

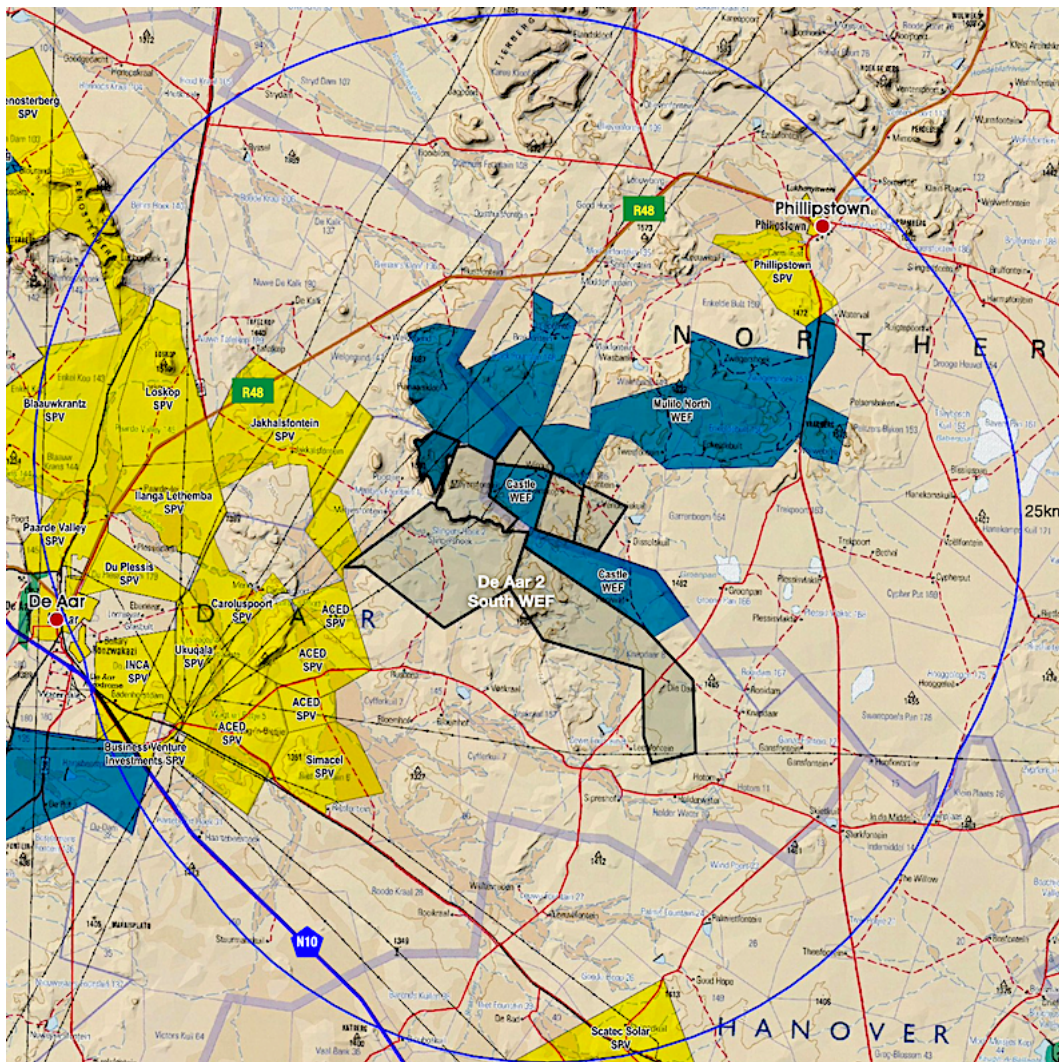
# Proposed Mulilo De Ar 2 South Wind Energy Facility near De Aar, Northern Cape Province

for Mulilo De Ar 2 South (Pty) Ltd

## Visual Assessment Amendment

### FINAL

27 October 2022



Prepared for  
Holland & Associates Environmental Consultants

Prepared by  
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and  
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## List of Abbreviations

DFFE	Department of Forestry, Fisheries and Environment
EA	Environmental Authorisation
EMPR	Environmental Management Programme
O&M	Operations and maintenance
OHPL	Overhead powerline
REDZ	Renewable Energy Development Zone
VIA	Visual Impact Assessment
WEF	Wind energy facility
WTG	Wind turbine generator

## 1. Background

The Applicant is proposing to amend the Environmental Authorisation for the proposed Mulilo De Aar 2 South Wind Energy Facility (WEF) located near De Aar in the Northern Cape Province. This visual amendment report addresses the potential changes in visual impact significance relating to the proposed amendments, as well as the finalisation of the Layout Plan and Environmental Management Programme (EMPr) process.

The original Visual Impact Assessment (VIA) Report was prepared by Karen Hansen Landscape Architect (2011), along with a number of amendments from 2013 to 2019. Ms. Hansen has subsequently retired and the Authors of this Report have been requested to prepare the visual assessment of the current amendment.

## 2. Terms of Reference

The visual specialist input is for a Part 1 Environmental Authorisation (EA) amendment process, and for the finalisation of the EMPr and Final Layout Plan process. The Terms of Reference include the preparation of a specialist comment / statement addressing the following:

- *The implications of the proposed amendments, if any, in terms of the potential impacts within your area of expertise.*
- *A statement as to whether or not the proposed amendments will result in an increased level or change in the nature of the impact (which was initially assessed and considered when application was made for the environmental authorization and subsequent Part 2 EA amendment process in 2015 – 2016).*

The purpose of this Amendment Report therefore is to determine if there would be any changes in the potential visual impacts, when compared to those of the authorised project description and layout, and the possible significance of the changes.

A field trip was not considered necessary for the amendment as the authors are familiar with the surroundings, having been involved in other renewable energy projects in the area.

## 3. Original VIA

The original VIA of 2011 for the Mulilo De Aar 2 South Wind Energy Facility consisted of a total of 103 wind turbines, which were authorised. However, a number of amendments resulted in the currently authorised project consisting of 25 to 61 wind turbines and associated infrastructure.

The visual impact significance rating in the original VIA at that time was recorded as high given the relative visibility of wind turbines to surrounding farmsteads. It was further recommended that from a visual perspective the development could proceed and that the agreed mitigation measures be undertaken. It was considered that the various amendments at the time would not result in any change to the visual impact significance ratings, (Hansen, 2019).

## 4. Proposed Amendments

The proposed amendments to the project description require an amendment to the text of the DFFE EA for the project, and accordingly a Part 1 Application for Amendment of the Environmental Authorisation is being submitted to DFFE.

The changes that could have potential visual implications include the following (see Table 1):

- Changes to the siting of proposed turbines as indicated in the latest layout (Map 3);
- A change from the 25-61 authorised turbines to a max. of 26 turbines, with no change to the maximum hub height and rotor diameter;

- Modifications to road widths, hardstands and internal grid reticulation.
- Extension of the validity period of the EA by 9 months, from 01 March 2023 to 01 December 2023.
- Addition of a Listed Activity into the EA, i.e. Activity 15 of GN R. 545 (Listing Notice 2) (the physical alteration and transformation of 20ha or more), was assessed in detail as part of the 2012 EIA process and subsequent Part 2 EA amendment process in 2015 for the project, however, this particular listed activity was erroneously omitted from the Application.

Table 1: Proposed Amendments to the Wind Energy Facility

Component	Authorised Layout (2015)	Proposed Amendment (2022)
<b>Number of turbines</b>	25-61 turbines	Up to 26 turbines
<b>Generation capacity per turbine</b>	2.3MW – 6.0MW	Remove MW designation per turbine
<b>Hub height</b>	120 m	Up to 120 m
<b>Rotor diameter</b>	165 m	Up to 165 m
<b>Hardstand area</b>	50 x 40m per WTG	Approximately 0,47ha per WTG
<b>Width of internal roads</b>	4m	6m (10m working width during construction)
<b>Foundations</b>	18.4m in diameter that narrows up to 10.6m at the surface (the visible portion) with a depth of 3.5 once completed	maximum 24 m diameter at lowest point and up to 12 m diameter at surface
<b>Substation/ O&amp;M buildings</b>	2 ha	No change to footprint. Modification to coordinates.
<b>Internal reticulation</b>	22 kV	33 kV
<b>Temporary laydown areas</b>	Total 24 ha	No change to footprint.

## 5. Visual Assessment Methodology

A comparison of viewsheds between the authorised and currently proposed (final) layout are indicated on Maps 4 and 5 to determine the zone of visual influence of the two layouts. The currently proposed layout with fewer turbines would have a slightly reduced viewshed (zone of visual influence).

To facilitate a comparison between the previously authorised layout and the current (proposed final) layout, Landscape Features (Map 6), and Visual Sensitivity (Map 7) have been prepared on which the layouts can be overlaid. The maps were also made available to the EAP as shape files for inclusion in the Environmental Sensitivity Map for the Final Layout Plan. Landscape features and sensitive receptors, including recommended buffers are listed in Table 2 below, as a basis for the sensitivity mapping.

Table 2: Visual Sensitivity Mapping Categories for Wind Turbines

Scenic Resources	Very high visual sensitivity	High visual sensitivity	Medium visual sensitivity	Low visual sensitivity
Topographic feature: scarps, peaks and ridges	within 200m	within 400m	within 600m	-
Steep slopes	Slopes > 1:6	Slopes > 1:10	Slopes > 1:20	-
Water features	Feature	within 100m	-	-
Cultural landscapes <sup>1</sup>	Refer to HIA		-	-
<b>Protected Landscapes / Sensitive Receptors</b>				

Nature Reserves	n/a	-	-	-
Private reserves / game farms	within 2 km	within 4 km	within 6 km	-
Settlements/ towns	within 2 km	within 4 km	within 6 km	-
Farmsteads outside site	within 1 km	within 2 km	within 3 km	-
Farmsteads inside site	within 500m	within 1 km	within 2 km	-
Arterial routes R48 and R389	within 750m	within 1 km	within 1,5 km	-
Main district roads	within 250m	within 500m	within 1 km	-

## 6. Re-assessment of Visual Impacts

### *Spatial layout:*

The changes to the layout of the currently proposed project with fewer turbines results in an overall improvement in terms of potential visual impacts as can be seen in the comparison of wind turbine generator (WTG) positions (see Map 7).

Besides having fewer turbines, most of these have been moved back slightly from the steep escarpment edge, which is a visually sensitive landscape feature. In addition, the proposed turbines are now located further from surrounding farmsteads.

The only exceptions are WTG 19 and 24, close to the scarp edge, which is a visually prominent landform. If possible, taking engineering and other considerations into account, these WTGs should be micro-sited to minimise visual intrusion on the surrounding landscape, although they are acceptable in the current locations if micro-siting is not possible.

Changes to the internal road layout and internal overhead powerline (OHPL) layouts tend to not have any major visual implications. However, the internal OHPL between WTGs 21 and 24 crosses steep scarp slopes and a small kloof, and therefore consideration should be given to re-routing this powerline if possible.

There are no visual impact implications for extending the validity period of the EA from the 01 March 2023 to 01 December 2023 as the visual baseline environment has not changed since the original visual assessment and subsequent amendments.

There are also no visual impact implications for including the listed activity, being the physical alteration of more than 20ha of land, as this was previously assessed in detail as part of the 2012 EIA process, and subsequent Part 2 amendment processes.

### *Advantages and Disadvantages*

The reduction in the number of turbines means that the fewer turbines would result in less visual clutter in the landscape. Because there are fewer turbines, the distance between visually sensitive viewpoints and WTGs has slightly increased in most cases.

The viewshed analysis indicates that there would be a moderate decrease in the zone of visual exposure as well as extent of the viewshed. No disadvantages relating to the currently proposed layout were noted, in comparison to the previously authorised layout.

## 7. Cumulative Visual Impacts

The original VIA of 2011 indicated the following:

*"The local landscape character would be changed and made more industrial, but the scale of the landscape can absorb both of these currently assessed developments, (De Aar 1 and 2 WEFs), and this cumulative impact is assessed as medium for both magnitude and significance".*

A number of other renewable energy projects have been developed, or are proposed, in the De Aar area, as indicated on Map 1. However, given that De Aar 2 North WEF has been developed, and that De Aar 2 South WEF has been previously authorised, no change in the cumulative visual impact significance is anticipated.

## **8. Mitigations**

As indicated in the VIA of the previously authorised project, the layout of the wind farm has already been through a number of iterations based on the specialist studies and engineering considerations.

As the screening of wind turbines is not practical, only avoidance measures are possible. Where possible, the micro-siting of turbines could be considered, as in the case of WTG 19 and 24 as previously mentioned. The routing of the internal overhead powerline between WTG 21 and 24 should be re-considered, given the visual sensitivity of the steep slopes and small kloof.

The visual mitigations contained in the original VIA of 2011 are still relevant, and no other additional visual mitigations are proposed. (Note: The proposed painting of one of the blades of each turbine, as recommended by the avifaunal specialist during the current EMPr and layout plan finalisation process, is considered acceptable from a visual impact perspective. Accordingly, amendment of the mitigation measures in the original VIA (2011) that indicated that blades must be white (with no stripes, decals or logos) is considered acceptable, to allow for the proposed blade painting. The update of the visual mitigation measure to allow for the proposed blade painting will be addressed in the update of the Environmental Management Programme (EMPr) process).

## **9. Conclusion**

Although the currently proposed layout consists of fewer wind turbines, the overall visual impact significance rating for the project is not expected to change from that of the authorised layout and would remain high before and after mitigation, because of the change in character of the site and surrounding area.

Amendments to the related infrastructure, such as internal access roads and overhead powerlines, would result in no change in the overall visual impact significance ratings in relation to those of the previously assessed proposals, and would remain low before and after mitigation.

The extension of the validity period of the EA, and the inclusion of Activity 15 of GN R. 545 (Listing Notice 2), would not result in any change to the visual impact significance.

Accordingly, the proposed amendments and proposed final layout will not result in an increased level or change in the nature of impacts, and the final layout is acceptable from a visual impact perspective

## **10. Recommendation**

Provided that the visual mitigations listed in the original visual impact study (including post-construction rehabilitation of the site) are adhered to<sup>1</sup>, the findings of the original and subsequent visual assessments for the Mulilo De Aar 2 South Wind Energy Facility project would still be valid for the currently proposed amendments. Our opinion from a visual perspective therefore is that the proposed amendments to the project description and

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<sup>1</sup> and allowing amendment of the mitigation measures in the original VIA (2011) that indicated that blades must be white (with no stripes, decals or logos), to allow for the proposed blade painting recommended by the avifaunal specialist

proposed final layout could be authorised. Further consideration could be given to the optional recommended mitigations mentioned in Section 8 above.

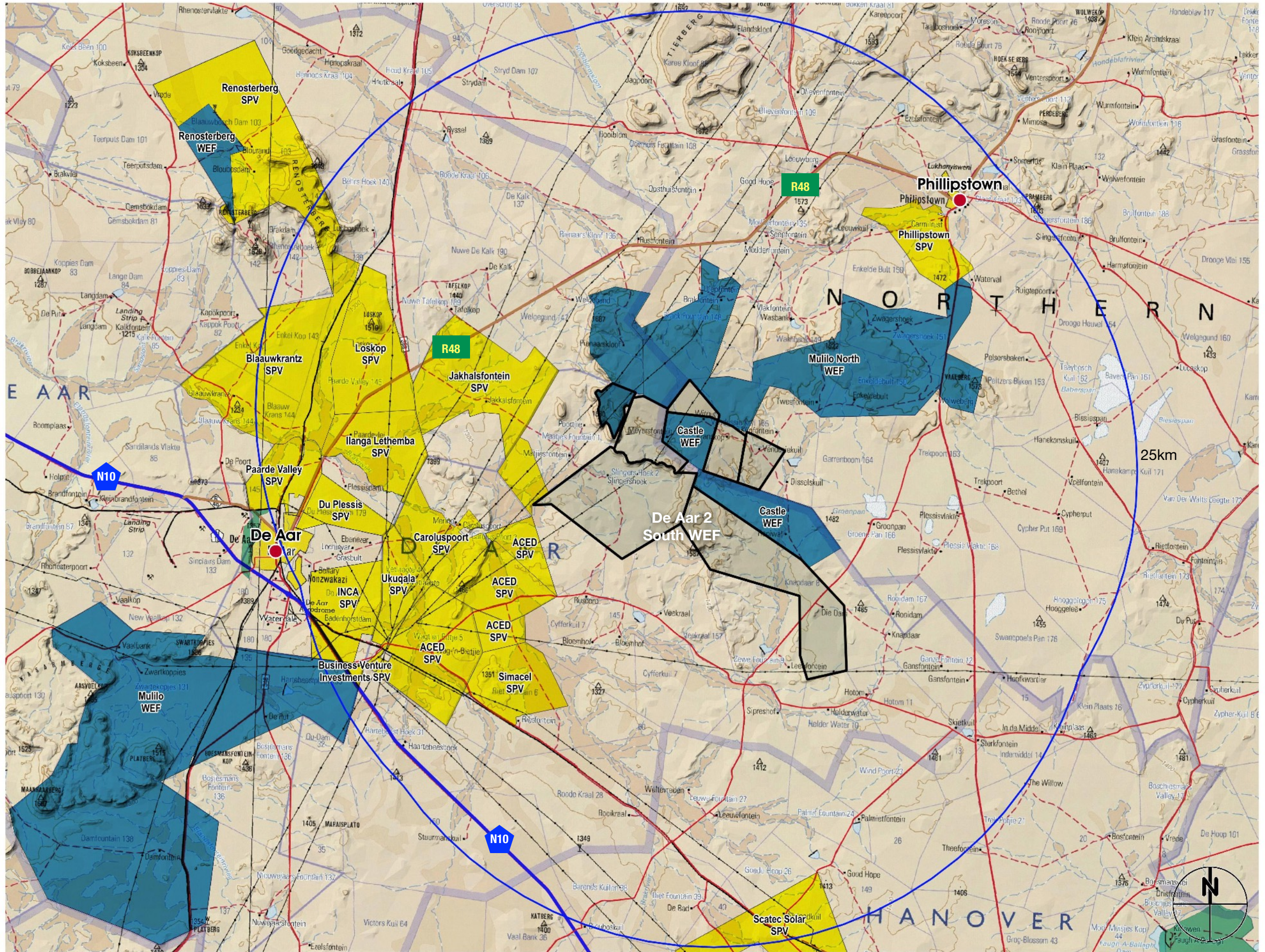
## **References**

Hansen, K. 2011. Proposed Wind Energy Facilities (North and South) Situated on the Eastern Plateau near De Aar, Northern Cape: level 3 Visual Impact Assessment.

Hansen K. 2019. Proposed Application for Amendment of the Environmental Authorisation for the Proposed Wind Energy Facility Situated on the Plateau (South) near De Aar, Northern Cape Province. Specialist Visual Impact Assessment.

Holland and Associates, July 2022. Establishment of a Wind Energy Facility Situated on the Eastern Plateau (South) near De Aar, Northern Cape Province: Application for Amendment of the Environmental Authorisation, and Finalisation of the Environmental Management Programme and Site Layout Process: Visual Specialist Input TOR.

- Legend :**
- Onshore Wind
  - Solar PV



Base map : CD NGI 250K Topo-Cadastral Series Current Mosaic 2022

map 1 : Regional Locality, REEA Q4 2021



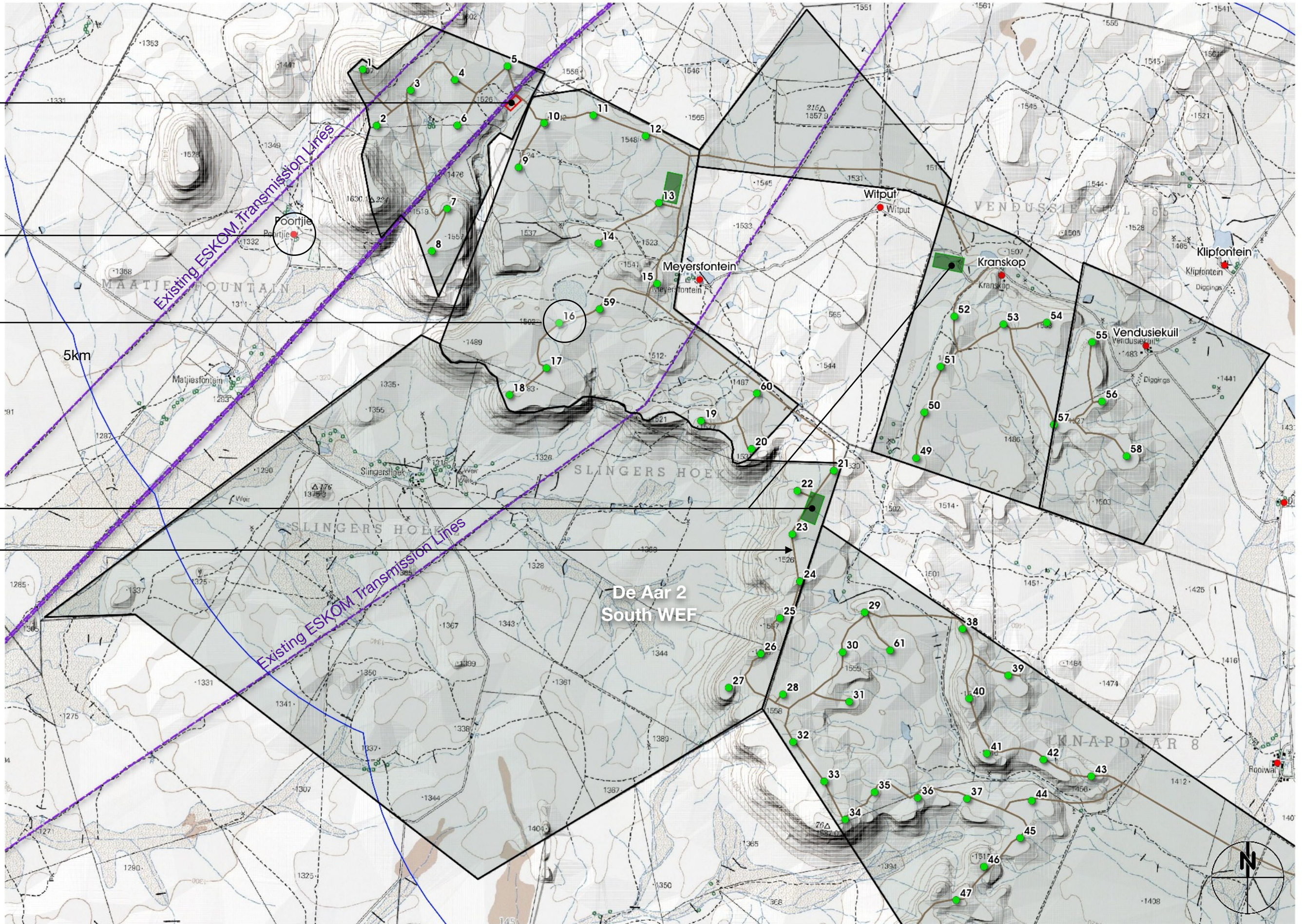
Substation Complex

Neighbouring Farmsteads

Numbered WTGs

Temporary Laydown Area

Internal Access Roads



Base map : CD NGI 50K Topographic Series Current Mosaic 2022



map 2 : De Aar 2 South WEF Authorised Layout • 61x WTGs

Neighbouring Farmsteads

Temporary Laydown Areas

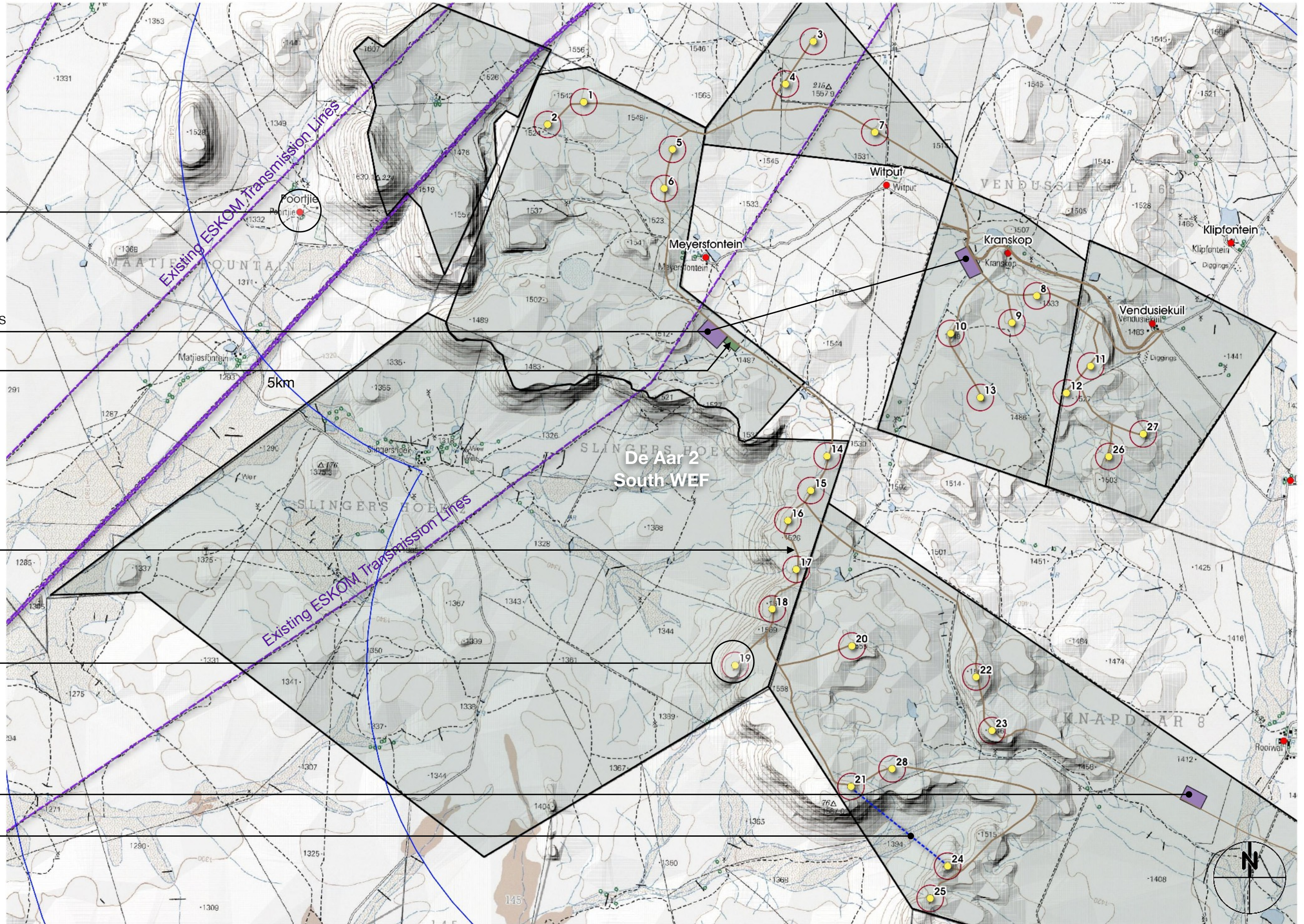
Substation Complex

Internal Access Roads

Numbered WTGs

Temporary Laydown Area

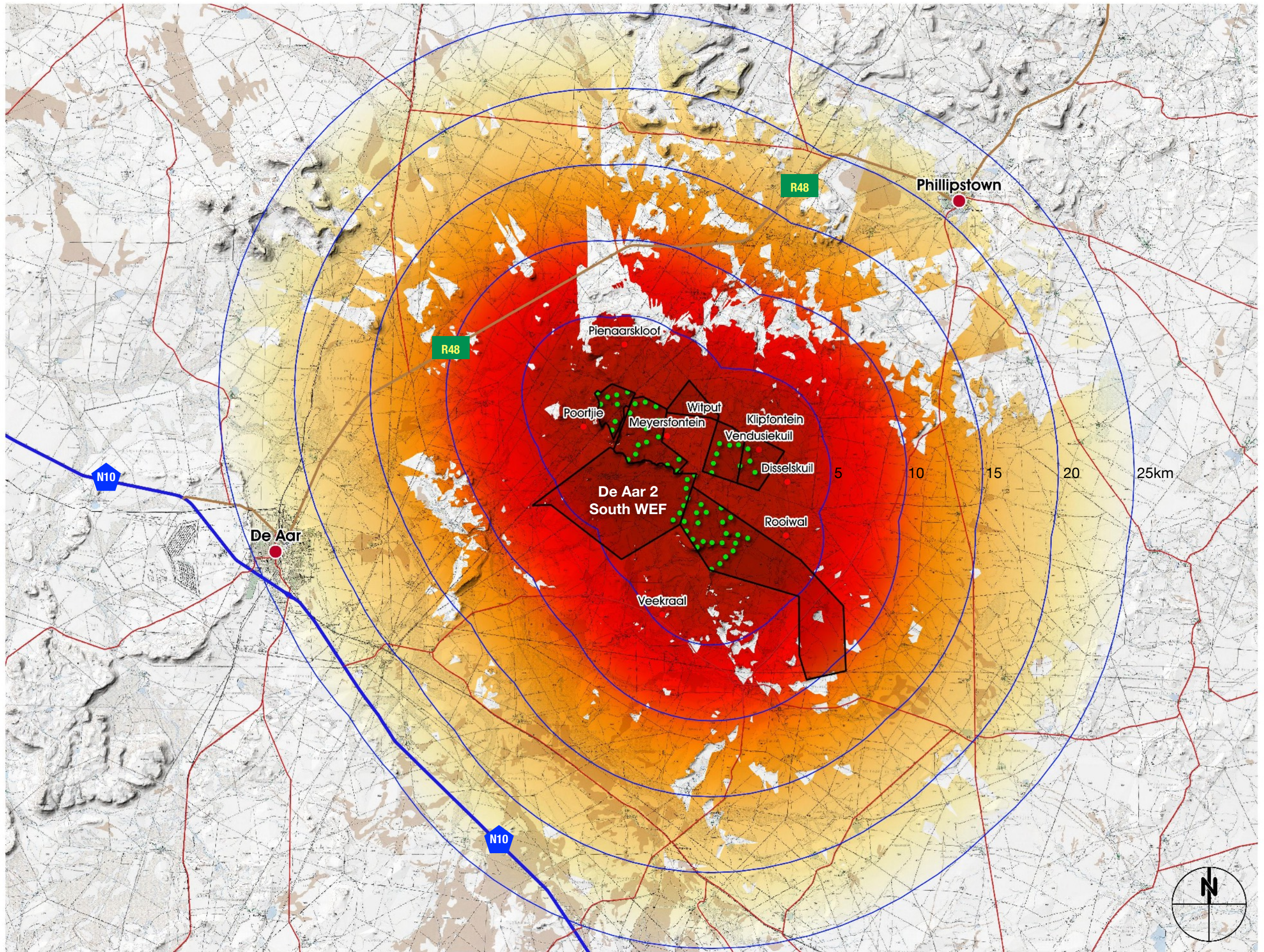
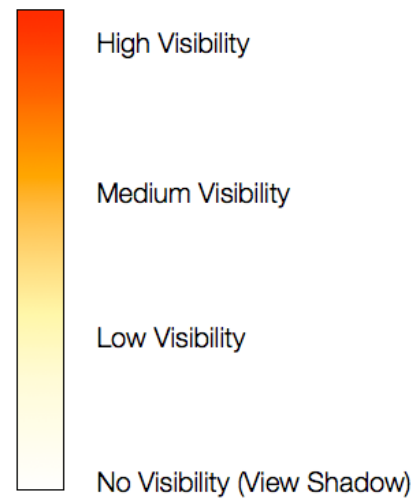
Additional 33kV OH Line



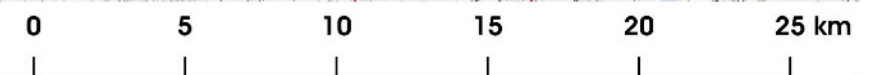
Base map : CD NGI 50K Topographic Series Current Mosaic 2022

map 3 : De Aar 2 South WEF Amended Layout • 28x WTGs (only 26x WTGs will be constructed)

**Viewshed Legend :**

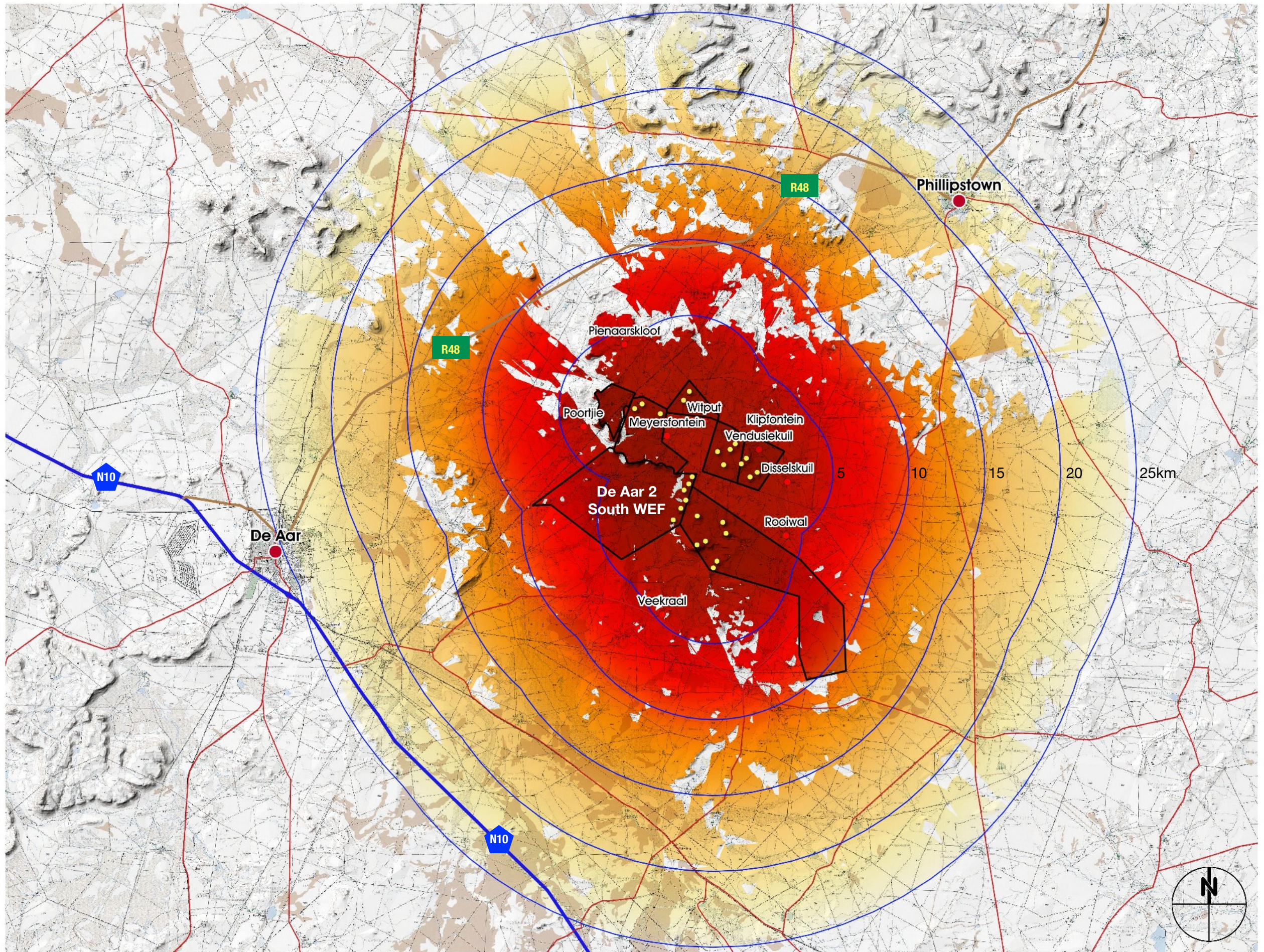
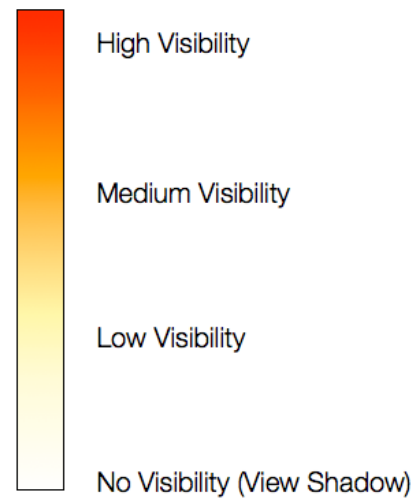


Base map : CD NGI 50K Topographic Series Current Mosaic 2022



**map 4 : De Aar 2 South WEF Authorised Layout • VIEWSHED 61x WTGs**

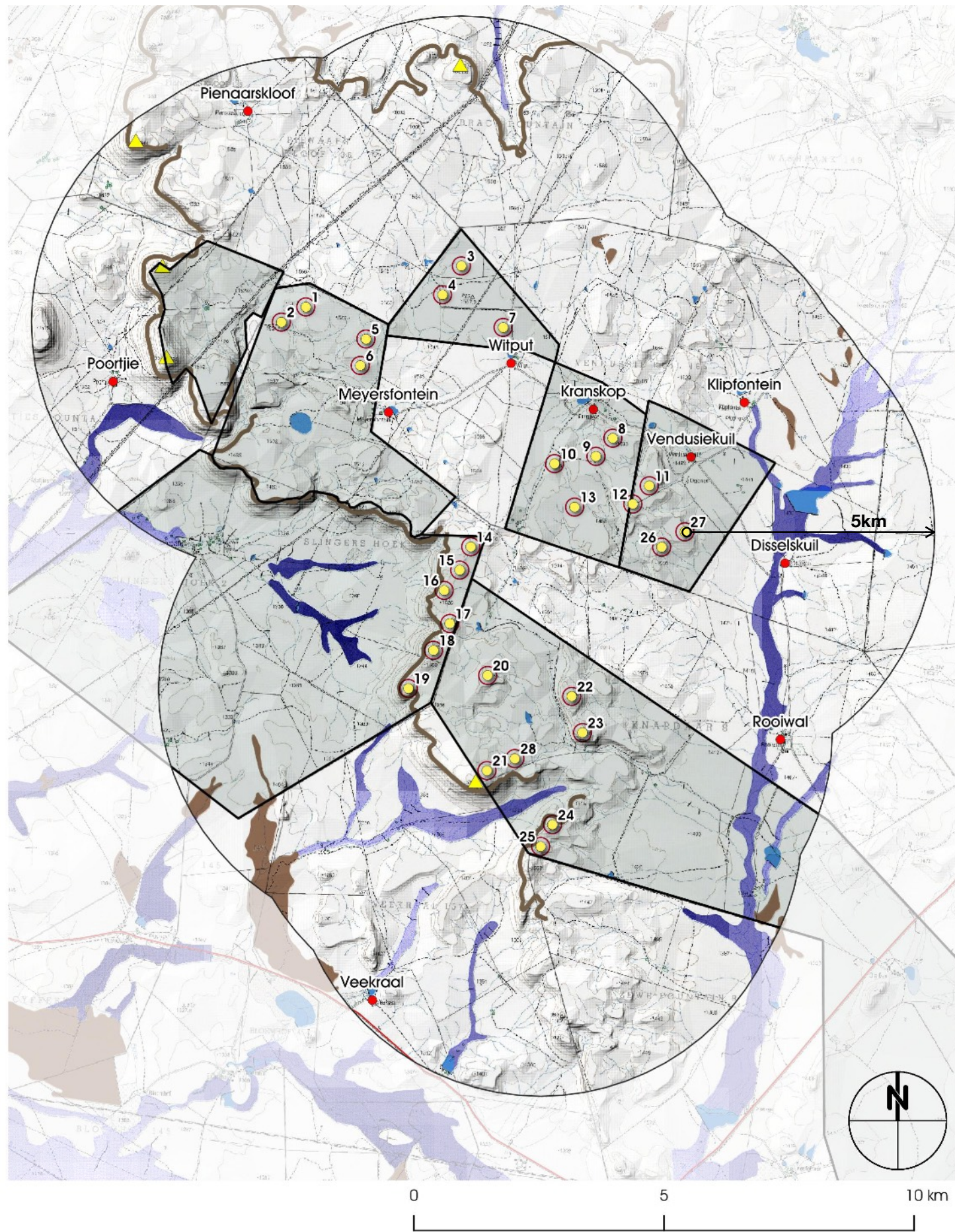
**Viewshed Legend :**







Base map : CD NGI 50K Topographic Series Current Mosaic 2022



**map 5 : De Aar 2 South WEF Amended Layout • VIEWSHED 28x WTGs (only 26x WTGs will be constructed)**

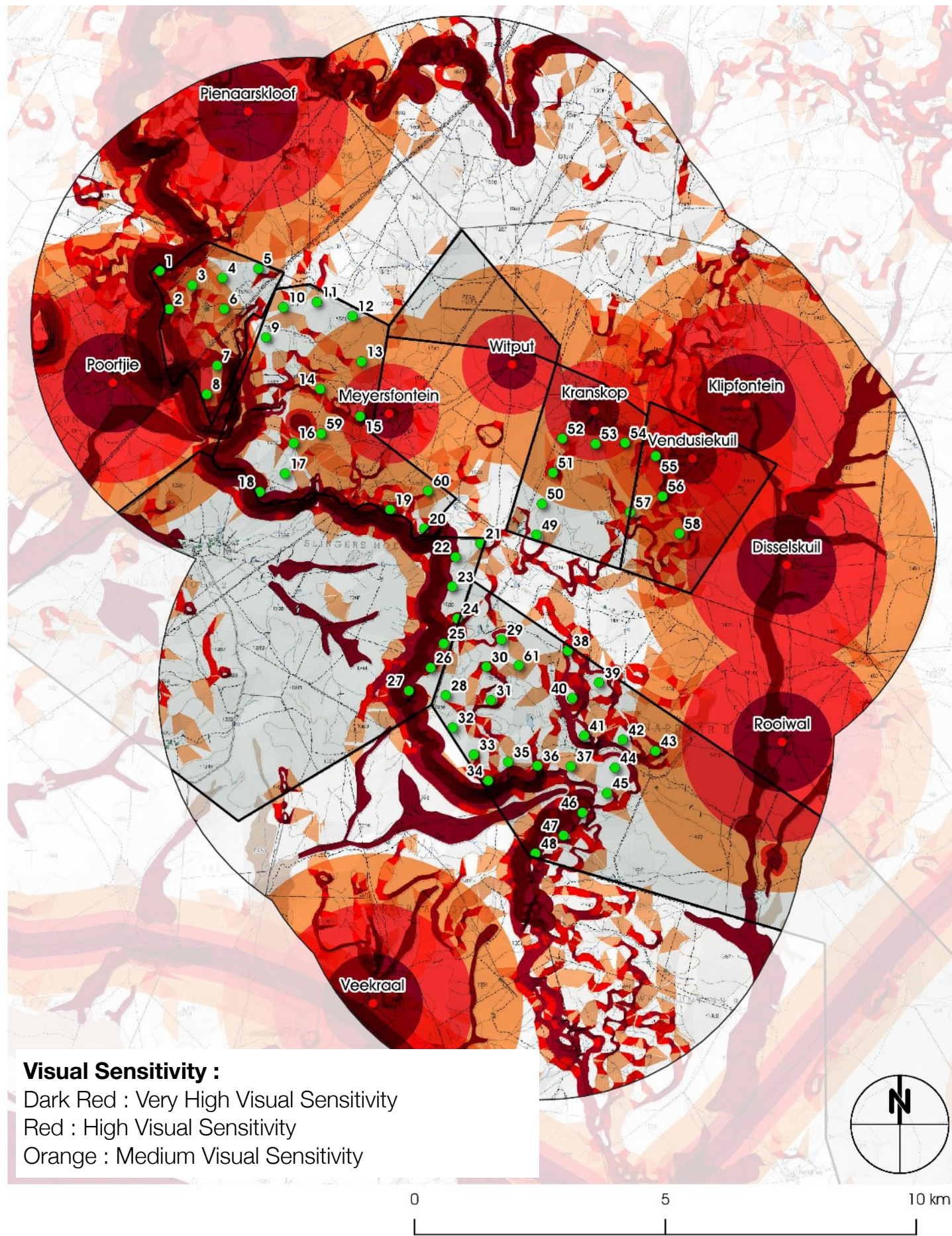


**Legend :**

-  Peaks, Scarp Edge
-  River / Water Area
-  Farmsteads
-  Wind Turbine Location

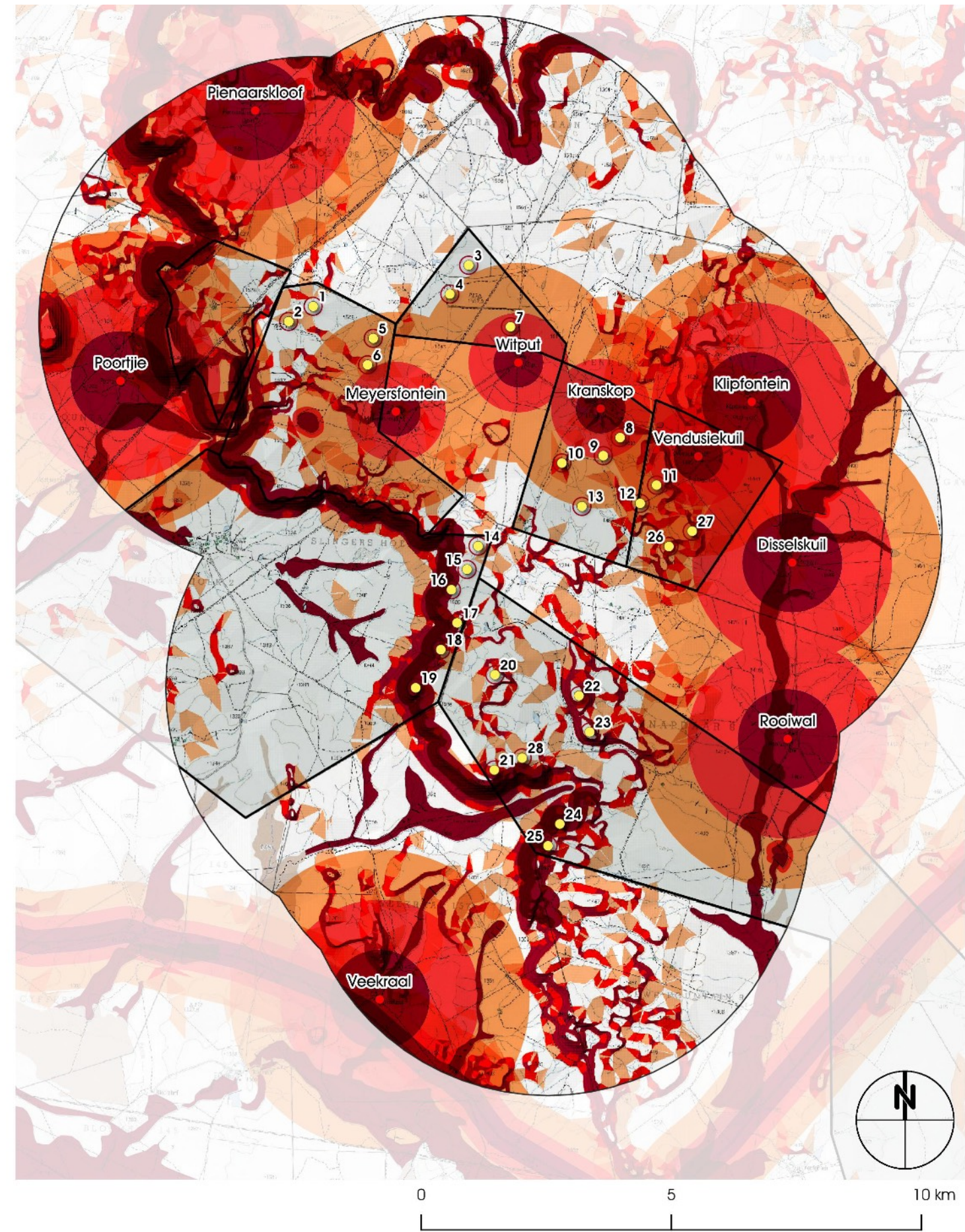
**map 6 : Landscape Features** (within 5km of WTGs)

base map : NGI 50K Topographic Series : 3024 CA De Aar

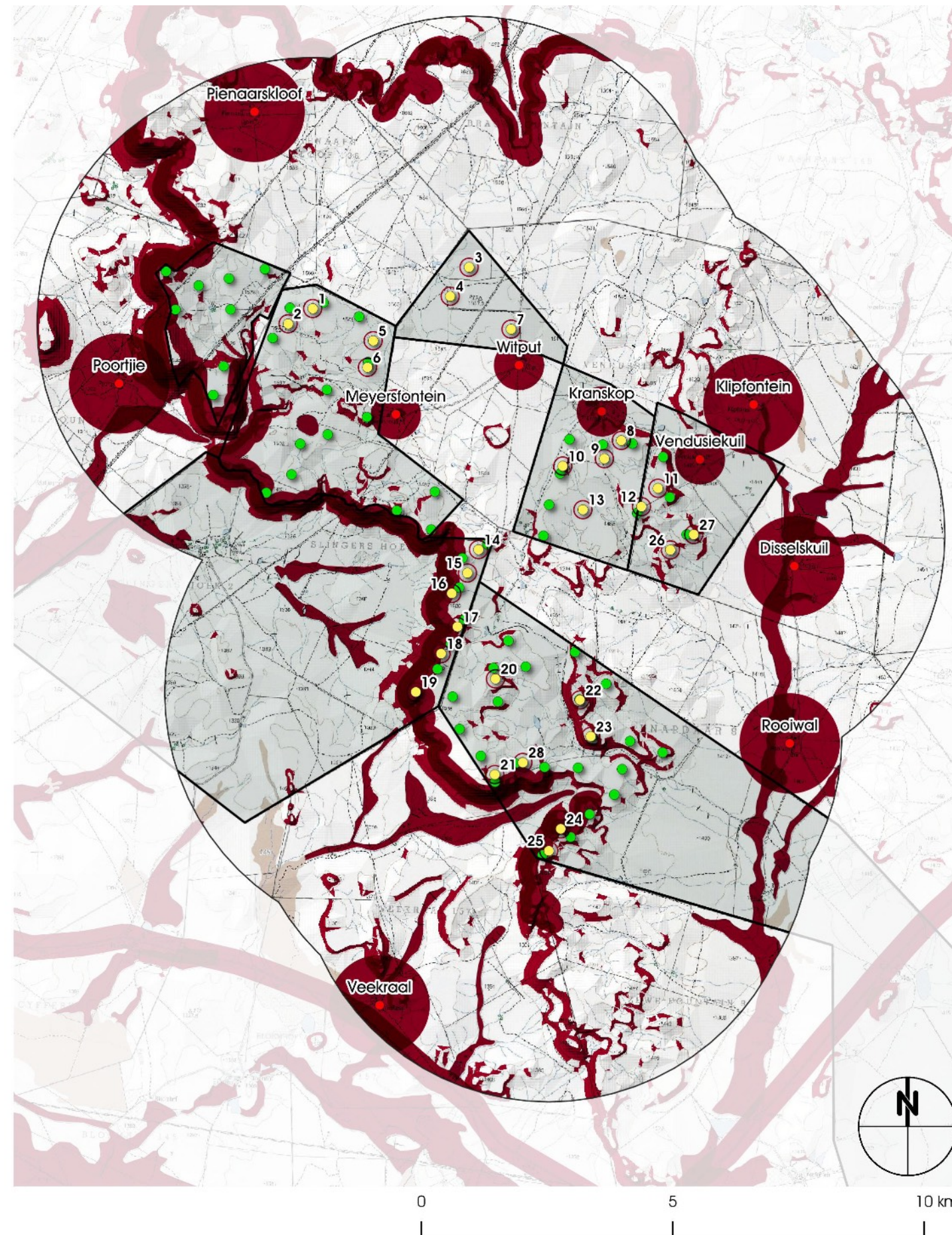


**map 7 : Visual Sensitivity • Authorised Layout 2015 • 61x WTGs**

base map : NGI 50K Topographic Series : 3024 CA De Aar



**Amended Layout 2022 • 28x WTGs (only 26x WTGs will be constructed)**



**Green** Symbol : Authorised Layout 2015  
**Yellow** Symbol : Amended Layout 2022

**map 8 : ALL Very High Visual Sensitivity : Authorised vs Amended Layout**

base map : NGI 50K Topographic Series : 3024 CA De Aar

## **Addendum A: CV of Visual Specialists**

The Visual Assessment Amendment was prepared by the following:

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### **Expertise**

Quinton Lawson has a Bachelor of Architecture Degree (Natal) and has more than 12 years' experience in visual assessments, specializing in 3D modeling and visual simulations. He has previously lectured on visual simulation techniques in the Master of Landscape Architecture Programme at UCT.

Bernard Oberholzer has a Bachelor of Architecture (UCT) and Master of Landscape Architecture (U. of Pennsylvania), and has more than 22 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 for the Dept. of Environmental Affairs and Development Planning, Provincial Government of the Western Cape, 2005.

The authors have been involved in visual assessments for a wide range of residential, industrial and renewable energy projects. They prepared the 'Landscape Assessment' report for the *National Wind and Solar PV Strategic Environmental Assessment (SEA)*, in association with the CSIR, for the Department of Environmental Affairs (now DFFE) in 2014.