

Proposed Witberg Renewable Wind Energy Facility,
near Matjiesfontein
Western Cape Province

Amendment Report to Visual Impact Assessment

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Prepared for
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On behalf of Witberg Wind Power (Pty) Ltd

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1. Introduction

Witberg Wind Power (Pty) Ltd is proposing to amend the environmental authorisation for the proposed Witberg Wind Energy Facility (WEF) located near Matjiesfontein in the Western Cape, (Figure 1). This amendment report addresses the potential changes in visual impact significance relating to the new proposals. The location of the proposed Witberg WEF is indicated in Figure 1.

2. Original VIA and Amendments

The original Visual Impact Assessment (VIA) for the Witberg wind farm, (Alternative 3, March 2011), consisting of 40 wind turbines, was based on hub heights of 80m and a rotor diameter of 90m. The visual significance rating after mitigation at that time was medium to high, given the large number of turbines, the visual prominence of the wind turbines on the Witberg skyline and visibility from the historic Matjiesfontein settlement and N1 National Road.

3. Subsequent Authorisation

Subsequently, a revised layout, (Alternative 7), was submitted, consisting of 27 wind turbines, which received authorisation from the relevant Departments. The authorisation allowed for hub Heights of up to 92m, and rotor diameters of up to 116m.

The finding at the time was that the slight increase in the hub height and rotor diameter of the proposed wind turbines was considered to be marginal, and would not have a significant effect on the viewshed and potential visual impacts. In addition, the fewer number of turbines would help to decrease the potential visual clutter of turbines on the exposed ridgeline.

4. Proposed Amendments

The currently proposed amendments involve the following:

- Range of Rotor diameter: From 116m, to up to 136m;
- Range of Hub height: From 92m, to up to 120m; and
- Range of Wind turbine capacity: From 3MW, to up to 5MW.
- The previous wind farm layout of 27 turbines (Figure 2), amended to the current layout of 25 turbines (Figure 3).

5. Visual Assessment Methodology

The method used to determine if there will be any change in the visual impact significance to that of the previously authorised WEF layout consisted of the following:

5.1 A review of changes to the physical layout of the wind turbines and related infrastructure (Figures 2 and 3).

Comment: This involved the removal of two turbines (10 and 18) and their access roads from the layout, and relocation of the powerline, substation and construction camp, with no further changes to the siting of the remaining turbines.

5.2 A review of possible changes to the viewshed, given the increased height of the turbines.

Comment: A comparative viewshed analysis between the previously authorised proposal and the current proposal was prepared (Figures 4 and 5). The analysis

indicated that the proposed amendments would result in a negligible change to the viewshed (zone of visual exposure) as indicated in Figure 6.

5.3 A review of possible changes in the photomontages as seen from selected viewpoints, based on the increased height of the wind turbines, along with the omission of two turbines, and the effect this would have on receptors (Figures 7, 8 and 9).

Comment: The comparison of the photomontages indicates that the proposed amendments will have an almost imperceptible change when seen from the selected viewpoints.

The result of the above review is that the current amendments will have a negligible effect on the significance of potential visual impacts identified in the original VIA Report and subsequent authorised amendment.

6. Advantages and Disadvantages

The increase in height of the wind turbines and increase in rotor diameter is partly offset by the removal of 2 turbines, in that fewer turbines could result in less visual clutter on the Witberg skyline. Overall, the viewshed analysis and photomontages indicate that the extent of the viewshed and difference in visibility of the turbines would be largely imperceptible.

7. Assumptions and Limitations

No further information was available at this stage on details regarding the detailed design of the substation, operations and maintenance buildings, or the pylons for the connecting powerline. It was assumed therefore that these would be as per the previously authorised project. It was also assumed that internal powerlines between the turbines would be located underground.

8. Cumulative Visual Impacts

There are a number of renewable energy projects, either existing or proposed, in the region of the Witberg site, (Figure 10). These include an existing solar energy facility near Touwsrivier, which, although visible from the N1 Route, is in a low-lying area with a very limited viewshed.

Another wind and solar facility is proposed just west of the Witberg site, but the status of this is not known. The remaining renewable energy projects are mainly more than 25 km north of the site, and being separated by mountain ranges, will not result in cumulative visual impacts within the local area.

Although the current project will be visible from the N1 Route, cumulative visual impacts are expected to be low, given the distances to other renewable energy projects and the screening effect of the mountainous topography. The project could therefore be authorised from a cumulative visual perspective.

9. Mitigations

The layout of the wind farm has already been through a number of iterations based on the specialist studies and engineering considerations. The visual mitigations contained in the original VIA of 2011 are still relevant, and no new visual mitigations are deemed necessary.

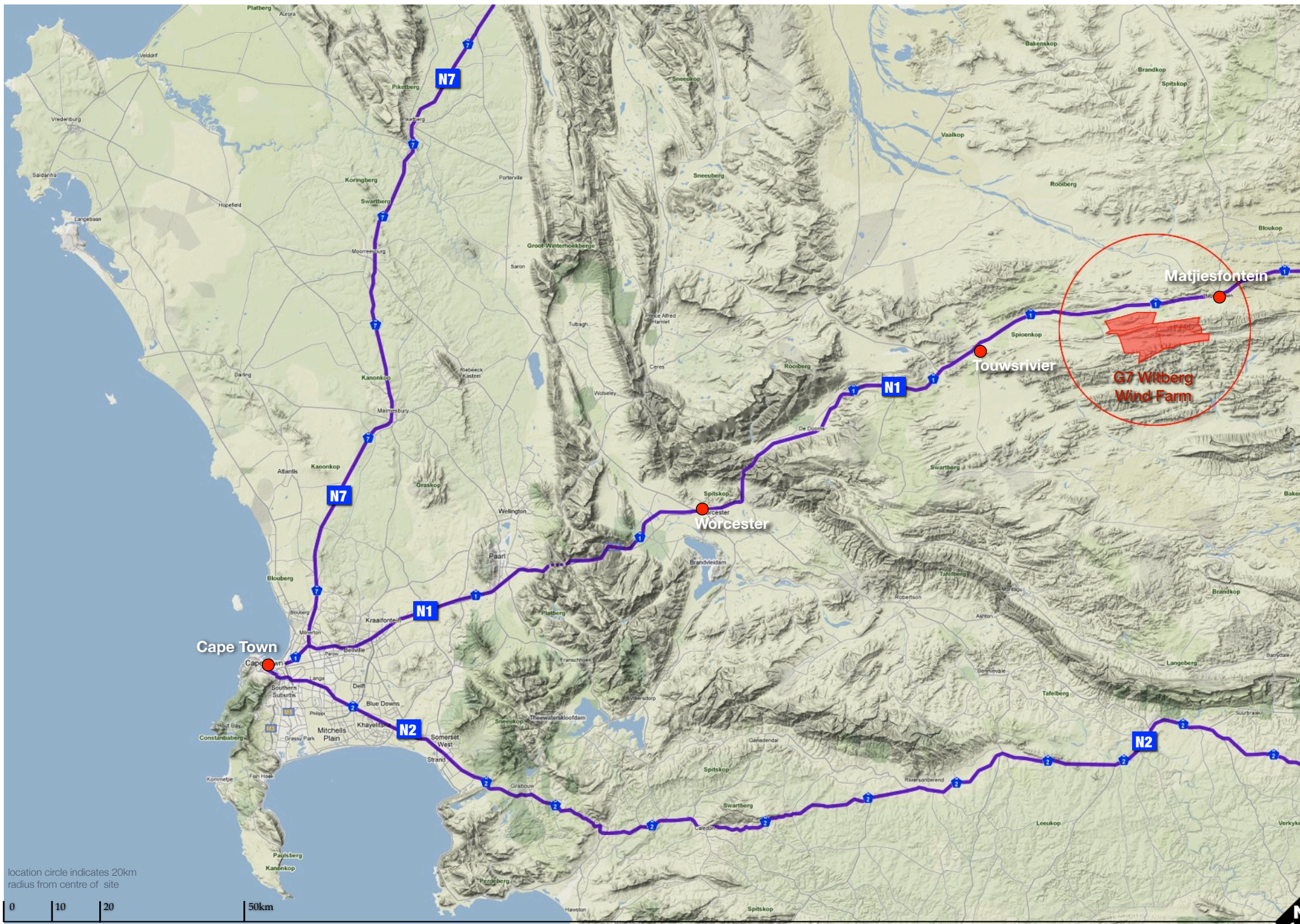
10. Conclusion

The increased hub height, rotor diameter and blade tip height would result in similar overall visual impact significance ratings to that determined in the original VIA and subsequent authorised amendment, as indicated in Paragraph 5 above.

The proposed amendments to the wind turbines and related infrastructure, such as internal access roads, powerline, substation and construction camp would result in no change in the overall visual impact significance ratings in relation to those of the previous authorised proposals.

As the baseline visual environment has not changed since the previous authorisation, the extension of the validity of the Environmental Assessment by two years will have no bearing on the visual environment.

Provided that the visual mitigations listed in the original visual impact study (including post-construction rehabilitation of the site) are adhered to, the existing Environmental Authorisation for the Witberg WEF would still be valid. Our opinion from a visual perspective is that the proposed amendments should be approved.



location circle indicates 20km
radius from centre of site

Base Map Source : Google Maps 2010

Figure 1 • Witberg Wind Energy Facility Locality Map

scale 1 : 1 000 000

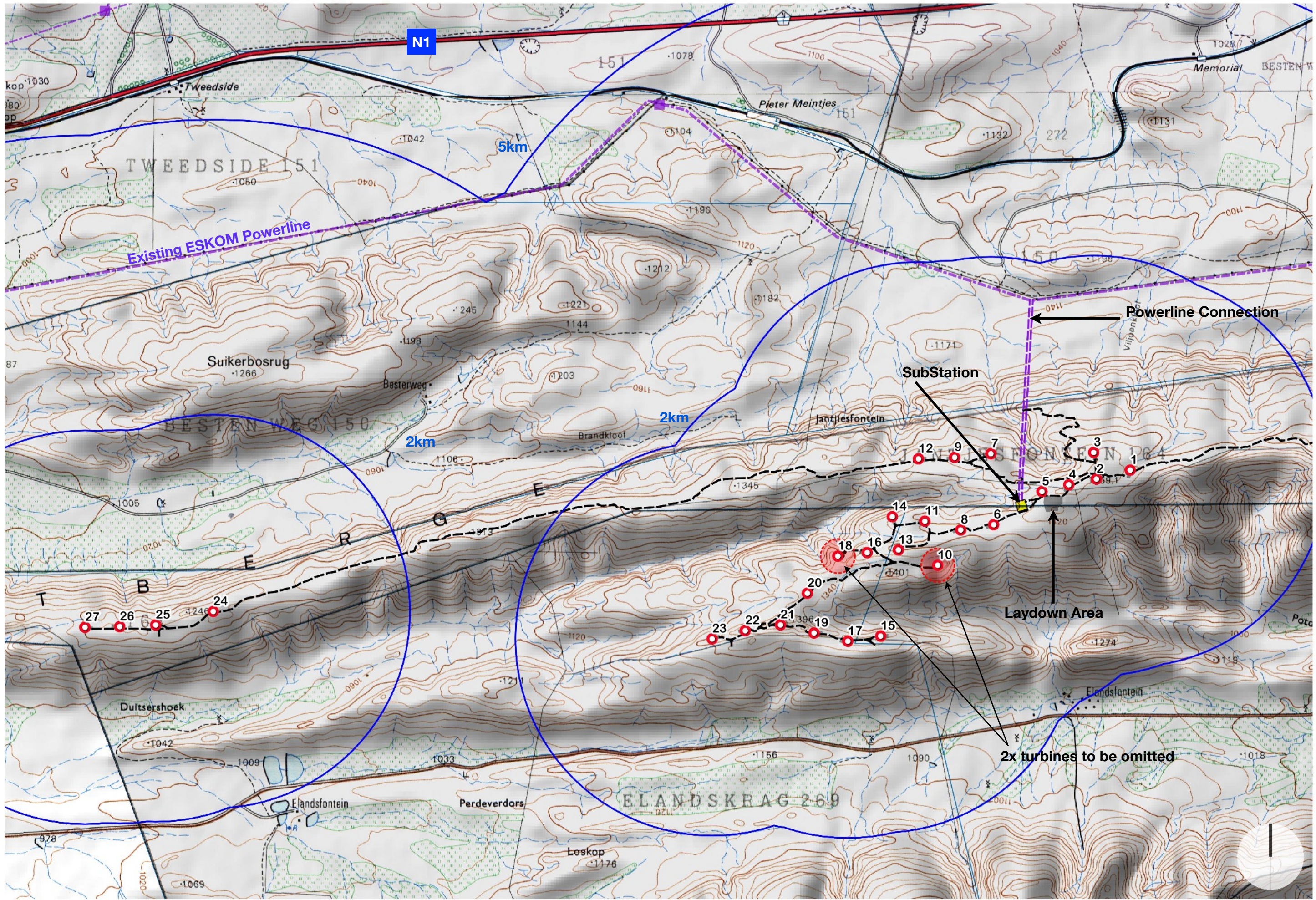


Figure 2 • Witberg Previous Authorized Layout • 27x 92m High Wind Turbines



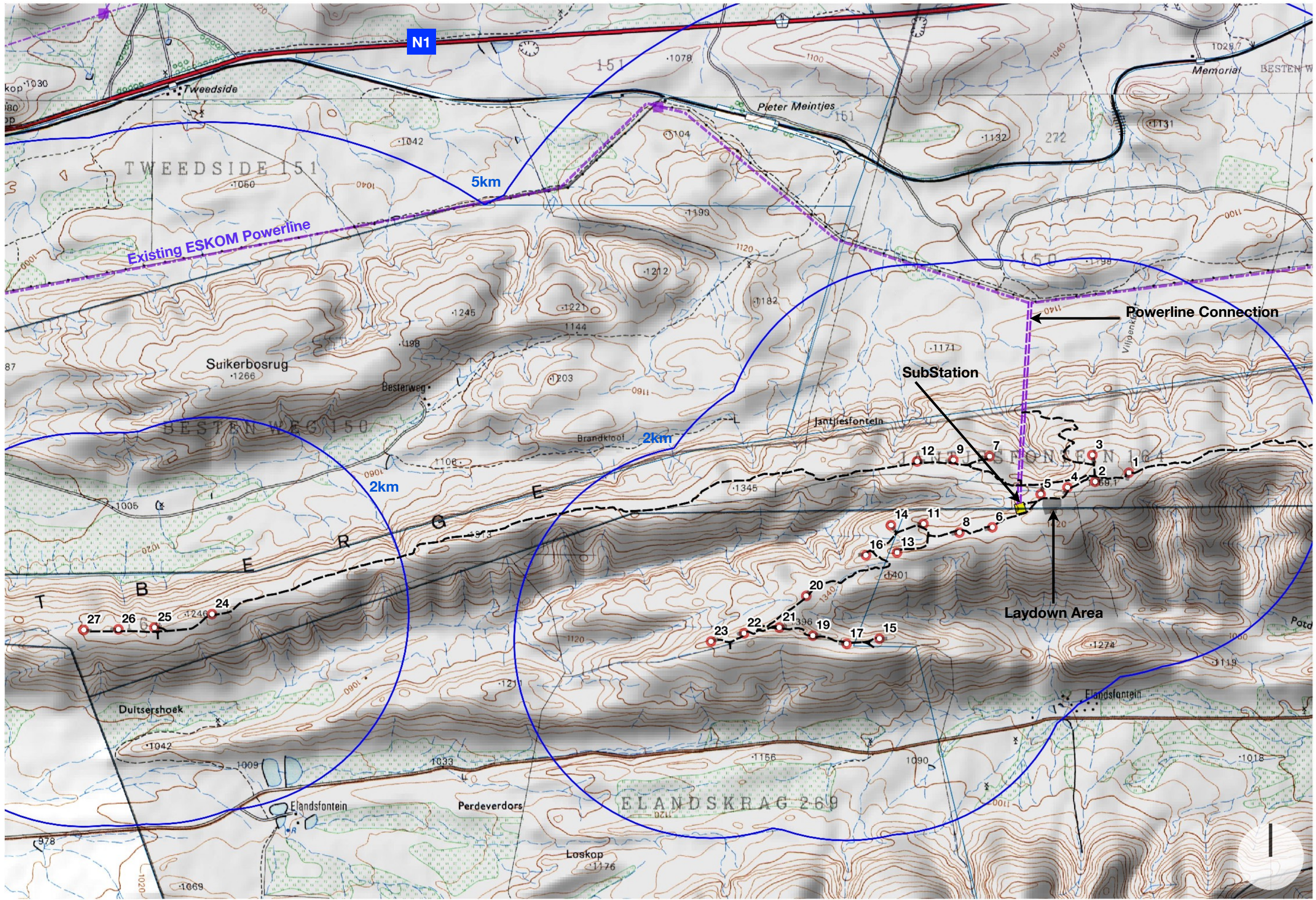


Figure 3 • Witberg Proposed Amended Layout • 25x 120m High Wind Turbines



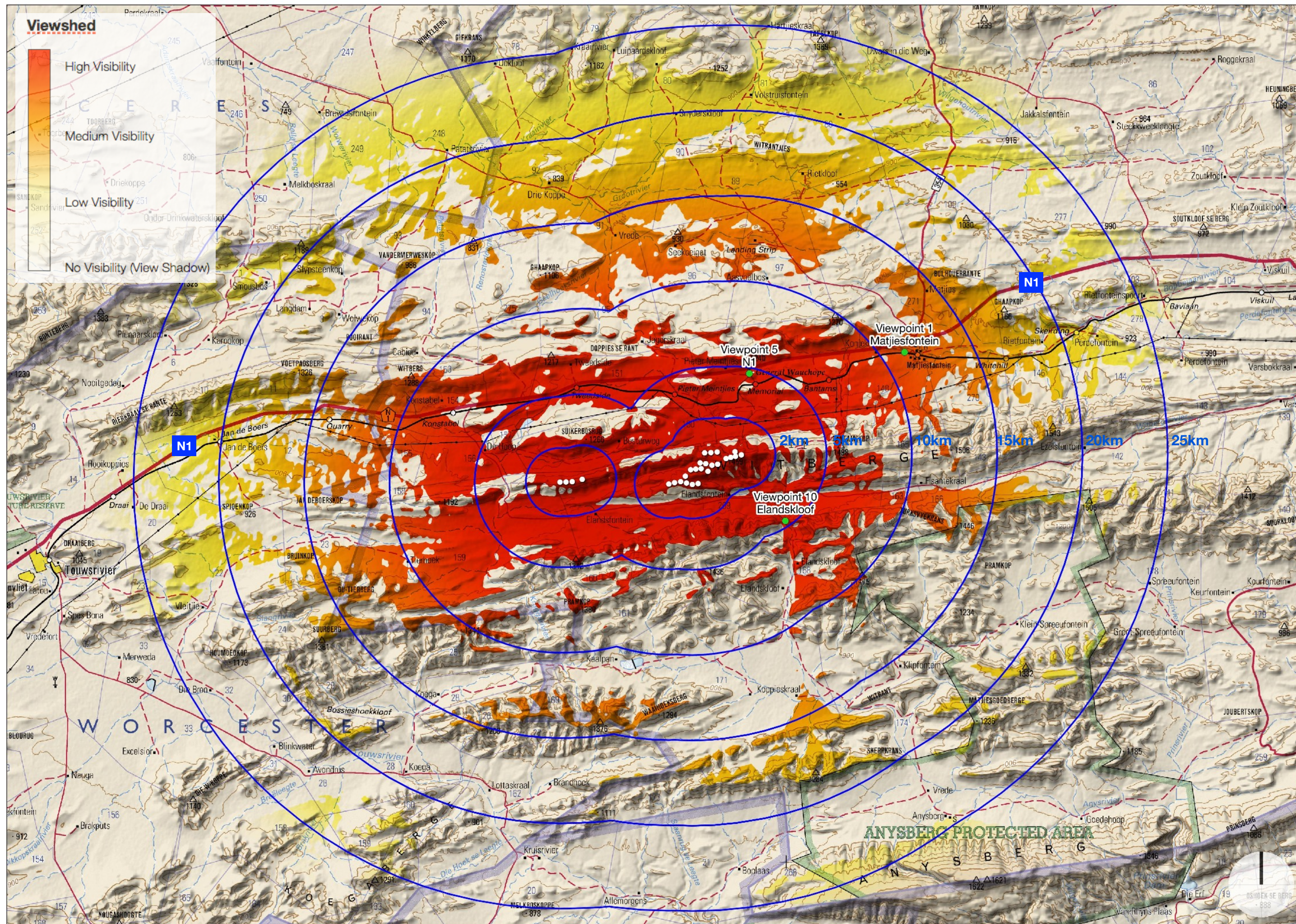
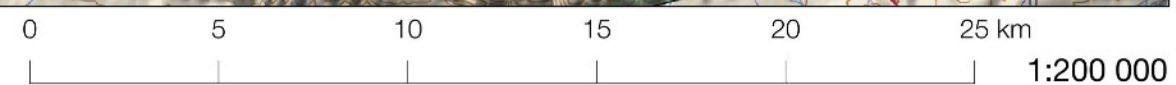


Figure 4 • Witberg Previous Authorized Layout Viewshed • 27x 92m High Wind Turbines



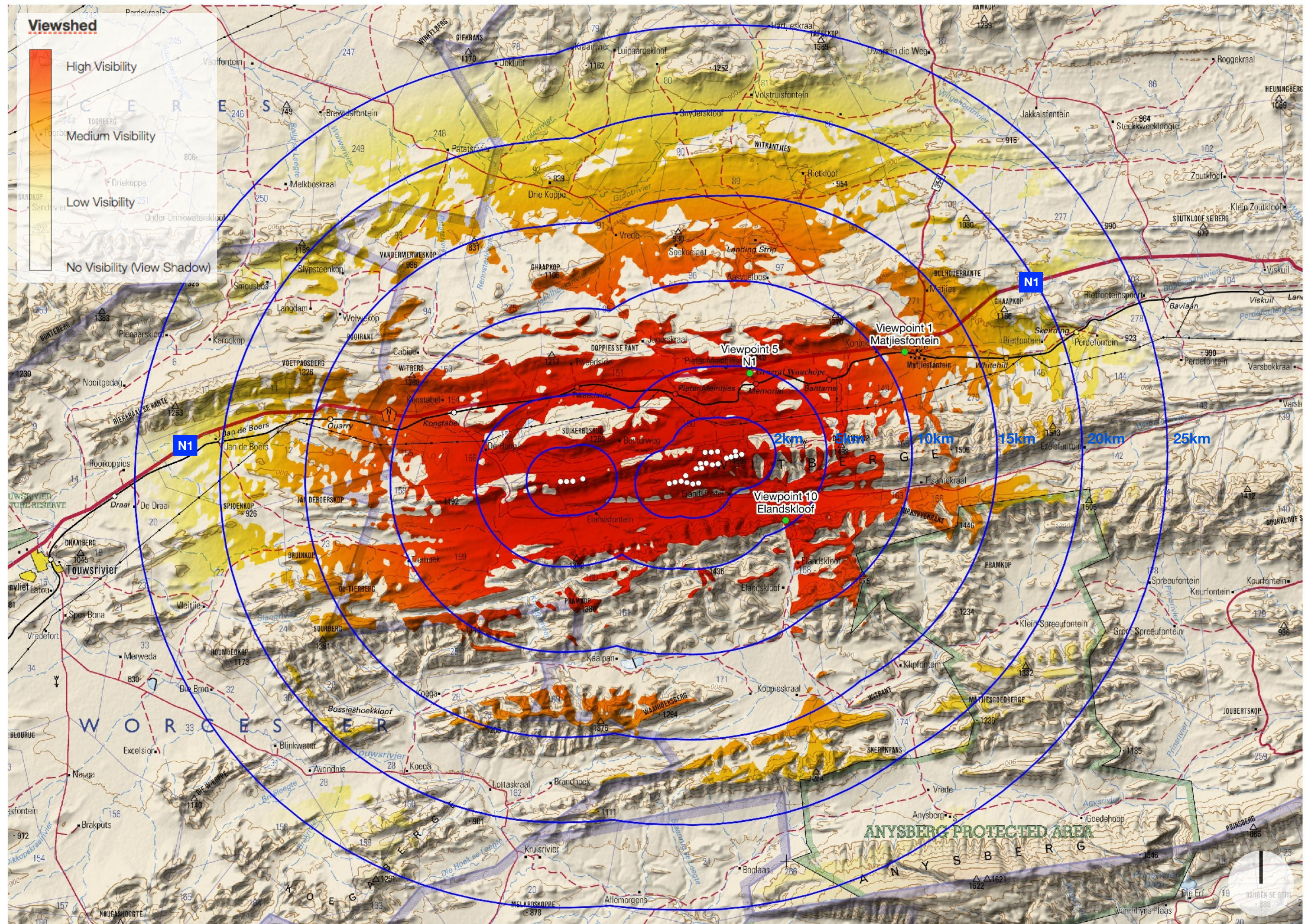


Figure 5 • Witberg Proposed Amended Layout Viewshed • 25x 120m High Wind Turbines



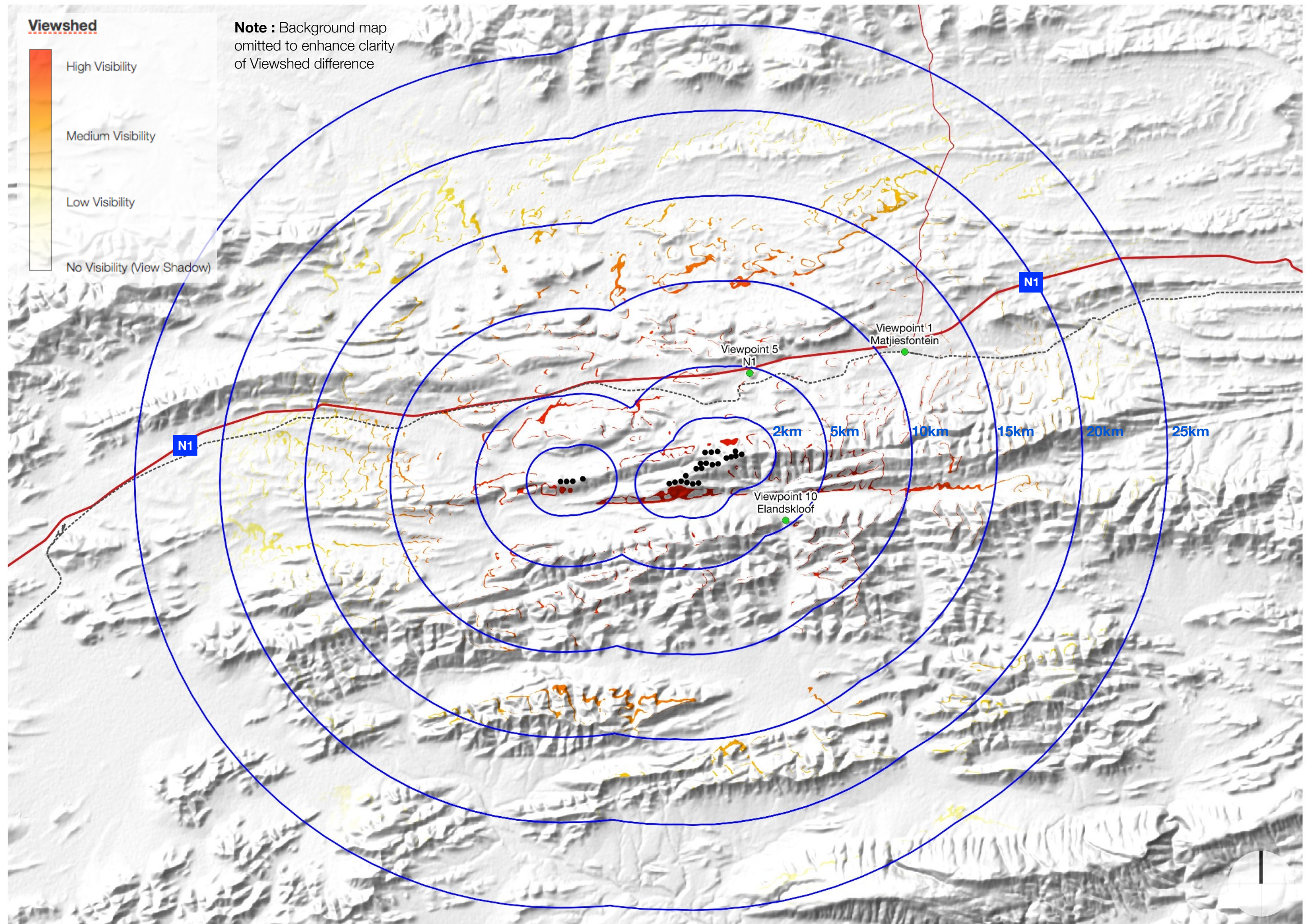


Figure 6 • Witberg DIFFERENCE (Increased) Viewshed • 92 - 120m High Wind Turbines



Viewpoint 1 2018 Amendment • looking south-west from Matjiesfontein Rail Crossing
distance to nearest turbine • 11.3km

33.2308S, 20.5761E • 08/10/2010 • 08h47



Viewpoint 1 2019 Amendment • looking south-west from Matjiesfontein Rail Crossing
distance to nearest turbine • 11.3km

33.2308S, 20.5761E • 08/10/2010 • 08h47



Viewpoint 5 2018 Amendment • looking east from N1 Memorial
distance to nearest turbine • 4.5km

33.2417S, 20.4783E • 08/10/2010 • 11h17



Viewpoint 5 2019 Amendment • looking east from N1 Memorial
distance to nearest turbine • 4.5km

33.2417S, 20.4783E • 08/10/2010 • 11h17



Viewpoint 10 2018 Amendment • looking north from Elandskloof Gate
distance to nearest turbine • 4.3km

33.3197S, 20.5006E • 08/10/2010 • 12h37



Viewpoint 10 2019 Amendment • looking north from Elandskloof Gate
distance to nearest turbine • 4.3km

33.3197S, 20.5006E • 08/10/2010 • 12h37

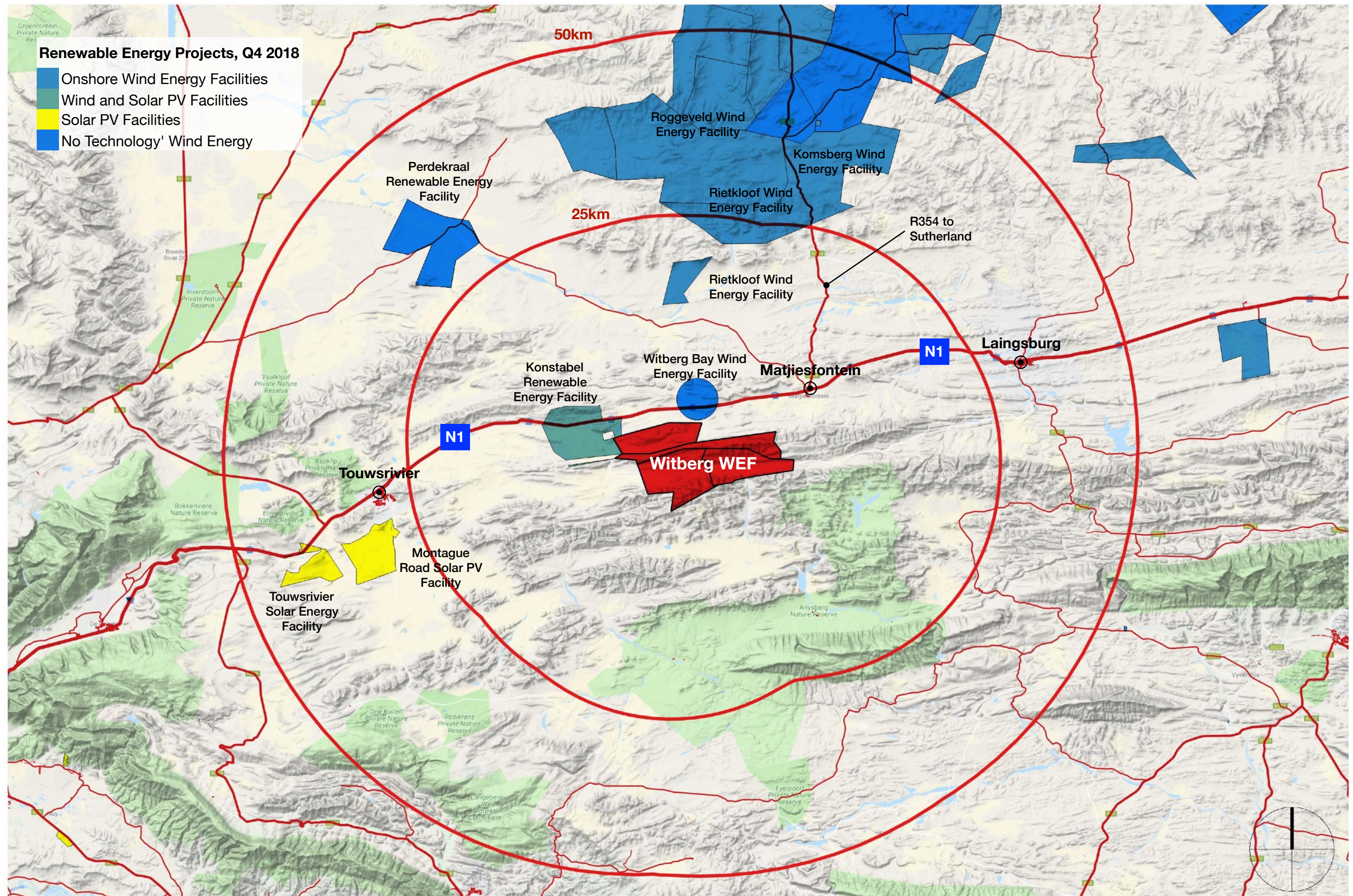


Figure 10 • Witberg WEF • Cumulative Renewable Energy Projects