APPENDIX C7(2): COMMENTS RECIEVED

Comments on Basic Assessment Report

Review period 04 March 2021 – 06 May 2021

(C&RR: Point 1)

Key Stakeholders and Interested & Affected Parties

Proposed Fronteer and Wind Garden Energy Facilities,
Makana Municipality, Eastern Cape

Review of Visual Impact Assessments

20 April 2021

Prepared for
Richard Summers Inc.

Prepared by
Bernard Oberholzer and Quinton Lawson

Contents

Abbreviations

CAA	Civil Aviation Authority
DEFF	Department of Environment Forestry and Fisheries
EIA	Environmental Impact Assessment
HIA	Heritage Impact Assessment
NEMA	National Environmental Management Act
NHRA	National Heritage Resources Act
REDZ	Renewable Energy Development Zone
SEA	Strategic Environmental Assessment
VIA	Visual Impact Assessment
WEF	Wind energy facility

1 Background to the Review

A review of two Visual Impact Assessments (VIAs) of the proposed Fronteer and Wind Garden Wind Energy Facilities (WEFs) was requested by Richard Summers Inc. Attorneys, acting on behalf of Kwandwe Private Game Reserve. The VIA Reports were prepared by Lourens du Plessis of LOGIS (March 2021), and form part of the Basic Assessment Report by Savannah Environmental (Pty) Ltd, (March, 2021), that is out for public comment.

Issues raised by Richard Summers Attorneys, on behalf of their client/s for both wind farms, include the following:

- *Concern that not all the related project infrastructure has been assessed, such as internal and connecting powerlines, and access roads.*
- *Concern that not all sensitive receptors / viewpoints have been identified and assessed, nor have adequate photomontages been provided for those receptors most affected.*
- *Concern that site-specific environmental and scenic features have not been identified, nor how these would be affected.*
- *Concern that the local context, including its remoteness and rural / wilderness qualities have not been considered with regard to an industrial-type wind farm.*
- *Concern that 'avoidance' measures have not been considered as a primary form of mitigation.*
- *Concern that visual impacts from aviation lighting have not been resolved, nor any indication on the effect of these lights on sensitive receptors in the area.*
- *Concern that the assessment of visual cumulative impacts is limited to the actual proposed wind farms, and not the wider surrounding area.*
- *Concern that the siting of wind turbines has not been informed by any visual sensitivity mapping, nor any acceptable visual threshold values.*
- *Concern that the potential visual impacts on Kwandwe Nature Reserve have not been adequately identified and assessed, given its protected area status.*

2 Purpose of the Review

The purpose of this Review is to give an independent expert opinion on the adequacy and credibility of the VIA Report for the two proposed WEF projects, in particular the issues outlined above. A concern expressed was the quality and accuracy of the VIA Reports, particularly with regard to gaps in the information.

3 Assumptions and limitations

The Review did not involve any fieldwork or ground-truthing, and assumed that the VIA would include all the relevant information and baseline studies for the two proposed WEF sites on which to base informed assessments. However, the Reviewers have access to a range of related information sources, having worked on the original landscape assessments

for all the wind and solar REDZs, in collaboration with the CSIR for the then Department of Environmental Affairs.

The Reviewers also briefly studied the Heritage Impact Assessments (PSG Heritage, March 2021), for the two wind farms because of their inter-relatedness with respect to visual issues.

4 Definition of 'Visual'

For purposes of the review, the term 'visual' is intended to cover the broad range of visual, scenic, cultural, aesthetic and spiritual aspects of the natural and cultural landscape that contribute to the overall sense of place, (Oberholzer, 2005).

The NHRA (1999) defines 'cultural significance' as aesthetic, architectural, historical, scientific, social, spiritual, linguistic and technological value or significance.

These definitions are important as they imply wider considerations than merely the GIS mapping of aspects such as visual exposure, visibility and visual absorption capacity.

5 The Role of a VIA

The Environmental Impact Assessment Regulations of 2014, Appendix 8, refers to specialist reports, which are required *inter alia* to include the following:

- *The sensitivity of the site (visual sensitivity in this case);*
- *Identification of areas to be avoided, including buffers;*
- *Assumptions, uncertainties and gaps in knowledge;*
- *Mitigation measures and monitoring for inclusion in the EMPr;*
- *An opinion as to whether the activity should be authorized; and*
- *Conditions for inclusion in the environmental authorization.*

In addition, the VIA is required to determine visual impact 'significance' in relation to the local or regional importance of the landscape features, the relative intactness of these, and the effect on the prevailing sense of place.

The VIA must provide a baseline study that identifies characteristics and constraints of the receiving environment in relation to the proposed WEF, including 'no-go' areas for development. These should inform the layout of the project along with mitigations to avoid or minimise potential visual impacts.

6 Comment on the Findings of the VIA Report

The conclusion of the VIA Report states the following:

*"Overall, the significance of the visual impacts associated with the proposed Fronteer WEF (and Wind Garden WEF) is expected to be **high*** (post-mitigation)*, as a result of the generally undeveloped character of the landscape. The facility would be visible within an area that contains certain sensitive visual receptors who would consider visual exposure to this type of infrastructure to be intrusive. Such visual receptors include people travelling along roads, residents of rural homesteads and settlements, and tourists passing through or holidaying in the region."*

The VIA indicates that the cumulative visual impact of the existing Waainek WEF and the proposed Fronteer, Wind Garden and Albany WEFs is expected to be of **high** significance.

The VIA further states that although the potential visual impacts may exceed acceptable levels within the context of the receiving environment, (an area with an established tourism industry), the proposed WEF development is not considered to be fatally flawed.

This reasoning seems to be based on the proposal being legally compliant, and that it would only be fatally flawed if the **majority** of stakeholders and decision-makers consider the impacts to be unacceptable. Given that a large number of sensitive receptors / viewpoints have not been assessed, nor apparently even consulted, the question of a fatal flaw is open to dispute.

The findings in the VIA are questionable for the following reasons:

(1) **Cookhouse REDZ**

The proposed Fronteer and Wind Garden wind farms are situated within the Cookhouse REDZ. A cursory examination of the REDZ visual mapping at the regional scale indicates that the relevant portion of the REDZ is categorised as mostly 'very high' and 'high' visual sensitivity and therefore not ideally suitable for wind farm development. (See Maps 1 and 2 for each wind farm attached). Therefore, just because the project falls within the REDZ, does not mean that the entire REDZ is suitable for the proposed development.

(2) **Site Verification**

In terms of Government Notice No. 648, dated 10 May 2019, there is a requirement that Initial Site Sensitivity Verification Reports be produced for a development footprint. The purpose of the Site Verification is that the VIA report confirms or disputes the current use of the land and environmental sensitivity as identified by the national web based environmental screening tool. The current VIA Reports fail to include a 'Site Sensitivity Verification Report'.

For ease of reference, the Landscape Theme (visual and scenic resources) for the Cookhouse REDZ is attached (Map3) for both the Fronteer and Wind Garden sites. The maps indicate that a number of the proposed wind turbines would occur in a 'very high' sensitivity zone. The VIA Report is then required to confirm or dispute the DEFF screening map.

(3) **Visual Sensitivity Mapping**

The fairly minor mitigations provided in the VIA Reports, along with the admission that little can be done to screen turbines, given their large size, means that little or no visual mitigation would occur. On the other hand, the preferred mitigation of avoiding no-go areas and areas of high visual sensitivity of the site are not even considered in the two VIA Reports. In fact, no visual sensitivity mapping is included in the VIA Reports, even though this is a requirement by DEFF. As a result, the Reviewers carried out their own screening desktop study of both the Fronteer and Wind Garden WEF sites to identify potential visual sensitivity. This mapping study (Maps 6 to 17 attached) revealed that a large number of the proposed wind turbines would be located in potential no-go areas for both sites.

Given the above considerations, it was found during this Review that a large number of the proposed wind turbines could potentially represent a fatal flaw according to the visual sensitivity maps attached to the Review.

7 Additional Comment on the VIA Reports

A number of omissions and inaccuracies in the VIA Report, are identified and commented on below:

7.1 Baseline Description:

Although the VIA Reports include a generalized description of the affected physical environment, they provide little indication of the specific landscape features and scenic resources of the actual sites, such as topographic features, steep slopes and water features, which would inform the layouts of the two proposed wind farms. Furthermore, the maps provided are small-scale and highly generalized, providing little information. More seriously, the VIA Reports do not provide a visual sensitivity map with the abovementioned features and recommended buffers. Neither do the Reports include the 'Specialist Checklist' required in terms of the NEMA regulations, (see Addendum B attached). The Checklist stipulates the following as a requirement:

"a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site (visual in this case), including areas to be avoided, and including buffers".

7.2 Visual Receptors:

Although the VIA Reports indicate that there are a high number of sensitive receptors around the two proposed wind farms, astonishingly only 5 viewpoints have been selected, (the same viewpoints for both WEFs), 3 of which seem to be related to views from public roads, and at least 1 (Viewpoint 1) from inside the Wind Garden site. No visual buffers for the various sensitive receptors, nor for the adjacent Kwandwe Nature Reserve been indicated. Standard practice would be to list all the sensitive receptors, their location coordinates, the distance to each from the proposed WEF, and their visibility implications.

7.3 Local Airfields

According to Regulations from The Civil Aviation Act (Act 13 of 2009), obstacle limitations need to be taken into account near airports, such as the Makhanda (Grahamstown) airport. These include the following regulation:

No buildings or objects higher than 45 meters above the mean level of the landing area, or, in the case of a water aerodrome or heliport, the normal level of the water, must without the approval of the Director be erected within a distance of 8 kilometer measured from the nearest point on the boundary of an aerodrome or heliport.

The 8km buffer is indicated on the attached Map 14, indicating that the siting of about half of the wind turbines in the proposed Fronteer Wind Farm could be affected.

7.4 Visual Simulations:

As indicated above, numerous sensitive receptors were not included in the limited range of 5 selected viewpoints, which appear to have been chosen on an *ad hoc* basis, and are the same for both WEFs. This makes little sense as one of the viewpoints is inside the Wind Garden site, and therefore not sensitive, while another 3 viewpoints seem to be located on public roads. Other than an abstract example, no visual simulations of the lights at night from sensitive viewpoints are provided, which is unusual given the importance of the rural / wilderness experience of the immediate area, and the proximity of the Kwandwe Nature Reserve.

7.5 Viewsheds:

The viewsheds indicated in the two VIA Reports have been checked by the Reviewers and appear to be relatively accurate when compared to the viewsheds prepared by the Reviewers, (see Maps 3 and 4 attached). The scale of the viewshed maps tend to be too small to determine the effect on sensitive receptors.

7.6 Connecting Powerlines

The internal powerline is indicated on maps of the site for the two wind farms, while the connecting powerlines to the Eskom substation are indicated at a smaller scale. The latter

powerlines tend to have major visual implications, and it is not indicated in the VIA Reports if these form part of a separate Basic Assessment application.

7.7 Visual Mitigations:

The two VIA Reports include a number of mitigations for the various components and phases of the proposed project. These tend to be of a minor remedial nature rather than an avoidance measure. It is incumbent on visual specialists to first employ avoidance measures, which are more effective in reducing potential visual impacts. This would ideally occur at the early screening stage of the project to inform the layouts of the two wind farms. An example would be the use of visual buffers around special landscape or scenic features and sensitive receptors, based on thresholds of visual sensitivity, including 'no-go' zones, such as those in Table 1, Paragraph 8 below.

7.8 Visual Impact Significance Ratings:

The Reviewers are in agreement with the impact significance rating for wind turbines (Operational Phase), which is stated as being high both before and after mitigation. The Reviewers question the moderate significance rating for lights at night, after mitigation, given that the red navigation lights are more visible at a distance than during the day, well beyond the 10km distance inferred in the VIA Reports. Added to this is the consideration that the proposed Fronteer WEF is close to the Makhanda airport, which would imply an emphasis on navigation lights for nearby obstacles.

8 Visual Sensitivity Mapping

A major concern in this review has been the absence of site-specific visual sensitivity mapping as part of the VIA Report. To this end the Reviewers have provided a series of maps (Maps 6 to 17) to get a better idea of the potential visual implications of the two proposed wind farms, including potential 'no-go' areas, which are summarised in Map 17 for each wind farm, attached. It should be stressed that this mapping involved a desktop study and would need to be ground-truthed.

The visual sensitivity mapping is based on recommended visual buffers, derived from the Wind and Solar SEA (CSIR, 2015), as indicated in Table 1 below. These are not intended to be mandatory, but instead provide a useful guide in line with best practice. The buffers would be moderated by site-specific conditions, such as instances where receptors are in a view shadow. This visual sensitivity mapping should be used to inform the layouts of the two wind farms.

Table 1: Visual sensitivity categories with recommended visual buffers

Scenic Resources/ Sensitive receptors	No-go areas	High visual sensitivity	Medium visual sensitivity
Topographic features, ridges, scarps	Feature	0-250m	-
Steep slopes	Slopes > 1:4	Slopes > 1:10	-
Water features, wetlands, dams	0-250m	250-500mm	-
Heritage sites Grade I and II	Feature	0-500m	500m-1km
Heritage sites Grade III	Feature	0-250m	250-500m
Nature Reserves	0-3km	3-5km	5-10km
Private reserves/ guest farms	0-1,5km	1,5-3km	3-5km
Game farms (site boundary)	0-1km	1-2km	2-3km
Farmsteads outside the site	0-500m	500m-1km	1-2km
Settlements / towns	0-2km	2-4km	4-6km
Provincial / arterial route	0-500m	500m-1km	1-3km
Scenic routes	0-1km	1-2,5km	2,5-5km
National road	0-1km	1-2,5km	2,5-5km
Small airfields	0-3km	-	-
Farm boundary setback	1,5x turbine height [1]		

[1] Relates to both safety and visual considerations

9 Conclusion and Recommendations

The Reviewers are of the opinion that the VIA Report contains too many omissions to warrant an informed recommendation regarding the visual acceptability of the two proposed wind farms. The desktop mapping by the Reviewers indicates that parts of the wind farm layouts are clearly problematic from a visual perspective, resulting in potential fatal flaws for many of the proposed wind turbines in both the Fronteer and Wind Garden WEFs.

Given the scale of the wind turbines, laydown areas and related infrastructure, the most meaningful visual mitigation would be avoidance, including the use of visual buffers, which would involve the relocation or removal of turbines in visually sensitive positions. Certain wind turbine locations are patently unsuitable and would constitute a fatal flaw.

It appears that inadequate visual screening was undertaken at an early stage of the project, including the omission of the DEFF Screening Tool, as well as the lack of more site-specific, project-level visual sensitivity mapping for each of the wind farms.

Based on the desktop mapping prepared by the Reviewers, it appears that about half of the proposed Fronteer wind turbines are potentially located in no-go areas, and similarly, about a third of the proposed Wind Garden turbines are in no-go areas.

In response to the concerns raised in Section 1 above, the following findings arise from this review:

- Not all of the related infrastructure for the two wind farms have been assessed, in particular the internal access roads and connecting powerline to the Eskom substation beyond the two WEF sites;
- Not all sensitive receptors have been taken into account in the assessments of both wind farms, and neither have adequate photomontages relating to sensitive viewpoints been provided;
- No screening has been carried out, nor site-specific landscape features, scenic resources and sensitive receptors clearly identified or mapped;
- The context of the two proposed wind farms in terms of the rural / wilderness qualities of the area, including nearby nature reserves, has not been adequately taken into account in the assessments;
- Avoidance measures, including the use of visual buffers, have not been considered as an essential part of the mitigation;
- The visual impact of navigation lights at night, which tend to be visible up to 30km away, have not been adequately assessed, nor any visual simulations provided from sensitive receptors in the area;
- The assessment of cumulative visual impacts is not clearly represented in the form of a wider regional map of the area;
- A major concern is that the layouts of the two proposed wind farms have not been informed by means visual sensitivity mapping, which is a requirement in terms of NEMA Regulations;
- The potential visual impact on the Kwandwe Nature Reserve, which borders on the proposed Fronteer WEF, and which includes a number of lodges, has not adequately been taken into account, given its status as a Protected Area;
- The fact that the same 5 visual simulations / photomontages were used for each of the windfarms (which are on different sites), is unacceptable. There are patently too few visual simulations, which in turn hardly cover the range of sensitive viewpoints, and which are therefore not helpful for the visual assessment.

It is therefore recommended that the current VIA Reports for the Fronteer and Wind Garden WEFs in their present form be set aside until the omissions are corrected. Based on the findings of this Review, and the fact that they do not meet all the requirements of NEMA and the EIA regulations, both the Fronteer and Wind Garden VIA Reports are considered flawed.

References

Logis, March 2021. *Proposed Fronteer Wind Farm, Eastern Cape Province: Visual Impact Assessment.* 76pp.

Logis, March 2021. *Proposed Wind Garden Wind Farm, Eastern Cape Province: Visual Impact Assessment.* 77pp.

CSIR, 2015. *Strategic Environmental Assessment for Wind and Solar Photovoltaic Energy in South Africa*, prepared for Department of Environmental Affairs.

Oberholzer, B. 2005. *Guideline for involving visual & aesthetic specialists in EIA processes: Edition 1.* CSIR Report No ENV-S-C 2005 053 F. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs & Development Planning, Cape Town.

PGS Heritage, March 2021. *Wind Garden Wind Farm between Makhanda and Somerset East, Eastern Cape.* 103pp.

PGS Heritage, March 2021. *Fronteer Wind Farm between Makhanda and Somerset East, Eastern Cape.* 86pp.

Savannah Environmental, March 2021. *Fronteer Wind Farm, Eastern Cape Province: Basic Assessment Report.* 304pp.

Savannah Environmental, March 2021. *Wind Garden Wind Farm, Eastern Cape Province: Basic Assessment Report.* 307pp.

Addendum A

Statement of Independence

The Reviewers declare that they are independent practitioners with expertise and wide experience in visual impact assessments, that the review has been carried out in an objective manner and complies with the relevant EIA regulations, and that all material information in their possession, which may influence a decision by the competent authority and the objectivity of the review, has been disclosed.

Bernard Oberholzer Landscape Architect
Fellow of the Institute for Landscape Architecture in South Africa (ILASA)
Professional Member, South African Council for the Landscape Architects Profession (SACLAP) Reg. no. 87018

Quinton Lawson Architect
Professional member of the SA Council for the Architectural Profession
Member of the Cape Institute for Architects and SA Institute of Architects.
(SACAP), reg. no. 3686.

Expertise:

Bernard Oberholzer has a Bachelor of Architecture (UCT) and Master of Landscape Architecture (U. of Pennsylvania), and has more than 25 years of 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 and Development Planning, Provincial Government of the Western Cape.

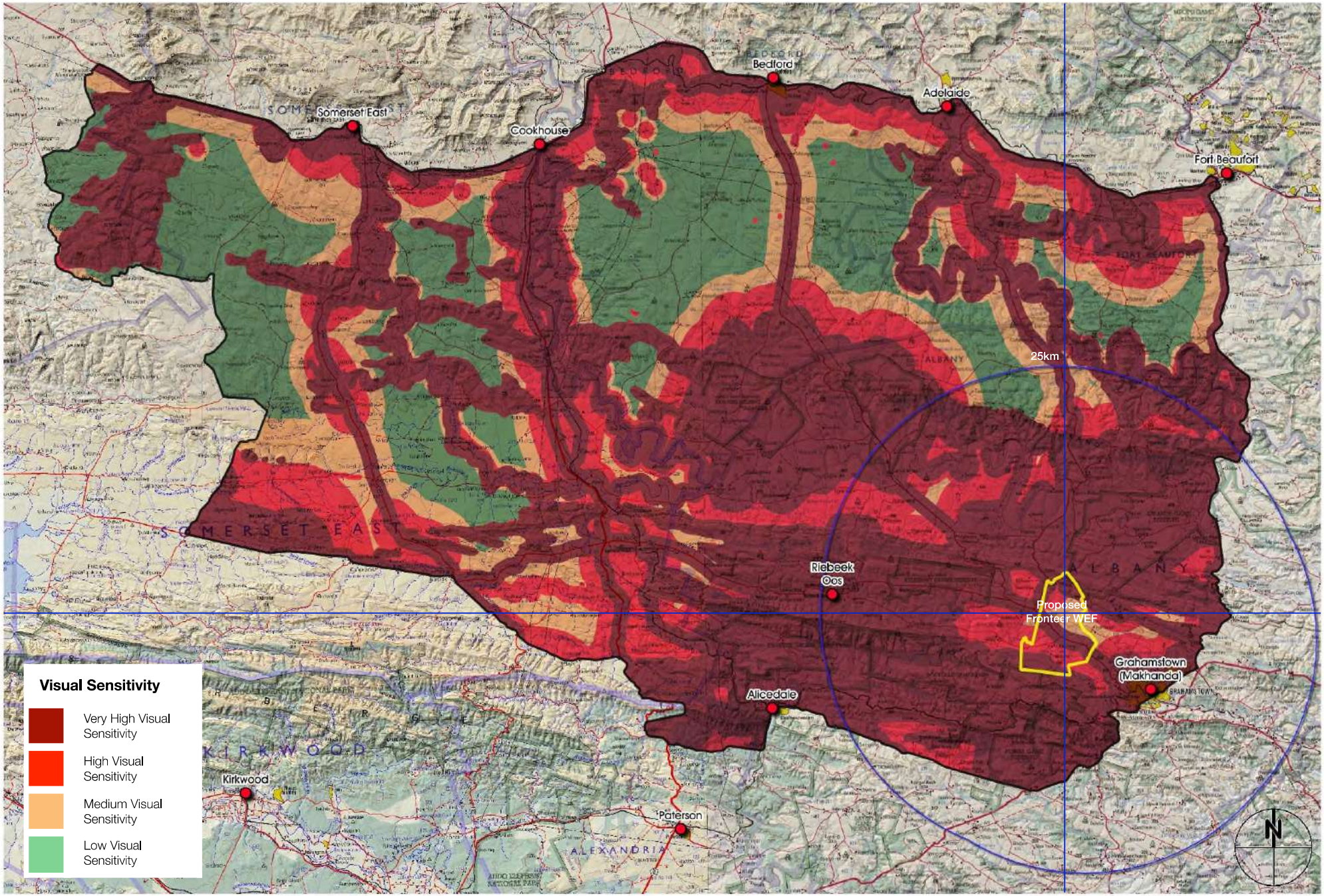
Quinton Lawson has a Bachelor of Architecture (Natal), and has practiced as a professional architect since 1978, specialising in architectural and urban design, environmental design and computer visualisation. He was a senior partner at MLB Architecture and Urban Design, with specialist expertise in visual modelling and design solutions. He was in the past a visiting lecturer at UCT teaching a post-graduate course on Computer Techniques in Landscape Architecture, including visualisation and visual assessment techniques, and has previously served on the Impact Assessment Review Committee of Heritage Western Cape.

Together, they prepared the 'Landscape/Visual Assessment' report for the *National Wind and Solar PV Strategic Environmental Assessment*, for the various REDZs, as well as for the *National Electricity Grid Infrastructure SEA* in association with the CSIR, for the then Department of Environmental Affairs in 2014-2015.

Addendum B

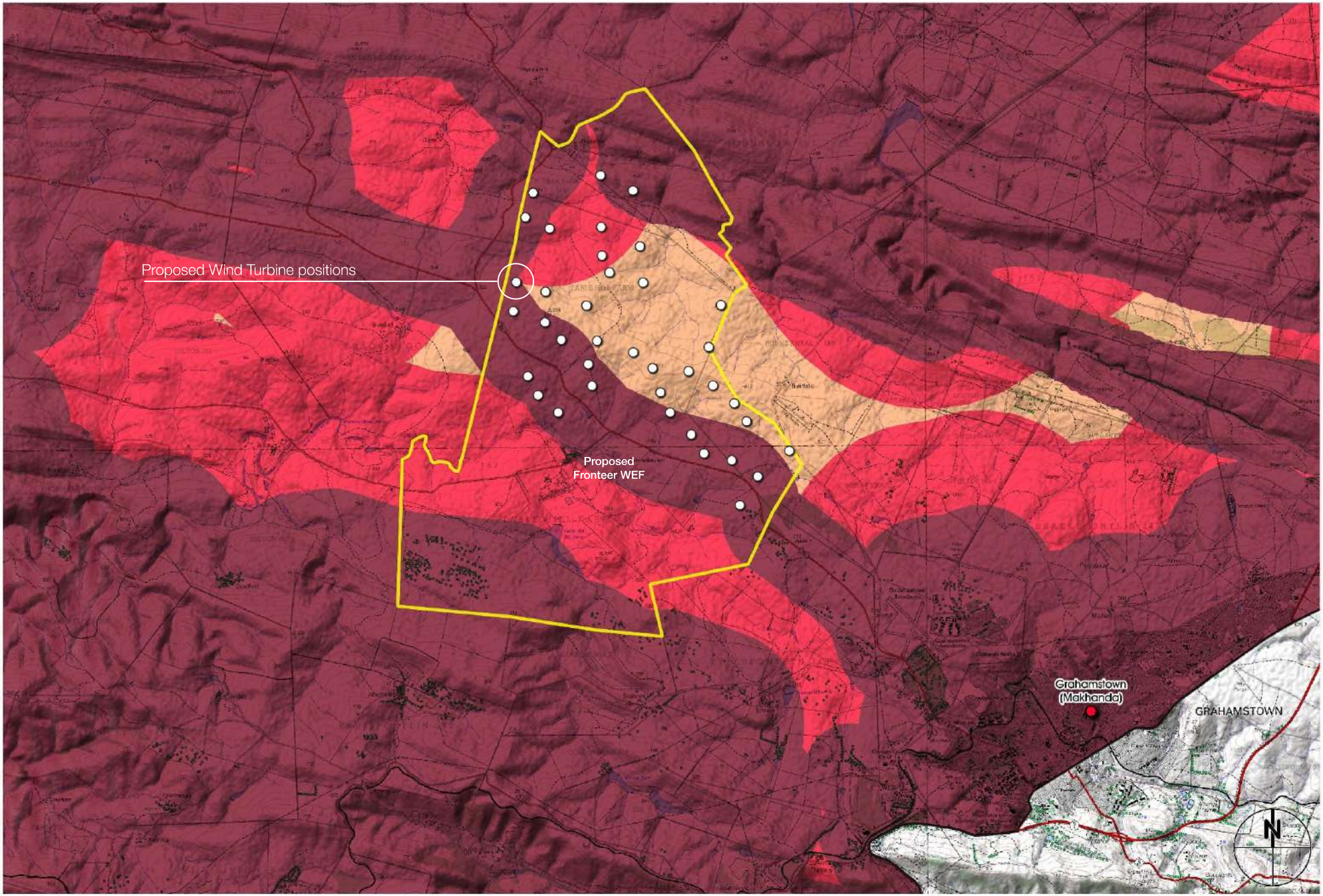
CONTENTS OF THE SPECIALIST REPORT – CHECKLIST

Regulation GNR 326 of 4 December 2014, as amended 7 April 2017, Appendix 6	**Section of Report**
(a) details of the specialist who prepared the report; and the expertise of that specialist to compile a specialist report including a *curriculum vitae*;	
(b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	
(c) an indication of the scope of, and the purpose for which, the report was prepared;	
(cA) an indication of the quality and age of base data used for the specialist report;	
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	
(d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	
(e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	
(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;	
(g) an identification of any areas to be avoided, including buffers;	
(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;	
(i) a description of any assumptions made and any uncertainties or gaps in knowledge;	
(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;	
(k) any mitigation measures for inclusion in the EMPr;	
(l) any conditions for inclusion in the environmental authorisation;	
(m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	
(n) a reasoned opinion— 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 or Environmental Authorization, and where applicable, the closure plan;	
(o) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	
(p) any other information requested by the competent authority	
Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	



base map : NGI 1:250 000 Topo-cadastral Series : 3224 Graaf-Reinet, 3324 Port Elizabeth, 3226 King William's Town, 3326 Grahamstown
source : Wind and Solar PV Strategic Environmental Assessment, Cookhouse REDZ 3, CSIR 2015.

map 1 : REDZ 3 · COOKHOUSE : Visual Sensitivity



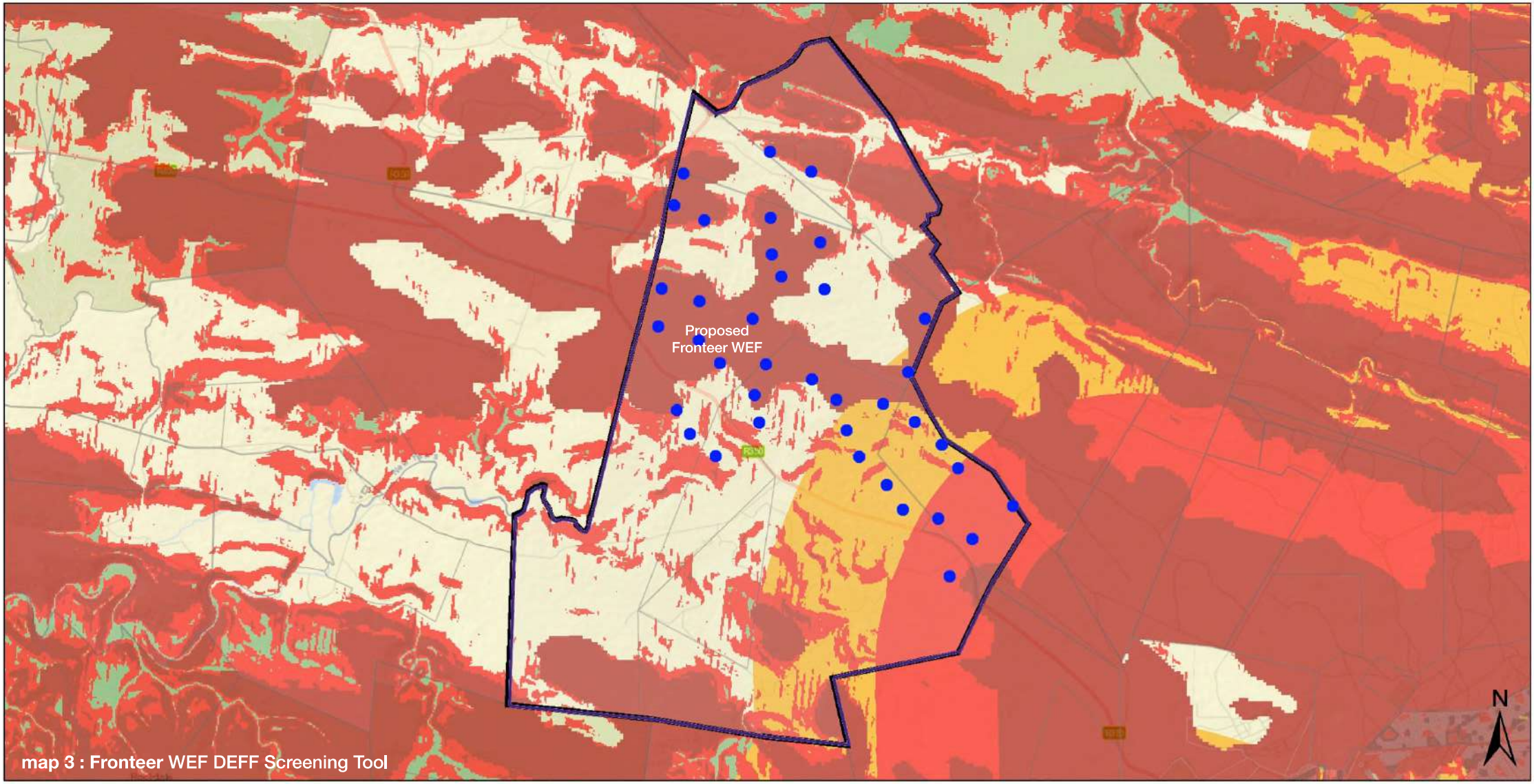
base map : NGI 1:250 000 Topo-cadastral Series : 3224 Graaf-Reinet, 3324 Port Elizabeth, 3226 King William's Town, 3326 Grahamstown
source : Wind and Solar PV Strategic Environmental Assessment, Cookhouse REDZ 3, CSIR 2015.

map 2 : Proposed Fronteer WEF in relation to REDZ 3

environment, forestry & fisheries

Department:
Environment, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

Screening Report Map



map 3 : Fronteer WEF DEFF Screening Tool

9 April 2021

Legend

- Fronteer
- Site Area
- EIA Application Development Footprint
- EIA Application Site
- National Jurisdiction Area

Cadastre

- Erven
- Farm Portion
- Farm
- Agri Holding
- Public Place

Landscape (Wind) Combined Sensitivity

- Very High
- High
- Medium
- Low

0 3.5 7 km

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

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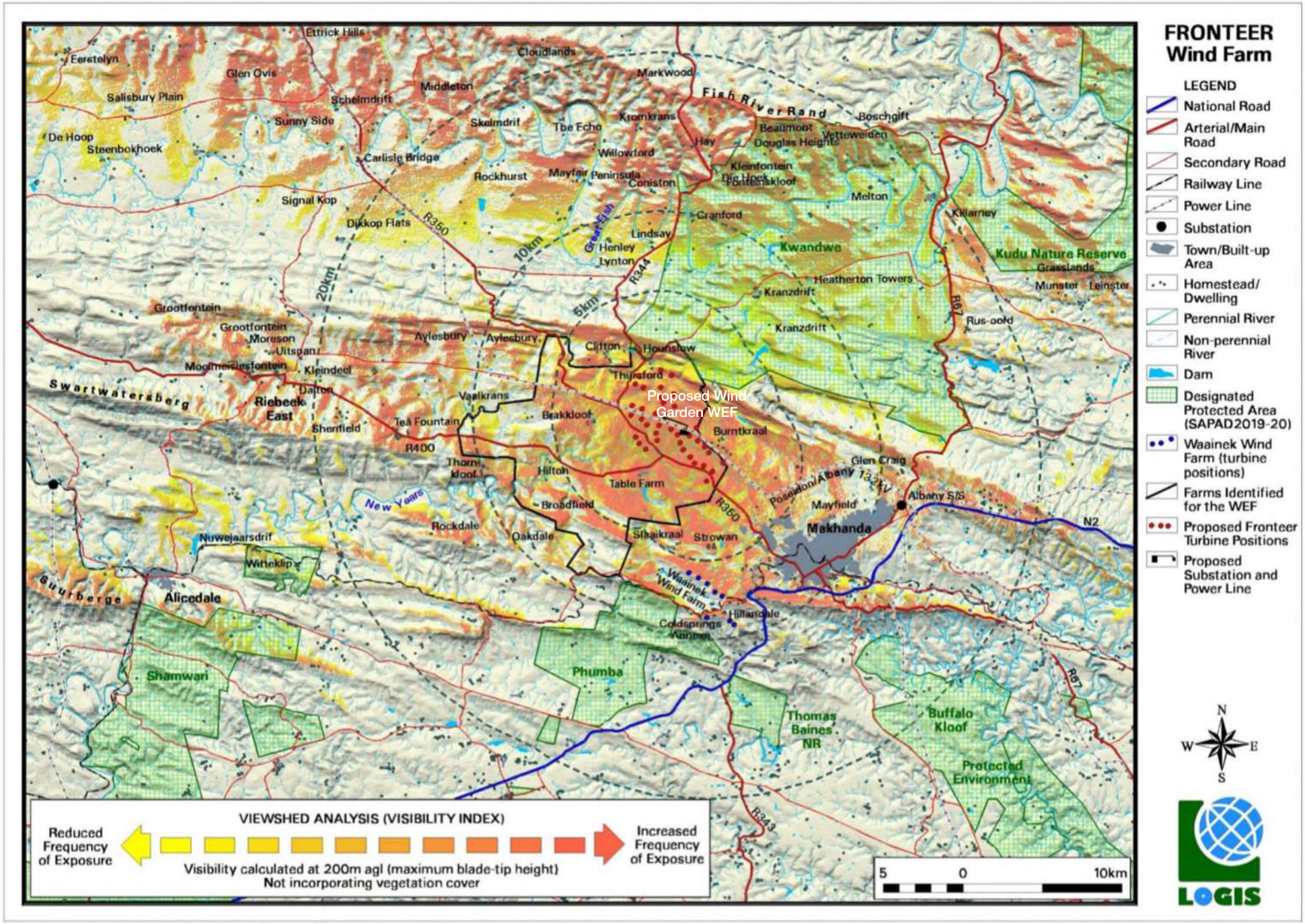
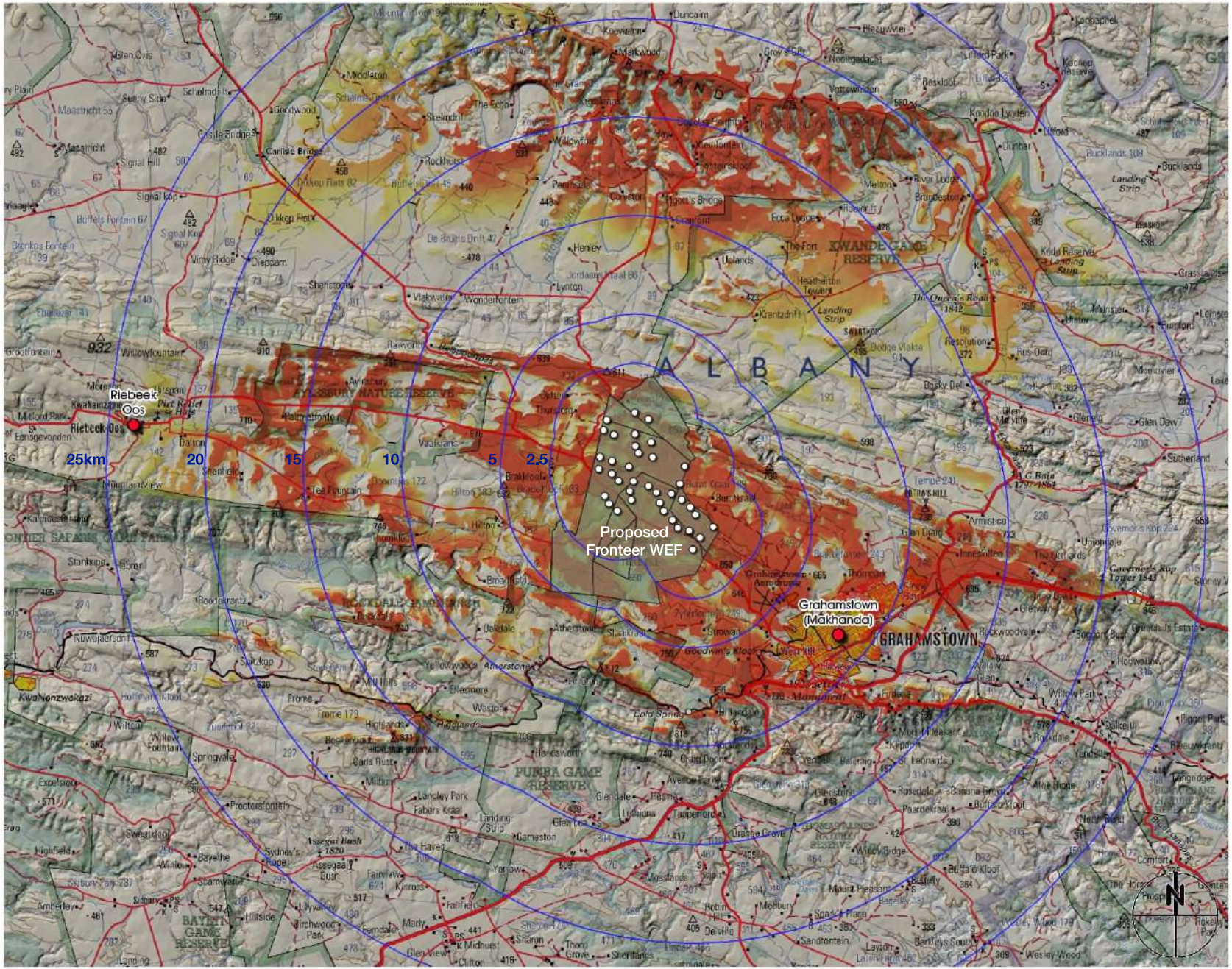
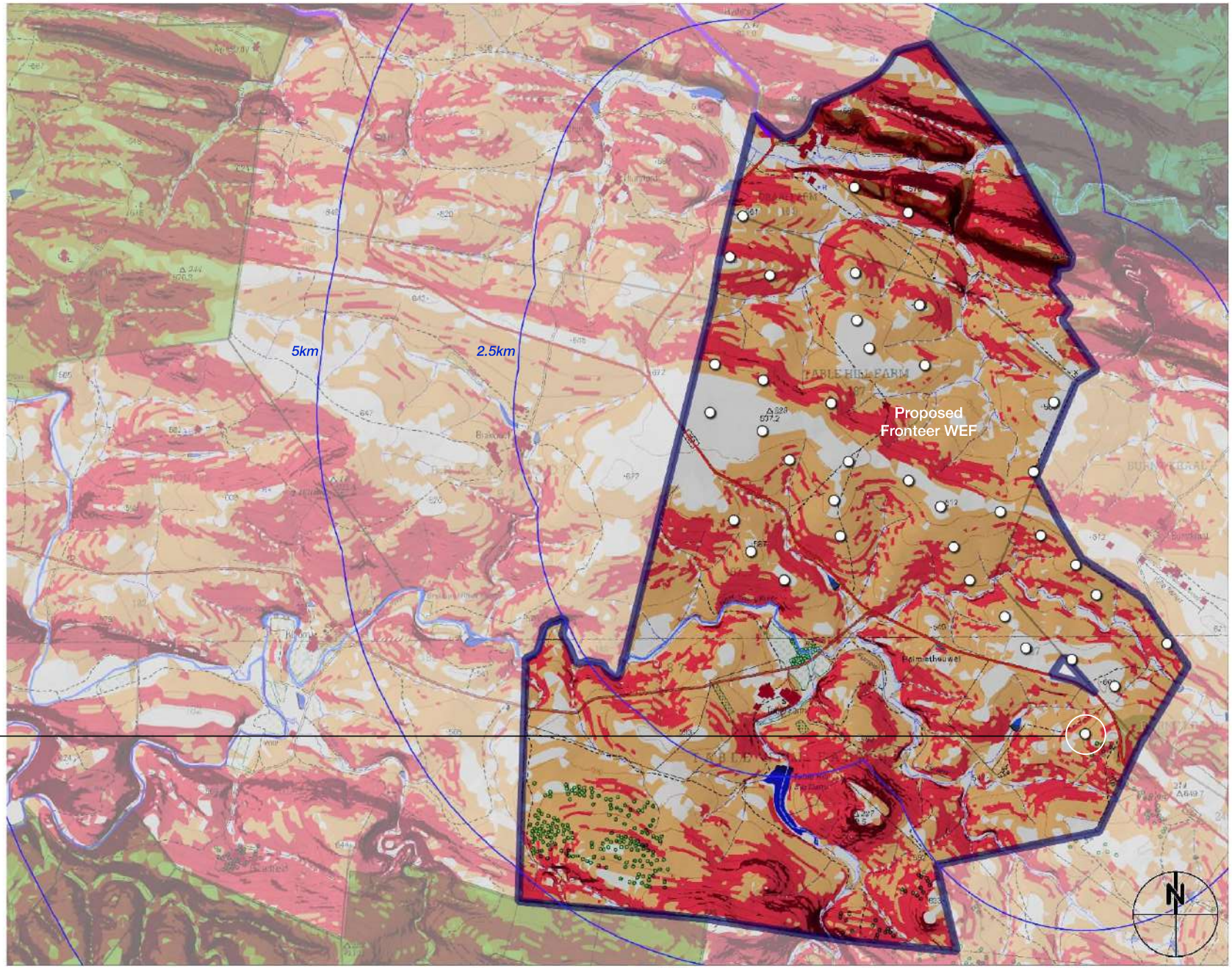


Map 4: Viewshed analysis of the proposed Fronteer WEF.



map 5 : Frontier WEF Viewshed Comparison



base map : NGI 1:50 000 Topographic Series : 3326AB Pigott's Bridge, 3326AD Salem

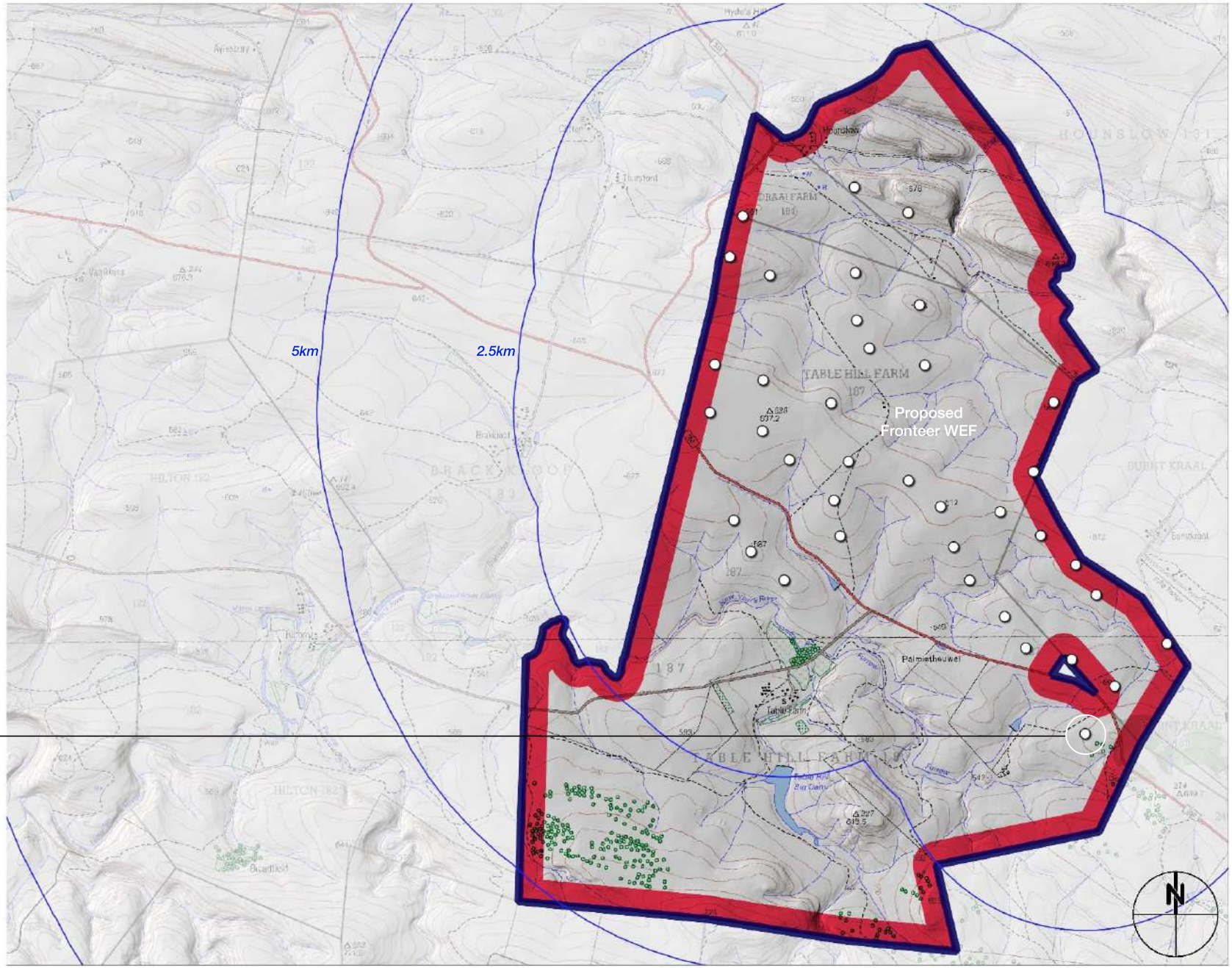
0 2.5 5 7.5 km

1:50 000 @ A3

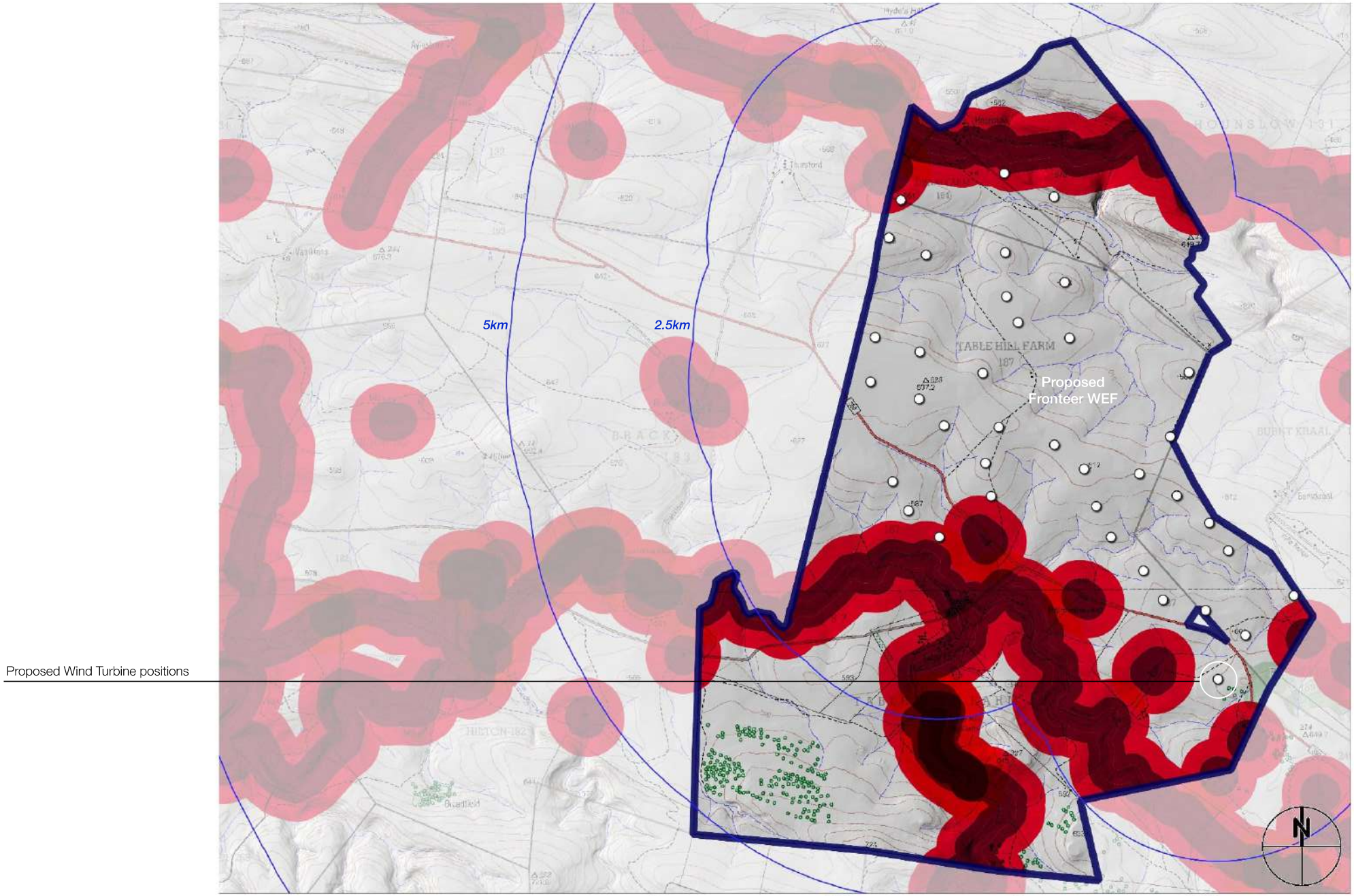
map 6 : Fronteer WEF Visual Features

Visual Features Legend :

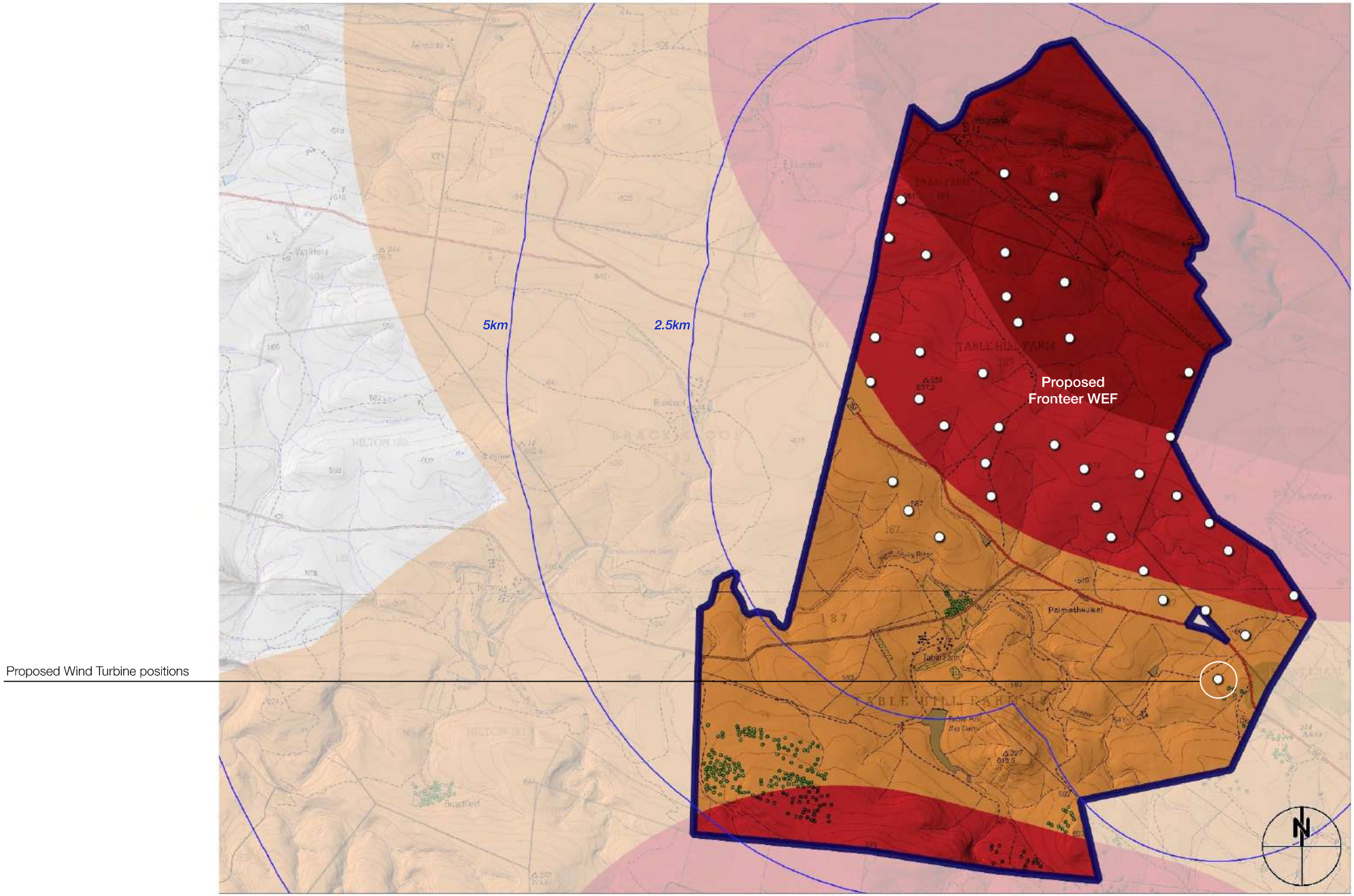
	Source :
 Topographic Features, Ridge-lines	*derived from 1:50 000 NGI Topographic Series*
 1:4+ Slopes (red) 1:10 - 1:4 Slopes (orange)	*derived from NGI 5m contour data*
 Water Features, Farm Dams	*SANBI NFEPA Wetlands data 2017*
 Heritage Sites Grade I, II and III	*SAHRA Heritage Site Inventory Dec 2017* *Phase 1 Archaeological Impact Assessment: Proposed Albany WEF, C. Booth Jan 2020*
 Nature Reserves, Protected Areas	*DEFF SAPAD Database OR Q4 2019*
 Private Reserves, Game Farms	*SANBI Private Reserves, Game Farms, Conservancies 2018*
 Guest Farms, Game Farm Lodges	*derived from Google Earth Aerial imagery Dec 2018, Google Map Data 2020*
 Settlements, Towns	*derived from Google Earth Aerial imagery Dec 2018*
 Farmsteads	*derived from Google Earth Aerial imagery Dec 2018, 1:50 000 NGI Topographic Series*
 Arterial Routes	*Open Street Map Roads Categorised Data 2019*
 Scenic Routes	*interpreted from Open Street Map Roads Data 2019, Google Earth Aerial and Street View Imagery 2014/2018, 1:50 000 NGI Topographic Series*
 National Road	*Open Street Map Roads Categorised Data 2019*
 Small Airfields	*CAA Database 2018, Google Earth Aerial Imagery Dec 2018*



map 8 : Fronteer WEF • Visual Sensitivity : 1.5x WTG Height Setback



map 9 : Fronteer WEF • Visual Sensitivity : Rivers, Wetlands, Dams

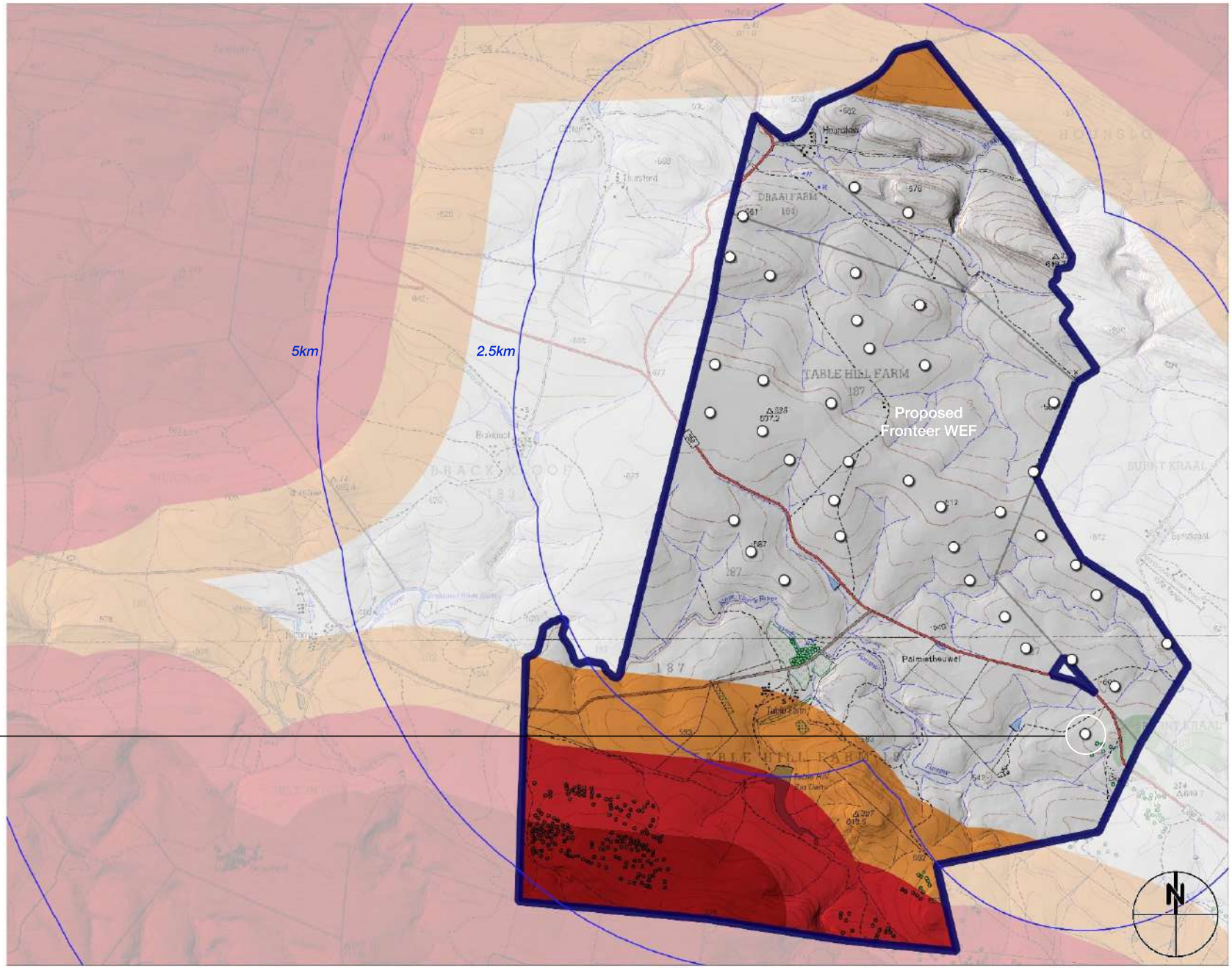


base map : NGI 1:50 000 Topographic Series : 3326AB Pigott's Bridge, 3326AD Salem

0 2.5 5 7.5 km

1:50 000 @ A3

map 10 : Fronteer WEF • Visual Sensitivity : SAPAD Protected Areas Q3 2020

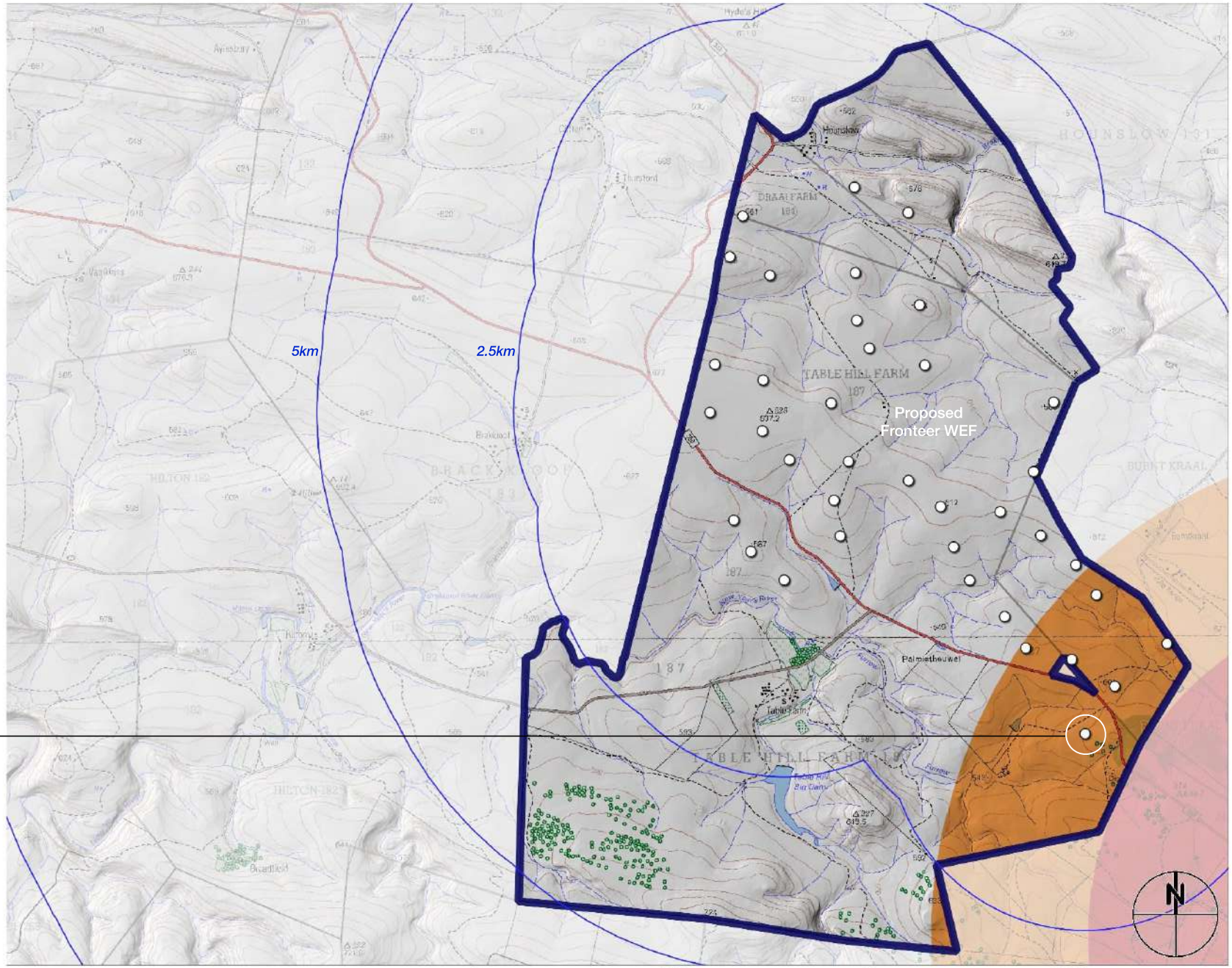


base map : NGI 1:50 000 Topographic Series : 3326AB Pigott's Bridge, 3326AD Salem

0 2.5 5 7.5 km

1:50 000 @ A3

map 11 : Fronteer WEF • Visual Sensitivity : Conservation Areas, Private Nature Reserves

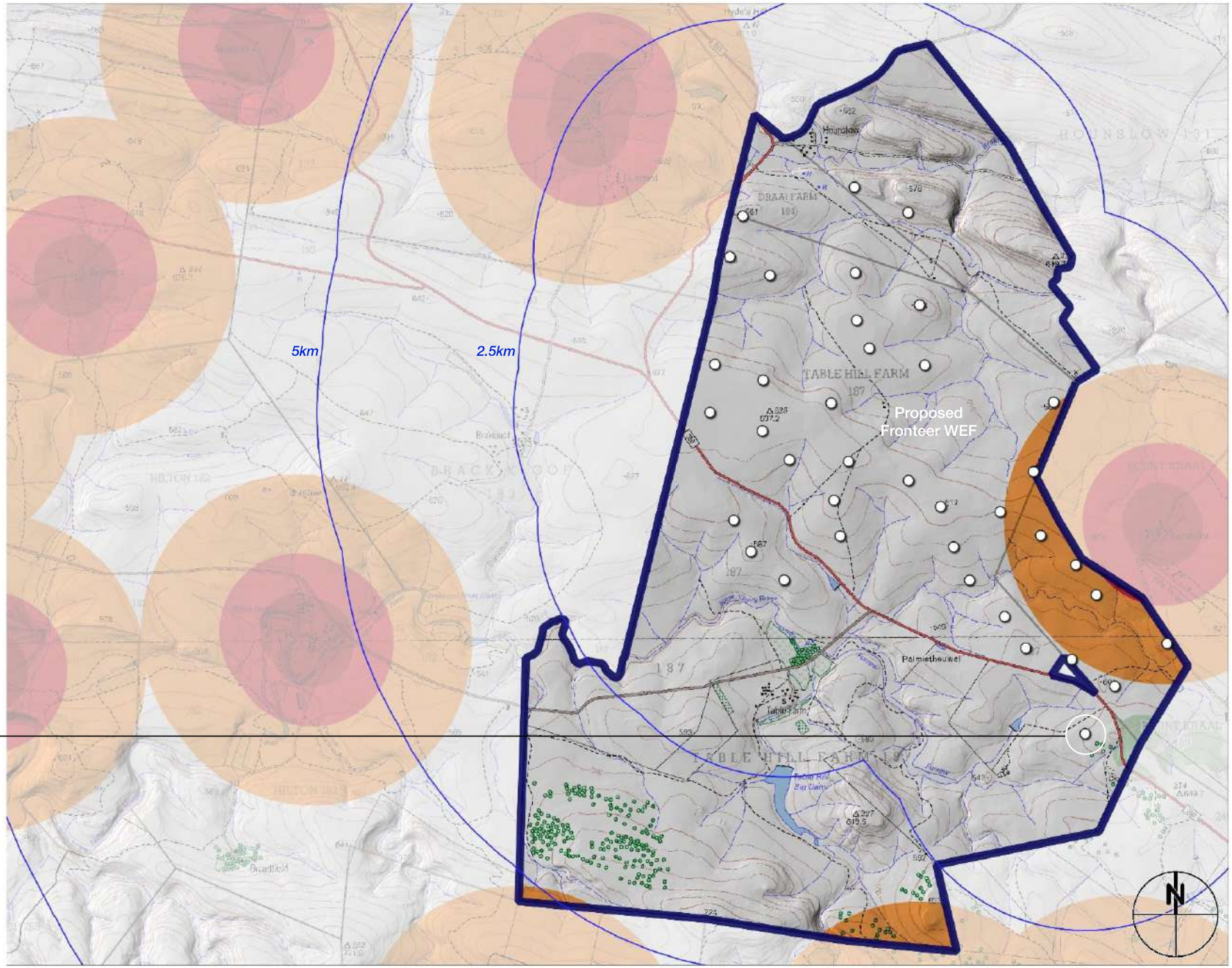


base map : NGI 1:50 000 Topographic Series : 3326AB Pigott's Bridge, 3326AD Salem

0 2.5 5 7.5 km

1:50 000 @ A3

map 12 : Fronteer WEF • Visual Sensitivity : Towns - Grahamstown (Makhanda)

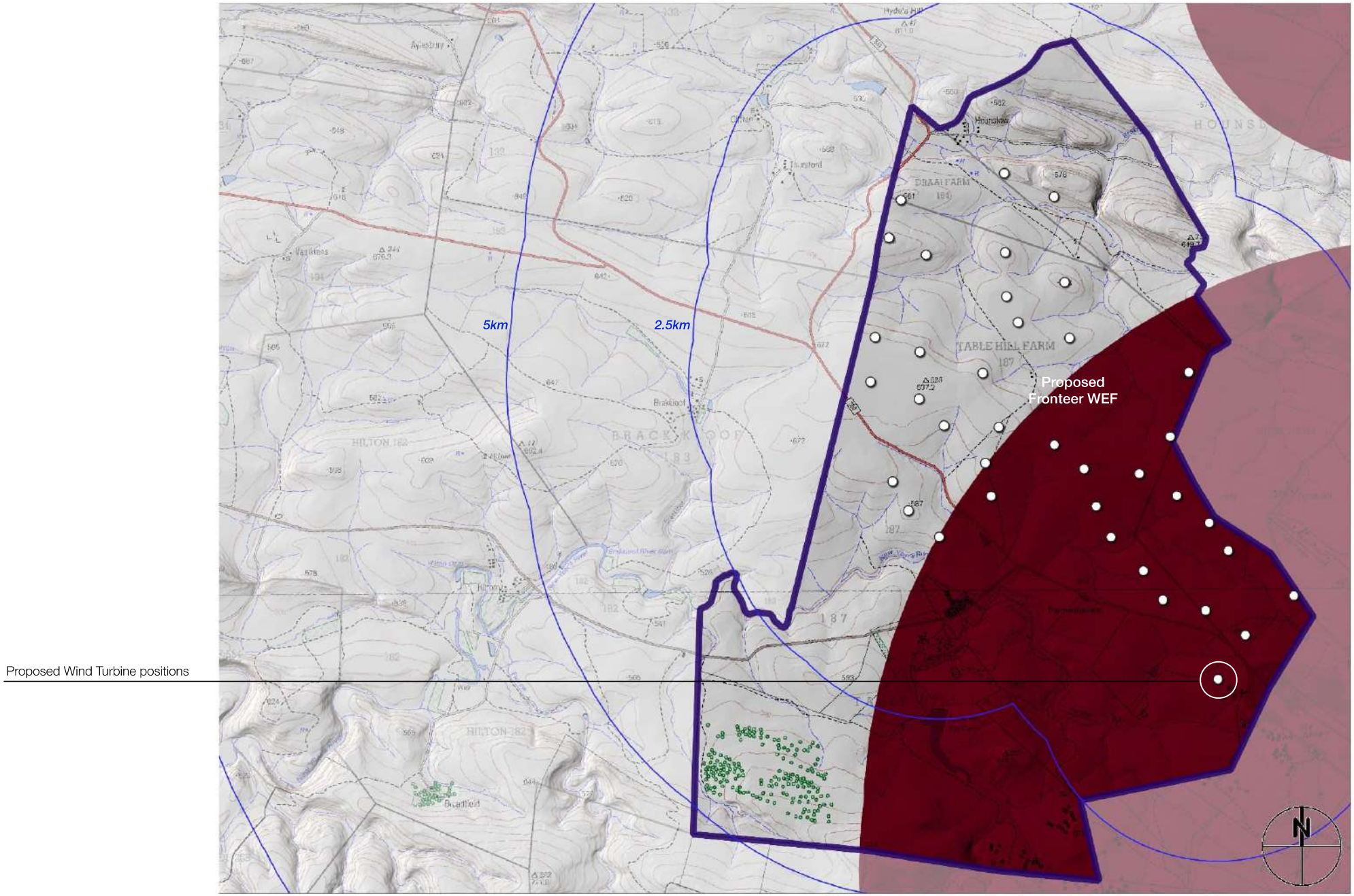


base map : NGI 1:50 000 Topographic Series : 3326AB Pigott's Bridge, 3326AD Salem

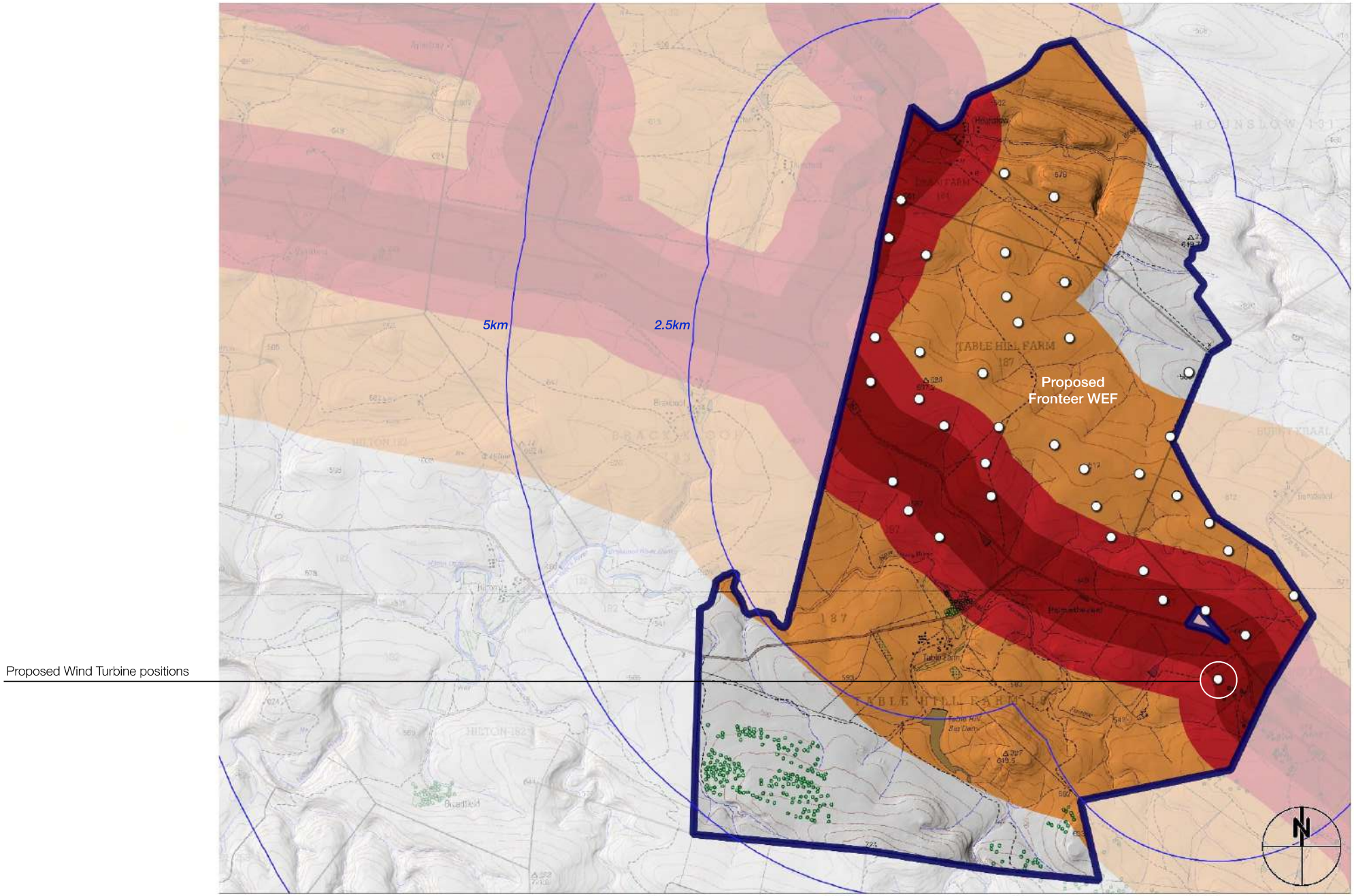
0 2.5 5 7.5 km

1:50 000 @ A3

map 13 : Fronteer WEF • Visual Sensitivity : Farmsteads outside WEF Site



map 14 : Fronteer WEF • Visual Sensitivity : Airfields 3km, Makhanda Airport 8km

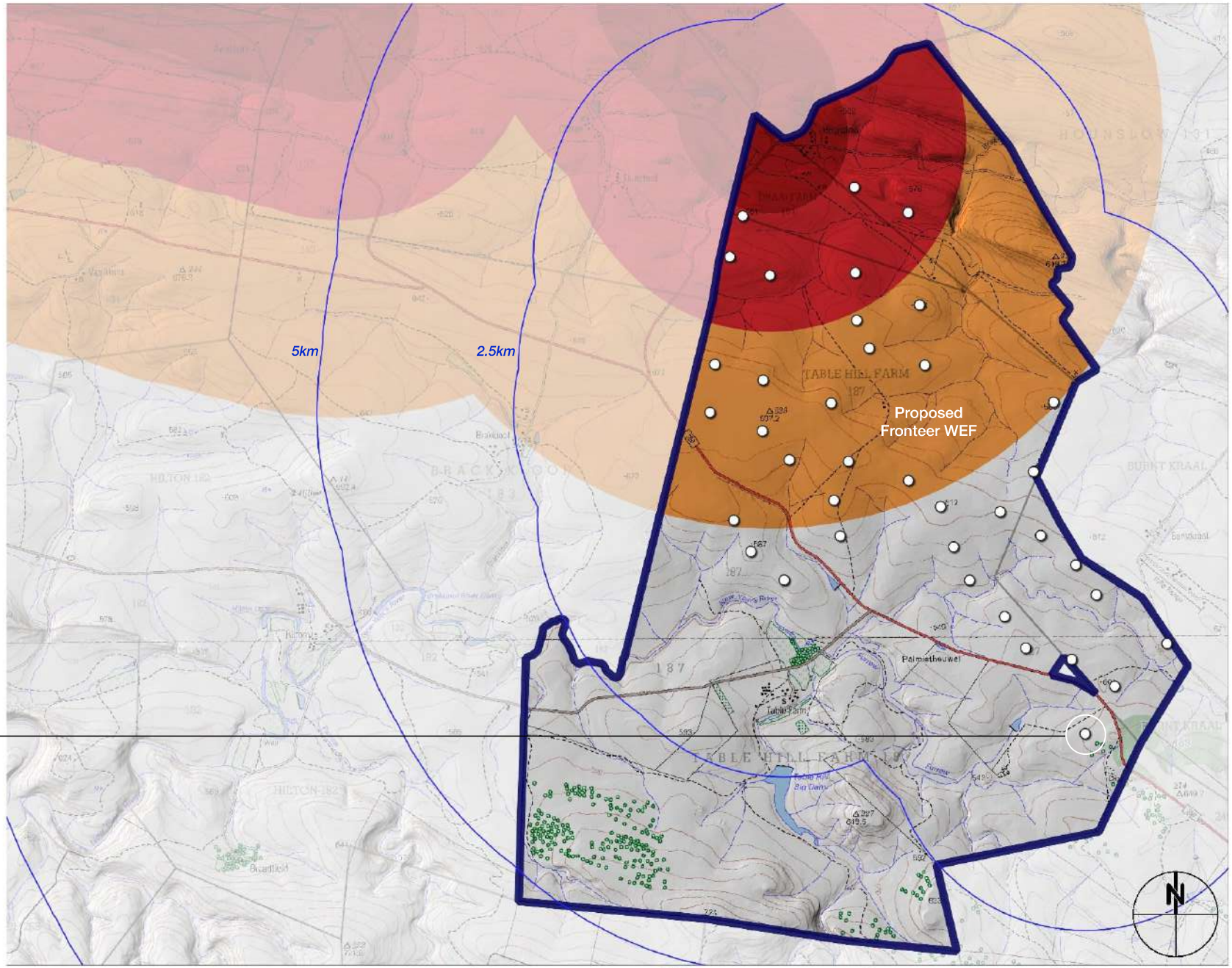


base map : NGI 1:50 000 Topographic Series : 3326AB Pigott's Bridge, 3326AD Salem

0 2.5 5 7.5 km

1:50 000 @ A3

map 15 : Fronteer WEF • Visual Sensitivity : Regional Roads



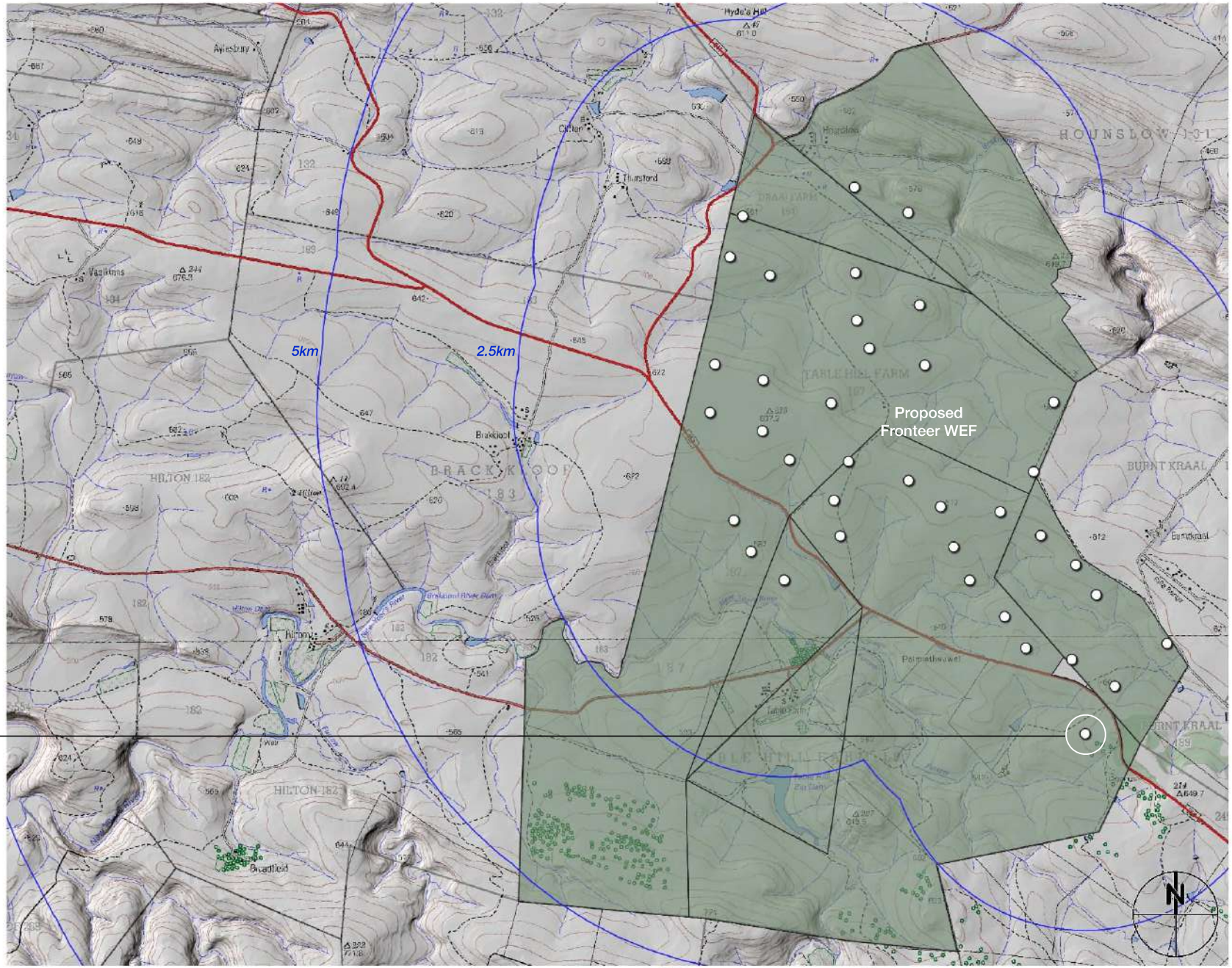
map 16 : Fronteer WEF • Visual Sensitivity : Scenic Routes

base map : NGI 1:50 000 Topographic Series : 3326AB Pigott's Bridge, 3326AD Salem

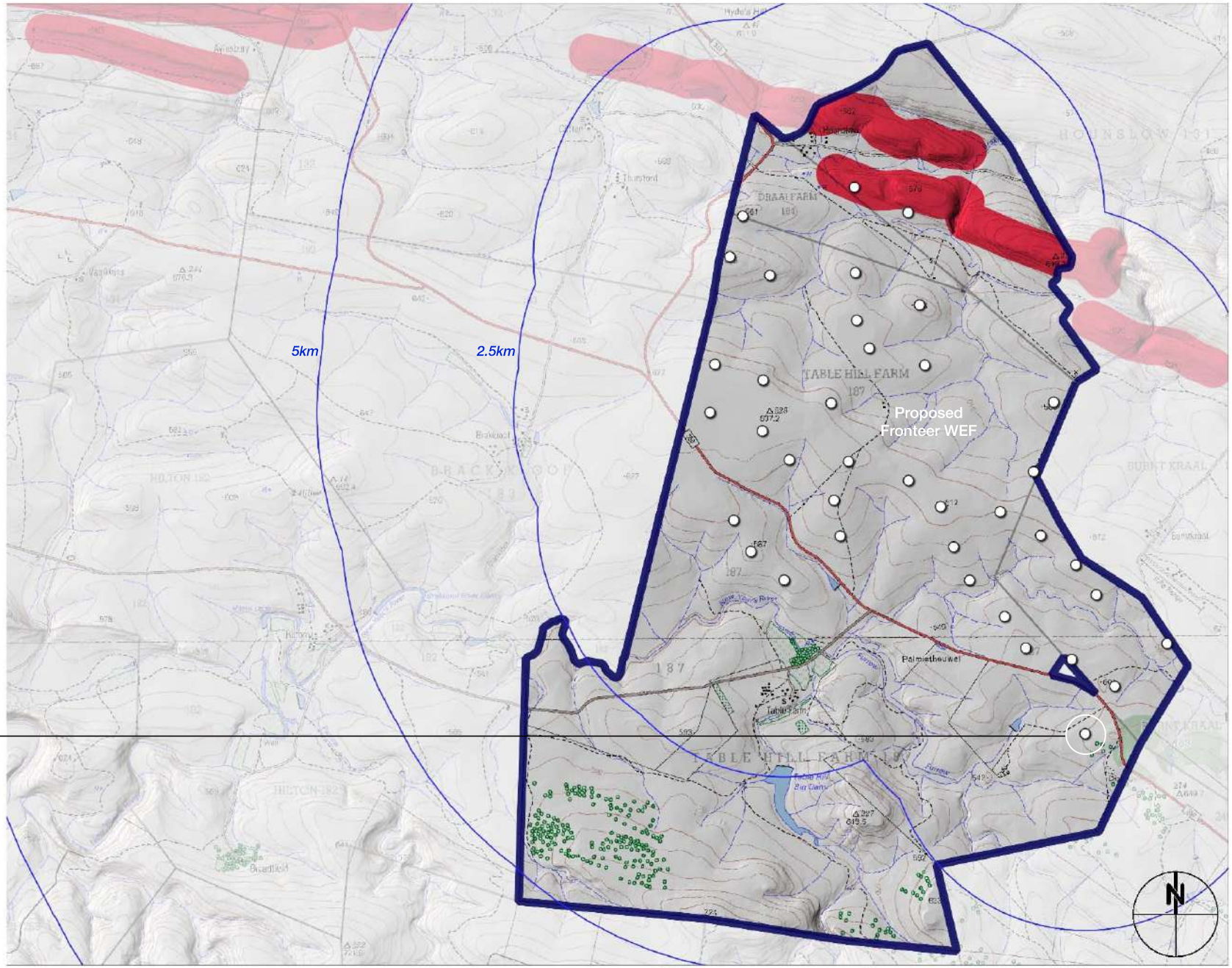
0 2.5 5 7.5 km

1:50 000 @ A3

map 17 : Fronteer WEF • Visual Sensitivity : Composite NoGo Areas



map 18 : Fronteer WEF Proposed Wind Turbine Layout



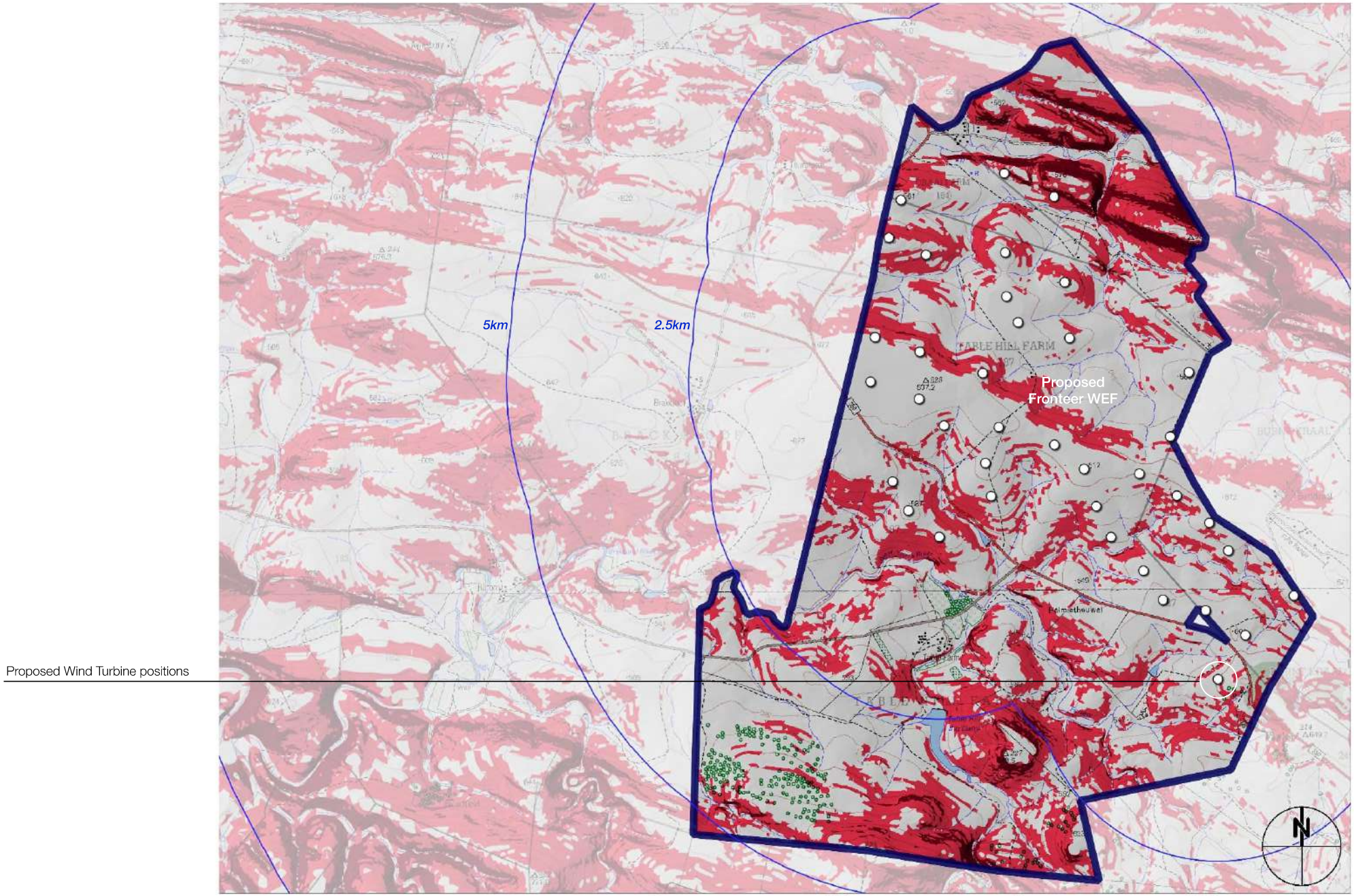
Proposed Wind Turbine positions

base map : NGI 1:50 000 Topographic Series : 3326AB Pigott's Bridge, 3326AD Salem

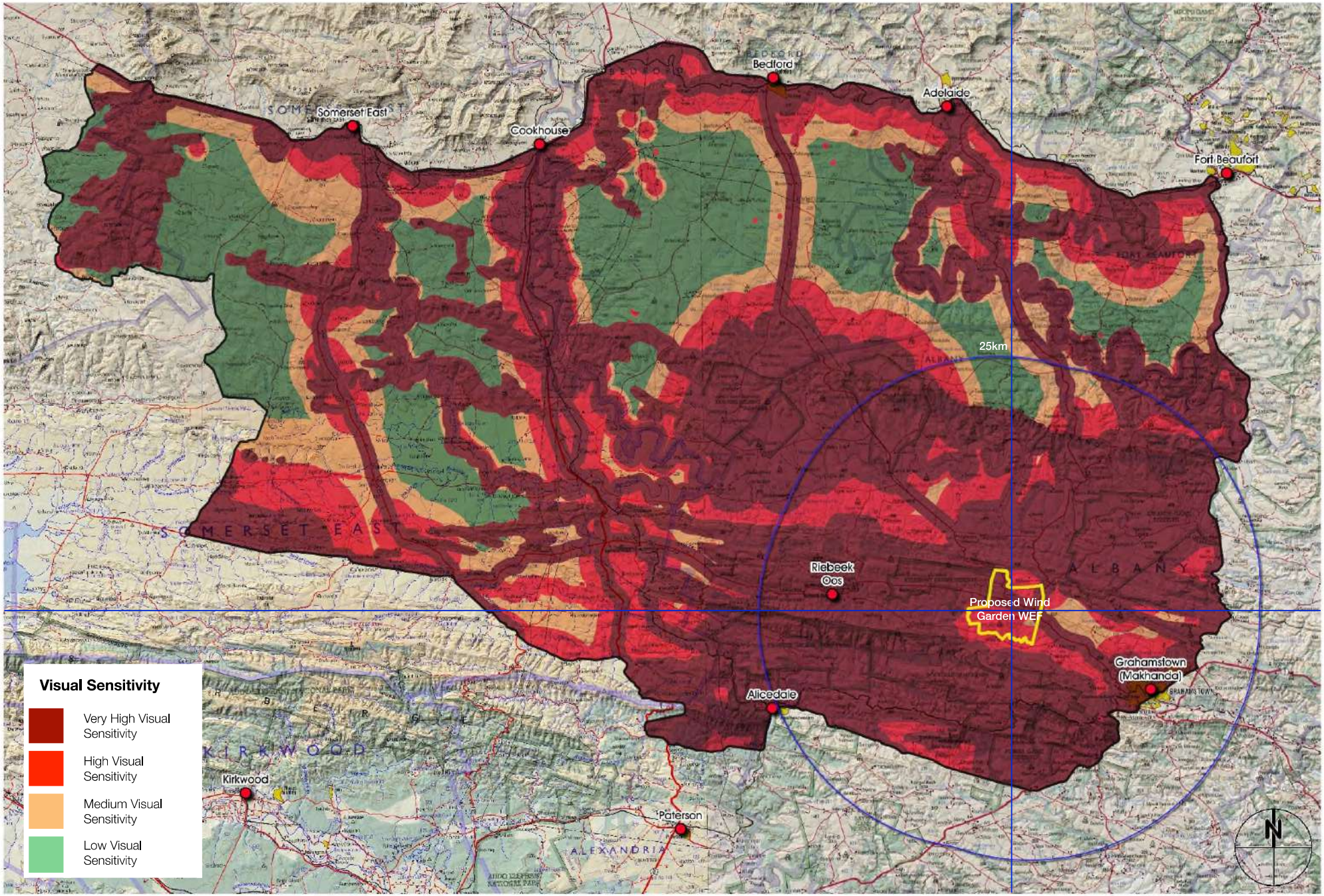
0 2.5 5 7.5 km

1:50 000 @ A3

map 19 : Fronteer WEF • Visual Sensitivity : Topographic Features

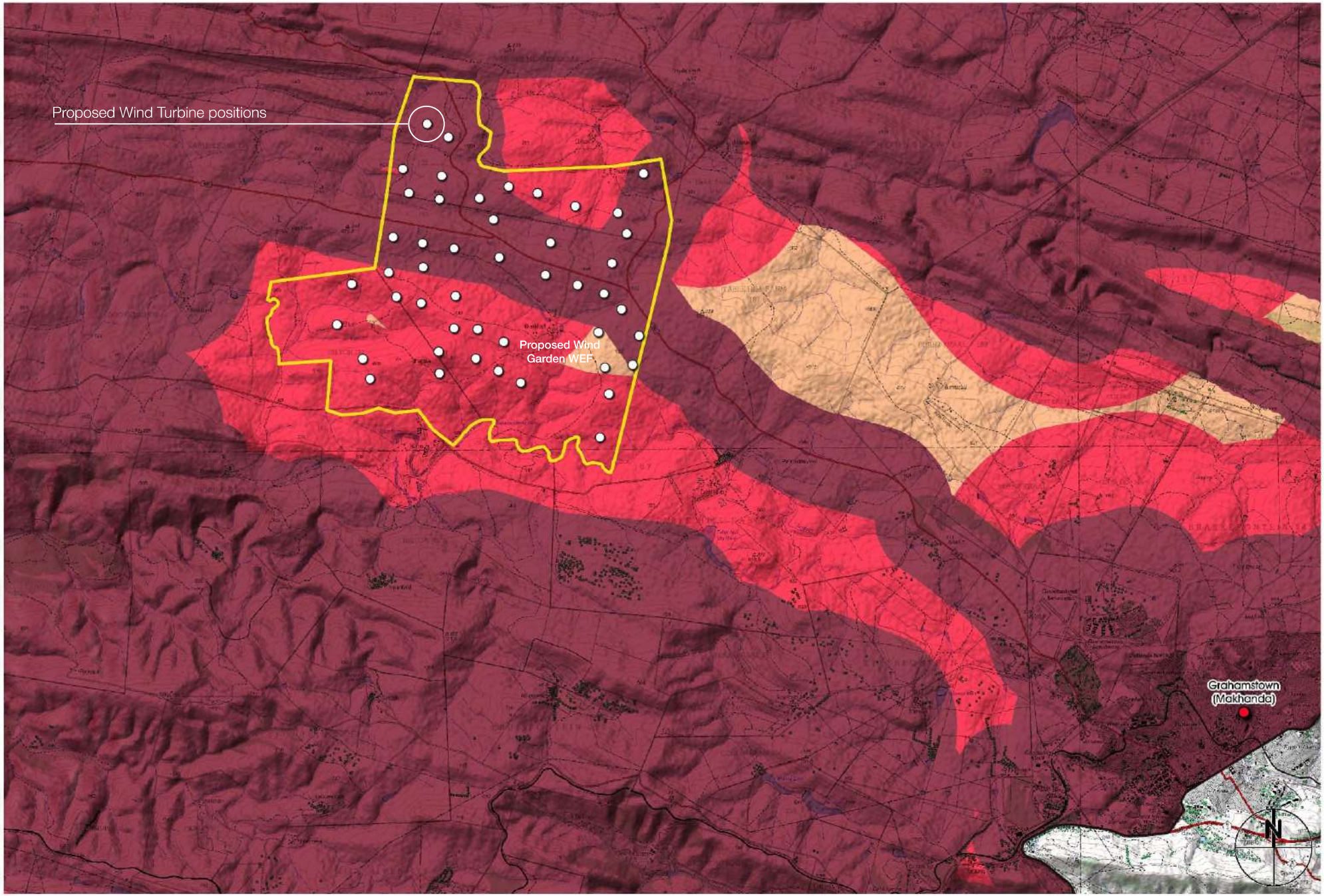


map 20 : Fronteer WEF • Visual Sensitivity : Steep Slopes



base map : NGI 1:250 000 Topo-cadastral Series : 3224 Graaf-Reinet, 3324 Port Elizabeth, 3226 King William's Town, 3326 Grahamstown
source : Wind and Solar PV Strategic Environmental Assessment, Cookhouse REDZ 3, CSIR 2015.

map 1 : REDZ 3 · COOKHOUSE : Visual Sensitivity



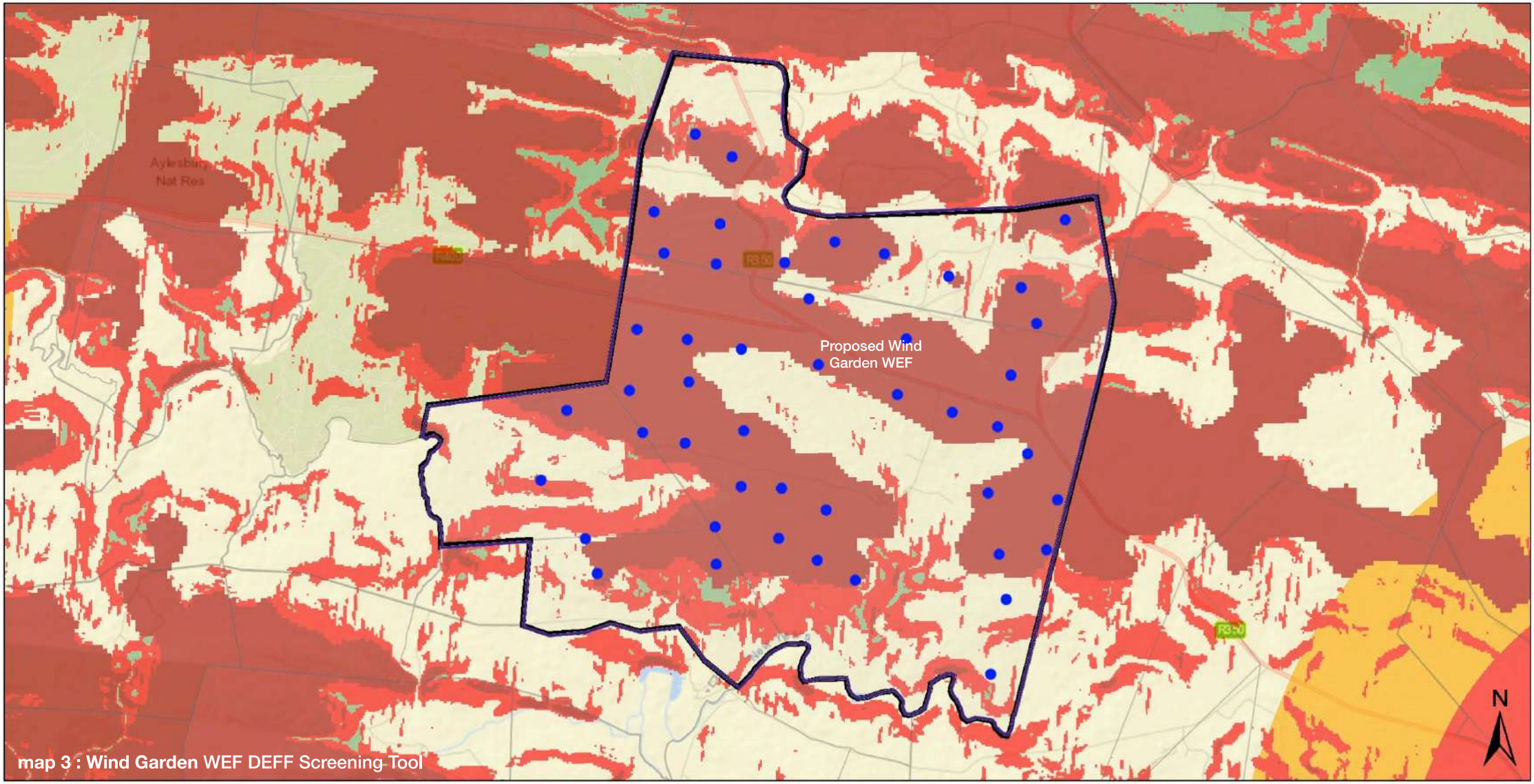
base map : NGI 1:250 000 Topo-cadastral Series : 3224 Graaf-Reinet, 3324 Port Elizabeth, 3226 King William's Town, 3326 Grahamstown
source : Wind and Solar PV Strategic Environmental Assessment, Cookhouse REDZ 3, CSIR 2015.

map 2 : Proposed Wind Garden WEF in relation to REDZ 3

environment, forestry & fisheries

Department:
Environment, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

Screening Report Map



map 3 : Wind Garden WEF DEFF Screening Tool

9 April 2021

Legend

- Wind Garden
- Site Area
- EIA Application Development Footprint
- EIA Application Site
- National Jurisdiction Area

Cadastre

- Erven
- Farm Portion
- Farm
- Agri Holding
- Public Place

Landscape (Wind) Combined Sensitivity

- Very High
- High
- Medium
- Low

0 2.75 5.5 km

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

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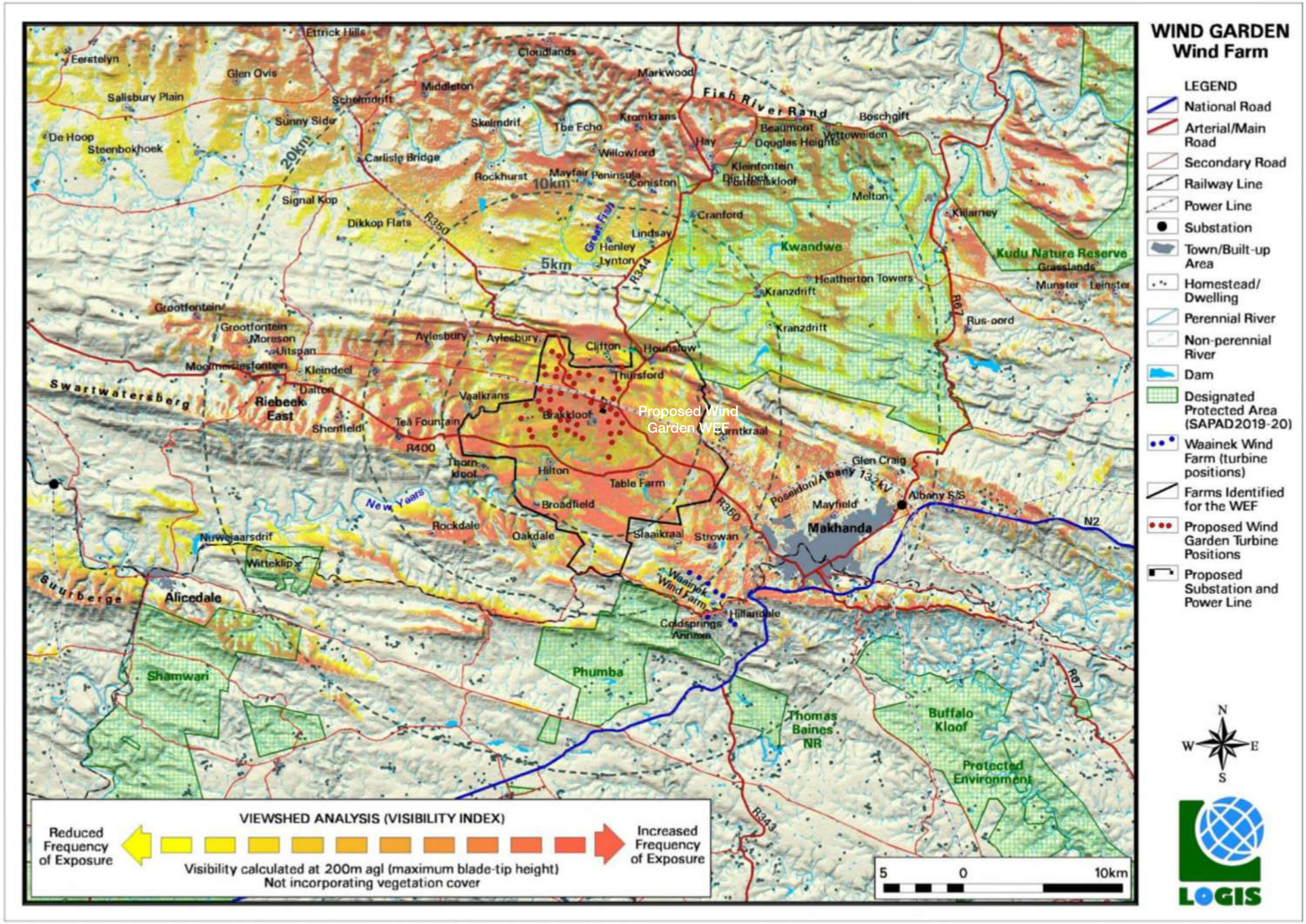
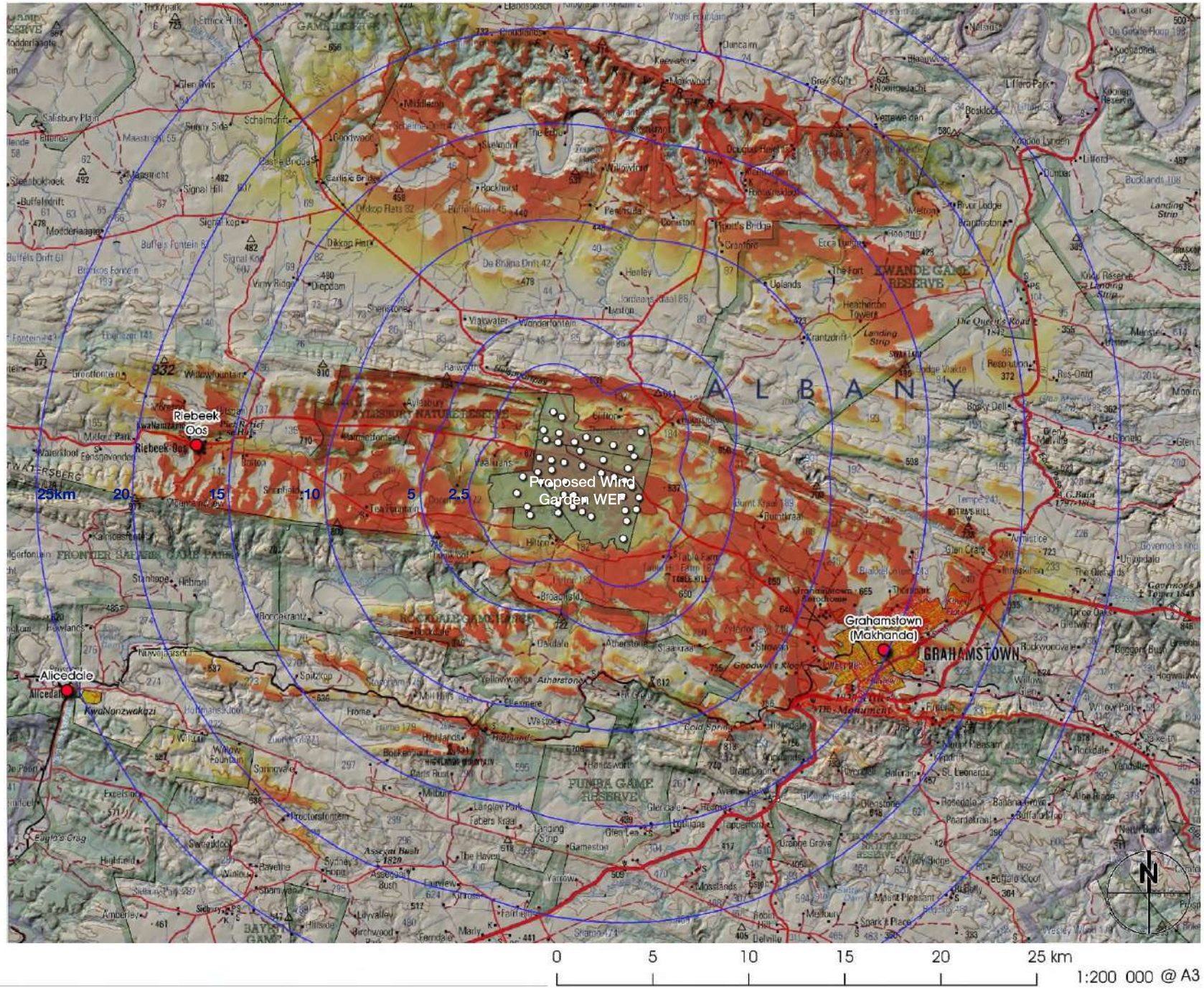
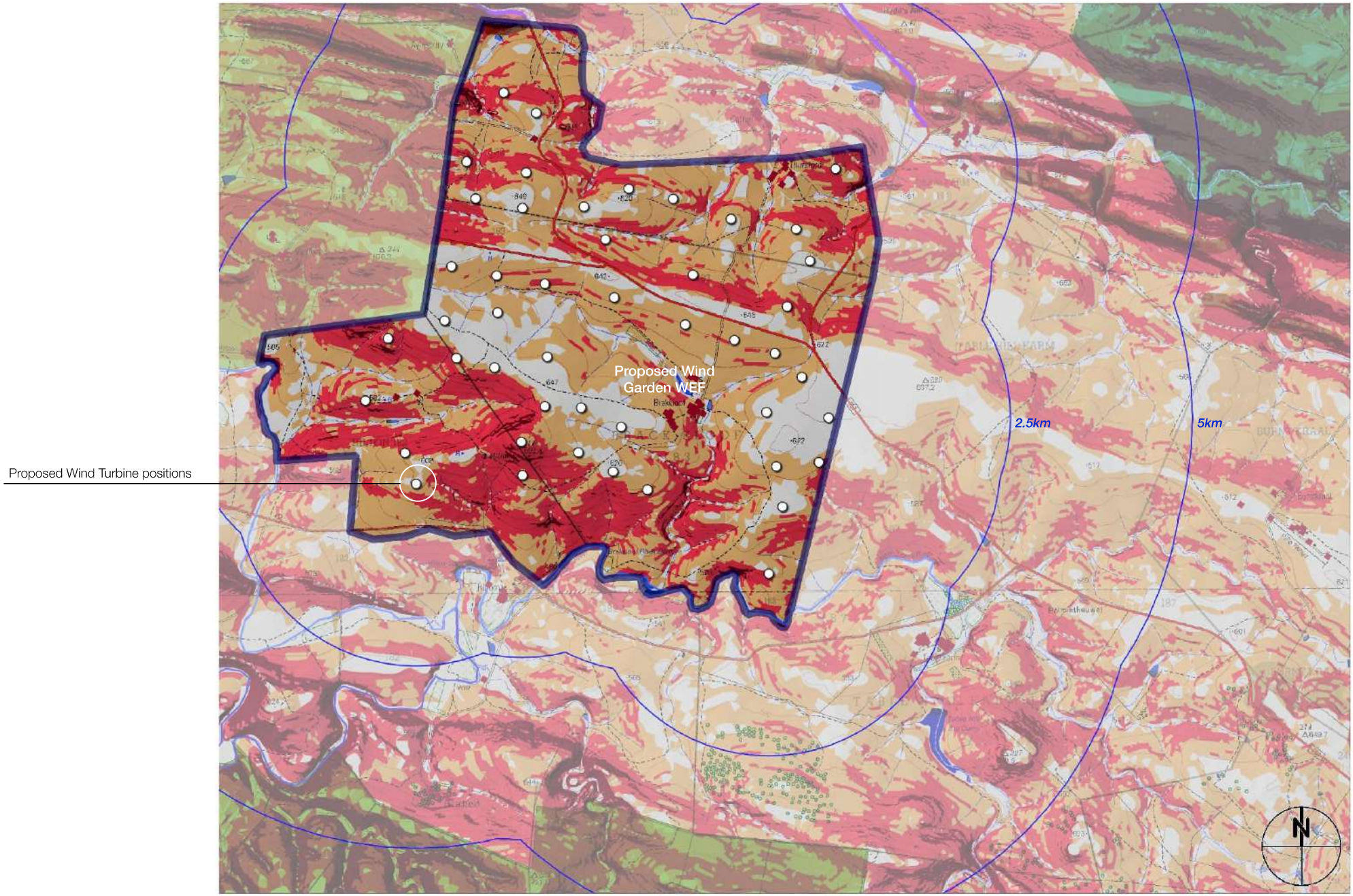
National Department of Environmental Affairs,
Government of South Africa.



Map 4: Viewshed analysis of the proposed Wind Garden WEF.



map 5 : Wind Garden WEF Viewshed Comparison



base map : NGI 1:50 000 Topographic Series : 3326AB Pigott's Bridge, 3326AD Salem

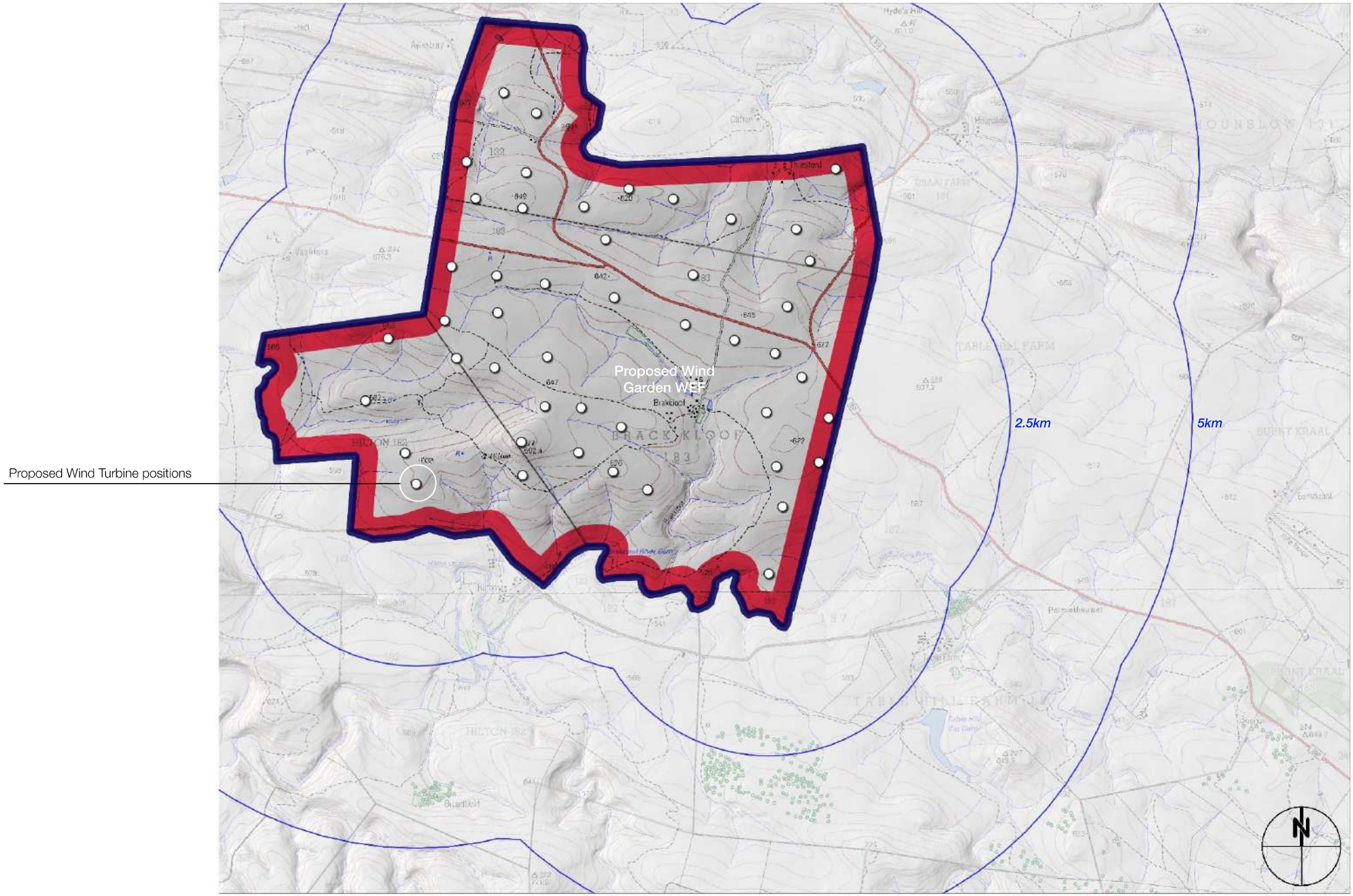
0 2.5 5 7.5 km

1:50 000 @ A3

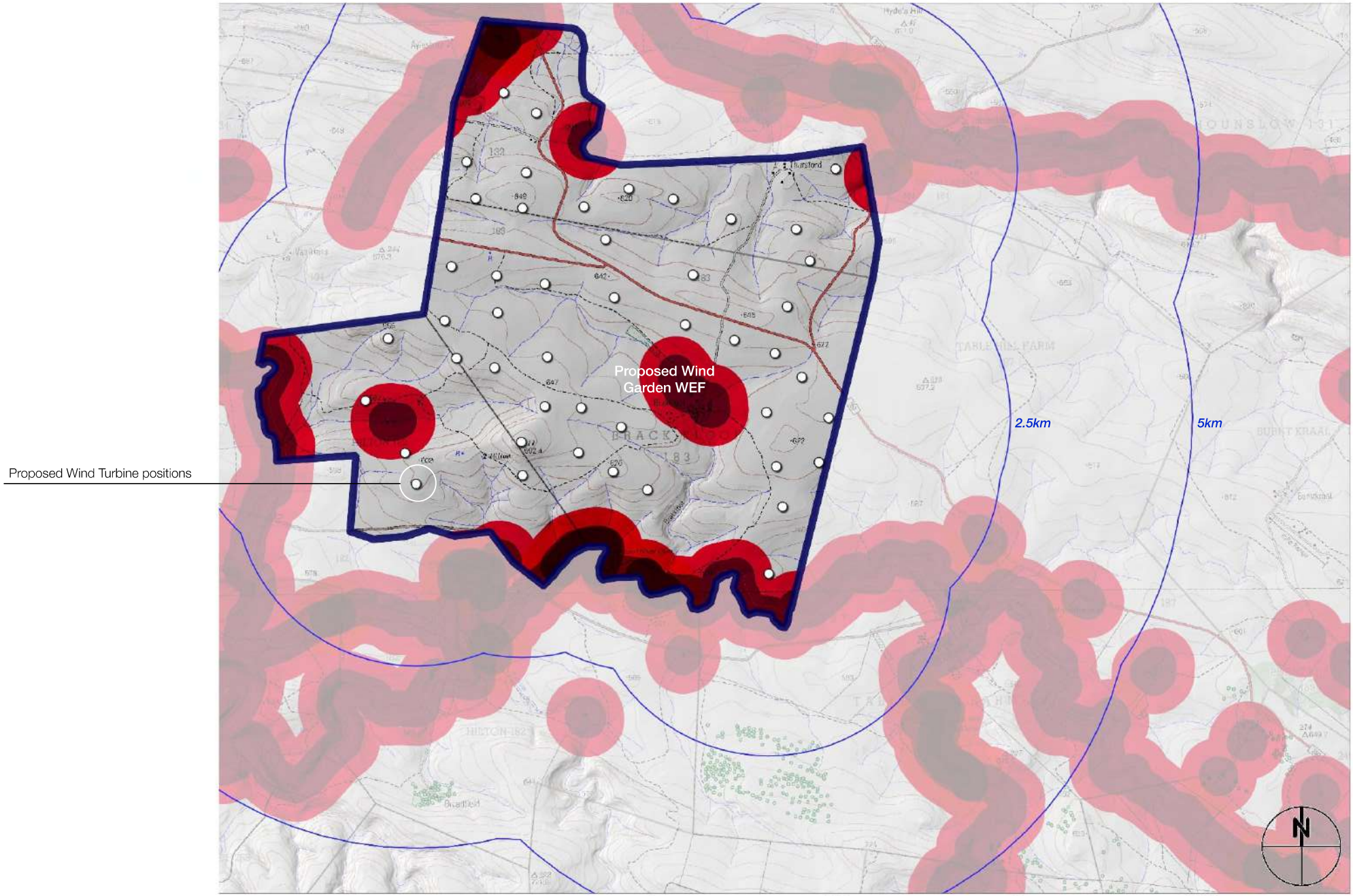
map 6 : Wind Garden WEF Visual Features

Visual Features Legend :

	Source :
 Topographic Features, Ridge-lines	*derived from 1:50 000 NGI Topographic Series*
 1:4+ Slopes (red) 1:10 - 1:4 Slopes (orange)	*derived from NGI 5m contour data*
 Water Features, Farm Dams	*SANBI NFEPA Wetlands data 2017*
 Heritage Sites Grade I, II and III	*SAHRA Heritage Site Inventory Dec 2017* *Phase 1 Archaeological Impact Assessment: Proposed Albany WEF, C. Booth Jan 2020*
 Nature Reserves, Protected Areas	*DEFF SAPAD Database OR Q4 2019*
 Private Reserves, Game Farms	*SANBI Private Reserves, Game Farms, Conservancies 2018*
 Guest Farms, Game Farm Lodges	*derived from Google Earth Aerial imagery Dec 2018, Google Map Data 2020*
 Settlements, Towns	*derived from Google Earth Aerial imagery Dec 2018*
 Farmsteads	*derived from Google Earth Aerial imagery Dec 2018, 1:50 000 NGI Topographic Series*
 Arterial Routes	*Open Street Map Roads Categorised Data 2019*
 Scenic Routes	*interpreted from Open Street Map Roads Data 2019, Google Earth Aerial and Street View Imagery 2014/2018, 1:50 000 NGI Topographic Series*
 National Road	*Open Street Map Roads Categorised Data 2019*
 Small Airfields	*CAA Database 2018, Google Earth Aerial Imagery Dec 2018*



map 8 : Wind Garden WEF • Visual Sensitivity : 1.5x WTG Height Setback



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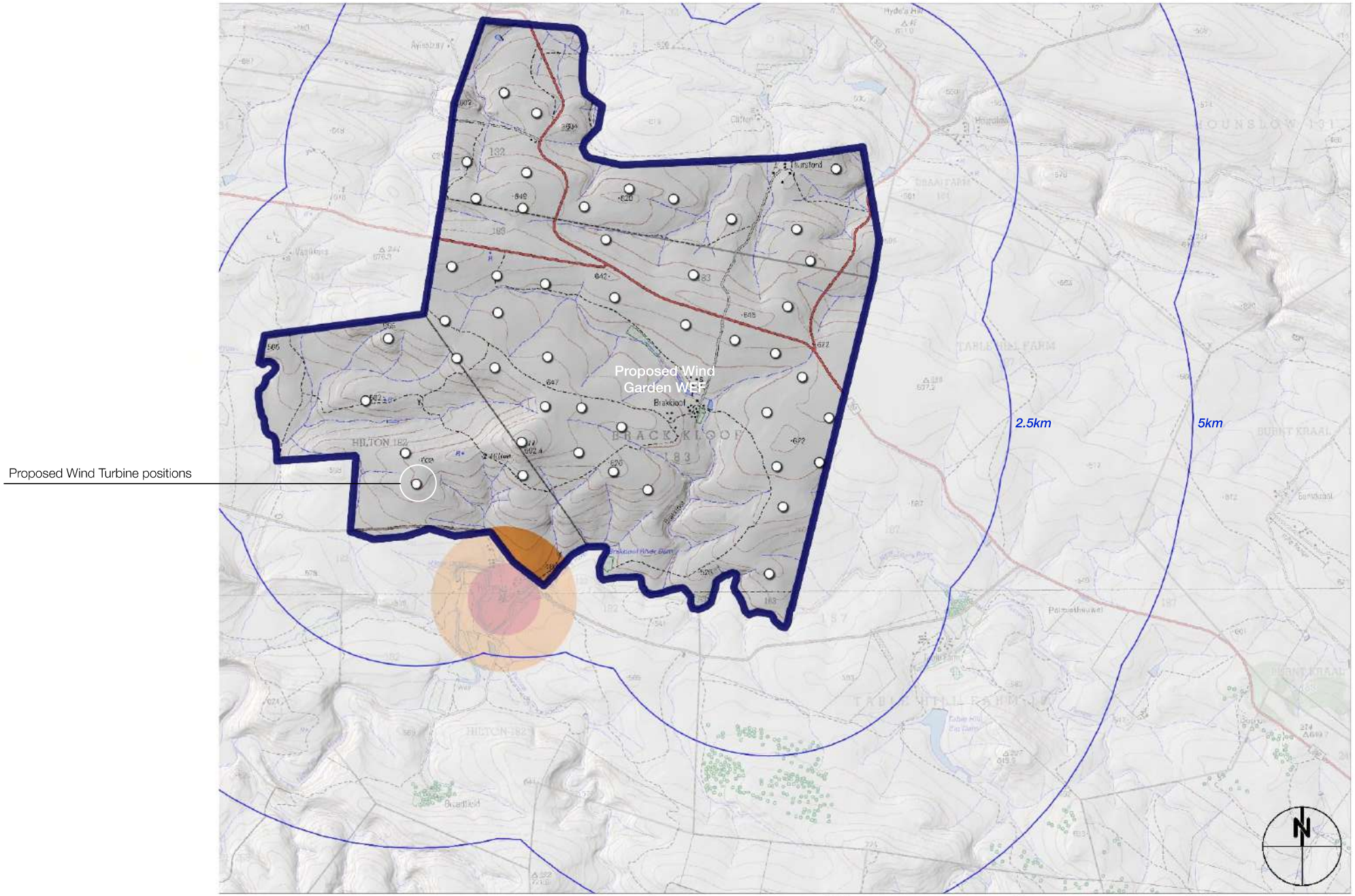
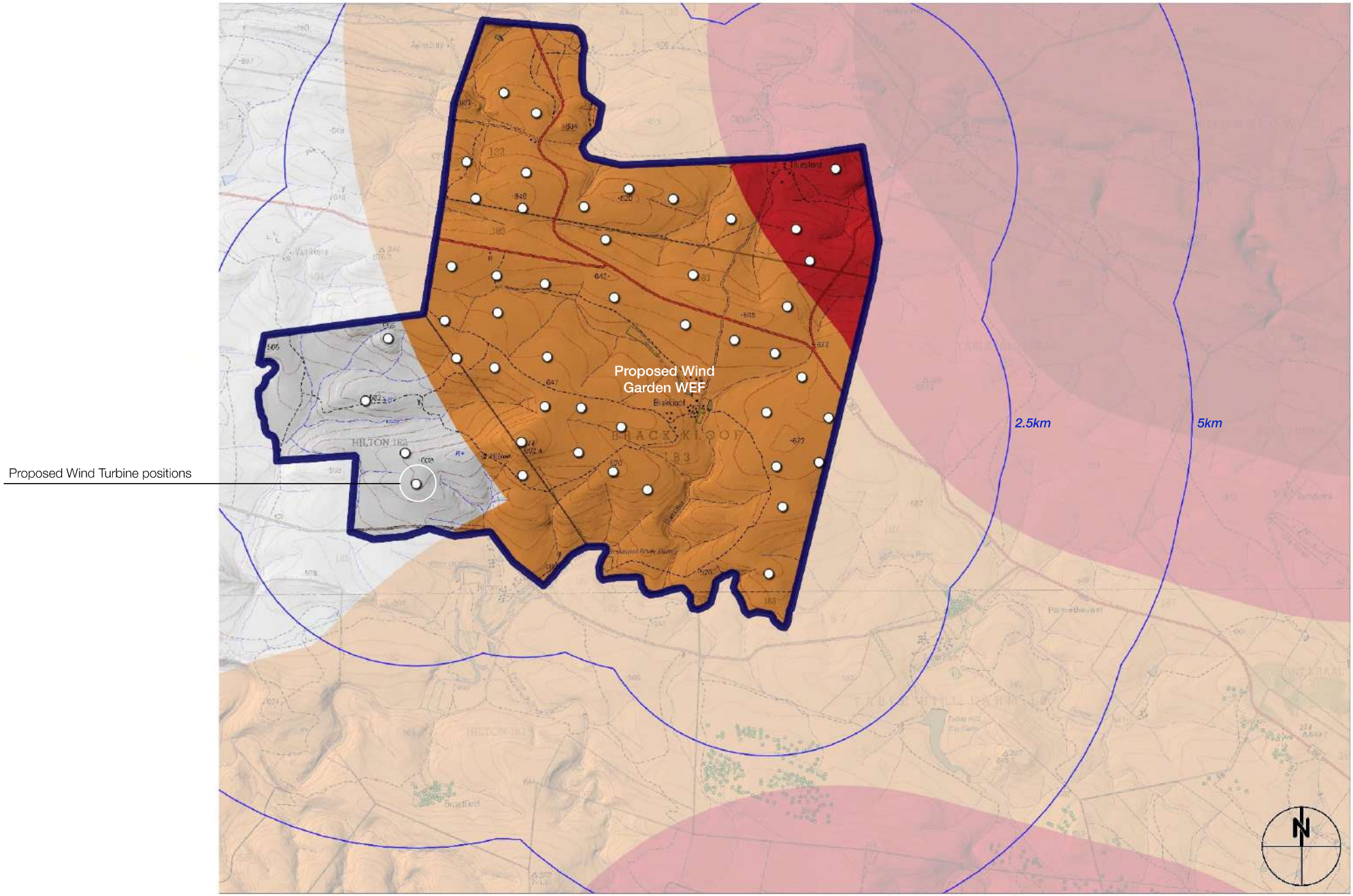
0 2.5 5 7.5 km

1:50 000 @ A3

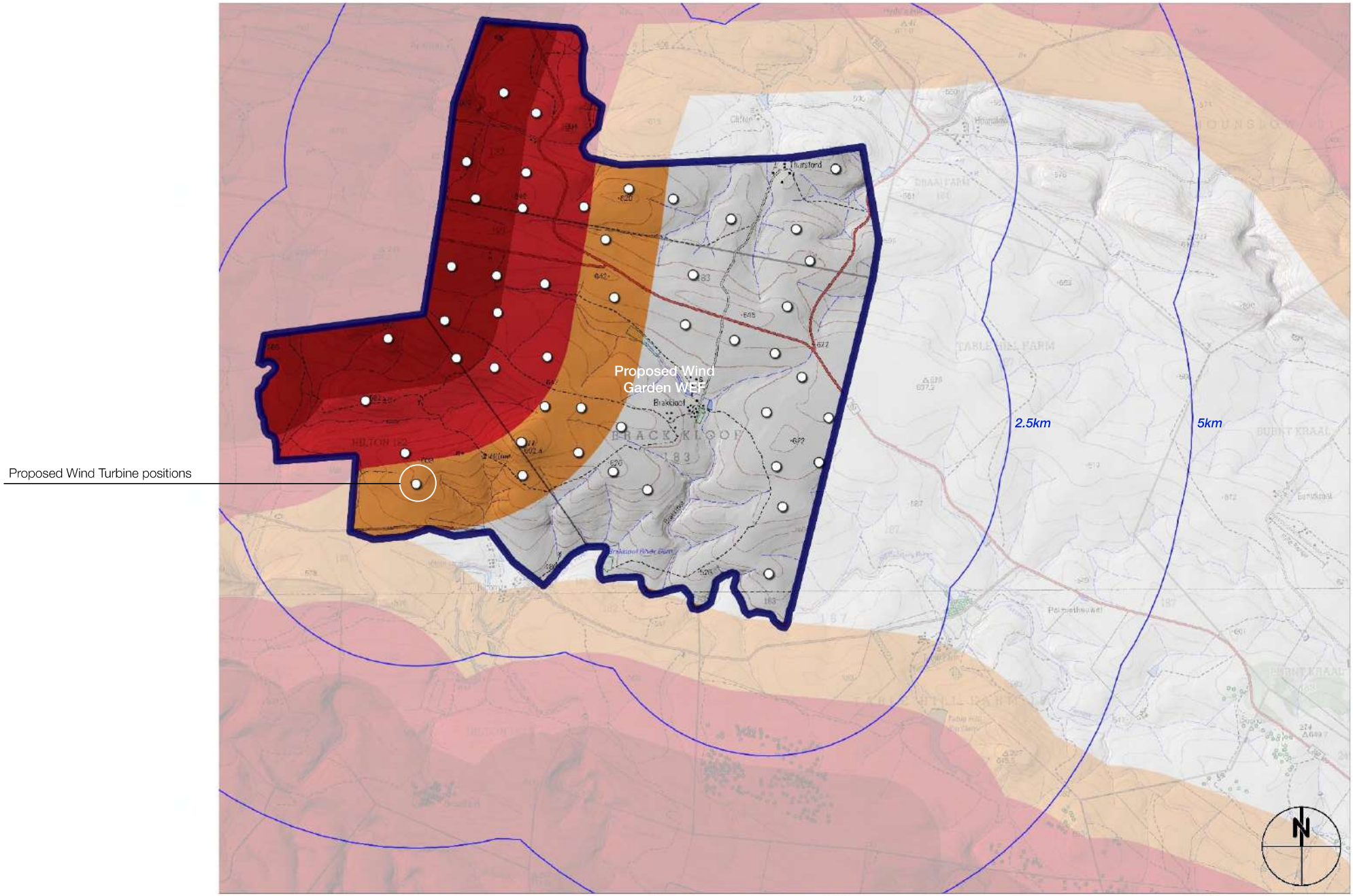
map 9 : Wind Garden WEF • Visual Sensitivity : Rivers, Wetlands, Dams



map 10 : Wind Garden WEF • Visual Sensitivity : Grade I - II Heritage Sites



map 11 : Wind Garden WEF • Visual Sensitivity : SAPAD Protected Areas Q3 2020



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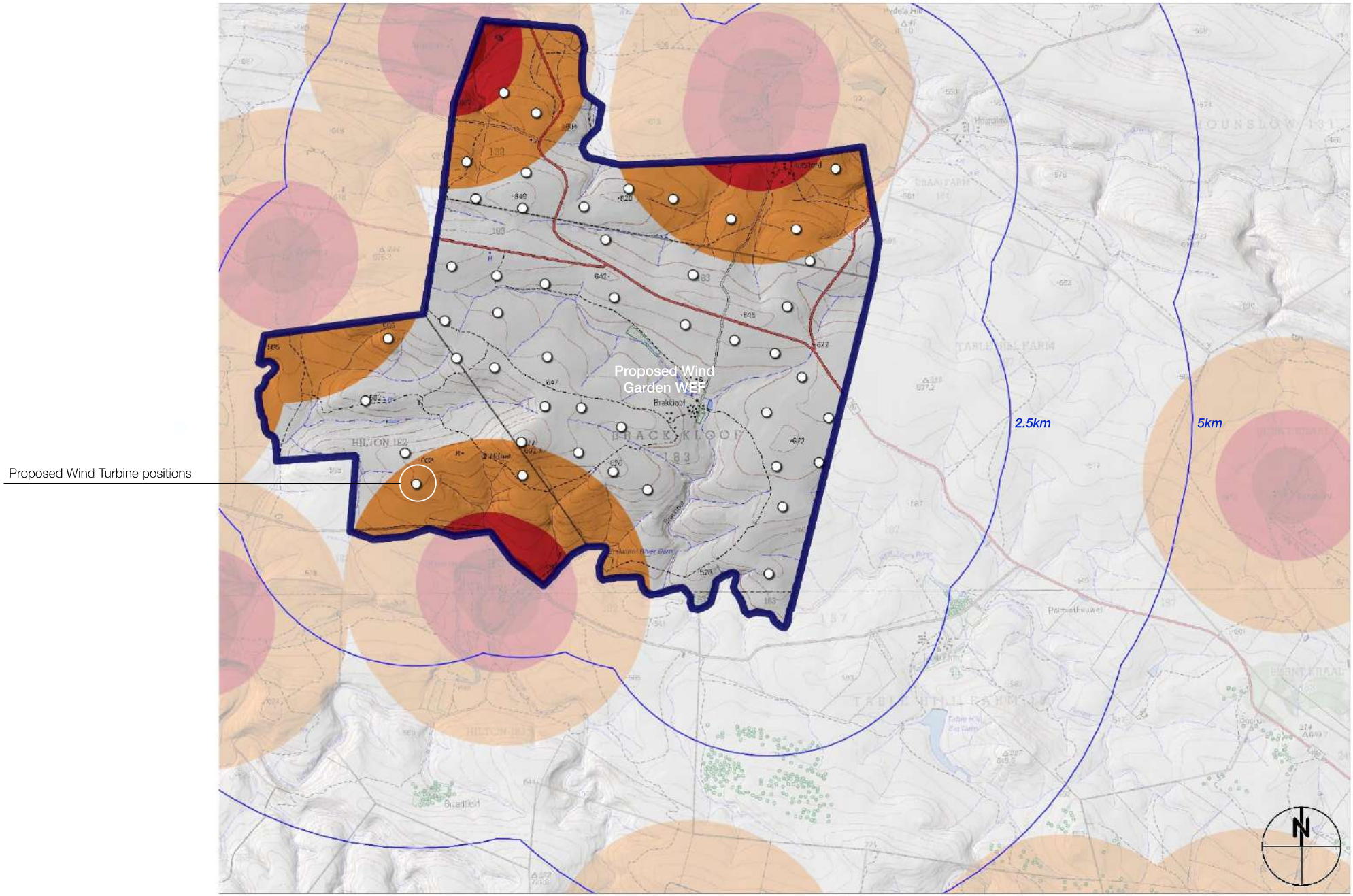

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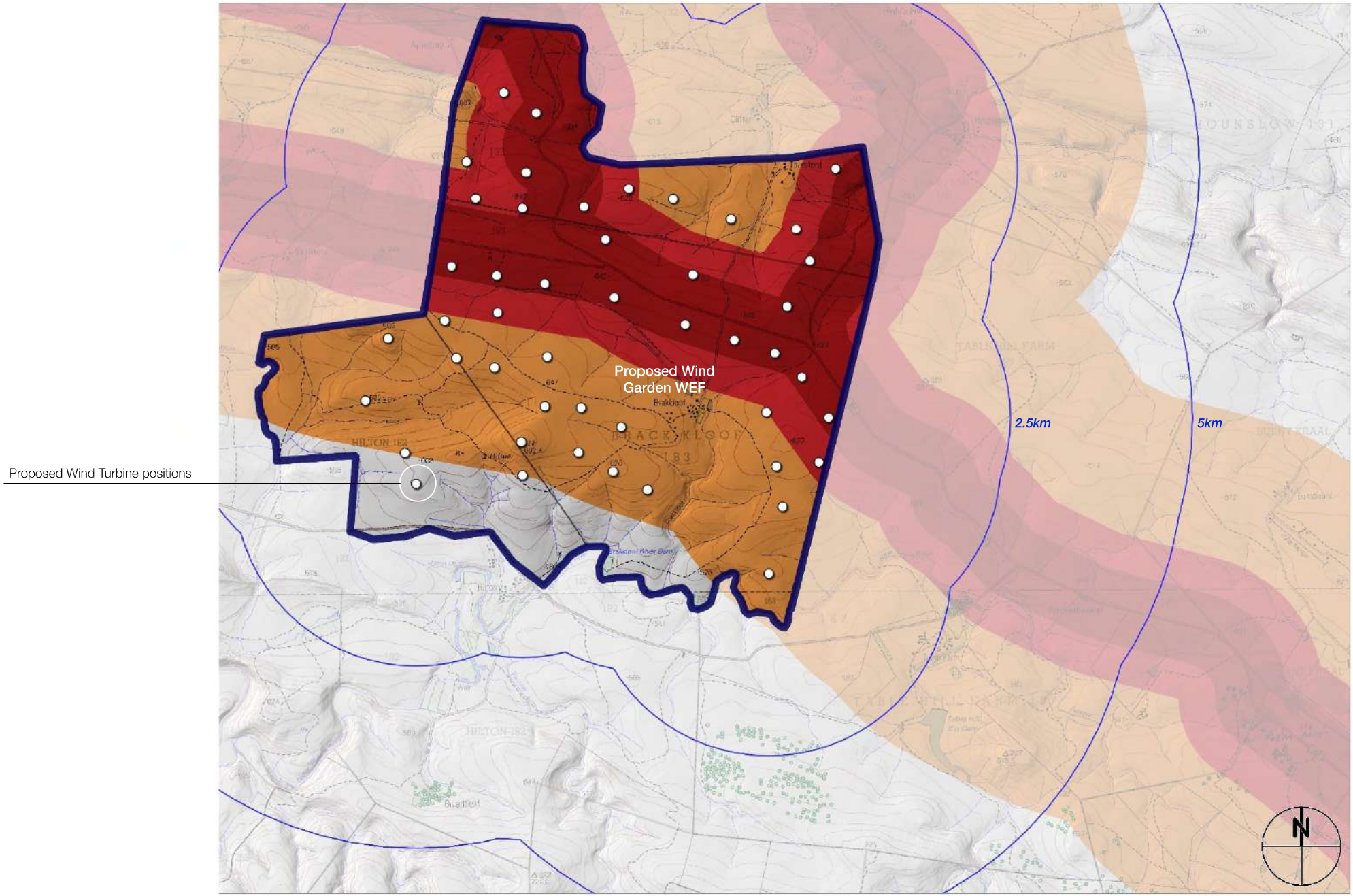

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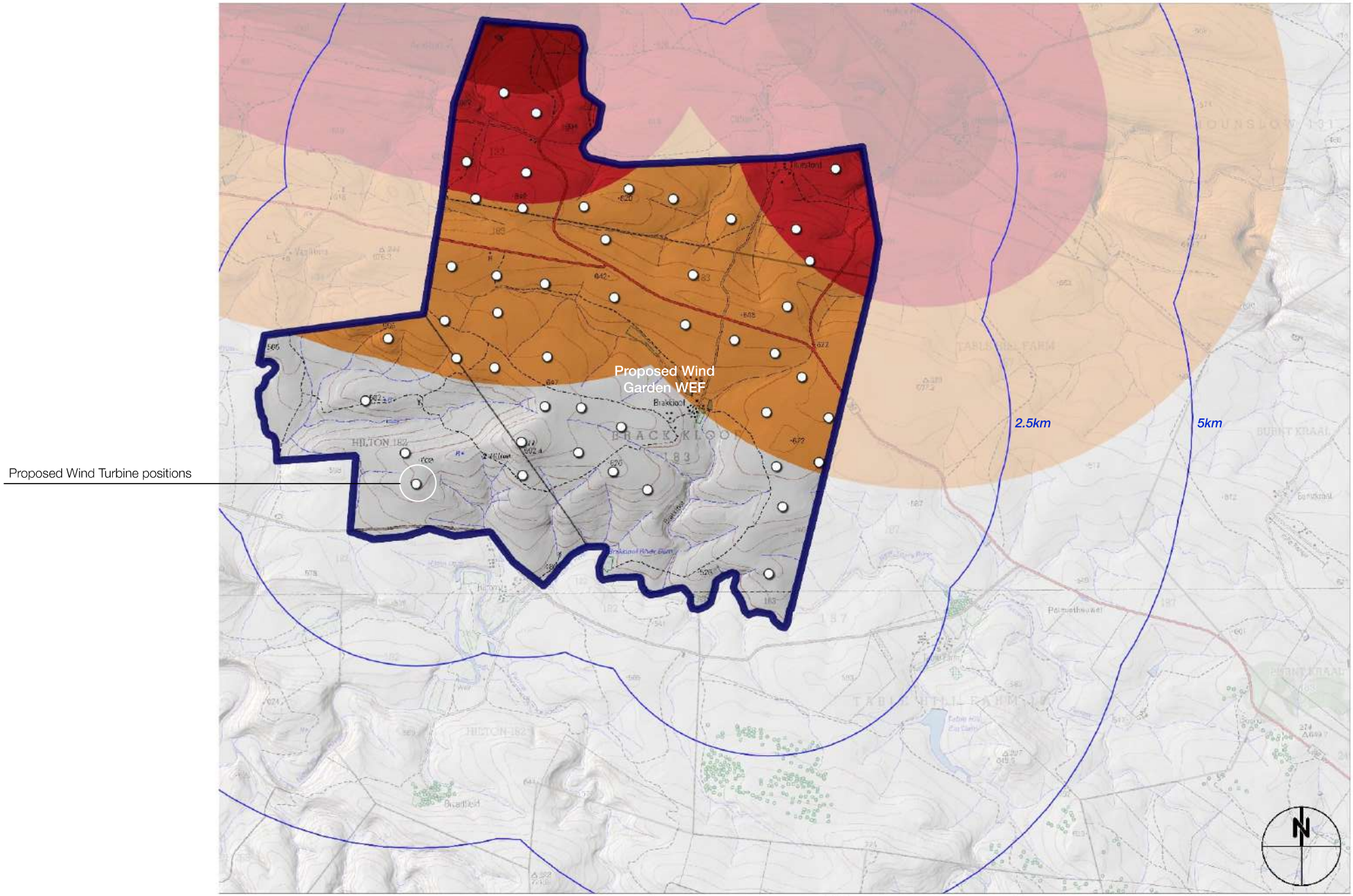

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1:50 000 @ A3

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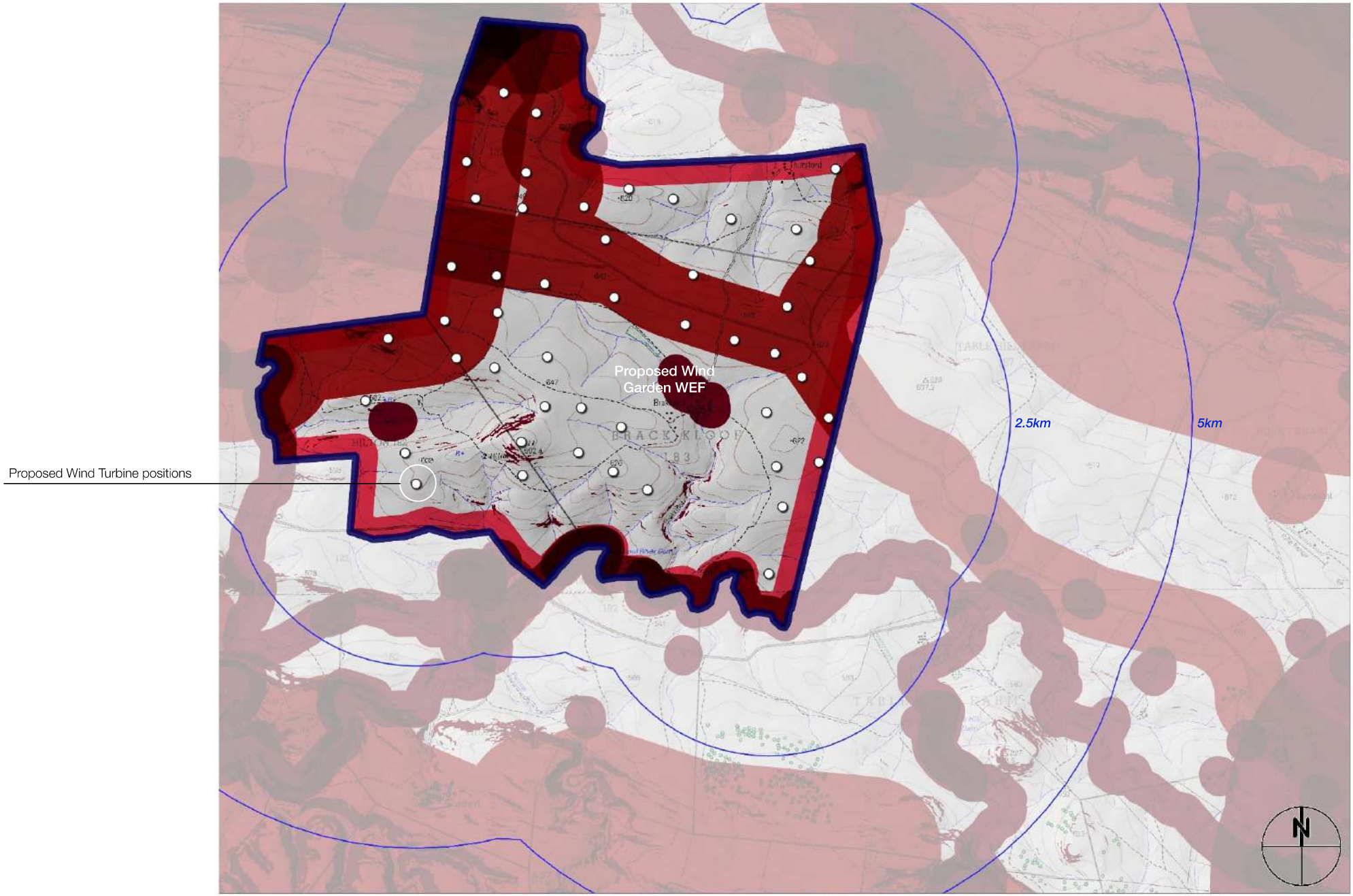

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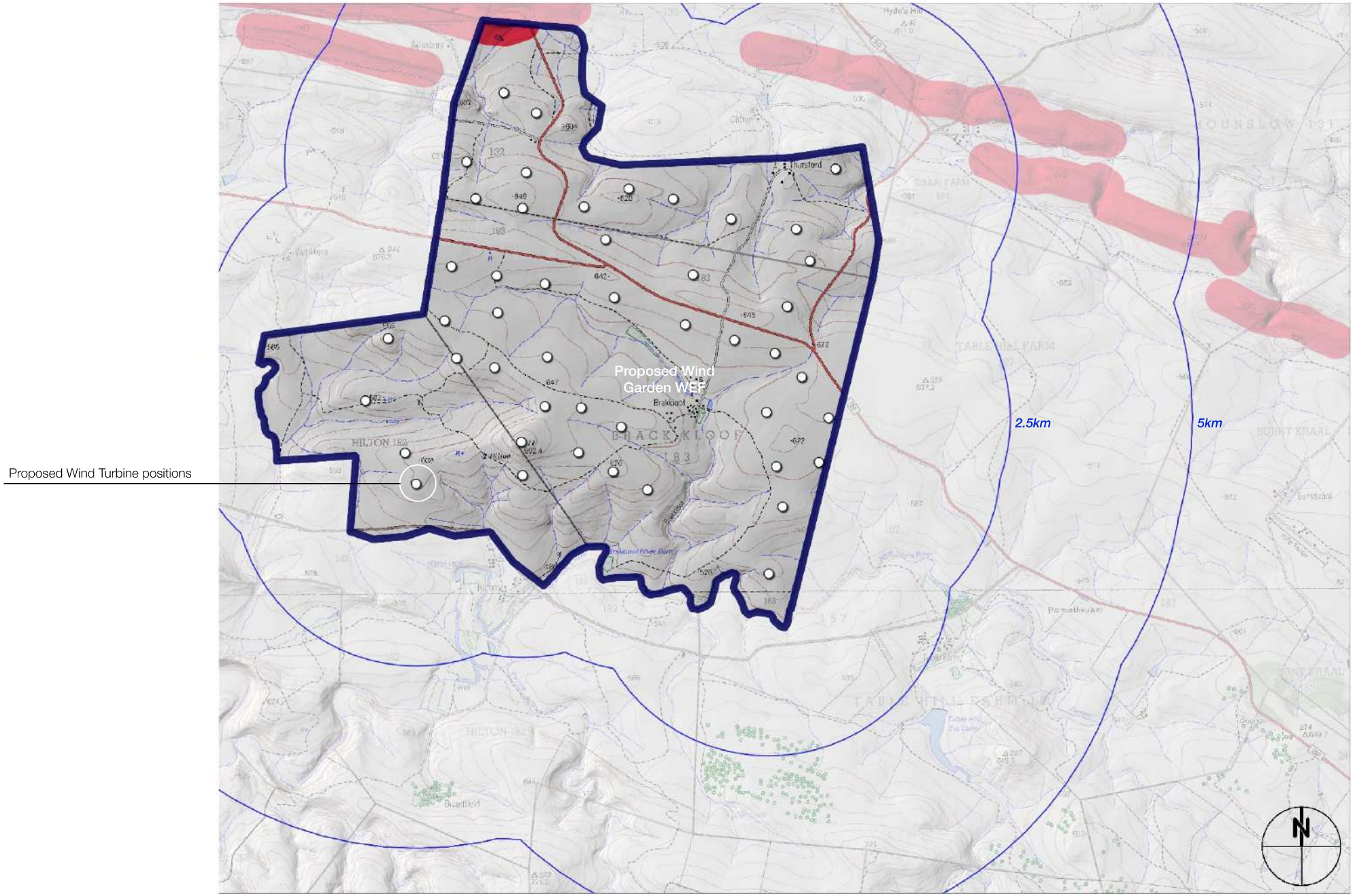

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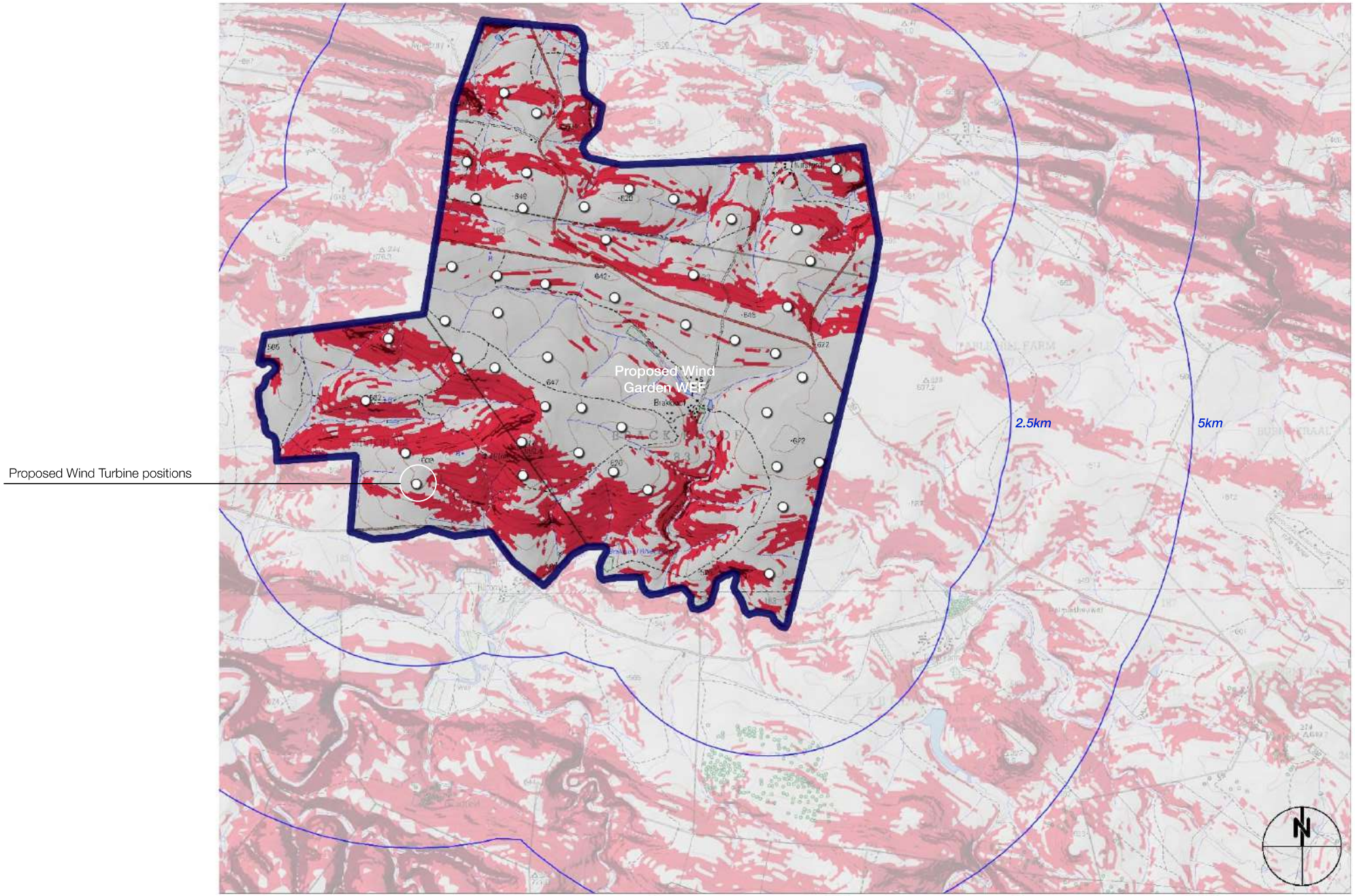

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