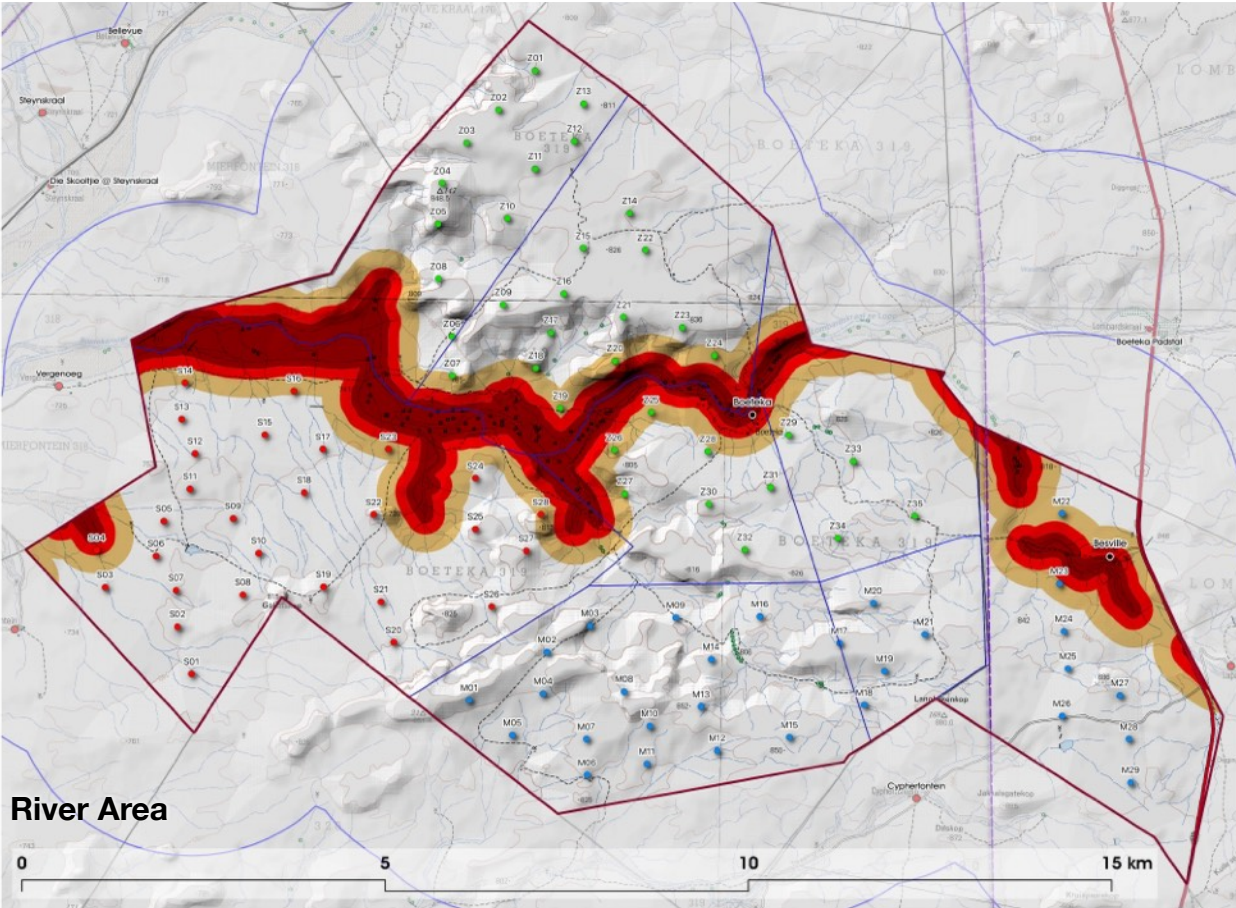
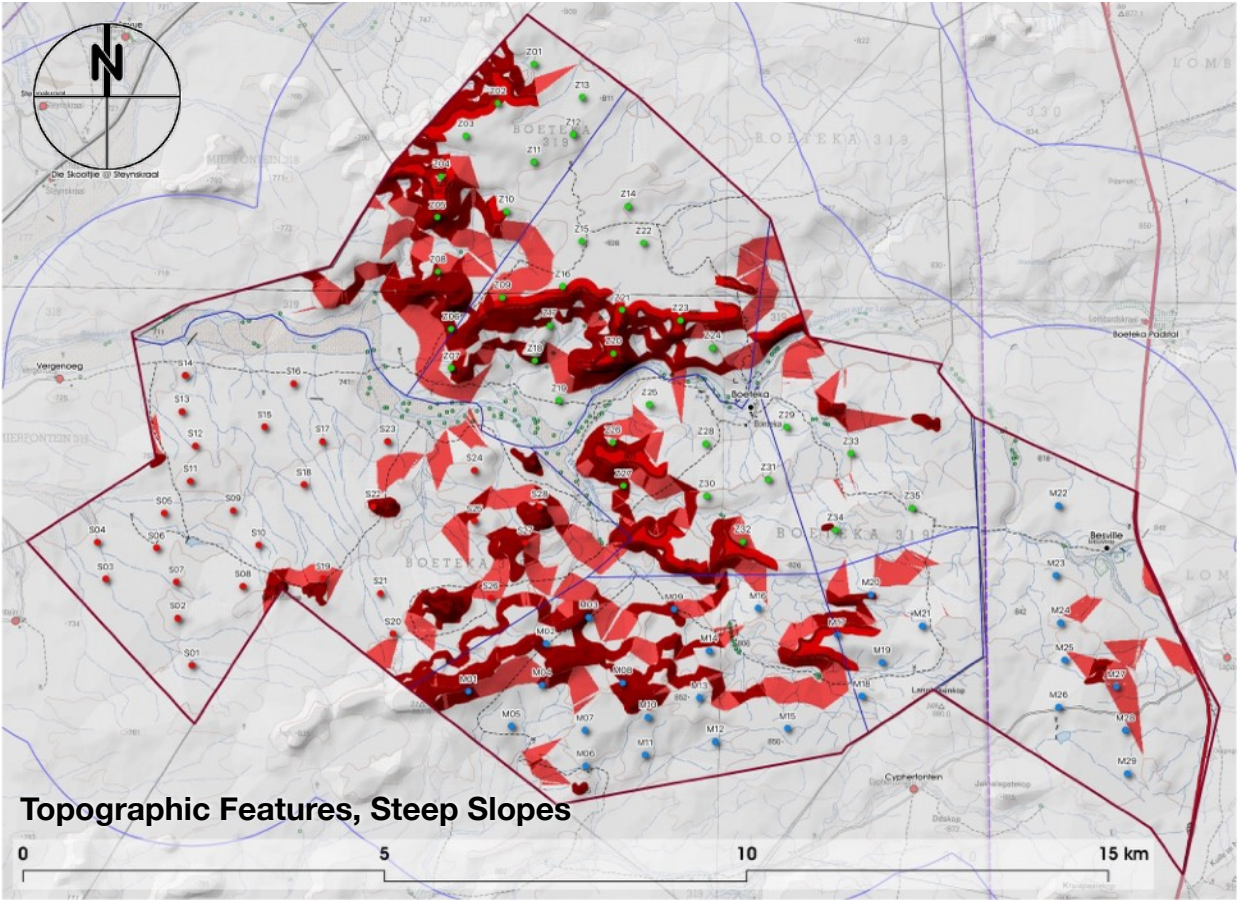
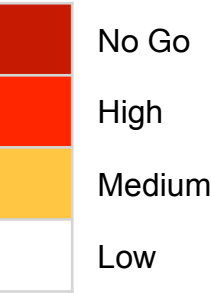


base map : NGI 1:50k Topographic Series : 3222AD Klipbank,, 3222BC Beaufort West, 3222CB Letjiesbos , 3222DA Moerbeifontein

Map 5 : Proposed JESSA WEF : Visual Features



Visual Sensitivity  
Legend :

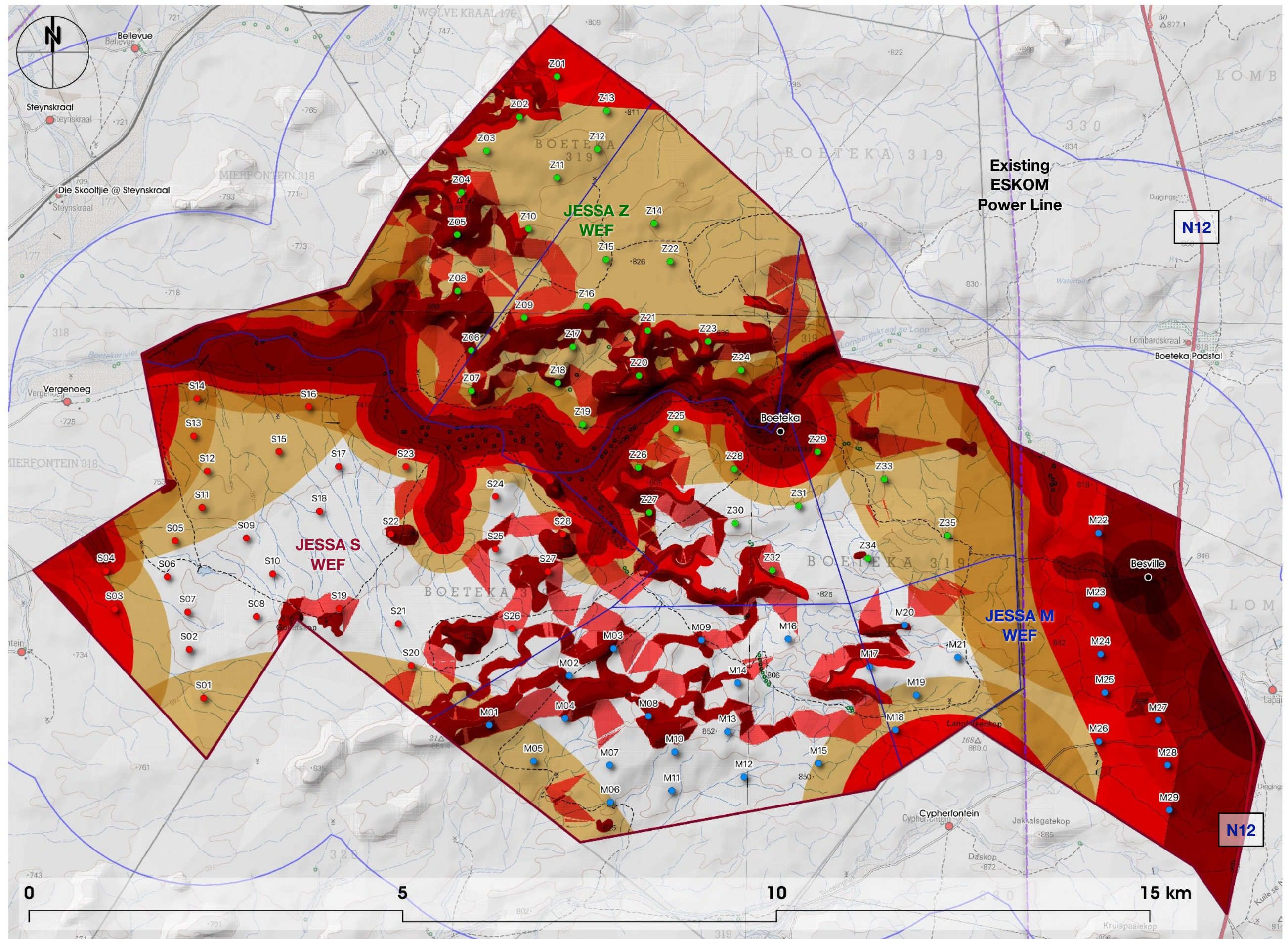
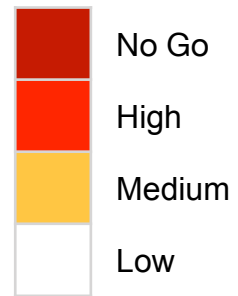


base map : NGI 1:50k Topographic Series : 3222AD Klipbank,, 3222BC Beaufort West, 3222CB Letjiesbos , 3222DA Moerbeifontein

Map 6 : Proposed JESSA WEF : Visual Sensitivity : Wind Turbines



## Visual Sensitivity Legend :

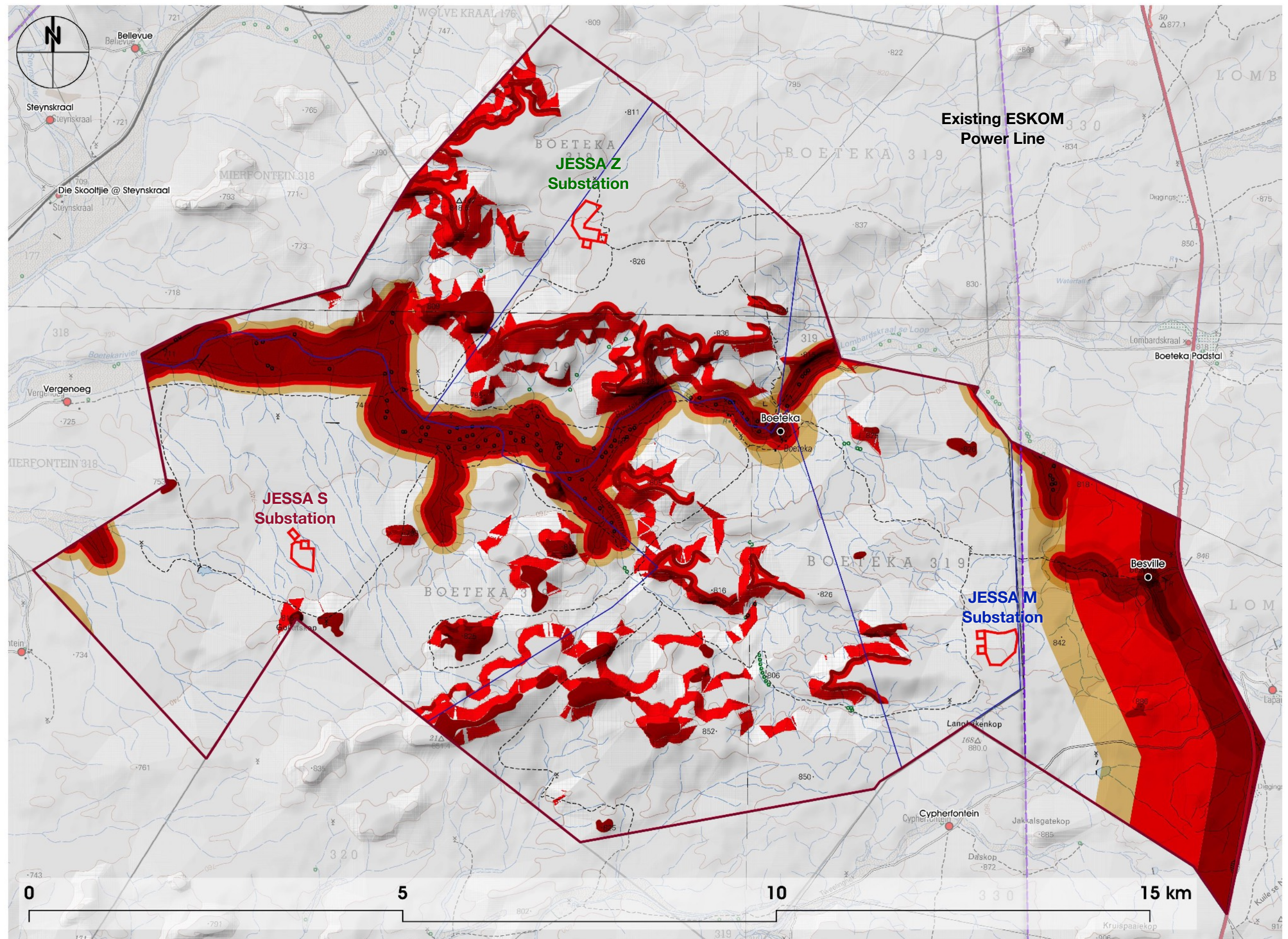
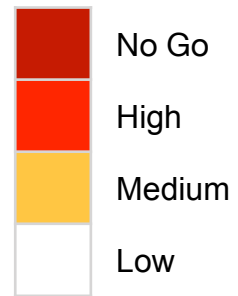


base map : NGI 1:50k Topographic Series : 3222AD Klipbank,, 3222BC Beaufort West, 3222CB Letjiesbos , 3222DA Moerbeifontein

**Map 7 : Proposed JESSA WEF : Visual Sensitivities Combined**



## Visual Sensitivity Legend :

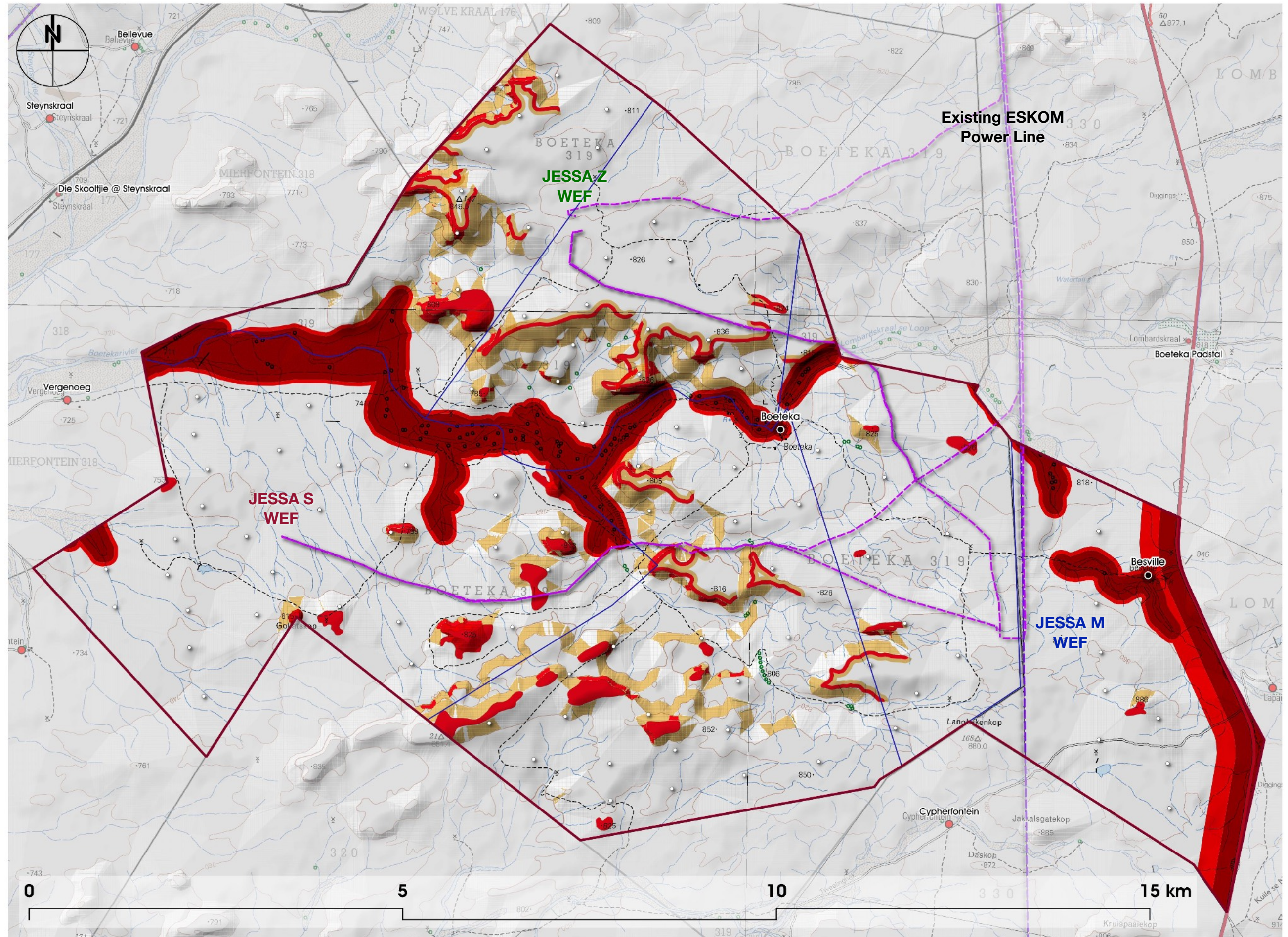
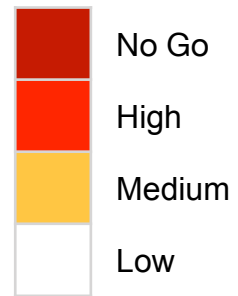


base map : NGI 1:50k Topographic Series : 3222AD Klipbank,, 3222BC Beaufort West, 3222CB Letjiesbos , 3222DA Moerbeifontein

**Map 8 : Proposed JESSA WEF : Visual Sensitivity - Substations and BESS**



## Visual Sensitivity Legend :

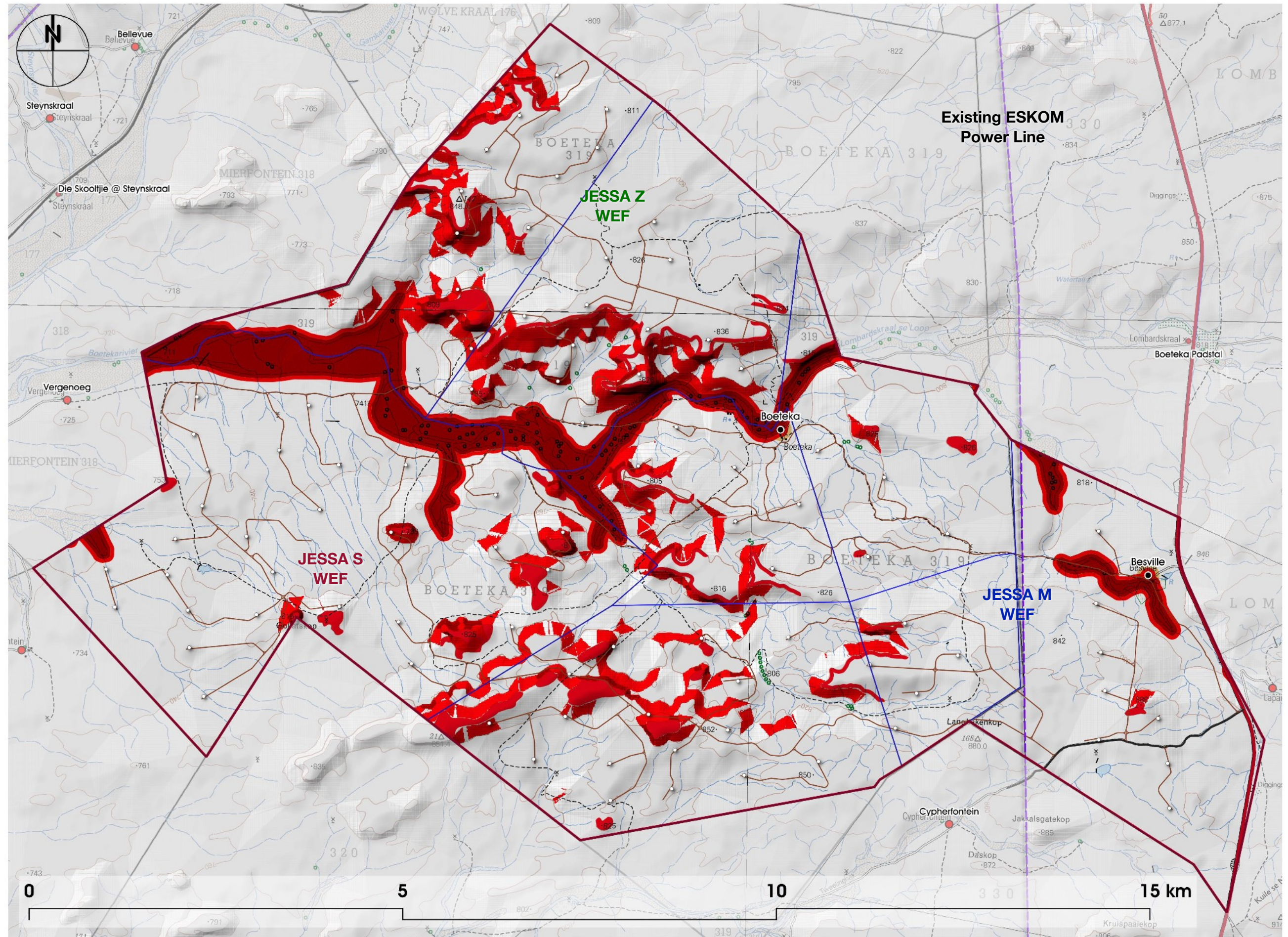
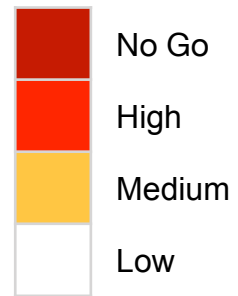


base map : NGI 1:50k Topographic Series : 3222AD Klipbank,, 3222BC Beaufort West, 3222CB Letjiesbos , 3222DA Moerbeifontein

**Map 9 : Proposed JESSA WEF : Visual Sensitivity - Internal Powerlines**



## Visual Sensitivity Legend :



base map : NGI 1:50k Topographic Series : 3222AD Klipbank,, 3222BC Beaufort West, 3222CB Letjiesbos , 3222DA Moerbeifontein

**Map 10 : Proposed JESSA WEF : Visual Sensitivity - Internal Roads, Hardstands**

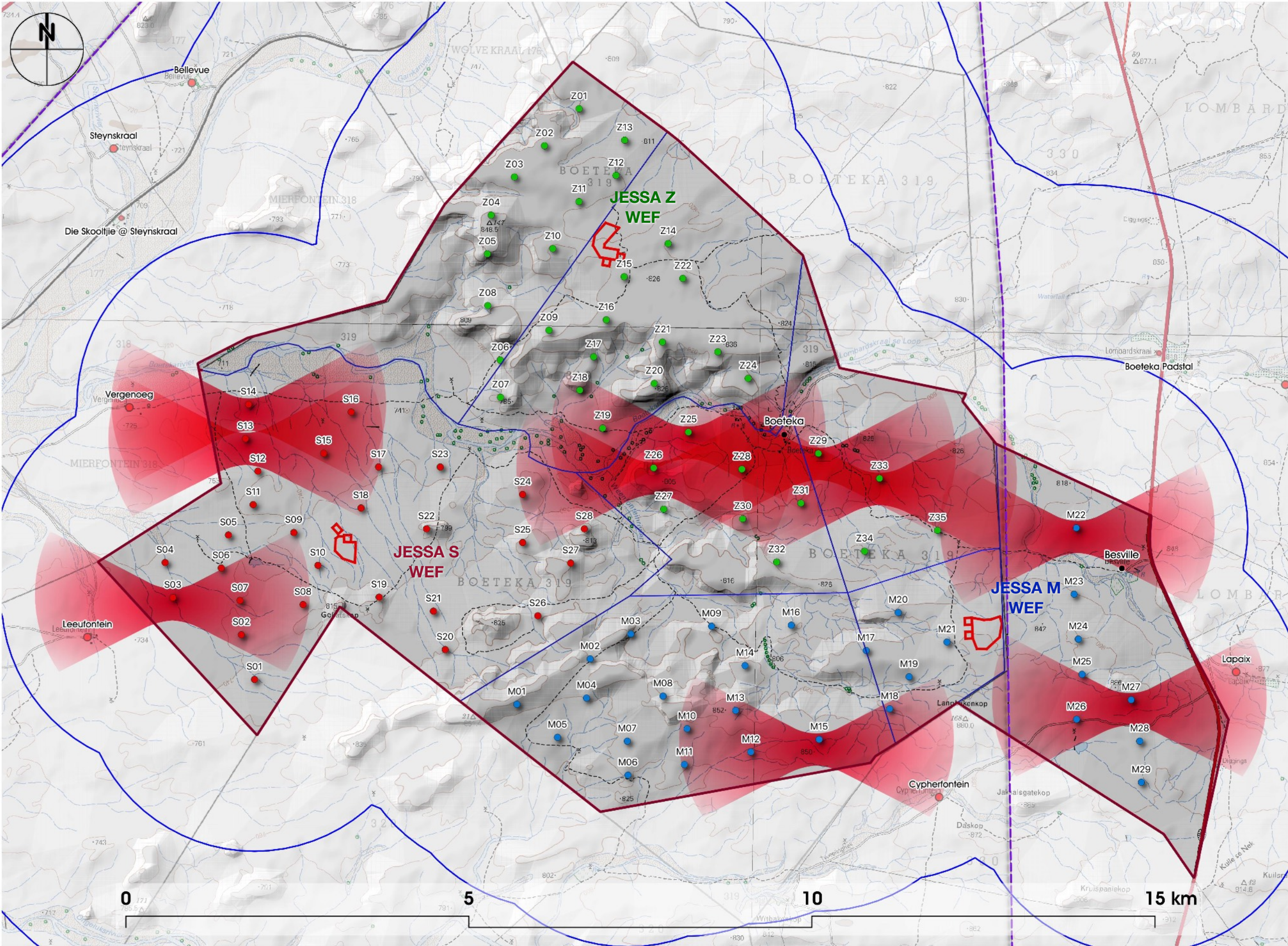


- Farm Vergenoeg potentially affected by shadow flicker from WTGs S13 and S14.
- Farm Leeufontein potentially affected by shadow flicker from WTGs S03.
- Farm Boeteka potentially affected by shadow flicker from WTGs Z25, Z26, Z29 and Z33.
- Farm Besville potentially affected by shadow flicker from WTG M22.
- Farm Lapaix potentially affected by shadow flicker from WTG M27.
- Farm Cypherfontein potentially affected by shadow flicker from WTG M15.

**NOTE :** This method determines the potential shadow flicker 'envelope' for a specific geographic location and Wind Turbine parameters.

This may also be affected by weather conditions, wind direction and speed, as well as location and orientation of the receptor.

Beyond a distance of approximately 2km the blade shadows become too diffuse to create the shadow flicker effect.



base map : NGI 1:50k Topographic Series : 3222AD Klipbank,, 3222BC Beaufort West, 3222CB Letjiesbos , 3222DA Moerbeifontein

**Map 11 : Proposed JESSA WEF : Potential Shadow Flicker Effect**





**Viewpoint W11** • Looking West from the N12 opposite Lapaix Farm

*Coordinates : 32.546809 S, 22.570647 E Distance : 1.07km*



**Viewpoint W10** • Looking South-West from Boeteka Farmstall

*Coordinates : 32.502853 S, 22.561799 E Distance : 2.76km*

## Photomontage 1 :

*photos qarc 2021*





**Viewpoint W4** • Looking East from Die Skooltjie Farm Cottage

*Coordinates : 32.486783 S, 22.401227 E Distance : 3.34km*



**Viewpoint W27** • Looking South-West from Olive Grove Farm road

*Coordinates : 32.502000 S, 22.573400 E Distance : 3.43km*





**Viewpoint W12** • Looking North from the N12 opposite Noblesfontein

*Coordinates : 32.589800 S, 22.563400 E Distance : 3.45km*



**Viewpoint W18** • Looking North from the Elandsfontein Gate

*Coordinates : 32.591862 S, 22.447440 E Distance : 4.61km*



## Appendix A: Visual Specialists

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### Expertise

Bernard Oberholzer has a Bachelor of Architecture (UCT) and Master of Landscape Architecture (U. of Pennsylvania), and has more than 20 years' experience in undertaking visual impact assessments. He has presented papers on *Visual and Aesthetic Assessment Techniques*, and is the author of *Guideline for Involving Visual and Aesthetic Specialists in EIA Processes*, prepared in association with the CSIR for the Dept. of Environmental Affairs and Development Planning, Provincial Government of the Western Cape, 2005.

Quinton Lawson has a Bachelor of Architecture Degree (Natal) and has more than 10 years' experience in visual assessments, specializing in 3D modelling and visual simulations. He has previously lectured on visual simulation techniques in the Master of Landscape Architecture Programme at UCT.

The authors have been involved in visual assessments for a wide range of residential, industrial and renewable energy projects. They prepared the 'Landscape/Visual Assessment' chapter in the report for the *National Wind and Solar PV Strategic Environmental Assessment (SEA)*, as well as the *National Electricity Grid Infrastructure SEA* in association with the CSIR, for the Department of Environmental Affairs in 2014-2015

## Appendix B: Visual Assessment Methodology

**Table 1: Impact Assessment Methodology**

PART A: DEFINITIONS AND CRITERIA						
Determination of CONSEQUENCE	Consequence is a function of intensity, spatial extent and duration					
Determination of SIGNIFICANCE	Significance is a function of consequence and probability					
Criteria for ranking of the INTENSITY of environmental impacts	Very High	Severe change, disturbance or degradation caused to receptors. Associated with severe consequences. Targets, limits and thresholds of concern continually exceeded. Substantial intervention will be required.				
	High	Prominent change, or large degree of modification, disturbance or degradation caused to receptors or may affect a large proportion of receptors, possibly entire community.				
	Medium	Moderate change, disturbance or discomfort caused to receptors and/or which may affect a moderate proportion of receptors.				
	Low	Minor (slight) change, disturbance or nuisance caused to receptors which is easily tolerated without intervention, or which may affect a small proportion of receptors.				
	Very Low	Negligible change, disturbance or nuisance caused to receptors, barely noticeable or may have minimal effect on receptors or affect a limited proportion of receptors.				
Criteria for ranking the DURATION of impacts	Very Short-term	The duration of the impact will be < 1 year or may be intermittent.				
	Short-term	The duration of the impact will be between 1 - 5 years.				
	Medium-term	The duration of the impact will be Medium-term between, 5 to 10 years.				
	Long-term	The duration of the impact will be Long-term, between 10 and 20 years. (Likely to cease at the end of the operational life of the activity).				
	Permanent	The duration of the impact will be permanent				
Criteria for ranking the EXTENT of impacts	Site	Impact is limited to the immediate footprint of the activity and immediate surrounds within a confined area.				
	Local	Impact is confined to within the project site / area and its nearby surroundings.				
	Regional	Impact is confined to the region, e.g., coast, basin, catchment, municipal region, district, etc.				
	National	Impact may extend beyond district or regional boundaries with national implications.				
	International	Impact extends beyond the national scale or may be transboundary.				
PART B: DETERMINING CONSEQUENCE						
		EXTENT				
		Site	Local	Regional	National	International
Intensity- Very Low						
DURATION	Permanent	Low	Low	Medium	Medium	High
	Long-term	Low	Low	Low	Medium	Medium
	Medium-term	Very Low	Low	Low	Low	Medium
	Short-term	Very low	Very Low	Low	Low	Low
	Very Short-term	Very low	Very Low	Very Low	Low	Low
Intensity -Low						
DURATION	Permanent	Medium	Medium	Medium	High	High
	Long-term	Low	Medium	Medium	Medium	High
	Medium-term	Low	Low	Medium	Medium	Medium
	Short-term	Low	Low	Low	Medium	Medium
	Very Short-term	Very low	Low	Low	Low	Medium
Intensity- Medium						
DURATION	Permanent	Medium	High	High	High	Very High
	Long-term	Medium	Medium	Medium	High	High
	Medium-term	Medium	Medium	Medium	High	High
	Short-term	Low	Medium	Medium	Medium	High
	Very Short-term	Low	Low	Low	Medium	Medium

Intensity -High						
DURATION	Permanent	High	High	High	Very High	Very High
	Long-term	Medium	High	High	High	Very High
	Medium-term	Medium	Medium	High	High	High
	Short-term	Medium	Medium	Medium	High	High
	Very Short-term	Low	Medium	Medium	Medium	High
Intensity - Very High						
DURATION	Permanent	High	High	Very High	Very High	Very High
	Long-term	High	High	High	Very High	Very High
	Medium-term	Medium	High	High	High	Very High
	Short-term	Medium	Medium	High	High	High
	Very Short-term	Low	Medium	Medium	High	High
		Site	Local	Regional	National	International
EXTENT						
PART C: DETERMINING SIGNIFICANCE						
PROBABILITY (of exposure to impacts)	Definite/ Continuous	Very Low	Low	Medium	High	Very High
	Probable	Very Low	Low	Medium	High	Very High
	Possible/ frequent	Very Low	Very Low	Low	Medium	High
	Conceivable	Insignificant	Very Low	Low	Medium	High
	Unlikely/ improbable	Insignificant	Insignificant	Very Low	Low	Medium
		Very Low	Low	Medium	High	Very High
CONSEQUENCE						
PART D: INTERPRETATION OF SIGNIFICANCE						
Very High -	Very High +	Represents a key factor in decision-making. In the case of adverse effects, the impact would be considered a fatal flaw unless mitigated to lower significance.				
High -	High +	These beneficial or adverse effects are considered to be very important considerations and are likely to be material for the decision-making process. In the case of negative impacts, substantial mitigation will be required.				
Medium -	Medium +	These beneficial or adverse effects may be important but are not likely to be key decision-making factors. The cumulative effects of such issues may become a decision-making issue if leading to an increase in the overall adverse effect on a particular resource or receptor. In the case of negative impacts, mitigation will be required.				
Low -	Low +	These beneficial or adverse effects may be raised as localised issues. They are unlikely to be critical in the decision-making process but could be important in the subsequent design of the project. In the case of negative impacts, some mitigation is likely to be required.				
Very Low -	Very Low +	These beneficial or adverse effects will not have an influence on the decision, neither will they need to be taken into account in the design of the project. In the case of negative impacts, mitigation is not necessarily required.				
Insignificant		Any effects are beneath the levels of perception and inconsequential, therefore not requiring any consideration.				