BA for WIND GARDEN WIND ENERGY FACILITY OUTSIDE MAKHANDA, EASTERN CAPE

# CULTURAL LANDSCAPES ASSESSMENT

Prepared for
Savannah (Pty) Ltd

By
Emmylou Rabe Bailey
Hearth Heritage
Disakloof Farm
Erf 4452, Valley Road
Hout Bay

18 June 2021
DEFF REF NO: To Be allocated

HEARTH HERITAGE
conversations about conservation

Specialist Expertise

Emmylou Rabe Bailey, director of Hearth Heritage consultancy (est 2009), has over 15 years of experience in the heritage field, in the public and private sectors. Emmylou holds an MA in Archaeology and Heritage Conservation from the University of Leicester, UK (2008), specialising in the assessment, conservation and representation of archaeological resources and cultural landscapes. Her BA(Hons) in Environmental Science and Archaeology was interdisciplinary research which focused on heritage assessment, conservation and management of the Luyolo Cultural Landscape in Simonstown, Cape Town (UCT, 2002). Emmylou's PhD in Environmental Anthropology (Rhodes University) around conservation and care ethics in cultural landscapes is currently on hold.

Emmylou's work has focused on the interdisciplinary research of heritage landscapes and working towards effective and sustainable management practices. She worked as a Cultural Heritage Specialist for SAHRA, where she was responsible for the research and compilation of site nomination reports for proposed Grade 1 Cultural Landscapes, following which a Heritage Conservation Officer at Heritage Western Cape and the Heritage Conservation Coordinator at the City of Cape Town. Since 2009, Emmylou has worked as an independent heritage specialist as Hearth Heritage, focusing on cultural landscapes and bio-cultural diversity conservation and management through policy, reports and community initiatives. Emmylou is an Accredited Professional Heritage Practitioner with the Association of Professional Heritage Practitioners (APHP) and registered with the Association of Southern African Professional Archaeologists (ASAPA) as a Professional Archaeologist. She also sits on Heritage Western Cape Council and the HWC Archaeology, Palaeontology and Meterorites Permitting Committee.

TERTIARY EDUCATION (chronologically from most recent)

- Rhodes University, Institute for Social and Economic Research 2011 – (on hold)
  PhD candidate in Environmental Anthropology (Indigenous knowledge systems, environmental ethics and conservation)
  South African Netherlands Programme for Alternatives in Development (SANPAD) RCi PhD programme 2011-2012
- University of Cape Town, Department of Social Anthropology 2010
  Ethnographic Research Methods and Methodology
- University of Leicester (UK) 2008
  MA in Archaeology and Heritage Conservation
  Dissertation: "Memories and memorials: Memorialisation at Prestwich Memorial, Cape Town and New York African Burial Ground, New York"
- University of Cape Town 2005
  Architecture and Urban Conservation: Theory and Practice
- University of Cape Town, Centre for African Studies 2003
  MA course in Public Culture (incl Representation of Public Culture through public exhibition)
- University of Cape Town 2002
  BA (HONS) – Archaeology, African Studies, History, Environmental Science

Dissertation: "Towards a Conservation Management Plan for Luyolo, Simonstown"

- University of Cape Town 1999 – 2001
  Bachelor of Arts • Majoring in: Social Anthropology; Archaeology, Environmental and Geographical Science

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WORK EXPERIENCE (for more information on any of the following projects, please contact me)

- Hearth Heritage – since 2009
  Professional Heritage Consultancy
  Director; professional heritage practitioner, researcher, writer, photojournalist
- University of Cape Town, 2019-2021
  Lecturer on Cultural Landscapes for MPhil in Conservation of the Built Environment
- Rhodes Univeristy, 2020-2021
  Lecturer on Cultural Landscapes for Postgraduate Diploma in Heritage Management
- CareTakers NPO, 2018-2021
  Chairperson and board member, director, producer bio-cultural documentary films
- University of Cape Town, Department of Social Anthropology February 2010 – July 2010
  Lecturer and tutor on Conservation and Development
- Department of Cultural Affairs and Sport, Western Cape Provincial Government: Museum Services October 2009
  Workshop Facilitator: Heritage conservation and management (as Hearth Heritage)
- Silimela Development Services (Pty) Ltd. August 2009
  Xhariep NSDP Application Project: Survey coordinator and translator
- vidamemoria heritage consultants – January 2009 – June 2010
  Specialist heritage research consultant and report writer (as Hearth Heritage)
- Blomfontein Nature Reserve (near Nieuwoudtville, Northern Cape) - November 2008 – January 2009; September 2020 – July 2021
  Cultural landscape research project (voluntary) and Rock Art Project (funded)
  Research, community consultation and report writing
- Nicolas Baumann and Sarah Winter Heritage Consultants June 2003 - 2011
  Heritage Specialist (research and report-writing)
- City of Cape Town: Environmental and Heritage Management January 2005 – March 2007
  Heritage Conservation Coordinator
- Department of Cultural Affairs and Sport, Western Cape Provincial Government: Heritage Resource Management Services (HRMS) July 2004 – December 2004
  Heritage Conservation Officer
- South African Heritage Resources Agency: Western Cape (SAHRA) January 2004 to June 2004
  Cultural Heritage Specialist

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RELEVANT PROJECT EXPERIENCE

- Compilation of Cultural Landscapes Assessment reports, Archaeological Impact Assessment reports, Socio-historical research and Heritage Impact Assessments for development applications to provincial authorities.

- Compilation of National Heritage Site nomination reports for Grade 1 Cultural Landscapes.
- Compliation of, and input into, Heritage Conservation Management Plans (Western Cape)
- Heritage resources surveys for inventories.
- Over 15 years experience, local and international, in research, data analysis and report writing as expert environmental and cultural heritage conservation consultant, specialising in cultural landscapes, IKS, memorialisation, environmental ethics, community heritage conservation projects.
- Over 15 years experience in development, management and implementation of projects, programmes, systems, policies and practices dealing with conservation and community management of significant and sensitive environmental and cultural landscapes and resources.
- Facilitation of coordination and communication between national, provincial and local heritage and environmental management authorities as well as private and government bodies in terms of conservation and management policy formulation and implementation, as well as facilitating coordination on broader issues of heritage and environmental conservation management.

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AFFILIATIONS

- Association for Professional Heritage Professionals (APHP) Accredited Heritage Professional;
- ASAPA Accredited Professional Archaeologist;
- HWC Council Member;
- HWC Archaeology, Palaeontology and Meteorites Permitting Committee member;
- ICOMOS SA Member;
- VASSA Member.

SPECIALIST DECLARATION OF INDEPENDENCE

I, Emmylou Rabe Bailey, as the appointed independent specialist, in terms of the 2014 EIA Regulations, as amended hereby declare that I:

- I act as the independent specialist in this application;
- I 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;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct, and do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management Act;
- 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 have no vested interest in the proposed activity proceeding;
- 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;
- I have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
- I have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application;
- all the particulars furnished by me in this specialist input/study 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.

Disclosure of Vested Interest

I do not have and will not have any vested interest in the proposed activity proceeding other than remuneration for work performed in terms of Regulations;

Heritage Consultant: Emmylou Bailey for Hearth Heritage
emmylou@hearthheritage.co.za / 0721333828

18 June 2021

# 1 EXECUTIVE SUMMARY

Hearth Heritage was appointed by Savannah Environmental (Pty) Ltd. on behalf of Wind Garden (Pty) Ltd. to undertake a Cultural Landscape Assessment (CLA) which would form part of the Heritage Impact Assessment (Undertaken by PGS Heritage (Pty) Ltd) which will serve to inform the Basic Assessment Report (BAR) and Environmental Management Programme (EMPr) for the proposed Wind Garden Wind Farm, located approximately 17kms north-west of Makhanda in the Eastern Cape. The entire extent of the site of approximately 4336ha falls within the Cookhouse Renewable Energy Development Zone (REDZ) and within the Eastern Corridor of the Strategic Transmission Corridors.

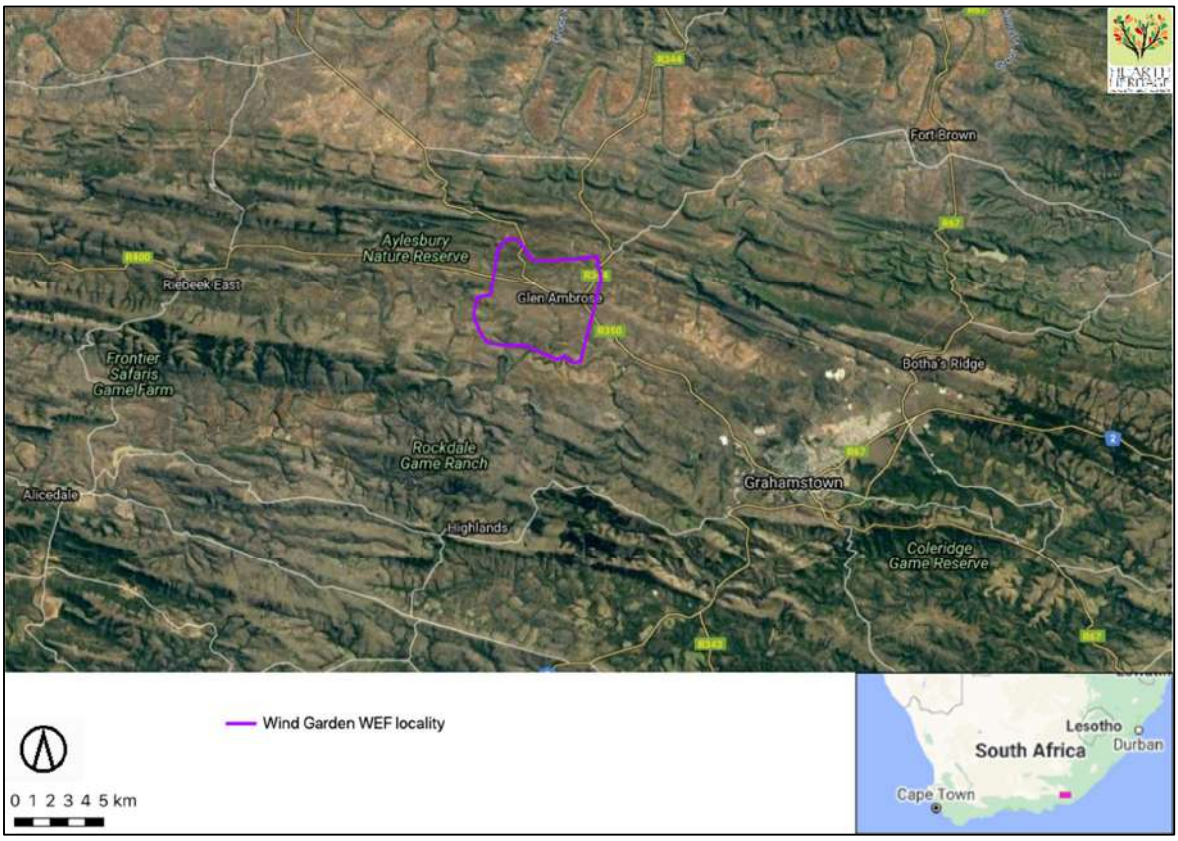


Figure 1: Site locality

## 1. Description

The proposed Wind Garden Wind Energy Facility is located on a plateau of undulating plains and hills situated between the Great Fish River valley to the north, the New Years River valley to the south west and Makhanda (previously known as Grahamstown) about 17kms to the south east. The area, known as the Zuurveld, is characterised by hills and mountains covered in low shrubby vegetation, interspersed with river valleys and watercourses with vast grazing lands and a rural and wildnerness sense of place. The site is accessed via three scenic historic regional roads which run through the site. These roads have carried inhabitants and travellers between historic towns, farmsteads and further regional destinations since at least the late C18th. Views and vistas of the distant mountains and destinations give significance to the experience of the landscape. The

history of the area is one of contact, conflict and survival and is an example of a long history of symbiotic relationship between man and nature.

### 2. Impact Statement

The cultural assessment found that without mitigation the impacts to the cultural landscape elements would result in a very high negative impact due to the magnitude and permanence of the impact on the cultural landscape, especially perceptual qualities from historic routes, heritage sites and impacts on cultural landscape areas and associated heritage resources. There are many visual receptors in the area as it is located close to the main urban node of the region, Makhanda, and eco-tourism facilities are common in the area, with three regional roads passing through or past the proposed site. Historic farmsteads and their associated stock farms are permanently occupied and offer accomodation to visitors to the area. Conservation and protected biodiversity areas dominate the landscape outside the proposed WEF site. Situated on a plateau the site is visible from distances of up to 50kms. The negative impact of the development on the cultural landscape with the recommended mitigation will be moderate.

### 3. Recommended alternatives

No alternatives were offered other than the no-go alternative, which would leave the landscape in its current state with no development and associated impacts. The location of the proposed infrastructure for this report has been informed by the BA and associated specialist studies.

## 2 CONCLUSION AND RECOMMENDATIONS

The conclusion of this CLA study has culminated in the recommended permitted development map (Figure 2) showing appropriate limited location of turbines and WEF infrastructure with a 1000m buffer to either side of the roads (red shading), 1000m buffer around historic farmsteads (red circles) and no-go areas on mountain ridges and slopes (yellow) as well as Critical Biodiversity Area 2 (green). All other identified no-go areas have been included and covered by these buffers, including watercourses and historic routes. The reduction in turbines further maintains the recommended clustering to eight or less turbines and no infrastructure on opposite sides of a scenic route. With these buffers in place and all other recommendations followed, the impact to the cultural landscape for the proposed Wind Garden WEF can be reduced from very high to moderate.

A full list of recommendations and mitigation measures for appropriate development can be found in Section 11: Impacts and Recommendations.

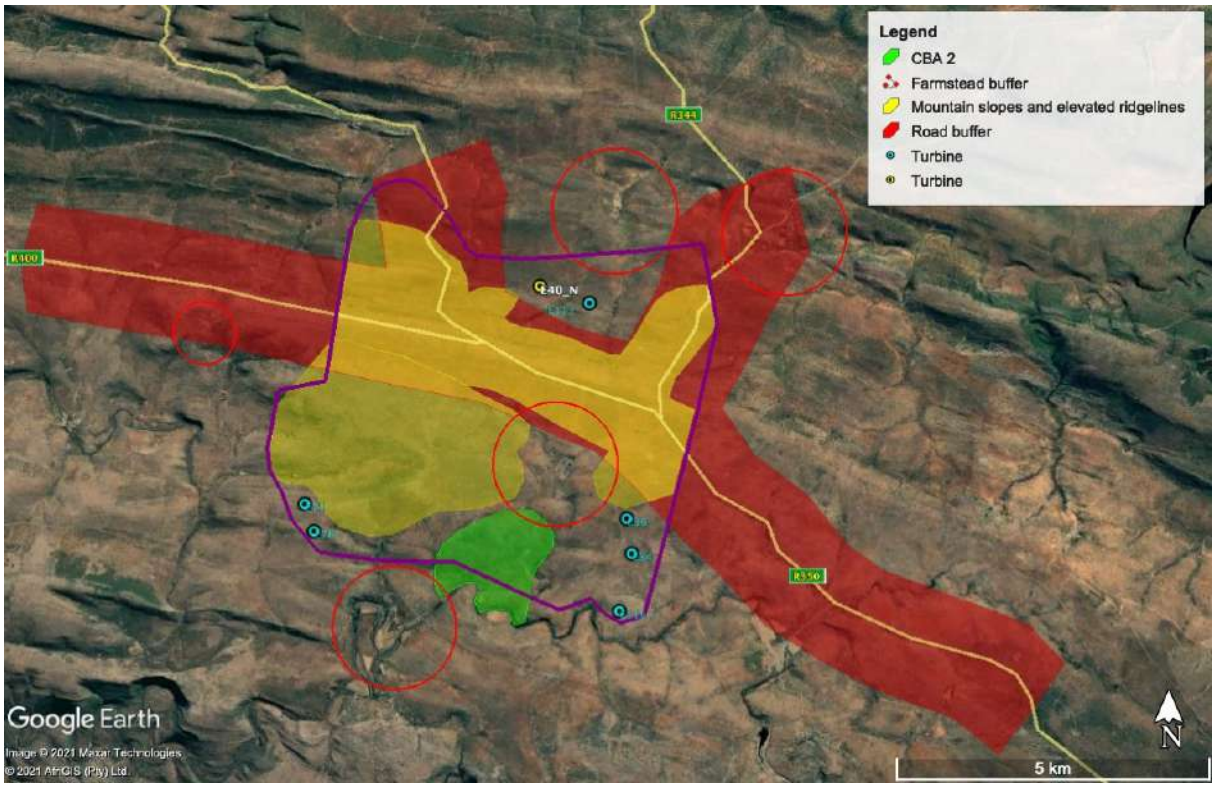

Figure 2: Development recommendation map with buffers and no-go areas identified for mitigation of negative impacts to cultural landscape.

# 3 TERMINOLOGY AND ABBREVIATIONS

Cultural Landscapes Terminology

| | |
|---|---|
| "perceptual qualities" | Aspects of a landscape which are perceived through the senses, specifically views and aesthetics. |
| "cultural landscape" | A representation of the combined worlds of nature and of man illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal (World Heritage Committee, 1992). Includes and extends beyond the study site boundaries. |
| "cultural landscape area" | These are single unique areas which are the discrete geographical areas of a particular landscape type. Each will have its own individual character and identity, even though it shares the same generic characteristics with other areas of the same type. |
| "study site" | The study site is assumed to include the area within the boundaries of the proposed development |
| "characteristics" | elements, or combination of elements, which make a particular contribution to distinctive character. |
| "elements" | individual components which make up the landscape, such as trees and fences. |
| "landscape character" | A distinct, and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse. |
| "landscape character assessment" | This is the process of identifying and describing variation in the character of the landscape. It seeks to identify and explain the unique combination of elements and features (characteristics) that make landscapes distinctive. This process results in the production of a Landscape Character Assessment. |
| "sense of place" | The unique quality or character of a place, whether natural, rural or urban. It relates to uniqueness, distinctiveness or strong identity. |
| "scenic route" | A public street designated as a scenic drive by a governing body in recognition of the high visual amenity alongside that public street, including background vistas of a mountain, open country, a coastline or a town; usually in the form of a scenic drive, but which could also be a railway, hiking trail, horse-riding trail or 4x4 trail. |
| "cultural significance" | Aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance |
| "development" | Any physical intervention, excavation or action, other than that caused by natural forces, which may result in a change in the appearance or physical nature of a site or influence its stability and future well-being, including |

| | |
|---|---|
| | (a) the construction, alteration, demolition, removal or change of use of a site or a structure on the site;<br>(b) the carrying out of any works on, over or under the site;<br>(c) the construction or putting up for display of signs or notice boards;<br>(d) any change to the natural or existing condition or topography of land; or<br>(e) any removal, physical disturbance, clearing or destruction of trees or vegetation or the removal of topsoil; |
| "heritage resource" | Heritage resource as defined in section 1 of the National Heritage Resources Act (25 of 1999) |
| "cultural heritage resource" | Places, objects and practices of cultural significance |
| "drift" | a watercourse crossing often associated with shallower areas that may be dry at times of the year |
| "tangible cultural heritage" | Physical heritage, such as buildings and objects, as opposed to intangible heritage |
| "intangible cultural heritage" | The practices, representations, expressions, knowledge, skills, as well as the instruments, objects, artefacts and cultural spaces associated therewith, that communities, groups and, in some cases, individuals recognise as part of their cultural heritage; – something considered to be a part of heritage that is not a physical object or place, such as a memory, tradition, language, belief or a cultural practice, (as opposed to tangible heritage) |
| "kraal" | Livestock enclosure common throughout the area. |
| "krans" | Cliff |
| "legplaats" | Stock post |
| "matjieshuis" | Mat or reed house |
| "poort" | portal usually associated with a gap between two higher elevations which separates two distinct landscapes, often related to a pass |
| "skerm" | Circular enclosures constructed out of dried bushes |
| "trekboer" | Semi-nomadic subsistence farmers who moved out of the Cape Colony |
| "werf" | Farmyard |

List of abbreviations used in this report

| | |
|---|---|
| AIA | Archaeological Impact Assessment |
| BA | Basic Assessment |
| BAR | Basic Assessment Report |
| CHG | Cultural Heritage Survey Guidelines and Assessment Tools for Protected Areas in South Africa (May 2017) |
| CL | Cultural Landscape |
| CLA | Cultural landscape area |
| CSIR | Council for Scientific and Industrial Research |
| DEA | Department of Environmental Affairs |
| ECO | Environmental Control Officer |
| EIA | Environmental Impact Assessment |
| EMPr | Environmental Management Programme |
| GPS | Global Positioning System |
| HIA | Heritage Impact Assessment |
| HWC | Heritage Western Cape |
| IKS | Indigenous Knowledge Systems |
| MW | Mega Watts |
| NCW | Not Conservation Worthy |
| NEMA | National Environmental Management Act |
| NHRA | National Heritage Resources Act (25 of 1999) |
| PHRA | Provincial Heritage Resources Authority |
| PPP | Public Participation Process |
| PV | Photovoltaic |
| REDZ | Renewable Energy Development Zone |
| SAHRA | South African Heritage Resources Agency |
| SAHRIS | South African Heritage Resources Information System |
| SEA | Strategic Environmental Assessment |
| UNESCO | United Nations Educational, Scientific and Cultural Organisation |
| VIA | Visual Impact Assessment |
| WEF | Wind Energy Facility |
| WHC | World Heritage Convention |

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# 1 INTRODUCTION

Hearth Heritage was appointed by Savannah Environmental (Pty) Ltd. on behalf of Wind Garden (Pty) Ltd. to undertake a Cultural Landscape Assessment (CLA) which would form part of the Heritage Impact Assessment (Undertaken by PGS Heritage (Pty) Ltd) which will serve to inform the Basic Assessment Report (BAR) and Environmental Management Programme (EMPr) for the proposed Wind Garden Wind Farm, located approximately 17kms north-west of Makhanda in the Eastern Cape. The entire extent of the site of approximately 4336ha falls within the Cookhouse Renewable Energy Development Zone (REDZ) and within the Eastern Corridor of the Strategic Transmission Corridors.

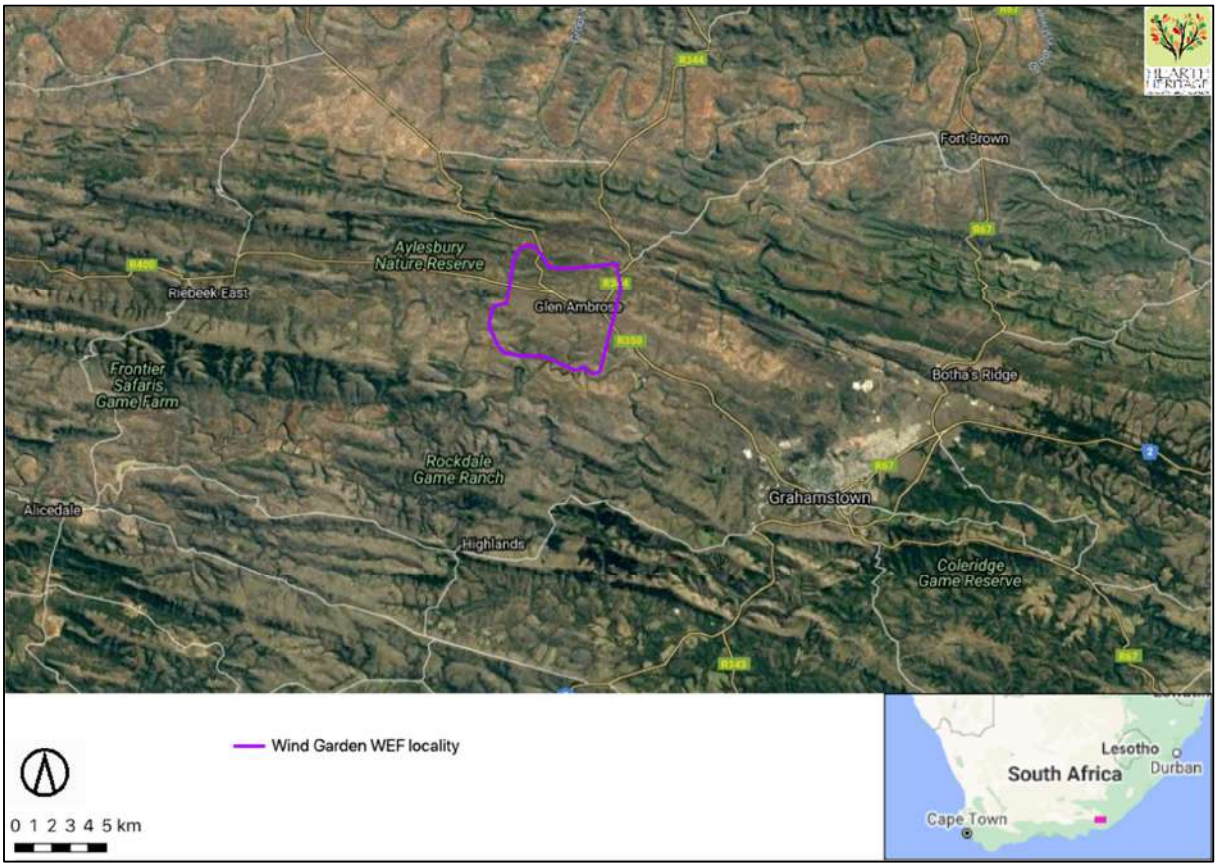


Figure 3: Locality of Wind Garden WEF

## 1.1 Scope of the Study

The aim of the study is to identify the cultural landscape (CL) elements of the proposed development area and to assess the impact of the proposed development on those elements. This report aims to assist the developer, Wind Garden (Pty) Ltd, in managing the identified cultural lansdcape elements in a responsible manner, to protect, conserve, and develop them within the framework provided for by the National Heritage Resources Act (25 of 1999) (NHRA).

# 2 DESCRIPTION OF PROPOSED DEVELOPMENT INTERVENTION

## 2.1 Locality

Wind Garden (Pty) Ltd is proposing the development of a commercial wind farm and associated infrastructure on a site located approximately 17km north-west of Grahamstown (measured from the centre of the site) within the Makana Local Municipality and the Sarah Baartman District Municipality in the Eastern Cape Province (Figure 1).

A preferred project site with an extent of ~4336ha has been identified by Wind Garden (Pty) Ltd as a technically suitable area for the development of the Wind Garden Wind Farm with a contracted capacity of up to 264MW that can accommodate up to 47 turbines. The entire project site is located within the Cookhouse Renewable Energy Development Zone (REDZ). Due to the location of the project site within the REDZ, a Basic Assessment (BA) process will be undertaken in accordance with GN114 as formally gazetted on 16 February 2018. The project site comprises the following eight (8) farm portions:

- Remaining extent of Farm Brackkloof No 182
- Portion 5 of Farm Hilton No 182
- Portion 8 of Farm Hilton No 182
- Portion 4 of Farm Vandermerweskraal No 132
- Portion 1 of Farm Thursford

## 2.2 Technical Project Description

The Wind Garden Wind Farm project site is proposed to accommodate the following infrastructure, which will enable the wind farm to supply a contracted capacity of up to 264MW:

- Up to 47 wind turbines with a maximum hub height of up to 120m. The tip height of the turbines will be up to 200m;
- A 132kV switching station and a 132/33kV on-site collector substation to be connected via a 132kV overhead power line (twin turn dual circuit). The wind farm will be connected to the national grid through a connection from the 132/33kV collector substation via the 132kV power line which will connect to the 132kV switching station that will loop in and loop out of the existing Poseidon – Albany 132kV line;
- Concrete turbine foundations and turbine hardstands;
- Temporary laydown areas which will accommodate the boom erection, storage and assembly area;
- Cabling between the turbines, to be laid underground where practical;
- Access roads to the site and between project components with a width of approximately 4.5m;
- A temporary concrete batching plant;
- Staff accommodation; and
- Operation and Maintenance buildings including a gate house, security building, control centre, offices, warehouses, a workshop and visitors centre.

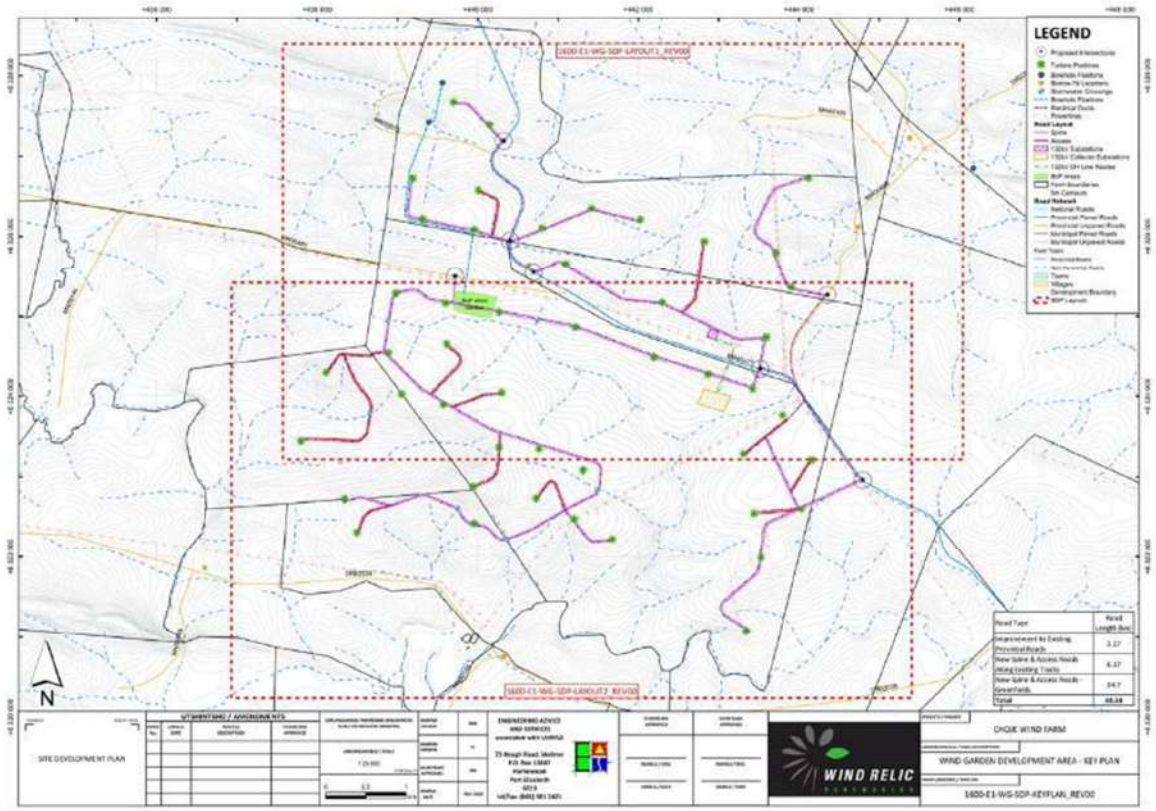


Figure 4: Proposed Wind Garden WEF development infrastructure (supplied by PGS, 2021)

## 2.3 Renewable Energy and Landscapes

While it is recognised that renewable energy is required to address the effects of climate change and has the potential to contribute to socio-economic development in rural areas, wind and solar photovoltaic (PV) facilities must be sited and designed in a manner that minimises the impact on South Africa's rich cultural resources and landscapes. Renewable energy facilities, including supporting infrastructure such as power lines, can be perceived as industrial structures, which have the potential to impact negatively on sensitive landscapes. The natural and cultural landscape characteristics generally encompass visual, scenic, aesthetic and amenity values, which contribute to the overall 'sense of place' of an area. Wind turbines in particular are tall structures that can be visible from long distances and have a high potential to impact on landscapes and visual resources. According to the Scottish Natural Heritage Guideline[1] the visual impact of a wind farm depends on the distance from which it is viewed, weather conditions, turbine siting and the landscape context. Several guidance documents have provided generic categories for the degrees of visibility and visual impact related to distance. Table 1 was adapted from the Scottish

[1] Scottish Natural Heritage (2014) Siting and Designing Wind Farms in the Landscape. Available from:
http://www.snh.org.uk/pdfs/strategy/renewables/Guidance_Siting_Designing_wind_farms.pdf

Planning Advice Note 452 and offers general guidance on the effect of distance on the perception of a wind farm in an open landscape. Although the document does not clearly specify the turbine size this table refers to, the document mentions turbines with tower heights of more than 70 metres (m) and rotor diameters of more than 80 m. Turbines have since increased in size and can now reach hub heights of 120 and rotor diameters of 130 m, resulting in a wind farm in some conditions being visible from a distance of up to 50 kilometres (km) away. Even though the below table considers smaller turbines than what is generally proposed in South Africa, it still places the potential visual impacts of wind farms into perspective. The cumulative impacts of renewable energy development on the landscape are of specific concern. According to the Scottish Natural Heritage Guideline, cumulative impacts may be perceived when more than one facility is visible from one viewpoint, when several facilities are seen during a single journey, and when there is a gradual increase in the number or size of facilities over time.

Table 1: General perception of wind farm in an open landscape (Scottish Planning Advice Note 45: Renewable Energy Technologies)

| Distance from turbine | Perception |
|---|---|
| <2 km | Likely to be a prominent feature |
| 2 – 5 km | Relative prominence |
| 5 – 10 km | Only prominent in clear visibility – seen as part of the wider landscape |
| 15 – 30 km | Only seen in very clear visibility – a minor element in the landscape |

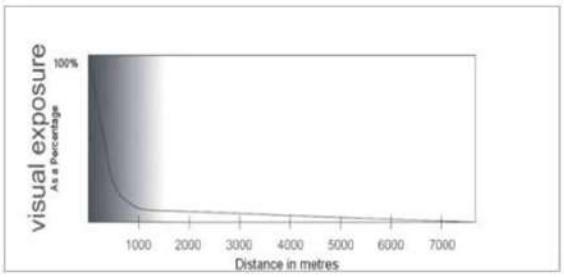


Figure 5: The rate at which the visual impact of an object dimishes over distance.

# 3 METHODOLOGY

3.1 Desktop analysis and literature review.

- Review of relevant Archaeological Impact Assessment (AIA), Heritage Impact Assessment (HIA), Visual Impact Assessment (VIA) and Socio-economic Impact Assessment reports (SEIA) on the proposed Wind Garden and adjacent Fronteer WEFs as well as other relevant assessment reports from Waainek WEF and proposed and operational Cookhouse WEFs;
- Review of relevant academic literature and articles on cultural landscape assessment;
- Review of relevant academic literature and articles on the cultural heritage of the regional study area;
- Review of relevant policies and legislation on cultural landscapes assessment, scenic drives and route assessment and heritage assessment in EIA process;

- Review of historic and current maps of the study area and surrounds;
- Review of REDZs Strategic Environmental Assessment (SEA) reports (DEA, 2015); and
- Review of relevant international cultural landscapes best practice.

3.2 Preliminary field survey

The field survey of cultural landscape elements was conducted by a cultural landscapes specialist (archaeologist / anthropologist / heritage specialist) over 4 days from 3rd to 6th June 2021 (mid-Winter). Survey was conducted in a vehicle on existing farm access roads and on foot where no vehicle access was possible. Cultural heritage resources and cultural landscape elements falling within and adjacent to the proposed development footprint were identified, mapped and photographed where appropriate. The season for field work did not impact the research for this study.

3.3 Recording and documentation of relevant cultural heritage and cultural landscape elements, the assessment of resources in terms of the specialist requirements for CLA criteria, report writing, mapping and recommendations.

The significance of the cultural landscape is based on the examination of the

- processes (spatial pattern, land uses, response to natural features and cultural traditions);
- components (circulation, boundaries, vegetation, structural types, cluster arrangements, archaeological types, small-scale elements); and
- perceptual qualities (views and aesthetics), which are then utilized to identify and assess the relationships between the patterns of human use, the natural environment and cultural beliefs and attitudes.

Evaluation of provisionally identified heritage elements' significance according to World Heritage Convention Operational Guidelines (2017) and National Heritage Resources Act (NHRA) (Act 25 of 1999) as is required as part of the BA process.

3.4 Sensitivity mapping for cultural landscapes (SEA, 2015)

Landscape sensitivity was determined as part of this study through the identification of natural, scenic and cultural resources which have aesthetic and economic value to the local community, the region, and society as a whole. The resources considered include features of topographic, geological or cultural interest, together with landscape grain or complexity. Protected landscapes, such as national parks, nature reserves, game parks or game farms, as well as heritage sites, add to the cultural value of an area and were thus considered as essential criteria in the determination of landscape sensitivities. Landscape sensitivity was further determined by taking into account existing receptors in the area including settlements, national roads, arterial roads, scenic routes, and tourist destinations such as guest farms and resorts.

3.5 Community engagement

Limited interviews with land owners in and around the proposed development and residents in Makhanda were done as part of the cultural landscape assessment to identify any values associated with identified heritage resources and to ascertain whether any meaningful intangible heritage resources are associated with any of the built structures or natural features. The socio-

economic impact assessment report for the proposed Wind Garden and Fronteer WEFs was consulted to gain insight into cultural landscapes concerns that may have been raised. Further research/ other studies beyond the brief of this BA would be required to determine the significance of the intangible or living heritage of the Wind Garden CL.

# 4 GRADING

S.7(1) of the NHRA provides for the grading of heritage resources into those of National (Grade I), Provincial (Grade II) and Local (Grade III) significance. Grading is intended to allow for the identification of the appropriate level of management for any given heritage resource. Grade I and II resources are intended to be managed by the national and provincial heritage resources authorities respectively, while Grade III resources would be managed by the relevant local planning authority. These bodies are responsible for grading, but anyone may make recommendations for grading.

Heritage Western Cape (2016), uses a system in which resources of local significance are divided into Grade IIIA – high significance, Grade IIIB – medium significance and Grade IIIC - low local or contextual significance, with a Not Conservation Worthy (NCW) grading for sites of very low or no significance and generally not requiring mitigation or other interventions). In lieu of a local heritage resources grading system for the Eastern Cape province, this report will use the HWC local gradings in its assessment.

It should be noted that without further research and investigation of the intangible and living heritage found at the Wind Garden study site or surrounding Cookhouse REDZ, a valuable and true assessment of the significance of the heritage resources and elements is not possible, and any grading assigned is subject to further work to confirm the proposed gradings. Notwithstanding, this report has drawn from other research to inform gradings and is confident that the proposed gradings herein have considered the most common significance assignments.

# 5 Legislative Requirements and Guidelines

The NHRA is utilised as the basis for the identification, evaluation and management of heritage resources and in the case of Cultural Resources Management those resources specifically impacted on by development as stipulated in Section 38 of NHRA. This study falls under s38(8) and requires comment from the relevant heritage resources authority, Eastern Cape Provincial Heritage Authority.

The identification and evaluation of cultural landscapes for this Basic Assessment Report (BAR) has been conducted according to the NHRA. While landscapes with cultural significance do not have a dedicated Section in the NHRA, they are protected under the definition of the National Estate (Section 3). Section 3(2)(c) and (d) list “historical settlements and townscapes” and ”landscapes and natural features of cultural significance” as part of the National Estate. Furthermore, some of the points in Section 3(3) speak directly to cultural landscapes.

Section 38(8) of the NHRA states that if an impact assessment is required under any legislation

other than the NHRA then it must include a heritage component that satisfies the requirements of S.38(3). Furthermore, the comments of the relevant heritage authority must be sought and considered by the consenting authority prior to the issuing of a decision. Under the National Environmental Management Act (No. 107 of 1998), as amended (NEMA), the project is subject to a BA. The present report provides the heritage component. ECPHRA is required to provide comment on the proposed project in order to facilitate final decision making by the DEA. The relevant sections of the NHRA and Cultural Heritage Survey Guidelines and Assessment Tools for Protected Areas in South Africa, May 2017 are included here to emphasize the detail and definitions on what qualifies as cultural landscapes, intangible heritage and living heritage.

## 5.1 NHRA definitions of terms applicable to assessment of cultural landscape:

Heritage resources are protected under the NHRA. As part of this assessment, resources were, as far as possible, assigned sensitivity ratings according to Section 3(3) of this act, which provides a guideline for evaluating the cultural significance of heritage resources according to the following criteria:
(a) its importance in the community or pattern of South Africa's history;
(b) its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
(c) its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
(d) its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
(e) its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
(f) its importance in demonstrating a high degree of creative or technical achievement at a particular period;
(g) its strong or special association with a particular community or cultural group for social cultural or spiritual reasons;
(h) its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and
(i) sites of significance relating to the history of slavery in South Africa.

Cultural heritage values (significance) as outlined in the NHRA, refers to qualities and attributes possessed by places or objects: these values can be aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance; for the past, present and future generations. These values may manifest themselves in places and physical features but can also be associated with intangible qualities such as people's associations with or feelings for a place or item or other elements such as cultural practices, knowledge, songs, legends and stories.

## 5.2 Cultural Heritage Survey Guidelines and Assessment Tools for Protected Areas in South Africa, May 2017 (Gazetted Dec 2017)

This guide is meant for those who work in Protected Areas and manage cultural heritage resources. The guide should be used together with the National Heritage Resource Act, 1999 (Act

No 25 of 1999) (NHRA), the National Environmental Management Act: Protected Areas Act, 2003 (Act No. 57 of 2003), the South African Heritage Resources Agency (SAHRA) and Provincial Heritage Resources Agency (PHRA) Guidelines on Norms and Standards. In lieu of minimum standards guidelines for cultural landscapes assessment specifically in South African legislation, the CHG offers cultural heritage survey guidelines and assessment tools that can be used for the purposes of CLA's in the EIA process.

Tools for inventories of different categories of cultural heritage resources

- Intangible Cultural Heritage

Types: a) Elements of folklore and traditional crafts
b) Elements of oral tradition

- Cultural Landscapes

Characteristics: a) processes – spatial pattern, land uses, response to natural features and cultural traditions
b) components – circulation, boundaries, vegetation, structural types, cluster arrangements, archaeological types, small-scale elements
c) perceptual qualities – views and aesthetics

## 5.3 Scenic Routes

A scenic route is usually a public street designated as a scenic drive by a governing body in recognition of the high visual amenity alongside that public street, including background vistas of a mountain, open country, a coastline or a town; usually in the form of a scenic drive, but which could also be a railway, hiking trail, horse-riding trail or 4x4 trail. Although not directly stipulated in the NHRA, "scenic routes" are considered as a category of heritage resource in the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP) Guidelines for involving heritage specialists in the EIA process, and Baumann and Winter (2005) comment that the visual intrusion of development on a scenic route should be considered a heritage issue. As no heritage survey or inventory exists for the Makana region, identification of local heritage resources depends on heritage impact assessments such as this cultural landscapes report to make the relevant governing bodies aware of these.

## 5.4 World Heritage Convention

The United Nations Educational, Scientific and Cultural Organization (UNESCO) Operational Guidelines for the World Heritage Convention (2017) define Cultural Landscapes as:

Cultural properties that represent the "combined works of nature and of man". They are illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal.
Cultural landscapes should be selected based on their representation in terms of a clearly defined geo-cultural region and also for their capacity to illustrate the essential and distinct

elements of such regions.

Cultural landscapes often reflect the specific techniques of sustainable land use, considering the characteristics and limits of the natural environment they are established in, and a specific spiritual relation to nature.

Cultural landscapes fall into three main categories, namely:

(i) The most easily identifiable is the clearly defined landscape designed and created intentionally by man. This embraces garden and parkland landscapes constructed for aesthetic reasons which are often (but not always) associated with religious or other monumental buildings and ensembles.

(ii) The second category is the organically evolved landscape. This results from an initial social, economic, administrative, and/or religious imperative and has developed its present form by association with and in response to its natural environment. Such landscapes reflect that process of evolution in their form and component features. They fall into two sub-categories:

- a relict (or fossil) landscape is one in which an evolutionary process came to an end at some time in the past, either abruptly or over a period. Its significant distinguishing features are, however, still visible in material form.
- a continuing landscape is one which retains an active social role in contemporary society closely associated with the traditional way of life, and in which the evolutionary process is still in progress. At the same time, it exhibits significant material evidence of its evolution over time.

(iii) The final category is the associative cultural landscape. The inscription of such landscapes on the World Heritage List is justifiable by the powerful religious, artistic or cultural associations of the natural element rather than material cultural evidence, which may be insignificant or even absent.

# 6 ASSUMPTIONS AND LIMITATIONS

Not detracting in any way from the comprehensiveness of the fieldwork and study undertaken, it is necessary to realise that the cultural landscape elements identified during fieldwork do not necessarily represent all the possible elements present in the area. Various factors account for this, including the layered histories associated with the area, specifically in terms of intangible and living heritage resources associated to the cultural landscape. Fieldwork was thorough enough for the purpose of this study, to pick up on the sense of place and character of the area, in order to assess impact of the development on the cultural landscape and propose mitigation measures.

The following identified limitations should be noted:

- No previous research has been undertaken in the immediate area in terms of cultural landscapes, however HIA studies near Cookhouse in the same REDZ have been done and were consulted for information. Similarities to landscape character and elements in the Makana region to other areas where CLA studies have been done, allowed for use of these studies in anaylsis and recommendations for development in this report (Jansen and Franklin, 2020).
- No stakeholder participation was conducted to determine intangible or living heritage resources for the purposes of the cultural landscape assessment.
- Due to the historical layering of the landscape and associated history and memory of

conflict, disposession and disempowerment, the values attributed to the landscape and heritage resources are varied and do not necessarily align to give a definitive single significance to the site. The depth and complexity of values assigned to heritage resources in this landscape is beyond the scope of this report for the BAR, but should be further developed in the EIA process through stakeholder engagament by qualified heritage specialists to determine the full impact of the proposed development on the cultural landscape and inform mitigation accordingly.

The information that could be obtained for the surrounding renewable energy developments was taken into account as part of the cumulative impact assessment.

# 7 CULTURAL LANDSCAPES AS CONCEPT

At its core the concept of cultural landscapes unites the products of 'natural' ecological processes and the products emerging from the processes of transformation of the 'natural' site by people in constructing their 'built' world (Jansen and Franklin, 2020). Cultural landscapes can be interpreted as complex and rich extended historical records conceptualised as organisations of space, time, meaning, and communication moulded through cultural process. The connections between landscape and identity and, hence, memory are fundamental to the understanding of landscape and human sense of place. Cultural landscapes are the interface of culture and nature, tangible and intangible heritage, and biological and cultural diversity. They represent a closely woven net of relationships, the essence of culture and people's identity. They are symbolic of the growing recognition of the fundamental links between local communities and their heritage, human kind, and its natural environment. In contemporary society, particular landscapes can be understood by taking into consideration the way in which they have been settled and modified including overall spatial organisation, settlement patterns, land uses, circulation networks, field layout, fencing, buildings, topography, vegetation, and structures. The dynamic and complex nature of cultural landscapes can be regarded as text, written and read by individuals and groups for very different purposes and with very many interpretations. The messages embedded in the landscape can be read as signs about values, beliefs, and practices from various perspectives. Most cultural landscapes are living landscapes where changes over time result in a montage effect or series of layers, each layer able to tell the human story and relationships between people and the natural processes.

The significance of the landscape reflects not just the sum of the individual parts, but rather landscapes as an integral whole. It is the nature of the relationship between features, and between these features and the broader landscape setting (context) that is important. What is also important is an understanding about how these landscapes have been produced. In other words, it is essential that the physical informants and historical events that have given structure and form to the landscape features are understood and appropriately interpreted with regard to heritage significance (Jansen and Franklin, 2020).

# 8 THE REGIONAL MAKANA CULTURAL LANDSCAPE

The proposed Wind Garden Wind Energy Facility is located on a plateau of undulating plains and

hills situated between the Great Fish River valley to the north, the New Years River valley to the south west and Makhanda (previously known as Grahamstown) about 17kms to the south east. The area is characterised by hills and mountains interspersed with river valleys and watercourses. The site is accessed via three scenic historic regional roads which run through the site. These roads have carried inhabitants and travellers between historic towns and further regional destinations since at least the late C18th according to maps and earlier considering the topographical layout of the area which requires the navigation of *poorts* (passage through mountains) and *drifts* (river crossings) to traverse the landscape.

The largest town in the area, Makhanda, is largely visually hidden from the surrounding landscape as it is situated in a low lying depression betweeen enclosing hills and ridges. A few historic heritage sites such as Makanaskop and Fort Selwyn (PHS) on Gunfire Hill are located on higher elevations along the outskirts of the town, which would have offered the inhabitants a better defensive viewpoint of their surroundings. On leaving Makhanda along the R350 regional routes, the road rises up onto the hilly plateau on which the proposed WEF site is located, from where the surrounding landscape is experienced as open vistas bounded to the north and south by skylines of mountain ranges viewed intermittently through viewsheds between the hills. Although the Waainek WEF is located 6km from this point, it is situated behind the viewer on leaving Makhanda and does not impact heavily on the experience as the main view is to the west and north west with Waainek WEF located to the southeast. These scenic routes wind between the hills of the plateau before they drop down into the surrounding lower elevations. Further along the R350, on leaving the proposed adjacent proposed WEF site, the road enters the historic Hellspoortpas between two steep ridges before heading down into the Great Fish River valley. The R350, a tourist route, travels through the proposed Fronteer WEF for 7km and for another 6km through the adjacent proposed Wind Garden WEF. The R400 travels over the plataeu slowly descending west out of the proposed WEF area towards the historic Riebeeck East, which grew out of the historically significant Mooimeisiesfontein farm, originally belonging to Piet Retief, one of the leaders of the Groot Trek. The R344 travels north towards the Great Fish River, passing through historic mountain passes (*poorts*) and over historic river crossings (*drifts*) away from the Cape Fold Mountains into the great Fish River valley and the Karoo and Eastern Cape escarpments beyond. The catchment area drains into the Nuwejaars and the Brak Rivers, with numerous smaller drainage lines leading from the ridges. According to Mucina and Rutherford (2006), the area is characterised by Kowie Thicket, Suurberg Quartzite Fynbos, Suurberg Shale Fynbos, Albany Broken Veld and Bhisho Thornveld vegetation types, all low lying shrubby vegetation. Given the form of the indigenous vegetation, clusters of tall trees are indicative of human transformation and usually habitation.

Outside of Makhanda, the area is sparsely populated with several farmsteads, most historic, with their associated and adapted agricultural structures located on the valley floors usually near watercourses or springs and adjacent to historic routes. Sites of habitation are usually layered in their historic signature, with various periods of habitation and human influence evident on the same site over time. The farmsteads are connected through several farm roads and old ox-wagon routes that join the local communities, through linking historic regional roads, to the towns of Makhanda and Somerset East and smaller historically significant settlements like Riebeek East and Fort Beaufort. Many farm buildings in the area contain elements greater than 60 years of age

and fall with the general protection of the NHRA. Remnant outspan[2] areas are found in the area, which relate to the trekboere and possibly other pastoral travellers on the landscape.

Sheep, cattle and other livestock farms exist alongside mostly nature reserves, game farms and other protected biodiversity conservation areas (Figure 11) populated with game species. The reintroduction of wildlife into the landscape through nature and game reserves echoes place names like "*Rhinoster Jagt*" (rhinoceros hunt) on historic maps which testify to these species dominating the landscape in the past. Many previous agricultural activities have been replaced and/ or supported by conservation and game initiatives aimed at the tourist market, relying on the wilderness sense of the landscape to set the scene for an 'African' experience. The result is a landscape with an overwhelmingly rural and natural sense of place, wide open spaces and distant vistas of surrounding mountain horizons, recalling the historic frontier landscape of conflict, survival and conquest, criss-crossed with wire fencing demarcating parcels of custodianship of people over the land and its inhabitants.

Figure 4: Makana landscape looking West over the proposed Wind Garden WEF site along the R350 scenic route with the Swartwaterberg mountain range on the horizon. The iconic Albany Aloe ferox plant species is prevalent in the area and has significance as an emblem of the Albany district as well as as having medicinal properties.

## 8.1 Regional landscape character elements

1. Winding scenic historic drives, tarred and gravel, which connect the towns over the undulating terrain; distant dramatic viewscapes alternating with intimate close ups of local fauna and flora, wild and domesticated. Many of the roads and farm tracks in the study site as well as surrounding area are visible on maps dating back to the 18th and 19th centuries. As a landscape that maintains a dominant characteristic of survival, conflict and change, the roads

[2] A vacant, 'neutral' piece of land belonging to a local or provincial authority, which may not be legally occupied for more than 48hrs at a time.

and paths that cross this landscape are an essential element, connecting the significant points, places of refuge and conflict, trade and subsistence, to each other in a challenging space over time.

2. Undulating topography with ridges and valleys, the meeting place of the Cape Fold Belt and the Great Escarpment, culminating in the Great Fish River valley as the main topographic element in the region.

3. *Poorts* and *drifts* which navigate the topography of ridges and riverine corridors. These natural crossing points, gaps between the ridges and undulating hills, and shallower sections of river, have been used by animals and people as the places to traverse the landscape to water, sweeter forage, safety or settlements for centuries. These places, acting as funnels of movements across the landscape, therefore, may hold the material scatter of those who passed over them and, where identified historic tracks are still used, these are heritage elements of land use and one of the ways in which the landscape would have determined the movement and, therefore, settlement and interaction of people on the landscape.

4. Low shrubby vegetation dominates the landscape allowing for distant views of mountain ranges and associated valleys, with taller clusters of trees marking historic points such as cemeteries or farmsteads. Many of the endemic species hold medicinal value for local Xhosa communities, making these signficant as cultural resources.

5. Historic farmsteads with their associated agricultural structures and linking farm roads. Many of the farm werfs include historic structures, made of local stone, some with old military structural remains, now converted into dwellings or sheds. Located near springs or rivers, these farmsteads are mostly situated at points of lower elevation, nestled inbetween the hills and ridges, supplying them with water for livestock and limited cultivation of crops.

6. Agricultural landscape with livestock, mostly sheep and cattle; fencing and associated structures line and dot the landscape.

7. Game and nature reserves with live game and associated high fencing, drawing tourists to the region for game viewing and hunting. Although a sense of wilderness is experienced when travelling within these reserves, the height of the fences and their increased occurrence does detract from the 'wild' sense of place when travelling the roads around them.

8. Historic towns associated to significant events in South Africa's hi-story of survival, conflict and nation-building, including many provincial heritage sites which mark people and places of value to our national estate.

9. Military posts and forts, historic and current, constructed of local stone; material remains to the frontier zone of conflict and survival that dominated this landscape for so long.

10. Kaolin mining sites dot the region around Makhanda; significant as a heritage resource as the clay holds value in the Xhosa culture.

11. Stone walls and kraals dot the landscape as remnants of stock keeping, road building and fortifications in the area.

12. Although not immediately apparent on travelling through the landscape, significant stone age

archaeology is common in the area; material cultural remnants of the prehistoric inhabitantsof the landscape who lived in intimate dependence on and knowledge of the natural environment, shaping it and being shaped by it over time.

13. Subtle industrial elements of the Poseidon-Albany power line and the Waaihoek WEF are evident close to Makhanda but, due to their limited scale and massing (only 8 turbines) and located further than 6kms from the rural landscape, do not overwhelm or detract from the rural and historic sense of place in the area.

## 8.2 Historical background to the region

This part of the eastern Cape, known as the Zuurveld (sourveld) due to its low nutrient value grazing for livestock, has a strong frontier history and this characterisation can be extended back into pre-European times. Around 200AD pastoralists moved into the region, at this stage inhabited by tanshumant hunter-gatherers who exploited travelling wild herds and changing climate, followed in about AD1600 by a growing mix of African farmer presence, and by the time Europeans started seriously influencing the region in the C18th, interaction between hunter-gatherers, pure partoralists and mixed farmers already had a long and complex history. Evidence of contact processes and economic, social and cultural integration and assimilation between the groups has been well researched and is still evident on the landscape through language and ritual practices and beliefs as well as archaeological material (Hall, 1994). Khoekhoen and Bushman (San) presence is evident in the names of places on the landscape such as ‘Kammadagga’ and ‘Keiskamma’, with mixed farmer presence clear in names like ‘Assegaaibosch’. The prevalence of click sounds in the isiXhosa language has also been attributed to the extended contact and integration between these farming communities and the hunter-gatherer and pastoralist groups.

Figure 6: 1787 map (Sparrman) of Makana region showing rivers and ox-wagon routes with approximate site of Wind Garden WEF indicated in pink

Figure 7: Section of 1815 Military sketch of the Cape Colony (Fadan) of Makana region with approximate locality of proposed Wind Garden WEF in pink showing old ox-wagon route running through the site. Note the farm names are not indicated, although locations of farmsteads and military posts are.

The Fadan map of 1815 (Figure 7) represents an early military survey of the Eastern Frontier of the Cape Colony, taken a decade after the British surplanted the trekboere (Dutch) in the region. The map is orientated with east on top showing the Great Fish River, the traditional border between the realm of European settlement to the west and the lands inhabited by the Xhosa to the east. The area between the Bushmans and Great Fish rivers was known as the Zuurveld, a dangerous buffer zone much coveted for its ranch lands and subject to ongoing conflict between cultural groups. During the latter part of Dutch rule of the Cape, the Zuurveld was fiercely contested between the Netherlands and the Xhosa nation, considered too dangerous for permanent European settlement. Many Afrikaner trekboers who had tried to settle in the Zuurveld had left their farms by the beginning of the C19th due to lack of support from the British colonial powers in their attempt to be productive in these hostile lands. The Afrikaans names of those farms are still evident in current maps, such as Brakkloof, Van der Merweskraal, Rietfontein, etc. After the official settlement of the military town of Grahamstown around 1812 by the British, tensions hightened between them and the local Xhosa group. The power of the Xhosa nation was underestimated and in 1819 the small British garrison narrowly survived an assault mounted under the much revered Chief Nxele. After this awakening, the English authorities 'imported' loyal British settlers in 1820 to anglisise the area and help keep the Xhosa back across the Great Fish river. A long period of Fontier Wars ensued, with the Xhosa essentially being pushed out of the Zuurveld to beyond the Great Fish River into what became Ciskei and Bisho, Apartheid 'homeland' regions. The english farm names of Hilton, Burnt Kraal and Table Hill Farm interspersed with the Afrikaans farm names, are testiment to this layer of cultural heritage to the area. The map markings show the high incidence of inhabitant turnover in the area, by mentioning whether

farms or posts are still inhabited, etc. The varied topography of the region is represented by fine hatchures, traversed by river ravines. During British rule, the Zuurveld became known as the Albany district.


Figure 8: 1847 map (Reid) of Makana region showing proposed Wind Garden WEF site in pink. Topographic hatching shows the location of the development on a plateau between ridge lines, and roads connecting towns. Slaai Kraal is indicated as 'Sly' Kraal, a clear anglicised version of the original afrikaans farm name.


Figure 9: 1856 map (Hall) of Makana region with locality of proposed Wind Garden WEF in pink. Note the increased English farm names now evident, including the farms included in the proposed development site such as Hilton. The regional R350 and R400 road is not evident on this map, with the use of the more southern, now secondary, road running past Table Hill and Hilton farmsteads being the dominant route of transport to Riebeeck (East). The historic ox-wagon route running over Draai Farm on the neighbouring proposed WEF and through Vandermerweskraal and Clifton Farms joins the now R350 as it navigates its way through the topography at Hellspoortpas.

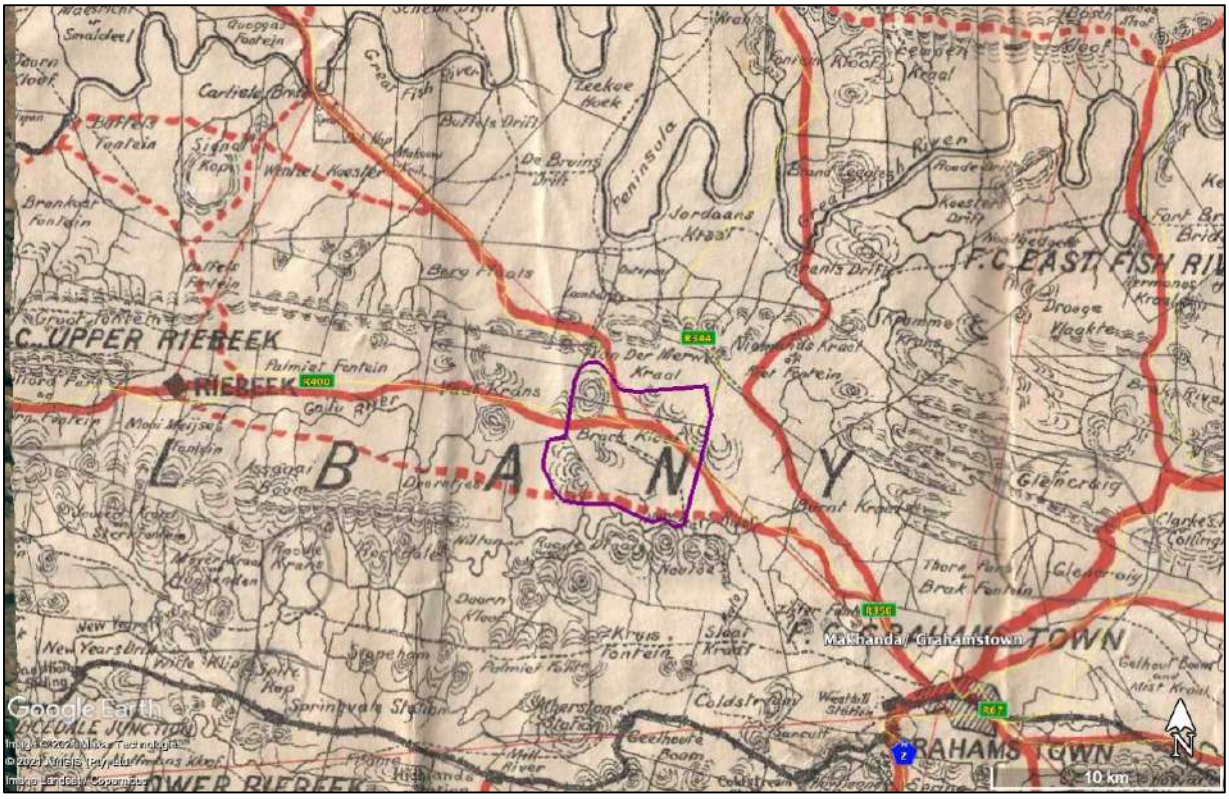


Figure 10: 1901 map (Talbot) of Makana region with locality of proposed Wind Garden WEF in purple. Here the farm boundaries are indicated, as are topographic features on the landscape. The R350 and R400 in their current orientation is evident in this map running across Brack Kloof Farm.

Since the period of British rule, the nearby town of Makhanda, then known as Grahamstown, continued to serve as a central urban node in the area, at one point the second largest British town in southern Africa. A historically successful place of learning developed into what is now Rhodes University, one of South Africa's leading educational institutions with a strength in research around botany, history and education. The surrounding area continued to be exploited as a stock farming region as well as an area of nature conservation (Addo Elephant National Park), with more recent ventures into biodiversity conservation and wildlife farming boosting the economic development of the region through tourism. With the dissolution of the homelands, the Eastern Cape Province was established as a provincial management area and many of the previous colonial place names have been changed in a national drive to recognise those that were disenfranchised and forced off their ancestral lands by the colonial incursions. Grahamstown has had its name changed to Makhanda, now located in the Makana district, and Port Elizabeth has recently been changed to Gqeberha.

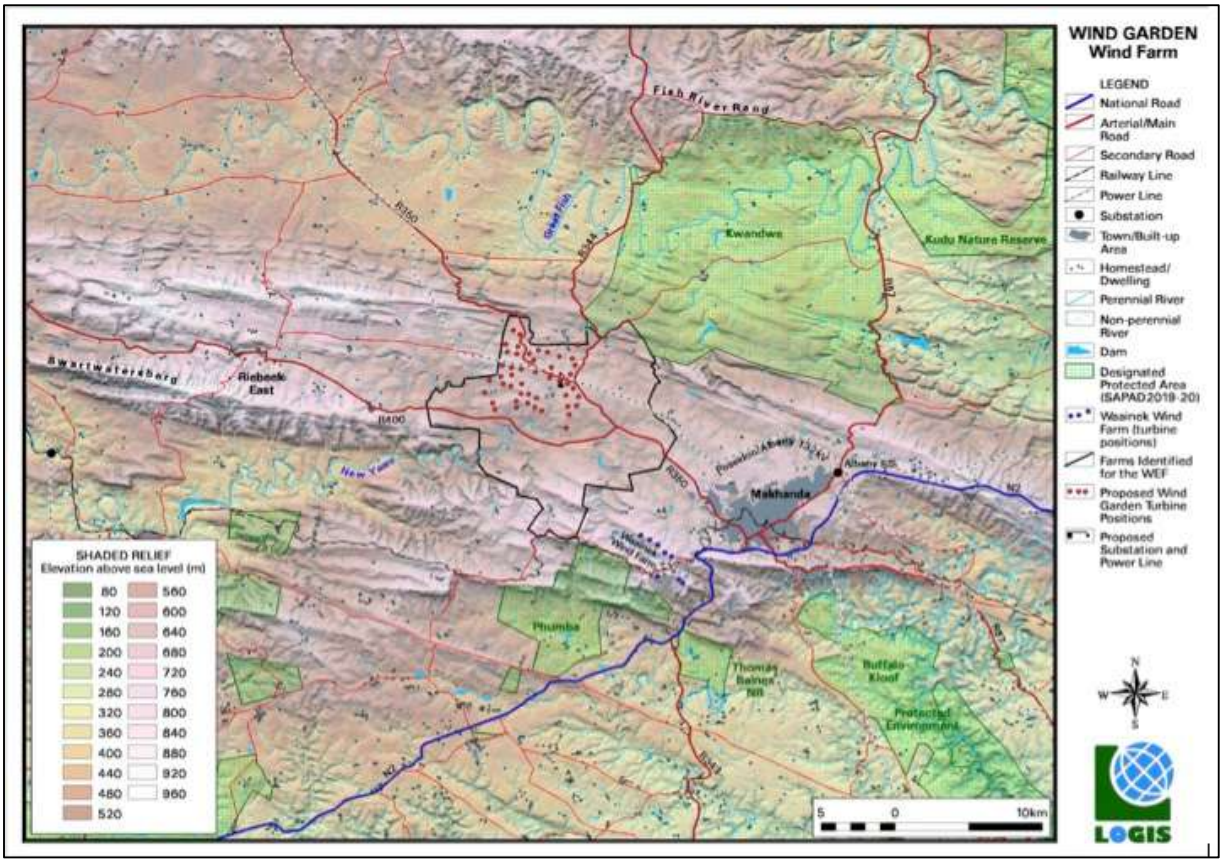


Figure 11: Relief map for the Wind Garden WEF and surrounding area showing protected areas in green (Wind Garden VIA, March 2021: Please note the R400 is incorrectly labelled on this map, please see Figure 1for correct road designations.)

## 8.1 Regional heritage elements and WEF developments

Cookhouse REDZ, SEA (DEA, 2015)
According to the Final SEA combined wind heritage sensitivity map (Figure 12) , the proposed Wind Garden WEF is located in an area of medium to very high sensitivity to archaeological, palaeontological and landscape elements, with the landscape sensitivities dominating the areas of high sensitivity. Although not officially proclaimed as scenic drives according to the NHRA, the SEA report recognises the scenic sensitivity of the regional roads in the area as very high to WEF development.

Regional WEF developments, operational and proposed
Currently there are eight operational turbines at the Waainek WEF around 14kms away from the Wind Garden site. The Waainek turbines are located on a ridge and are thus highly visible from the Wind Garden WEF site and further afield, especially at night where their red strobe lights are the only lighting visible on the landscape. The limited number of turbines to eight drastically reduces the negative impact on the landscape. The proposed Albany WEF (environmental authorisation in process), which includes around 43 turbines located partly outside the Cookhouse REDZ about 20kms away from the Wind Garden WEF site, has not yet been

constructed so its impact on the landscape cannot be fully assessed, however being located on a ridgeline close to Makhanda and with scenic historic roads of very high visual sensitivity to WEFs and frontier history sites associated with it, the impact of the Albany WEF site on the cultural landscape will undoubtely be high no matter the mitigation. The area immediately to the east of the Wind Garden site has also been earmarked for the Fronteer WEF development, subject to cumulative impact analysis with this report. The Fronteer WEF proposes another 38 turbines of 200m to blade tip height.

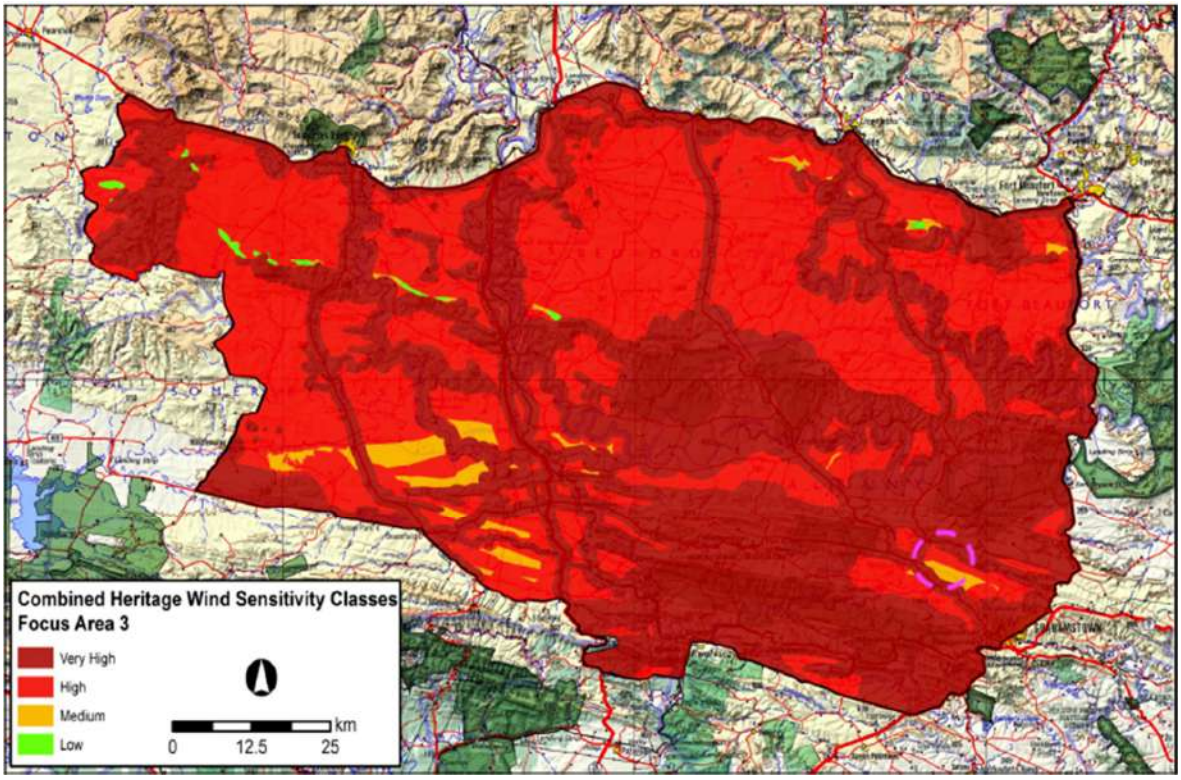


Figure 12: Cookhouse REDZ Combined Heritage Wind Sensitivity (2015, 3.3.pg10) which considers archaeological, palaeontological and landscape sensitivities showing area of proposed Wind Garden WEF in pink.

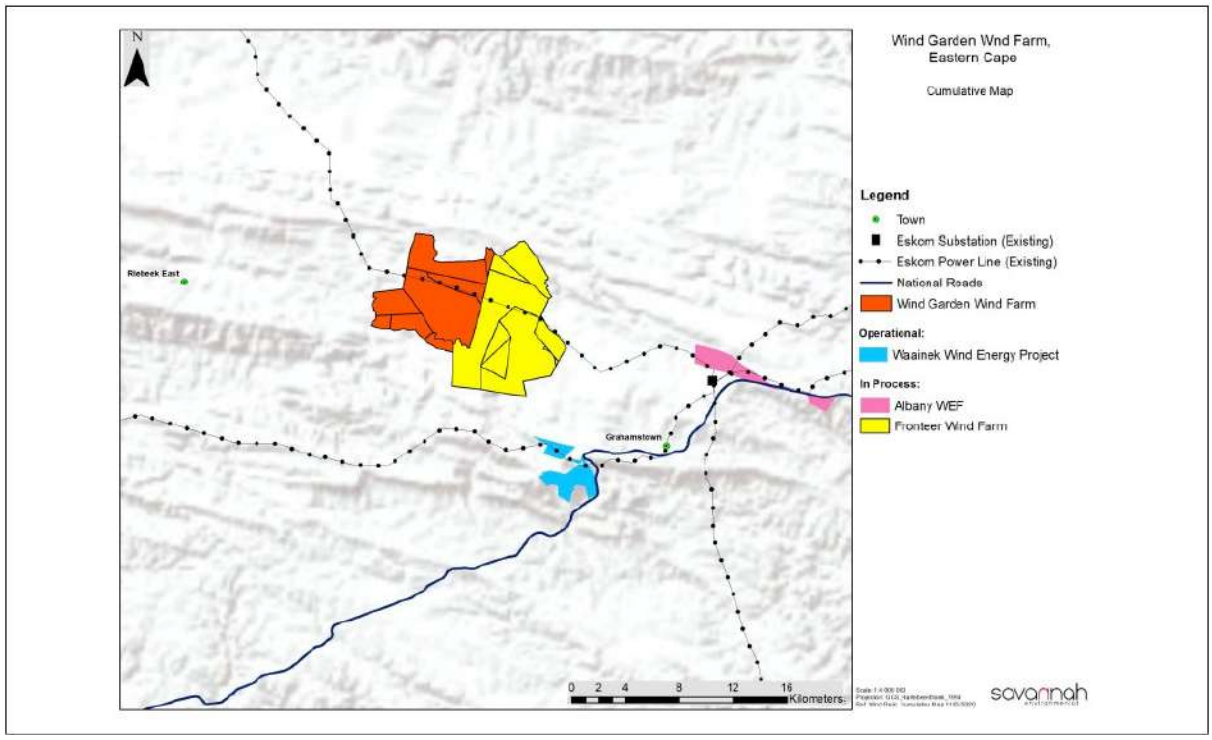


Figure 13: Operational WEFs and WEF applications in process in the surrounding area.

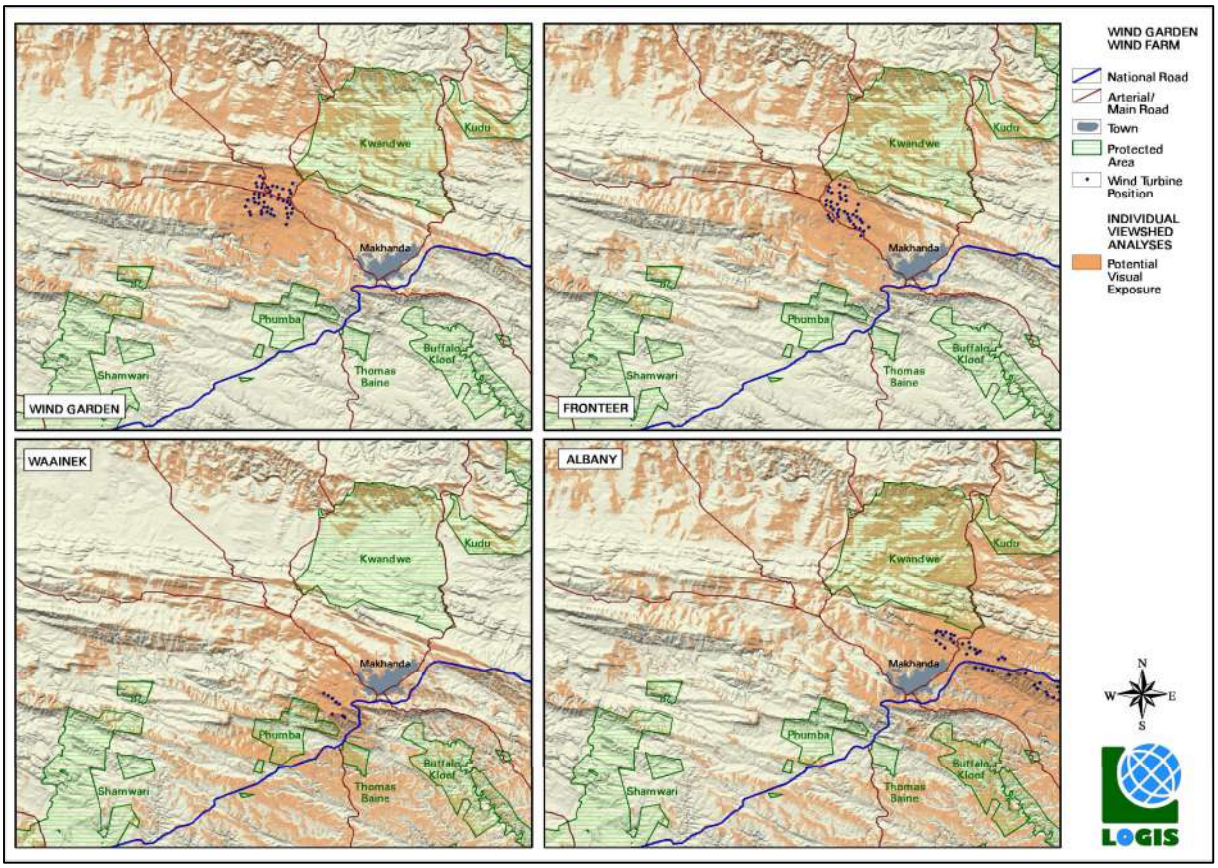


Figure 14: Viewshed analysis of proposed WEF and proposed and operating WEFs in 35km radius from

project site. The increased visual impact on the south facing slopes of signigicant cultural landscape feature of the Great Fish River valley by the proposed Albany, Wind Garden and Fronteer WEFs is evident.

It must be noted that the focus of heritage studies in the area has been on the material and tangible aspects of the landscape as identified in the NHRA. Cultural landscape assessments would ideally include consideration of intangible heritage associated to the tangible resources identified and a public participation process dealing with issues regarding inter alia intangible heritage, indigenous knowledge systems, oral histories, language and lifeways of the people who inhabit and use the landscape.

# 9 THE WIND GARDEN CULTURAL LANDSCAPE

## 9.1 Landscape Elements

The cultural landscape is a composition of a series of natural layers that have both informed and been formed by the patterns of human use and habitation on that place over time. The nature and shape of the landscape has informed the way in which it has been used, in turn ascribing cultural values to the these place-specific features. Through unpacking the layers, landscape character units can be identified which need to be carefully considered in proposed alterations to the landscape.

### 9.1.1 Geology and soils

The geology of the area dictates the soil structure, which in relation to climate will determine the capacity for the land to be used by humans for agriculture. Geology will also determine what raw materials are available for use in building structures or other land management practices.

The project site is underlain by the Dwyka Group, Witteberg Group, Witpoort Formation and the Weltevrede Formation of the Cape Supergroup. As such there is a moderate to high chance of finding fossils in the area. According to the land type database (Land Type Survey Staff, 1972 - 2006) the development falls within the Fc 744, Fc 745 and Fc 747 land types. The Fc land type consists of Glenrosa and/or Mispah soil forms with the possibility of other soils occurring throughout. Lime is rare or absent within this land type in upland soils but generally present in low-lying areas.

Figure 15: Outbuildings on Brackkloof Farm in the centre of the project site, showing use of local stone for construction.

Moisture availability is a severe limitation over the majority of the Cookhouse REDZ area and predominantly consists of severe agricultural limitation to very severe in the west and smaller areas of higher moisture availability in the southeast, where the proposed Wind Garden WEF is located. The climatic capability of the Wind Garden site was determined to be C6 in the lower elevations, with moderately restricted growing season due to low temperatures, frost or moisture stress where suitable crops will frequesntly experience yield loss, resulting in severe sensitivity. The mountainous portion was graded C8 with a very restricted choice of crops due to heat and moisture stress where suitable crops are at high risk of yield loss, resulting in a very severe sensitivity rating. The area is almost entirely soil type LP2, with minimal development, usually shallow on hard or weathered rock, with or without intermittent diverse soils where lime is generally present in part or most of the landscape, with only 2% of the focus area being cultivated. The moisture availability and soils limit agricultural use in this focus area to grazing. The area supports grazing of sheep, cattle and game with a grazing capacity of between 8 and 21 hectares per animal unit (SEA, 2015).

The Wind Garden project area is characterised by three vegetation types, namely the AT 8 (Kowie Thicket), the NKI 4 (Albany Broken Veld) and the SVs 7 (Bhisho Thornveld) vegetation types (Figure 16).

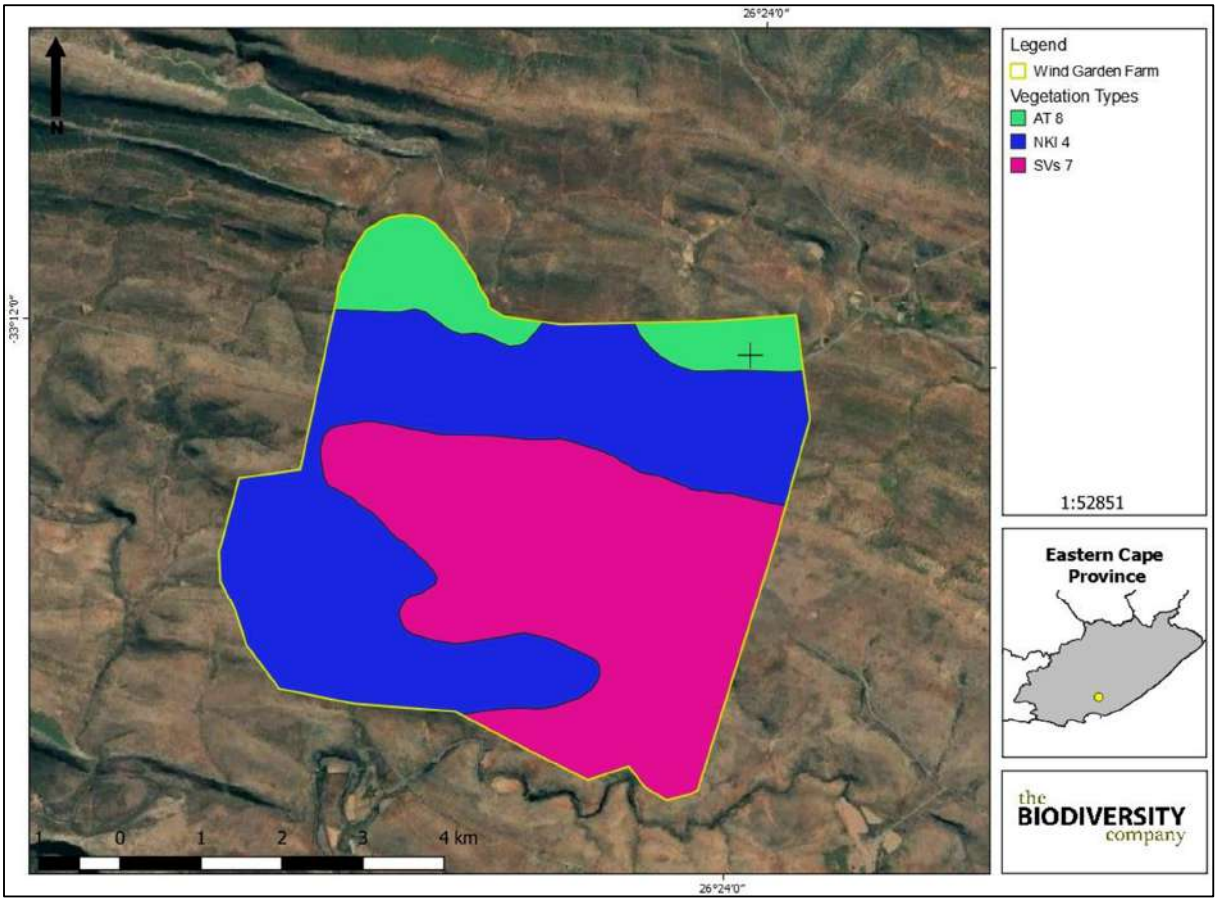

Figure 16: Vegetation types for Wind Garden site

The land capability of the soils present within the project site (Figure 17) were assessed in the BAR (March 2021) assigning 92% of the site as land capability class 6 which means that its limitations preclude cultivation but that it is suitable for perennial vegetation which allows for veld, pastures and afforestation, but requires protection measures for establishment of pasture such as sod-seeding. The 7.7% of the land on the project site was considered arable for 50-75% leys requiring intensive to special conservation practice and tillage methods. A very small percentage, of 0.3% was designated as class 2 for annual cropping with adequate run-off control and class 5 for watercourses and land with wetness limitations which are suitable for grazing and wildlife with the protection and control of the water table. Stock and game farming are thus well suited to the area, with the use of the land for sensitive conservation and eco-tourism facilities sustainable and economically viable.

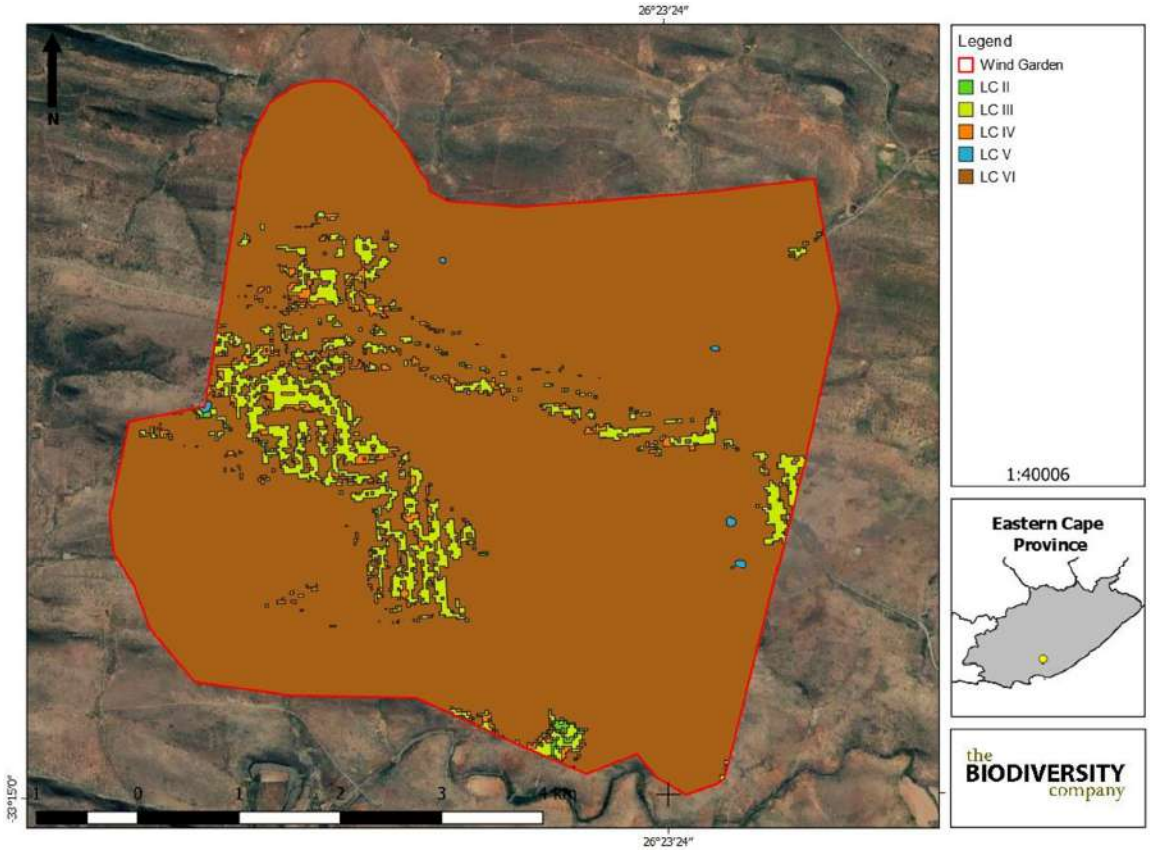


Figure 17: Land capability classes for the Wind Garden development envelope (LC6 – brown - of low sensitivity to impact on potential agricultural use, LC4 – orange - of moderate sensitivity, LC3 – yellow - of high senstivity, LC5 – blue – vlei, LC2 – green – moderate sensitivity)

9.1.2 Landform

Landform describes the topography of the area. The contours of the study area can be intepreted to identify slope gradient, with anything steeper than 25% slope being the steepest (like mountain slopes) and anything less than than 10% slope representing a flatter area (like alluvial plains). The slope percentage of the project area has been calculated and is illustrated in Figure 23. The majority of the project area is characterised by a slope percentage between 0 and 10%, with some smaller patches within the project area characterised by a slope percentage up to 44%. This illustration indicates a non-uniform topography with a high concentration of mountainous areas and ridges. The elevation of the project area (Figure 18Figure 19) indicates an elevation of 502– 694 Metres Above Sea Level (MASL).

The site's sense of place is influenced by the undulating plateau with prominent views of the elevated mountain range of the Swartwaterberg to the south and southwest. From higher central elevations within the site, the distant outlines and layers of the rise of the Great Escarpment on the eastern ridge of the Great Fish River valley give context and sense of place on the landscape. Closer to the northern boundary of the WEF site, as one travels north and northeast on the R350, the last ridges separating the plateau from the Great Fish River valley dominate the view, seemingly enclosing the plateau to the north.

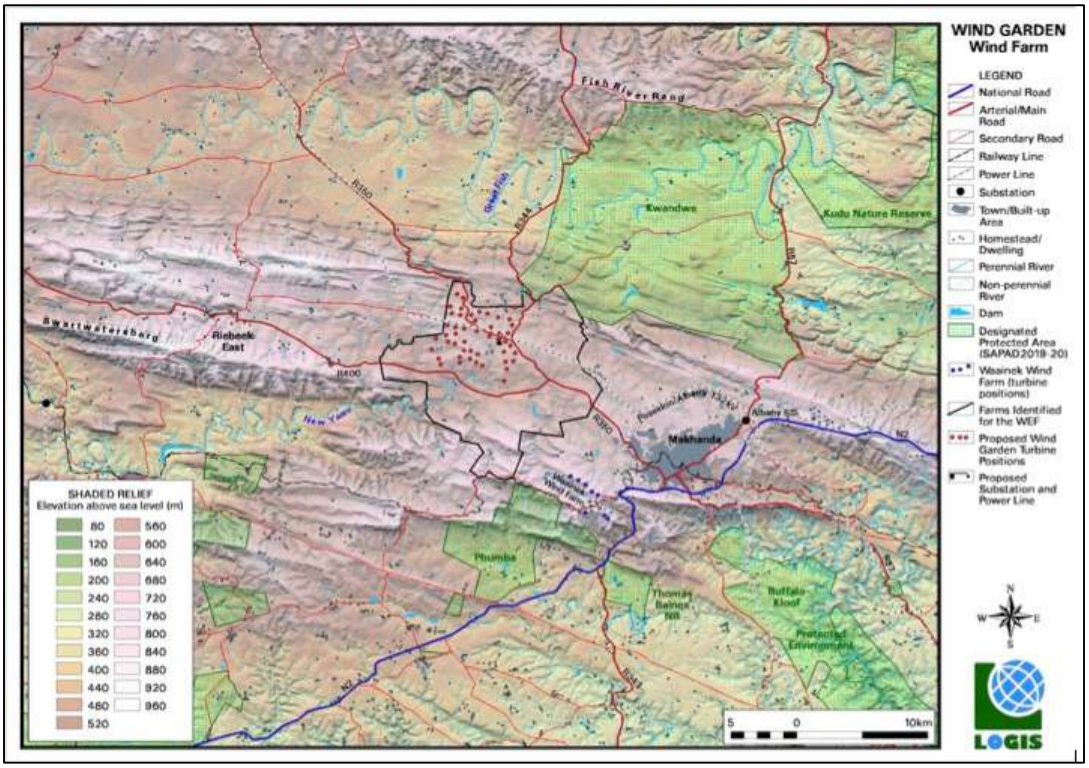


Figure 18: Elevation of project area in relation to surrounding landscape

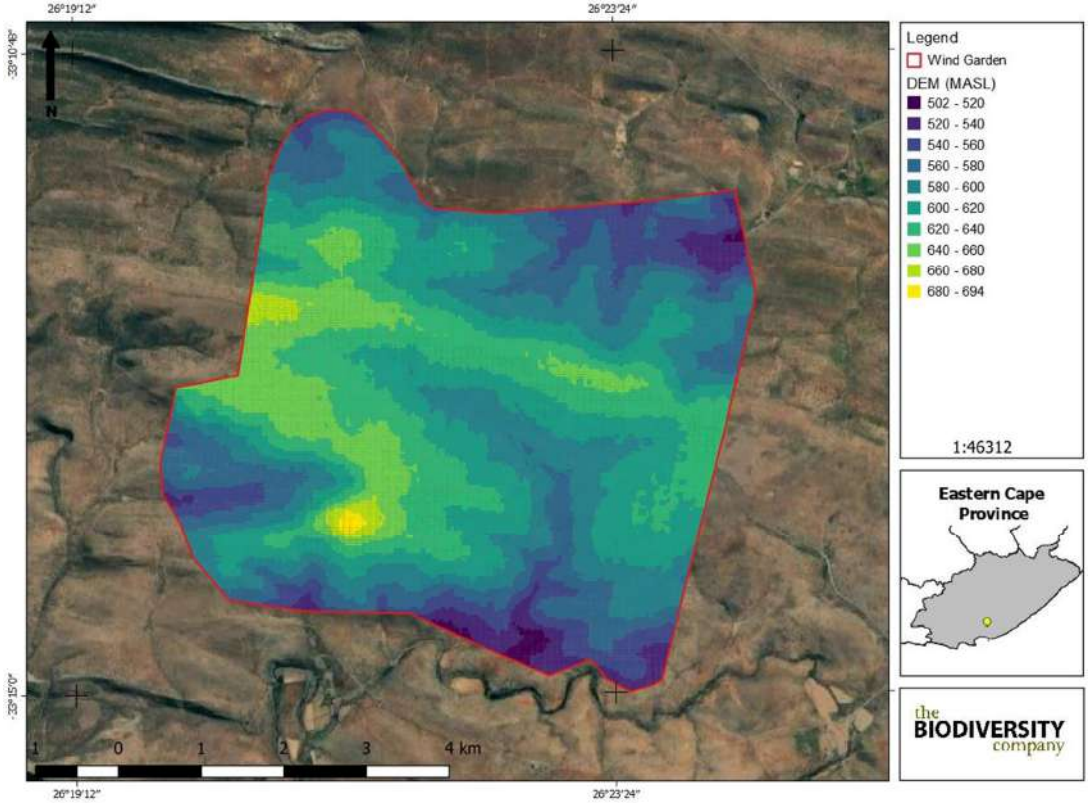


Figure 19: Elevation of study area

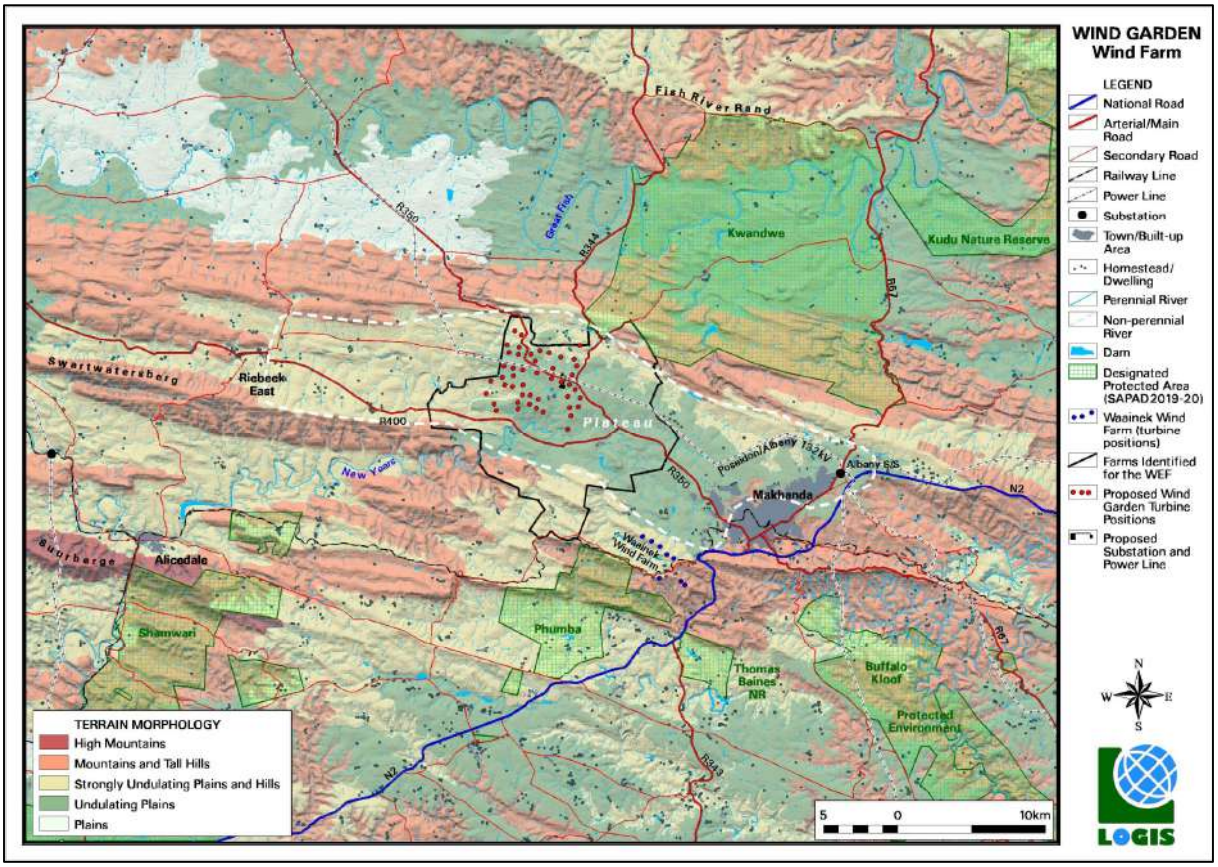

Figure 20: Terrain morphology of the study area and surrounding landscape.


Figure 21: Hellpoortpass showing R350 heading up out of the Great Fish River valley over the ridges, through the poort and onto the plateau. The experience of the poort and travel between ridges is part of the frontier character of the site. On exiting this poort, the Wind Garden WEF and its associated turbines will be an overwhelming and instrusive experience, conflicting with the character of the historic and wild cultural landscape.

Figure 22: View of Wind Garden WEF site from R350 looking southwest on leaving Hellpoortpas. This is one of the gateways onto the Wind Garden – Fronteer plateau.

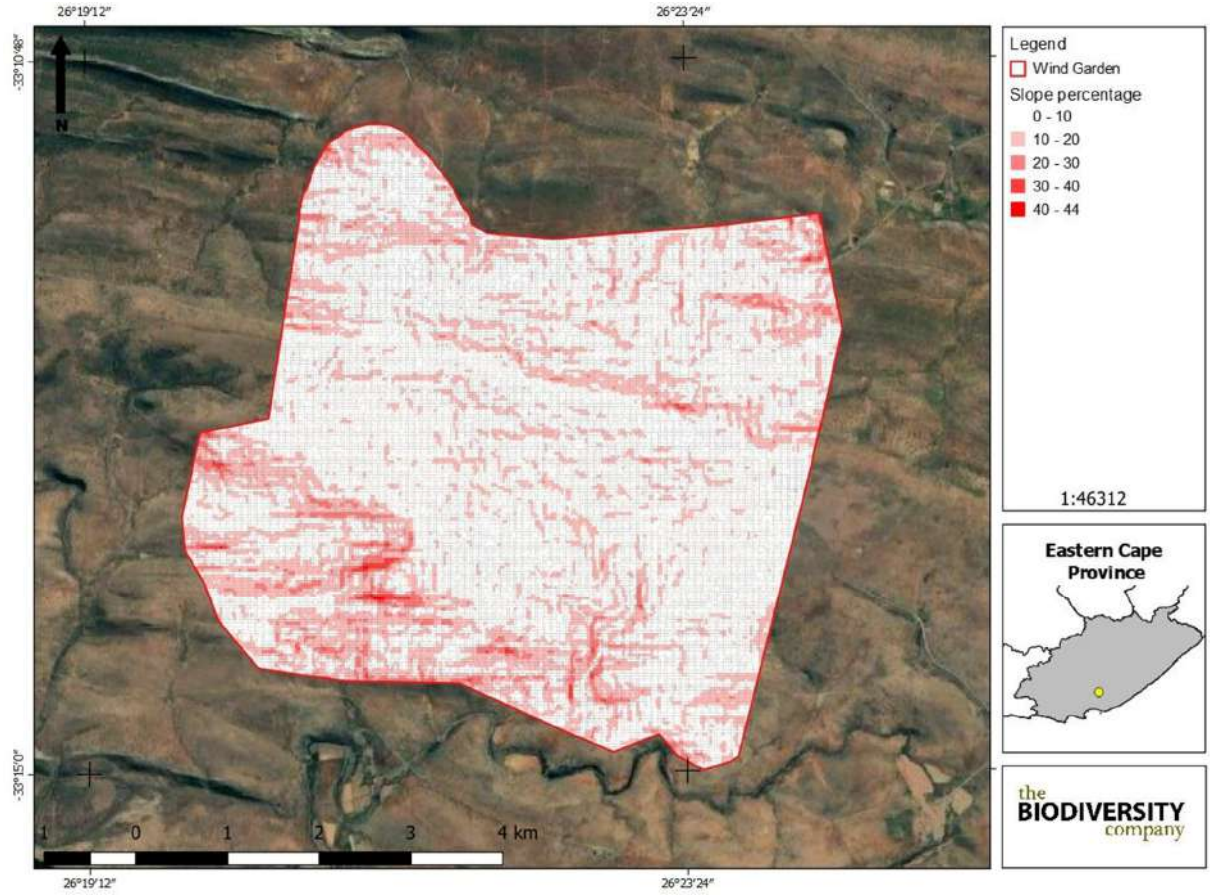


Figure 23: Slope percentage map for the project area.

Figure 24: View to north from Brackkloof Farm hill showing Great Escarpment beyond the Great Fish River valley in the distant horizon. Fencing shows farming character of the area.

Figure 25: View southwest from R350 onto Brackkloof Farm with mountain ridge and slope proposed for WEF development.

Figure 26: View of Van Der Merweskraal portion of the Wind Garden WEF site looking west from R400. Note the ridge on the right which follows the R400 and R350 alignment for the majority of the WEF site.

### 9.1.3 Hydrology

Wetlands and rivers are hydrological features sensitive to development and integral to the landscape character of the study area. In order to retain the landscape character of the area, rivers and wetlands must be conserved for their water resources in a largely water-stressed region, as well as for their ecological, scenic and recreational value. Historic farmsteads and archaeological features are commonly located in riverine corridors.

9.1.4 Vegetation

The majority of the Wind Garden study site is mapped as falling within the Albany Broken Veld and Bhisho Thornveld vegetation types, with a smaller proportion of Kowie Thicket in the north of the site. All these vegetation stypes are classified as least threatened and have not experienced a high degree of transformation. The study area forms an integral part of the unique landscape character that is classified as a least threatened ecosystem. Most of the study area has been used for agriculture, drawing on the potential of the natural vegetation to support livestock (mostly sheep and some cattle), and therefore has a largely untouched character.

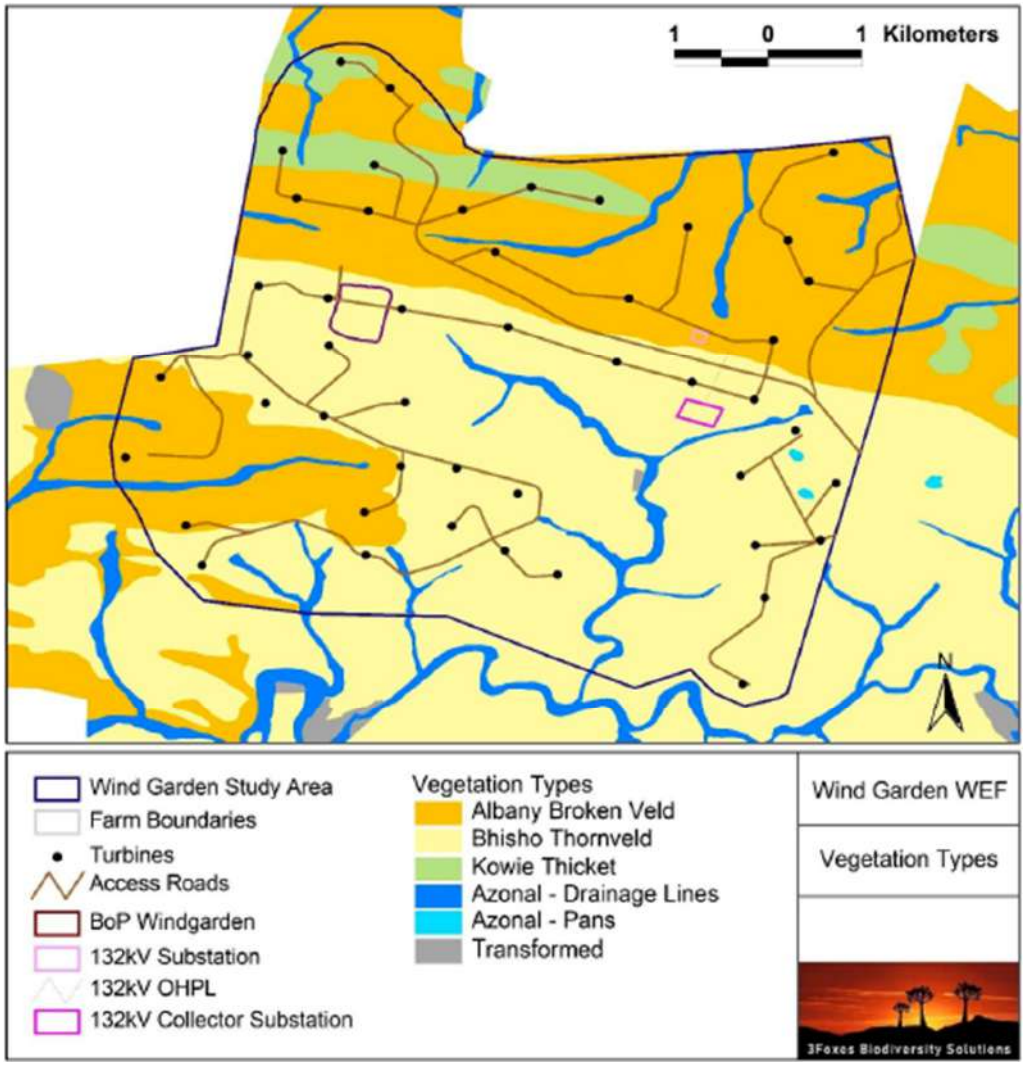


Figure 27: Fine-sale vegetation map of the Wind Garden WEF showing vegetation types and drainage lines.

9.1.5 Conservation: Biodiversity

The Critical Biodiversity Areas (CBA) and Ecological Support Areas (ESA) are essentially a combination of the following layers and their biodiversity significance:

- Ecosystems
- Vegetation Types
- Wetland Types
- River Types
- Estuaries
- Indigenous Forest
- Threatened Species

Note the section of critical biodiversity area (CBA) 1 and 2 along the northern ridge of Brackkloof adjacent to the R350 including the mountainous sloped in that portion of the site and the pocket of CBA 2 in the south adjacent to the Nuwejaars River. Ecological Support Area (ESA) and Natural Area designations cover the majority of the site (Figure 28).

The rationale of this study is that the CBA and ESA layers embody those natural hydrological, vegetation and ecological variables that are integral to maintaining the landscape character in some areas of the study area. The CBA's constitute highly significant areas and the ESA's include areas of medium significance, even from a heritage perspective (Jansen and Franklin, 2020). This is because agricultural and heritage values overlap in these considerations. The significance of the site, in the way that it was farmed to maintain the integrity of the natural vegetation, signifies a unique relationship between man, and nature where it reflects an entangled dimension, and representative of a cultural landscape.

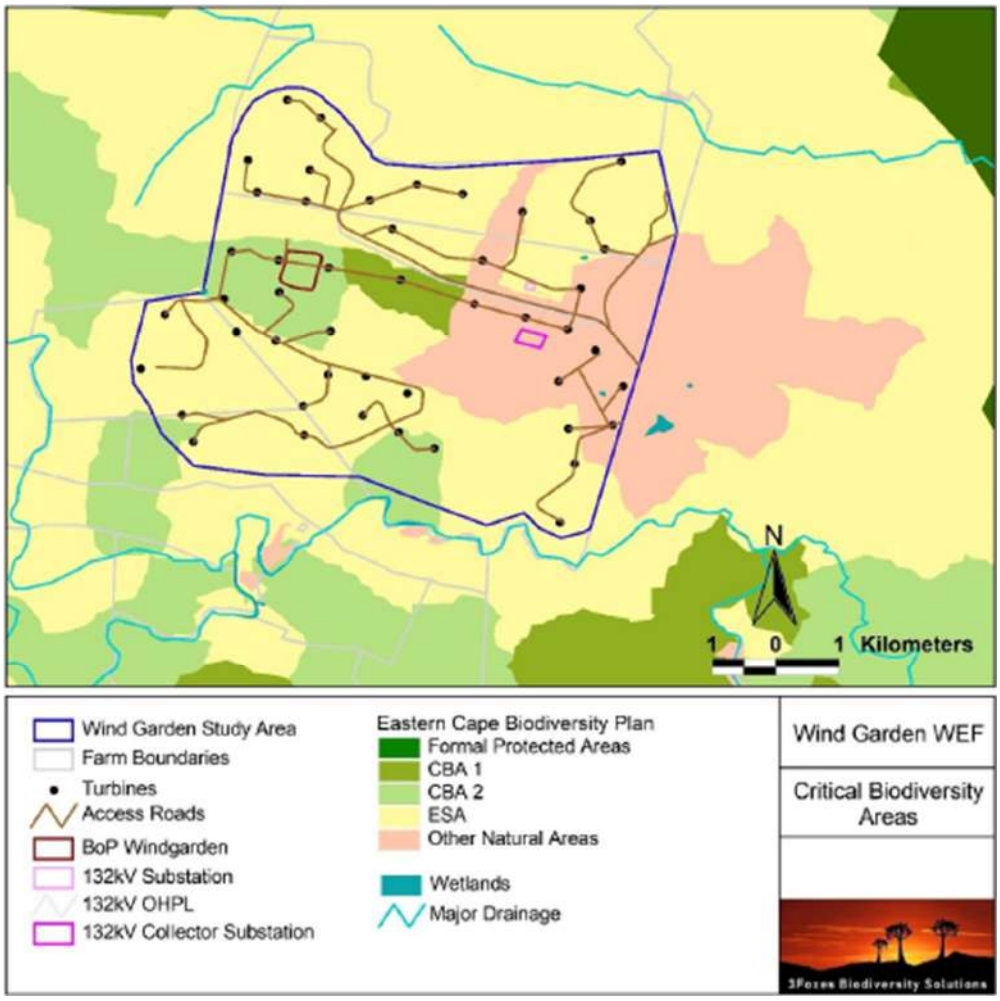


Figure 28:Extract from the Eastern Cape Biodiversity Plan for the study area. Note the section of CBA1 and 2 along the northern ridge of Brackkloof adjacent to the R350.

## 9.2 Cultural Elements

### 9.2.1 Archaeological material

The area around Makhanda is well known for its archaeological remains, especially stone age material and rock art. Howieson's Poort, to the south of the study site, is a type-site that has informed our understanding of the complexity of stone-age tool development in southern Africa. As an area that has, throughout the past, often been the site for contact and conflict between cultural groups, the rock art and material evidence of these contact periods, is significant in their ability to help us understand the impact of this history on the development of our cultures and people in southern Africa (Hall, 1985). Historic archaeological resources are also common in the landscape with many early trekboer farmsteads dating back to the C18th, as well as military structures associated with the increase in fortification on the Cape's eastern frontier from the turn of the C19th. A full assessment of archaeological resources for the area has been compiled in a separate AIA by PGS (2021) from which the following maps have been taken. In addition to the sites noted in the AIA (PGS, 2021) the CLA study also identified an unmarked burial ground on

Hounslow farm to the southeast of the farmstead, possibly associated with the military history of the property, and according to Mr White (pers comm) from Table Hill Farm, there is rock art on his property, but to the south of the farmstead. Neither of these archaeological sites is within the proposed WEF development site.

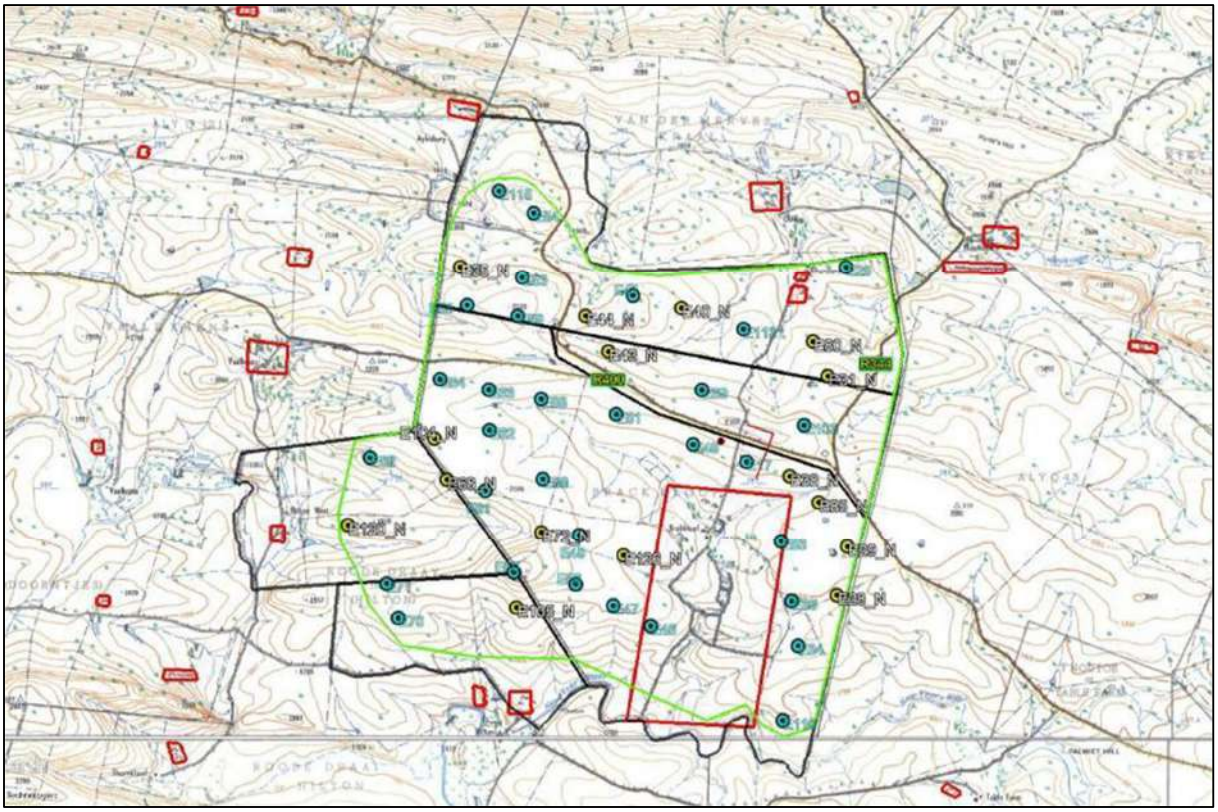

Figure 29: First Edition Topographic maps (1:50 000) *326AB Pigott's Bridge (1959) and 3326AD Salem (1962)* showing the Wind Garden Wind Farm, with several heritage features (red polygons) located in close proximity to the project development area (blue polygon).

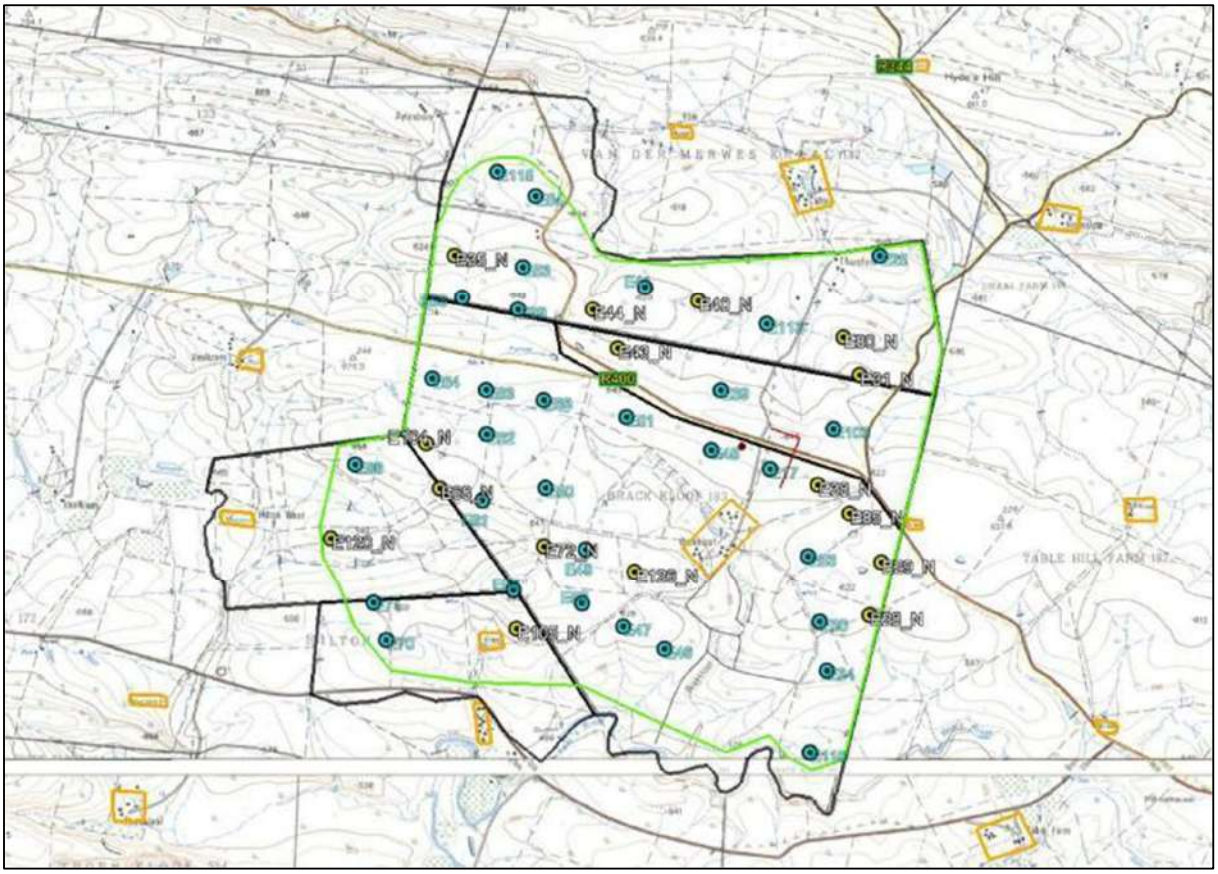

Figure 30: Second Edition Topographic map (1:50 000) *326AB Pigott's Bridge (1977) and 3326AD Salem (1979) showing* the Wind Garden Wind Farm, with several heritage features (red polygons) located in close proximity to the project development area (blue polygon).

### 9.2.2 Historical farmsteads and routes

The history of the landscape is intimately associated to stock farming and waves of settlement throughout history. The stone-age and prehistoric archaeology attests to the inhabitants of the landscape before written history, with the first farmsteads and stone kraals and walls remnants of the first people to settle on the land more permanently rather than being transhumant. The place names of the farms and landscape elements on historic maps give some context to the chronological evolution of settlement in the area. Many Afrikaans names are still prevalent, such as Hellspoort, Kranzdrift, Brakkloof, Van der Merweskraal, Mooimeisiesfontein, etc. with the terms *kraal, drift* and *poort* commonly found in existing place names to describe the phenomenon being labelled. Some of the deserted trekboer farmsteads were occupied by British farmers, who in turn adapted the structures and built new ones, often renaming their farms and homesteads with more personal English names. Interestingly, the term *kraal*, an Afrikaans word for stock enclosure, is now pronounced as "crawl" by the descendents of the British farmers who settled here from the turn of th C19th after many trekboers moved away.

These historic farmsteads and the roads that link them are contextually and historically significant as they would have determined patterns of use and movement across the landscape, and in turn

the natural landscape determined where these places of habitation would be through location of water sources, protection from the element, poorts through ridges and drifts through rivers. Connection between these places and the people who lived and stayed there has historically been critical in determining the way in which people use and survive in this landscape.

Four farmsteads of this nature are relevant to the Wind Garden WEF site, these being Table Hill Farm, Hounslow, Hilton and Brakkloof. All four these farms have historical significance, having been studied and documented in the Annals of the Grahamstown Historical Society, with Hilton House and the associated stone St Peters Church graded as a provincial heritage site.

Table Farm or Table Hill Farm was consolidated before 1966 incorporating the historic 1827 Draai and T'Noutoe Farms. T'Noutoe farmstead, the original proposed site for the first British town in the area was later moved to the current location of Makhanda by Col Graham. It has not been determined whether the T'Noutoe farmhouse, the original location, is still intact within or in the vicinity of the Table Hill farmstead, but as the 1834 SG diagram (Figure 36) shows, the Table Hill Farmstead is located within the T'Noutoe Farm boundaries, suggesting that there is good chance of this. The White family, who still own and live at Table Hill Farm, are descendents of Major Thomas Charles White, one of the 1820 settlers to the area. The farm takes its name from a flat hill that dominates the views around the farmstead. Old stone packed walls and a family graveyard lie just below the farmhouse adjacent to a small dam. Large mature trees surround the farmhouse and stone stock enclosures and sheds can be found on the werf. The owners of Table Hill Farm are supportive of the development of the WEF on their property, although much of the visual impact of the turbines will be minimized by the orientation of the homestead to the east and the presence of mature trees which will offer some visual screening.

Figure 31: View west along the R350 towards the Swartwaterberge showing prominent landscape feature, Table Hill, to the left of frame, middle distance and a historic stone road marker "102 miles CK". Brackkloof Koppie is visible in the middle distance. Much of this view from the centre of frame to the right in the middle distance is proposed for Wind Garden and adjacent Fronteer WEFs.

Figure 32: Stone packed walls and nearby family cemetery below Table Hill Farmstead. Note the mature trees marking the place of human habitation on the naturally shrubby landscape.

Figure 33: Table Hill Homestead

Figure 34: Historic stone structures on Table Hill Farmstead.

Figure 35: View north towards proposed Wind Garden WEF from Table Hill farmstead.

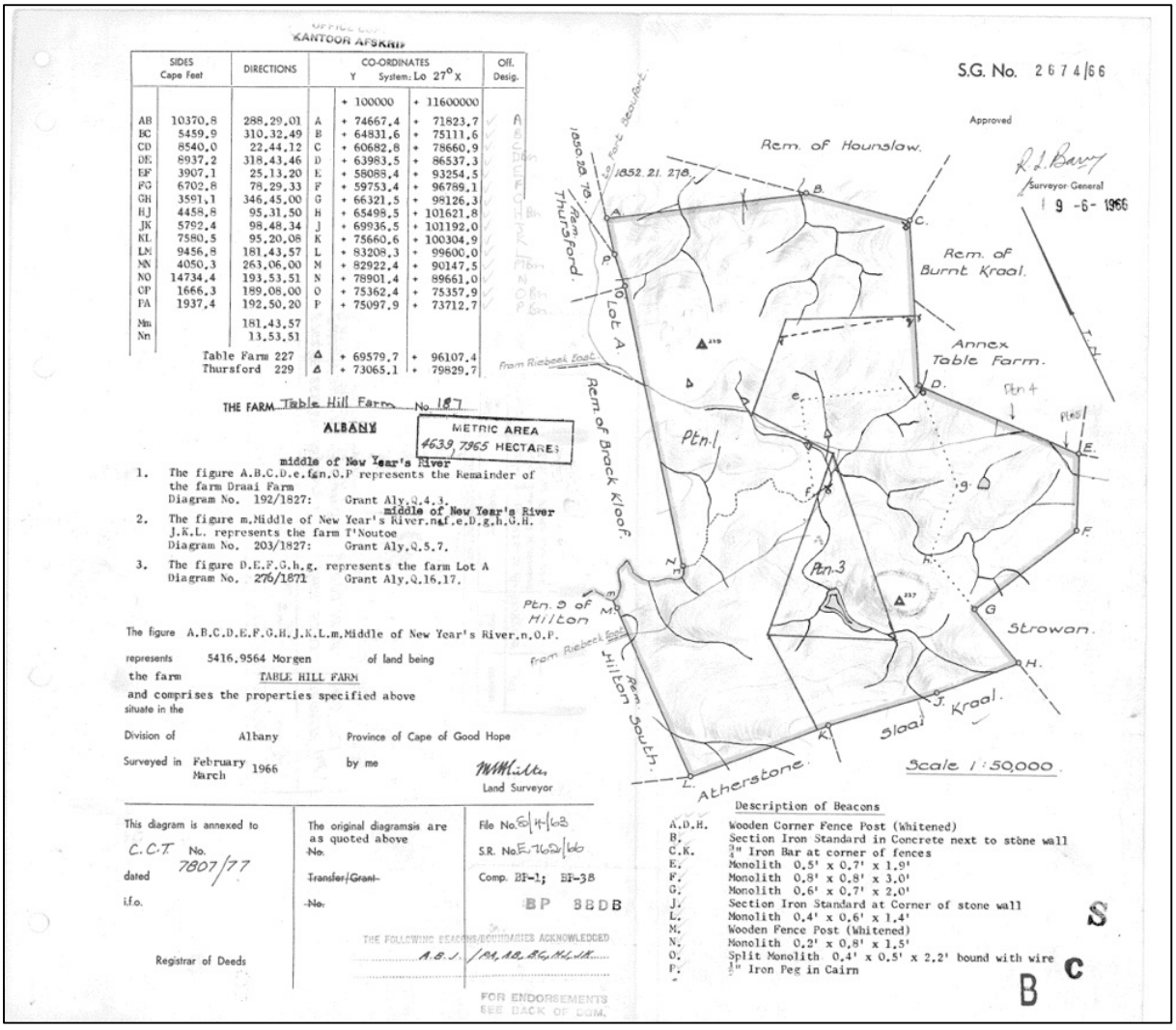


Figure 36: 1966 SG Diagram of Table Hill Farm 187. Note the boundaries of Farm T'Noutoe within Table Hill Farm. The current Table Hill farmstead is located within the boundaries of the T'Noutoe Farm.

Hounslow farmstead has a cluster of historic stone military structures associated to the farmstead. According to a pamphlet on its history, Hounslow was the first stop from Grahamstown after a hard days travel. In 1845 Niemandskraal, belonging to Nicolaas Niemand, became the property of a 1820s settler, William Potter, who renamed the farm Hounslow after his place of origin in England. The homestead became known as The Belle Inn. During the 1846-47 war, a military post of 60 FIngo Levies was established at Hounslow commanded by William Hyde. The homestead also endured heavy attack during the 1850-1853 war, but survived. Investigation of the historic maps together with the existing historic structures collaborates that this place was a significant and long standing nexus of travel across the landscape. There is a stone packed wall along the southern ridge, its use as yet unclear, but it does follow the old historic ox-wagon road shown on the 1827 Draai Farm SG diagram from Grahamstown to the Great Fish River (Figure 41). The historic maps vary in the layout of this road as it passess Hounslow, some showing it passing through a poort in the ridge towards Kranzdrift passing the farmstead on the east, others showing it running south of the farmstead along the ridge. Regardless, this road, clearly a

significant historic route between Grahamstown and the frontier, is intimately associated with the Hounslow farmstead and its military history. Note on the 1849 SG Diagram for Farm Hounslow 131 (Figure 40) the outspan area in the northwest corner of the site as well as references to old ox-wagon routes to 'Koesters Drift' which crosses the Great Fish River and the town of 'Cradock'. On the 1849 SG diagram is also one of the earlier names of the farm, Rietfontein and adjacent trekboer farm names of Jantjieskraal, Van der Merweskraal and Kranz Drift. Unmarked stone graves to the south east of the werf in a flat area adjacent to the watercourse, are also associated with this farmstead. These are possibly military graves, although some of the graves are small and could be those of children, which puts the military theme to question. The Hounslow homestead itself is of historic significance and associated to Sir Thomas Baines who spent some time here and painted the house. The owner of Hounslow is supportive of the proposed WEF development. Much of the development will be visually screened from the farmstead by the high ridge between the farmstead and the turbines to the south (Figure 26). The two nearest proposed turbines will however be visible above the ridgeline from the historic werf.

Figure 37: View of steep ridge to southeast from Hounslow farmstead with agricultural stone structures in the foreground. Two proposed turbines from the Wind Garden WEF would be visible above the ridge from this viewpoint.

Figure 38: Hounslow Farmstead with cluster of historic military stone buildings and walls in foreground and C19th Hounslow House roof and chimney visible behind mature trees. Much of the direct visual impact of the proposed Wind Garden WEF will be screened by the trees.

Figure 39: Ridge to south of Hounslow farmstead with unmarked stone graveyard in the foreground and stone walling running along the far ridge.

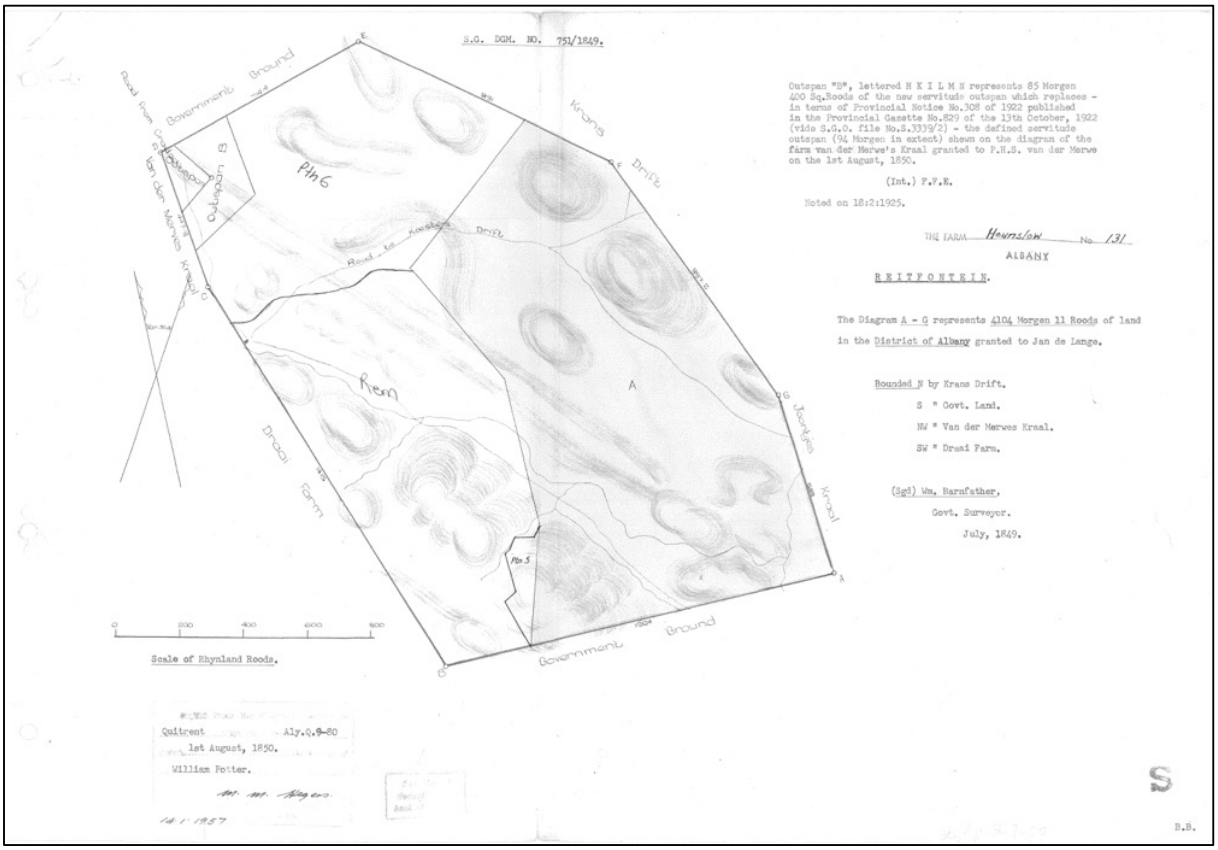


Figure 40: 1849 SG diagram for Farm Hounslow 131. Note the outspan area in the northwest corner of the site as well as references to old ox-wagon routes to 'Koesters Drift' which crosses the Great Fish River and the town of 'Cradock'. On the SG Diagram is also the original name of the farm, Rietfontein and adjacent trekboer farm names of Jantjieskraal, Van der Merweskraal and Kranz Drift.

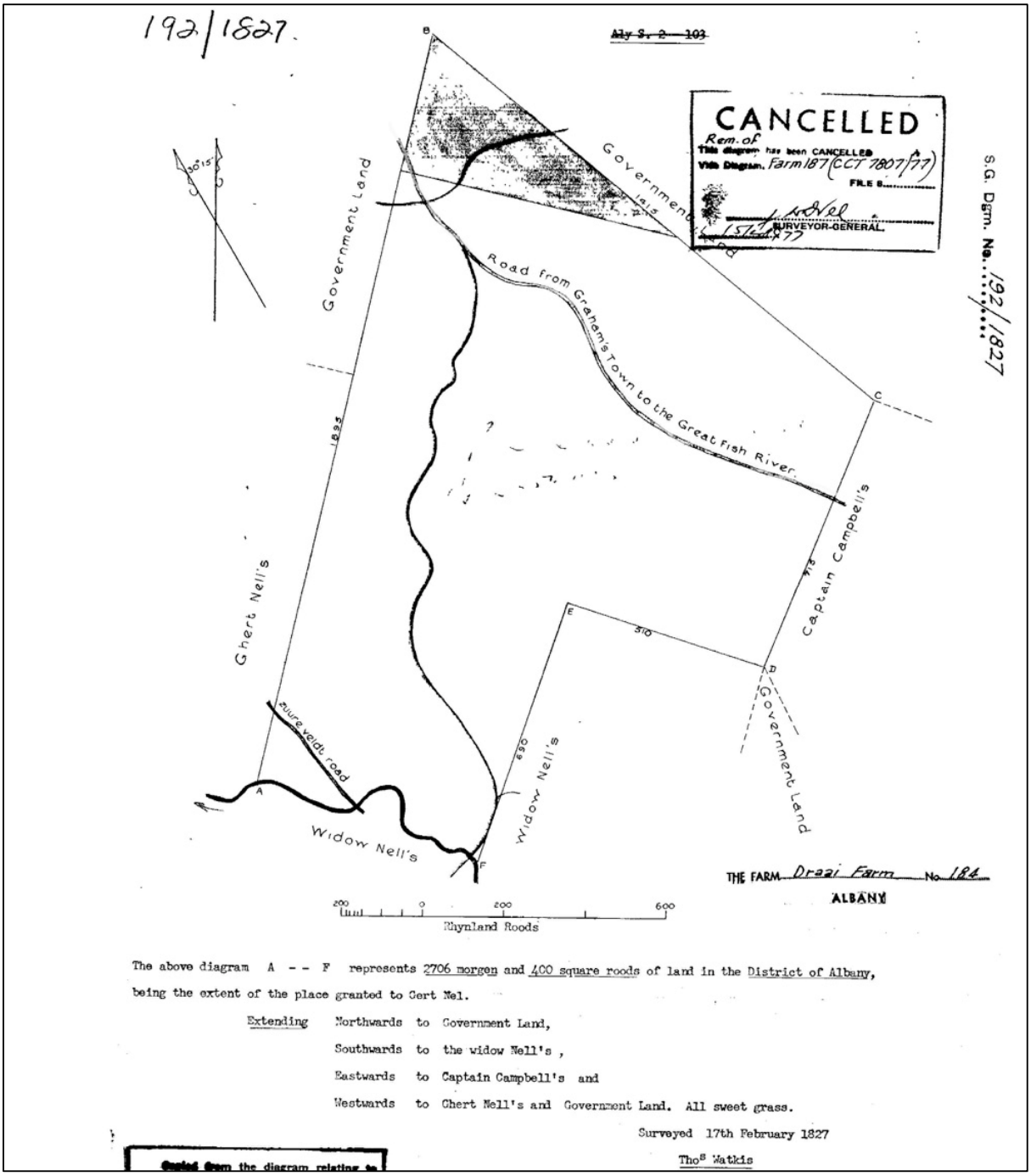


Figure 41: 1827 SG Diagram of Draai Farm showing old historic "Grahamstown to Great Fish River" route running through Draai Farm passing close to Hounslow farmstead.

The Hilton homestead is located off the plateau southwest of the proposed Wind Garden and Wind Garden WEFs. The proposed WEFs are located on the higher slopes directly in view of the homestead. Hilton Farm, originally known as Roodedraai, was owned by a Dutch farmer Philip Schutte, later by Landdrost Rivers. George Cumming became the owner in 1834 when the homestead was built and it was he who was instrumental in the building of the St Peters stone

church on the farm in 1877 to serve the neighbours. Internally, Hilton House homestead has a splendid oval entrance hall in the best classical manner, with wall-niches decorative sculpture and vases. The rooms are high and spacious, with fine fireplaces and the staircase is one of the most gracious surviving in the country. Hilton is one of only a few houses with the semicircular bow-fronts which were the height of architectural fashion throughout the late Georgian period, which have remained in existence in the Eastern Cape. The only alteration being the slate roof which has been replaced with iron. Previously proclaimed a National Monument, Hilton is now a provincial heritage site. The 1959 topographical map (Figure 29) shows huts located close to Hilton and later in 1977 (Figure 30) a kraal is indicated here.


Figure 42: View west from secondary farm road over Hilton House and associated St Peters Church with Swartwaterberge and the town of Riebeeck East in the distance. The proposed Wind Garden WEF is located across the road on the raised plateau to the right out of frame.

Figure 43: View west of St Peters Church with associated material remains including a cemetery.

Figure 44: View north from St Peter Church showing Brackkloof koppie which is proposed for Wind Garden WEF.

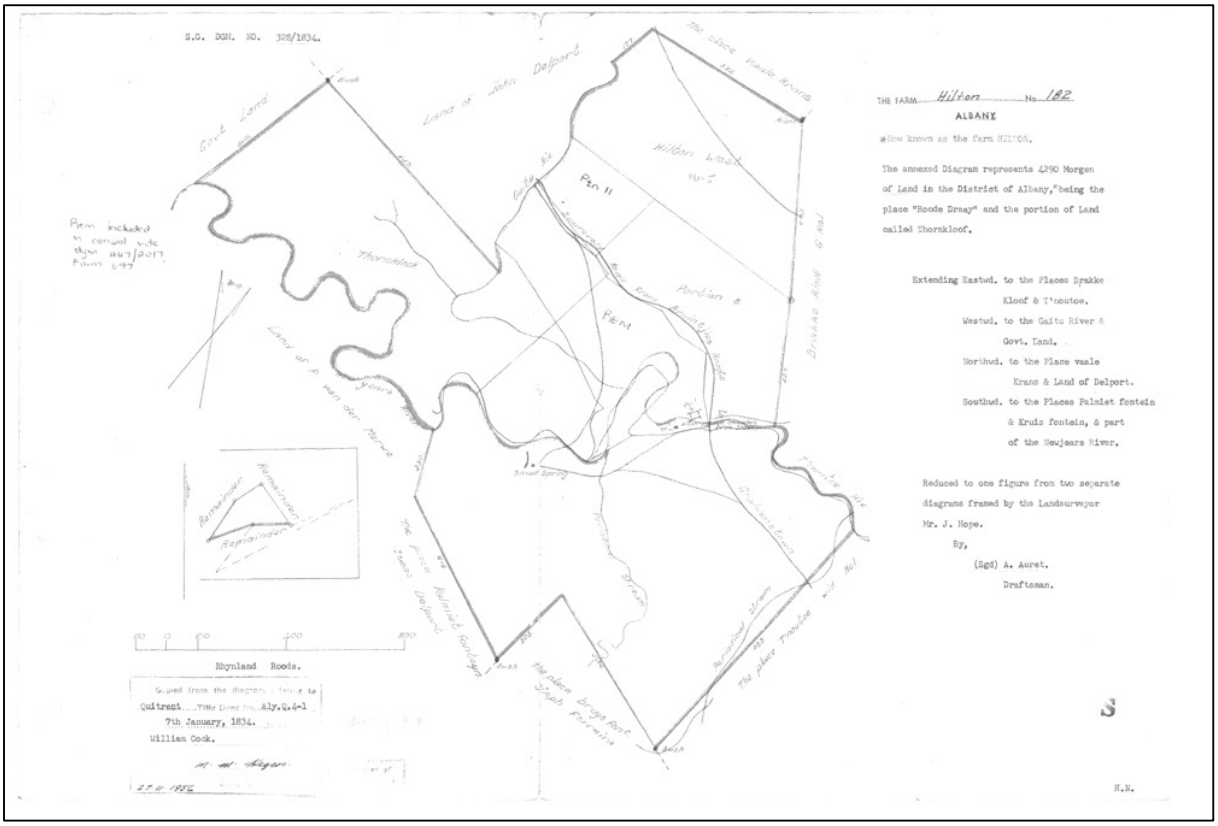

Figure 45: 1834 SG diagram of Hilton Farm indicating the location of the 'Hilton Church Cemetery' as well as the historic routes that crossed the farm to neighbouring farmsteads and towns. Note, Table Farm is here still known as "T'Noutoe" the farm of Widow Nel.

Brakkloof farmstead is located on the Brack Kloof/ Brakkloof farm, a historic stock farm, within the proposed Wind Garden WEF adjacent to the Wind Garden site. Another historic farmstead, the 1959 topographical map (Figure 29) shows extensive stone walling along the riverine corridor associated with the farmstead. The 1849 SG Diagram of Brakkloof Farm (Figure 48), shows the farmstead as a nexus of travel routes between Grahamstown, other farmsteads and towns. The proposed Wind Garden WEF adjacent to Wind Garden has the majority of its turbines located on Brack Kloof. The owner of Brack Kloof is supportive of the proposed WEF development. Located in a riverine depression, the view from Brack Kloof farmstead towards the Wind Garden WEF may be mitigated by the natural undulations, although the Wind Garden WEF turbines will be of high visibility.

Figure 46: View to south of Brack Kloof farmstead in middle distance and Cape Fold Mountains on the horizon. Much of this view has been proposed for turbine placement in the adjacent Wind Garden WEF. Hilton Farm is located on the far side of the hill to the right of frame.

Figure 47: View north from Brackkloof farmstead. The ridgeline in sight is proposed for Wind Garden WEF turbine and infrastructure placement.

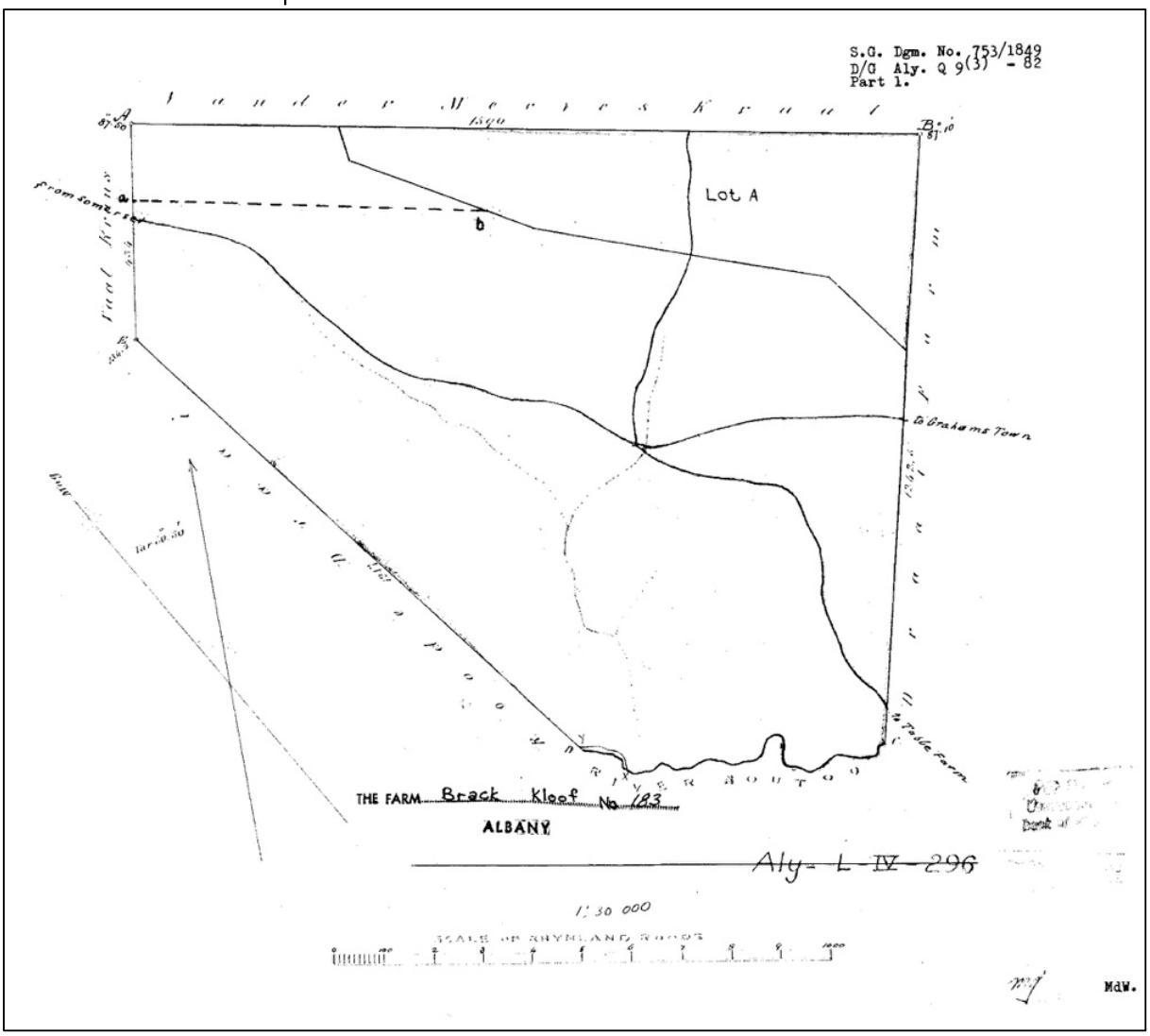


Figure 48: 1849 SG Diagram of Brakkloof Farm, showing the farmstead as a nexus of travel routes between Grahamstown, other farmsteads and towns.

As the most recent iteration of the historically significant network of roads that has determined patterns of travel and use on the landscape and linked vulnerable farmsteads and towns in an area of conflict and tension throughout history, the regional roads in the area are of high significance. The R350, R400 and R344 are all historic routes that have been used to navigate the vastness of space between places, punctuated by topographical features that simultaneously pose threat and offer protection, giving the sense of a wild and unpredictable frontier. This character of the landscape and the experience of travelling along them, is an essential part of the sense of place and a significant element in the cultural landscape.

### 9.2.3 Conservation areas and economic development

The more recent tranformation of the landscape into one of nature and game reserves attests to the resilience and adaptability of the inhabitants of the landscape to exploit the resources in the most economically productive manner without overwhelming or detracting from the sense of place or natural elements of the cultural landscape. The surrounding nature reserves have reintroduced wild game, as were prevalent before the influx of farming communities, and draw on the sense of wilderness and physical and visual expanses of the landscape to encourage tourism. The eco-tourism and game park ventures surrounding the proposed Wind Garden and Wind Garden WEFs have high economic value for the local inhabitants of the area, currently under the strain of high unemployment. This landscape element is a clear example of man and nature working in a symbiotic relationship with conservation considerations in relation to agricultural, economic and heritage values overlapping. The significance of this element, in the way that it is being exploited to maintain the integrity of the natural vegeation and fauna, signifies a unique relationship between man and nature and is representative of a cultural landscape.

Figure 49: View south to the Wind Garden plateau taken from the Kwandwe Reserve entrance road off the historic R67. Although the distance from the WEF site will significantly reduce the impact of the turbines, the constant movement in an otherwise still landscape will be noticeable with a low to moderate impact on the sense of place.

### 9.2.4 Military

As a landscape with a long history of conflict and military intervention, such as the military defence forts at Fort Brown and Fort Selwyn (both PHS's) , the military base outside of Makhanda is in keeping with the cultural pattern and use of the area. With no visible impact on the surrounding landscape, this element does not negatively detract from the significance of the cultural landscape.

9.2.5 Social

The VIA (March, 2021) identified specific landowners during the fieldwork that have objected to the construction and operation of wind farms within closer proximity to their properties. It is expected that these landowners may experience visual impacts ranging from moderate to very high, depending on their farm's proximity to the wind turbine structures, and due to their stated sensitivity (aversion) to the infrastructure. It is assumed that the landowners and inhabitants of the land for which the WEF is proposed are supportive of the WEF development on the affected properties. Personal communication with people living in Makhanda reflected a positive attitude to the proposed WEFs, probably as their sense of place and socio-economic situation will not be much affected by the development as they are not dependent on the landscape and its sense of place for their livelihoods and their desire for a stable source of power, and the potential that the WEFs hold to realise this, will override their concerns for an area outside of their everyday experience.

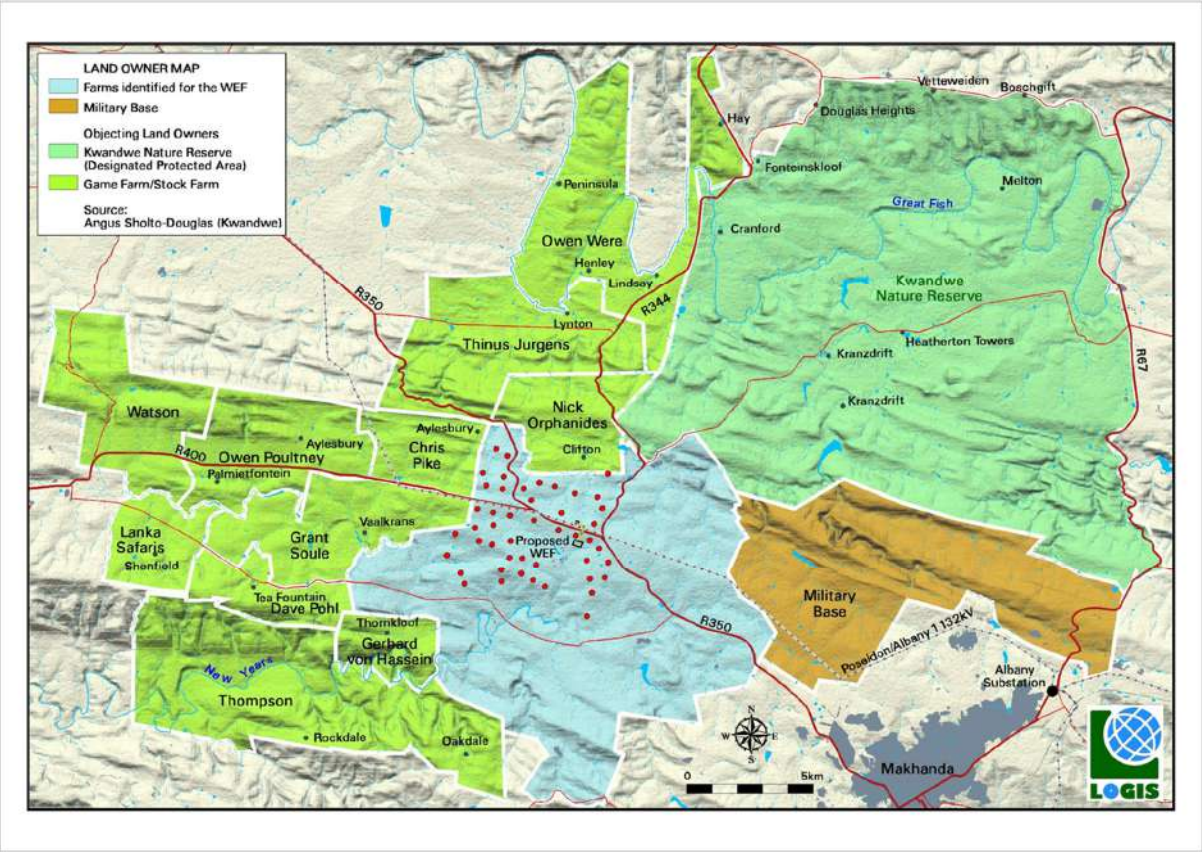


Figure 50: Map indicating locations of objecting landowners properties in relation to the proposed WEF.

9.2.6 Industrial elements

The Albany-Poseidon Power line is visible on the landscape, but due to its relatively low height, horizontal and linear orientation, which follows the natural layout of the land, the impact is subtle and does not overwhelm the scenic and historical experience of the cultural landscape. The Waainek WEF, although visible, is not overwhelming as it is experienced at a distance (17kms)

from the rural areas of the region as part of the wider landscape. Further, as it is not a main visual element on entering of the rural landscape and rather only really prominent once reaching the more built up area of Makhanda on arrival, it reads as part of the industrial and urban node. As it is only 8 turbines, the impact is drastically reduced to a separate, distinct element. The impact of the turbine lighting on the wilderness landscape at night is intrusive and overwhelms the rural character of the landscape, giving it an industrial sense of place after dark.

# 10 Landscape character assessment

The scope of cultural understanding is not only limited to the tangible features found on the site, but also include features that are captured in the production of space, the sense of place, and emotional connection to place.

"Article 22 of the Burra Charter in article 15.1 states that the amount of change to a place and its use should be guided by the cultural significance of a place and its appropriate interpretation. It is for this reason that this study analysed the entire landscape for its collective and contextual significance. Landscape Character Assessment is used as a tool to understand the character of the cultural landscape, and its associated boundaries. Landscape Character Assessment (LCA) helps us to understand our landscapes: their qualities, vulnerabilities and varying capacities to absorb change. It is a tool for understanding the formation of landscapes, defining patterns of natural and cultural features, and identifying the significant elements that give them character. Landscape Character Assessment is an integral part of identifying Cultural Landscapes, which embody the long history and heritage of the relationship between nature and culture, between people and their environment. The methodology of Landscape Character Assessment was adjusted to include five core value lines that underscore heritage significance in the context of the study site (ecologic, aesthetic, historic, social and economic value). Each of these value lines and the element of landscape character that they support (site requirements), lead to development criteria or placement indicators for the protection and management of its heritage significance. In each instance, 'Character' is thus understood to comprise a distinct, recognisable, describable and consistent pattern of elements in the landscape that makes one landscape different from another, each with its sense of place. When such a place is recognised as being valuable as a whole, but also due to each of its individual elements, it is defined as having Significance. The purpose of Landscape Character Analysis in this study is to help conserve and manage the significant qualities of our cultural landscapes as heritage. Landscape character differs with a different combination of elements and features that make up the landscape. Elements are classified as the functional (what), while features are more distinctive (how) that makes one area different to the next." (Jansen and Franklin, 2020)

## 10.1 Landscape Character Areas and Cultural Heritage Resources

Cultural landscapes are a significant factor in the evaluation of the impact of proposed development on cultural heritage resources, tangible (e.g. Historic settlements, landscapes, technological) and intangible (e.g. language, indigenous knowledge systems, oral traditions). The area investigated for the proposed Wind Garden and Wind Garden WEFs is considered as having a high to very high cultural landscape heritage significance.

The Wind Garden site can be divided into three landscape character areas with three cultural heritage resource types. These units were determined by taking the larger landscape context into consideration in order to understand the character and cultural heritage values that underpin the proposed development site.

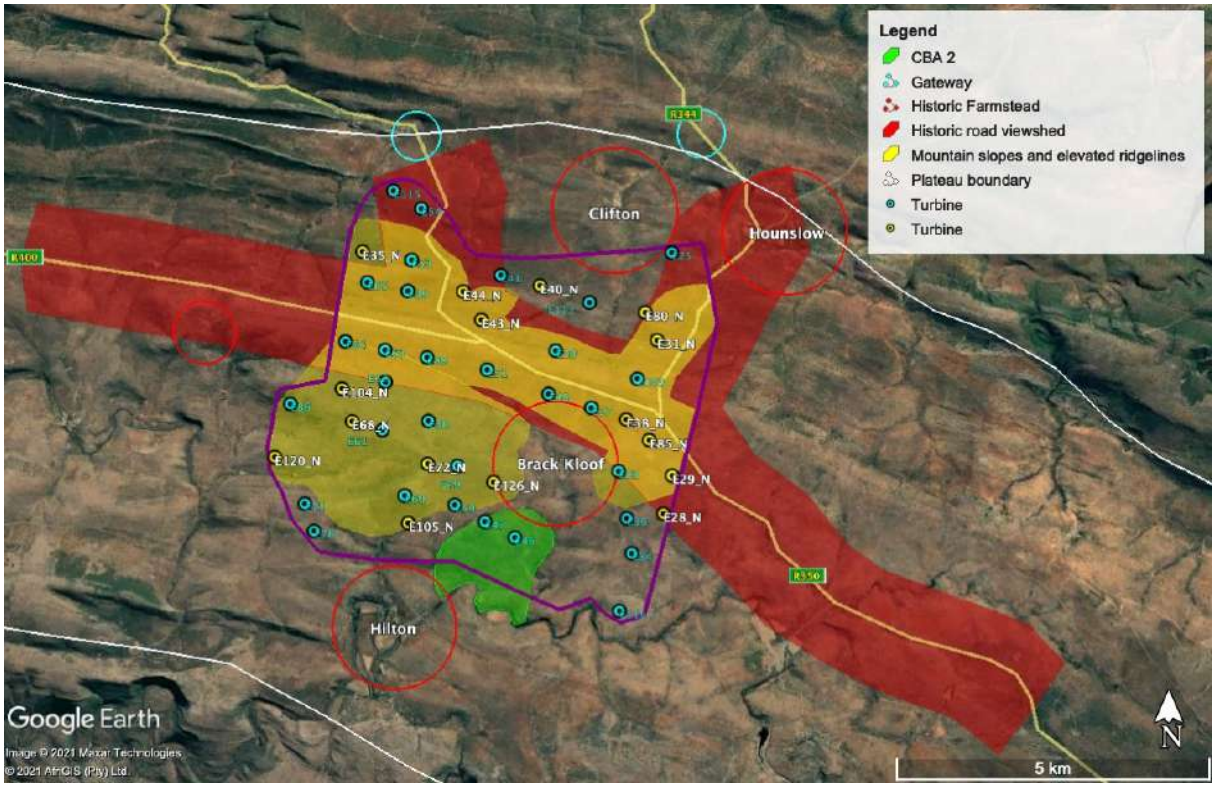

Figure 51: Cultural landscape units reflecting cultural heritage values identified for Wind Garden landscape. Proposed wind turbine placement overlaid.

A: Wind Garden – Wind Garden Plateau

The plateau of undulating hill and plains on which the proposed Wind Garden WEF is located is of higher elevation to the surrounding landscape and visible to a very significant part of the surrounding area, including significant heritage sites such as Fort Brown, Fort Selwyn, the Great Fish River eastern ridge, Riebeeck East and many farmsteads and nature reserves in the surrounding area (Figure 20). The visual impact on these sites is further discussed in the VIA for the site (March, 2021). The plateau is characterised by undulating terrain with hills and riverine corridors. The entire site is located on the plateau, as such it is not indicated on the cultural landscape elements map.

B. Mountainous ridges

The plateau of undulating and strongly undulating hills and plains is bounded to the north by mountainous and tall hills. These mountain ridges create a visual buffer between the plateau and lower lying areas when experienced from close proximity. Gaps between these ridges have become poorts through which animals and people navigate the landscape.

C. Riverine corridors
In juxtaposition to the hilly undulations of the plateau and surrounding landscape, riverine corridors intersect the landscape creating a network of drainage lines. Shallower parts of these water courses have become drifts through which animals and people navigate the landscape. Historic farmsteads and their associated structures are largely found in this landscape unit.

D. Historic farmsteads and associated stock farms – Grade IIIA – II cultural heritage resources
The farmsteads in this study are all located adjacent or near to watercourses or springs in the lower elevations of the undulating plains, with associated grazing lands for livestock on the higher elevations and ridges.

E. Conservation areas – Grade II – I Bio-cultural heritage resources
CBA's and a large portion of ESA in the study area supports biodiversity conservation. Many properties outside of the study area fall in this landscape unit and would add to the wilderness sense of place.

F. Historic routes and gateways – Grade IIIA – II cultural heritage resources
The R350, R400 and R344 are scenic historic routes that wind over the undulating plateau. Intermittent views between the hills of farmsteads and distant mountain ranges give the sense of place in the landscape. The gateways to the plateau on each of these routes allows for significant views on exiting and the transitional experience of leaving one distinct landscape area for another. This is most strongly experienced on entering the plateau on the R350 from Makhanda and more impressively travelling through the Hellspoortpas, as well entering the plateau from the northern ridge on the R344 overlooking Van Der Merwes Kraal and Clifton. Hounslow is a nexus point at a gap between the ridges where the R344 and the Kranzdrift roads join with the historic road to Grahamstown/ Makhanda.

G. Archaeological and palaeontological sites – Grade IIIC to II cultural heritage resources
All archaeological and palaeontological resources are protected by the NHRA and were investigated for grading by the AIA. Stone walling, kraals, graveyards/ cemeteries and rock art on Hounslow, Brack Kloof, Hilton, Draai and Table Hill Farms are included here. These resources, where there locations are known, are largely contained within the farmstead areas and as such have not been mapped separately in this report.

# 11 IMPACTS TO CULTURAL LANDSCAPE AND RECOMMENDATIONS

The impact of the proposed development on the cultural landscape will be assessed according to five core values developed by Job Roos (2007), which include ecologic, aesthetic, historic, social and economic (taken from the Cultural Landscapes study by Jansen and Franklin, 2020). These values merge the requirements of significance assessment according to cultural and natural heritage resources as is required for consideration of cultural landscapes which, by definition, are the manifestation of the relationship between these characteristics of a landscape over time.

## 11.1 Ecological

Table 2: Impact Assessment Table for Impact on ecological cultural landscape elements by all phases of development.

| *Nature of Impact:* Impact on ecological cultural landscape elements by all phases of development. | | |
|---|---|---|
| | *Without mitigation* | *With mitigation* |
| *Extent* | Regional (4) | Regional (1) |
| *Duration* | Permanent (5) | Permanent (5) |
| *Magnitude* | Moderate (6) | Low (4) |
| *Probability* | Highly Probable (4) | Probable (3) |
| *Significance* | Medium (60) | Moderate (30) |
| *Status (positive or negative)* | Negative | Negative |
| *Reversibility* | Low | Low |
| *Irreplaceable loss of resources?* | Yes | No |
| *Can impacts be mitigated?* | Yes | |
| *Cumulative impacts:* Complete or whole-scale changes to the environment or sense of place. | | |
| *Residual impacts:* Low, provided that rehabilitation works are carried out as required. However, decommissioning is unlikely which results in a high residual impact. | | |

*Mitigation*

- Most of the area is prized for the fact that its natural character is retained, and that the landscape therefore still performs a range of biodiversity and ecological functions. This is mainly due to the low agricultural potential of the area for anything other than grazing, which has limited the impact on the landscape and vegetation. Species and ecosystem loss should be prevented by limiting fragmentation in the landscape, and should therefore adhere to the following:
  - Remaining areas of endemic and endangered natural vegetation should be conserved.
  - Critical Biodiversity Areas, and Ecological Support Areas (along drainage lines), should be protected from development of the wind turbines or any associated development during all phases.
  - Areas of critical biodiversity should be protected from any damage during all phases; where indigenous and endemic vegetation should be preserved at all cost.
  - Areas of habitat are found among the rocky outcrops and contribute to the character, as well as biodiversity of the area. Care should be taken that habitats are not needlessly destroyed.
  - Identified medicinal plants used for healing or ritual purposes should be conserved during all phases if threatened for use.
- No wind turbines should be placed within the 1:100-year flood line of the watercourses. In the context of the sensitivity to soil erosion in the area, as well as potential archaeological resources, it would be a risk to include any structures close to these drainage lines
- Careful planning should incorporate areas for stormwater runoff where the base of the

structure disturbed the natural soil. Local rocks found on the site could be used to slow stormwater (instead of concrete, or standard edge treatments), and prevent erosion that would be an unfortunate consequence that would alter the character of the site. By using rocks from site it helps to sensitively keep to the character.

## 11.2 Aesthetic

Table 3: Impact Assessment Table for Impact on aesthetic cultural landscape elements by all phases of development.

| *Nature of Impact:*<br>Impact on aesthetic cultural landscape elements by all phases of development. | | |
|---|---|---|
| | *Without mitigation* | *With mitigation* |
| *Extent* | Regional (5) | Regional (2) |
| *Duration* | Permanent (5) | Permanent (5) |
| *Magnitude* | Very high (9) | Moderate (6) |
| *Probability* | Definite (5) | Definite (5) |
| *Significance* | High (95) | High (65) |
| *Status (positive or negative)* | Negative | Negative |
| *Reversibility* | Low | Low |
| *Irreplaceable loss of resources?* | Yes | Yes |
| *Can impacts be mitigated?* | Yes | |
| *Cumulative impacts:*<br>Complete or whole-scale changes to the environment or sense of place | | |
| *Residual impacts:*<br>The character of the landscape will remain changed permanently after the duration of the project as over time the sense of place will change. It is unlikely that the infrastructure will be decommissioned. | | |

*Mitigation*

- Encourage mitigation measures (for instance use of vegetation) to 'embed' or disguise the proposed structures within the surrounding tourism and agricultural landscape at ground level, road edges etc;
- The continuation of the traditional use of material could be enhanced with the use of the rocks on the site as building material. This would also help to embed structures into the landscape and should not consist of shipping containers that clutter the landscape.
- Using material found on the site adds to the sense of place and reduces transportation costs of bringing materials to site.
- Where additional infrastructure (i.e. roads) is needed, the upgrade of existing roads to accommodate the development should be the first consideration. The local material such as the rocks found within the area could be applied to address stormwater runoff from the road to prevent erosion.
- Infrastructure improvement, including new roads and upgrades to the road network, should be appropriate to the rural context (scale, material etc.).
- The layout of the turbines should have an emphasis on place-making, i.e. landscape-related

heritage considerations, as opposed to standard infrastructure driven requirements;

- Prevent the construction of new buildings/structures on visually sensitive, steep, elevated or exposed slopes, ridgelines and hillcrests. Retain the integrity of the distinctive Frontier landscape character;
- Scale and massing should be sensitive to the surrounding Frontier landscape. Limiting the number of turbines to clusters of no more than 8 that allow for views between the clusters from the scenic viewpoints should be maintained. The extent of cover of the Wind Garden and associated Fronteer WEF currently exceeds that of the whole of Makhanda urban area and must be reduced so that the area taken up is less than that of the urban and historic centre of the region.
- Significant and placemaking viewsheds of surrounding ridgelines and distant mountain should be maintained by limiting the placement of turbines or associated infrastructure on opposing sides of any of the regional roads, so that at any time a turbine-free view can be found when travelling through the landscape or at the historic farmsteads.
- Avoid visual clutter in the landscape by intrusive signage, and the intrusion of commercial, corporate development along roads.
- The mountains in the study area are landforms vital to its overall landscape character. They enclose the valleys and settlements of heritage significance. Prevent development on visually sensitive mountain slopes and ridgelines in order to preserve the continuity of the mountains as a backdrop. Although the Waainek WEF negatively impacts on southern views from the study site, the limited number of turbines (8) has reduced the impact considerably.
- Avoid development of infrastructure (such as buildings, wind turbines and power lines), on crests or ridgelines due to the impact on the visual sensitivity of skylines. The visual impact of turbines can be reduced by distancing them from viewpoints such as roads and farmsteads, and placing them in lower lying plains to reduce their impact on the surrounding sensitive cultural landscape.
- Retain view-lines and vistas focused on prominent natural features such as mountain peaks or hills (such as Table Hill, Hellspoort, the Swartwaterberg and the south facing slope of the Great Fish River valley), as these are important placemaking and orientating elements for experiencing the cultural landscape.
- Reduce the impact of turbine night lighting by minimizing the number of turbines with lighting to only those necessary for aviation safety, such as a few identified turbines on the outer periphery, or use aircraft triggered night lighting. Due to the reduced receptors on the roads at night, the impact of the lighting at night is reserved mainly for farmsteads and other places of overnight habitation such as the surrounding tourist facilities, which would be heavily impacted by the light pollution on a long term and ongoing basis. The impact of the Waainek WEF turbine night lighting on the wilderness landscape is intrusive and overwhelms the rural character of the landscape, giving it an indudtrial sense of place after dark. Further exacerbation of this should be limited as far possible.

## 11.3 Historic

Table 4: Impact Assessment Table for Impact on historic cultural landscape elements by all phases of development.

| *Nature of Impact:* Impact on historic cultural landscape elements by all phases of development. | | |
|---|---|---|
| | *Without mitigation* | *With mitigation* |
| *Extent* | Regional (5) | Regional (1) |
| *Duration* | Permanent (5) | Permanent (5) |
| *Magnitude* | Very high (9) | Moderate (5) |
| *Probability* | Definite (5) | Definite (5) |
| *Significance* | High (95) | Moderate (55) |
| *Status (positive or negative)* | Negative | Negative |
| *Reversibility* | Low | Low |
| *Irreplaceable loss of resources?* | Yes | Yes |
| *Can impacts be mitigated?* | Yes | |
| *Cumulative impacts:* Complete or whole-scale changes to the environment or sense of place | | |
| *Residual impacts:* The character of the landscape will remain changed permanently after the duration of the project as over time the sense of place will change. It is unlikely that the infrastructure will be decommissioned. | | |

*Mitigation*

- The integrity of the historic farm werfs should be maintained and protected. Therefore, care should be exercised in the placement of the turbines at least 1000m from all werfs and historic farmsteads.
- Names of routes and watercourses that refer to traditional use during the time of the hunter-gatherers and herders, as well as the colonial era in the Cape, should be celebrated. Public access to these sites should be encouraged, and care should be taken to protect these names.
- Traditional planting patterns should be protected by ensuring that existing trees are not needlessly destroyed, as these signify traces of cultural intervention in a harsh environment. These planting patterns include the trees planted around the werfs and along travel routes, such as the aloes along the historic route on Draai Farm as it crosses over Hounslow and the driveway to Thursford homestead. In some cases, remnant planting patterns (even single trees) uphold the historic character of an area. Interpretation of these landscape features as historic remnants should occur.
- Burial grounds and places of worship are automatically regarded as Grade IIIa or higher. Any development that threatens the inherent character of family burial grounds must be assessed and should be discouraged. No turbines have been proposed for placement near known unmarked burials or family cemeteries. A preconstruction micro-survey of each turbine footprint should be conducted to ensure no further unmarked graves are threatened.
- Mountain slopes have been used for traditional practices for many years, and care should be

taken that any significant cultural sites, such as burials and veldkos/medicinal plant resources, are not disturbed.

- Farms in the area followed a system of stone markers to demarcate the farm boundaries in the area. Where these structures are found on the site, care should be taken that they are not needlessly destroyed, as they add to the layering of the area.
- Roads running through the area have historic stone way markers, such as observed along the R350. Where these are found care should be taken that they are left in tact and in place. Road upgrades must not move or threaten their position and they should be visible from the road they are related to by passing travellers.
- Where the historic function of a building/site is still intact, the function has heritage value and should be protected.
- Surviving examples (wagon routes, outspans, and commonage), where they are owned in some public or communal way (or by a body responsible for acting in the public interest) and where they are found to be actively operating in a communal way, will have cultural and heritage value and should be enhanced and retained. The historic route running over Table Hill, Draai and Hounslow Farms is on private land and as such not publicly accessible. Where it is visible from the R350 it should be conserved together with the associated stone walling. The historic route to Kranzdrift through Kwandwe should be maintained as publicly accessible.
- Historic military structures such as Fort Brown and Fort Selwyn are of provincial heritage significance. Their locations chosen for their position on the landscape allowing distant views of and across the frontier boundary of the Great Fish River. Their distance from the proposed WEFs is reasonably far and this will reduce the impact of the development on the sense of place and heritage value of these sites. The historic site of Makanaskop holds similar historic value in relation to military history, however there is no structure to mark the place. The top of the hill itself, therefore is recognised as the heritage site. The distance from the proposed WEF reduces the visual impact of the development and the sense of place should not be heavily impacted upon.
- The new roads (especially those that align with historic wagon routes) should display minimum scale designs where possible. Due to the scenic and historic significance of the regional roads that cross the study site, a buffer of 1000m to either side of the road should be maintained for no development associated with the WEF other than sensitive road upgrades which must not impact on the views from the road. The visual impact of the turbines will be 50% less at 1km distance and therefore this distance will greatly reduce the negative visual impact of the turbines on the experience of the historic road and the values that give it significance.
- Maintain traditional movement patterns across rural landscapes or to places of socio-historical value; a) Avoid privatization or the creation of barriers to traditional access routes, b) Retain old roadways, which have been replaced by newer roads, for use as recreation trails.
- Commonages and outspans were located at water points, and these places were likely gathering points before the arrival of colonists and continued to provide communal resources. In the mid-20th century, many old commonages came under the ownership of the Municipality, and have since been rented out to private individuals or organisations. The Municipality should facilitate the use of common land in a way that promotes the well-being and quality of life of the public. These sites can play a restorative role withinthe community, for instance for those who have limited alternative opportunities for recreation. No portions

of the identified outspan near Hounslow is earmarked for development, but should the road nearby be upgraded, this area should be conserved for communal use as it was historically.

- Respect existing patterns, typologies and traditions of settlement-making by promoting the continuity of heritage features. These include: (a) indigenous; (b) colonial; and (c) current living heritage in the form of tangible and intangible associations to place.
- Evidence of the earliest settlement of the landscape is not always visible. Should any be uncovered, the provincial heritage authority (ECPHRA) should be notified and engaged with to determine appropriate action.
- Alterations and additions to conservation-worthy structures should be sympathetic to their architectural character and period detailing.
- Respect traditional werf settlement patterns by considering the entire werf as the component of significance. This includes the backdrop of the natural landscape against which it is sited, as well as its spatial structure. Any development that impacts the inherent character of the werf component should be discouraged. As such a 1000m buffer around farmsteads for any development associaed with the WEF should be maintained.
- Heritage expertise is required where appropriate.

## 11.4 Socio-economic

Table 5: Impact Assessment Table for Impact on socio-economic cultural landscape elements by all phases of development.

| *Nature of Impact:* Impact on socio-economic cultural landscape elements by all phases of development. | | |
|---|---|---|
| | *Without mitigation* | *With mitigation* |
| *Extent* | Regional (5) | Regional (2) |
| *Duration* | Permanent (5) | Permanent (5) |
| *Magnitude* | Very high (10) | Moderate (5) |
| *Probability* | Definite (4) | Definite (3) |
| *Significance* | High (80) | Moderate (36) |
| *Status (positive or negative)* | Negative | Negative |
| *Reversibility* | Low | Low |
| *Irreplaceable loss of resources?* | Yes | Yes |
| *Can impacts be mitigated?* | Yes | |
| *Cumulative impacts:* Complete or whole-scale changes to the environment or sense of place, which will impact on surrounding tourist land use and associated economic viability. Farming practices will continue. Local landowners will benefit at the expense of regional businesses. | | |
| *Residual impacts:* The character of the landscape will remain changed permanently after the duration of the project as over time the sense of place will change. It is unlikely that the infrastructure will be decommissioned. | | |

*Mitigation*

- The local community around the development should benefit from job opportunities created by the proposed development and the development should not cause reduction in economic viability of surrounding properties in excess of those offered by the development. Short-term job opportunities at the expense of long term economic benefit and local employment opportunities must be prevented.
- Sheep, cattle or game farming should be allowed to continue below the wind turbines, or be rehabilitated to increase biodiversity in the area.

## 12 Comparative Assessment of Alternatives

No layout alternatives for the proposed WEF infrastructure has been identified or will be comparatively assessed as the position of these (and ultimately the layout of the proposed wind energy facility) will be determined taking the identified environmental sensitive and/or 'no-go' areas into consideration. These areas will subsequently be used to inform the area for the potential erection of WEF infrastructure within the application.

No-go alternatives
It is mandatory to consider the "no-go" option in the BA process. The no development alternative option assumes the site remains in its current state, i.e. there is no construction of a solar PV facility and associated infrastructure in the proposed project area and the status quo would proceed.

## 13 Cumulative Impact Assessment

This section evaluates the possible cumulative impacts on heritage resources associated with cultural landscapes with the addition of the Wind Garden WEF. The cumulative impact on heritage resources evaluated a 35-kilometer radius (Figure 13). It must further be noted that the evaluation is based on available heritage studies.

The following must be considered in the analysis of the cumulative effect of development on heritage resources:
 Fixed datum or dataset: There is no comprehensive heritage data set for the Makana region and thus we cannot quantify how much of a specific cultural heritage element is present in the region. The region has never been covered by a heritage resources study that can account for all heritage resources. Further to this none of the heritage studies conducted can with certainty state that all heritage resources within the study area have been identified and evaluated;
 Defined thresholds: The value judgment on the significance of a heritage site will vary from individual to individual and between interest groups. Thus implicating that heritage resources' significance can and does change over time. And so will the tipping threshold for impacts on a certain type of heritage resource;
 Threshold crossing: In the absence of a comprehensive dataset or heritage inventory of the entire region we will never be able to quantify or set a threshold to determine at what stage the impact from developments on heritage resources has reached or is reaching the danger level or excludes the new development on this basis. (Godwin, 2011)

In review of the HIAs and EIAs it is noted that none of the reports for the area within 35kms include specialist Cultural Landscape Assessments. Similarly, Social Impact Assessments and Visula Impact Assessments done in the area are also not assessed in terms of heritage significance as pertaining to the cultural landscape. Without a regional database of this information it is impossible to offer a true cumulative impact of the proposed development. Cumulative impact assessment on cultural landscapes for the area is therefore based on minimal information and assumptions drawn from the general information of the area and the limited local cultural landscapes assessments that have been done for other proposed WEF facilities in the Cookhouse REDZ and Karoo.

With the above short-comings in mind, the cumulative impact to the Cultural Landscape and associated heritage resources in the Cookhouse REDZ area is as follows:

The numerous applications and proposed establishment of several wind energy facilities between Cookhouse and Makhanda as well as the adjacent regions have sparked a concern with regards to cumulative impacts that these projects may have on the heritage resources and the cultural landscape. Therefore, it is of the utmost importance to provide a thorough documentation of the archaeological and historical heritage resources, sites and features and cultural landscape elements within the specific project area. In addition, the cultural landscape of the wider region is inhibited by mass industrialisation of the landscape that changes the character of the landscape and hence impacts on the sense of place and aesthetic value negatively. The Makana region has been considered as a wilderness landscape with a significant footprint of human habitation, cultural contact and conflict, whereby the cumulative impact of increased WEFs will involve significant sterilisation of the aesthetic qualities of the landscape. The cumulative impacts on heritage resources is minimal, except when considering the cultural landscape which is negatively impacted by the construction of renewable energy, wind turbines and associated electrical infrastructure on the 'sense of place' and its scenic beauty. The cumulative impact on the cultural landscape is thus unavoidably high without mitigation, with losses to perceptual qualities and historic land use. Similarly, cumulative impacts to living heritage sites will be unavoidably high without mitigation, with losses including to physical expressions of cultural heritage as well as to sense of place and cultural landscapes. While mitigation in the form of avoidance and protection of these sites can go some way to reducing cumulative impacts, these are likely to remain moderate to high.

However, with the proposed recommendations of this CLA and reduction in infrastructure the cumulative negative impact of the proposed WEFs on the cultural landscape can be reduced. Whether the proposed mitigating reduction of the development exceeds the economic threshold set for its rationale is for the determination of the developer. In order to insure sustainable and sensitive development to the significant cultural landscape it is, therefore, crucial that the heritage resources are identified, mitigated and conserved appropriately.

Table 6: Cumulative impact table for Cultural Landscapes

| *Nature of Impact:* |
| --- |
| The potential cumulative visual impact of wind farms on the cultural landscape |

| | *Overall impact of the proposed project considered in isolation* | *Cumulative impact of the project and other projects in the area* |
|---|---|---|
| *Extent* | Regional (5) | Regional (5) |
| *Duration* | Long term (5) | Long term (5) |
| *Magnitude* | High (9) | High (10) |
| *Probability* | Highly probable (5) | Highly probable (5) |
| *Significance* | High (95) | High (100) |
| *Status (positive, neutral or negative)* | Negative | Negative |
| *Reversibility* | Low | Low |
| *Irreplaceable loss of resources?* | Yes | Yes |
| *Can impacts be mitigated?* | Yes | |
| *Mitigation measures: As per CLA* | | |
| *Residual impacts:* The visual impact will be removed after decommissioning, provided the WEF infrastructure is removed and the area rehabilitated. Failing this, the visual impact will remain. The character of the landscape will remain changed permanently after the duration of the project as over time the sense of place will change. It is unlikely that the infrastructure will be decommissioned. | | |

# 14 CONCLUSION

The findings of this report, coupled with the proposed layout for development of wind turbines which considers appropriate placement in terms of wind energy capacity, concludes that the development can be permitted within the site, but only in limited numbers in the low lying areas maintaining buffers around roads and farmsteads. This will reduce the impact on the surrounding landscape and heritage resources but due to the high visual impact of the turbines, largely a result of their height, the negative impact to the cultural landscape cannot be removed, only reduced from very high to moderate.

The Makana region is a significant cultural landscape that reflects the relationship between man and nature over a period of time. This relationship has generally been sustainable, where biodiversity and ecological systems have been maintained in the utilisation of the landscape. The surrounding land use indicates a social appreciation of the natural environment, with many nature reserves and game reserves that surround the study area. The vastness and relative homogenous nature of the cultural landscape is, however, often undervalued. If careful contextual planning is not followed, it will rapidly result in a cluttered wasteland. This does not mean that development is discouraged, but rather that the implementation of wind and solar energy farms should be planned holistically. It is the duty of the planning department to consider this application in terms of other renewable energy developments that are planned/proposed for the Cookhouse REDZ area, notably the proposed Wind Garden and Albany WEFs.

Conservation: to protect the natural resources (water, air, land, sand, fishes, etc.), ecosystems (reefs, fynbos), biological abundance (flora and fauna), landscapes and the local culture.

Development: to protect social and economic progress, without damaging or depleting the natural resources (sustainable development).

The conclusion of this CLA study has culminated in the permitted development map (Error! Reference source not found.) showing appropriate limited location of turbines and WEF infrastructure with a 1000m buffer to either side of the roads (red shading), 1000m buffer around historic farmsteads (red circles) and no-go areas on mountain ridges and slopes (yellow). All other identified no-go areas have been included and covered by these buffers, including watercourses, CBAs, and historic routes. The reduction in turbines further maintains the recommended clustering to eight or less turbines and no infrastructure on opposite sides of a scenic route. With these buffers in place and all other recommendations in Section 11 followed, the impact to the cultural landscape for the proposed Wind Garden WEF can be reduced from very high to moderate.

Conservation: to protect the natural resources (water, air, land, sand, fishes, etc.), ecosystems (reefs, fynbos), biological abundance (flora and fauna), landscapes and the local culture.

Development: to protect social and economic progress, without damaging or depleting the natural resources (sustainable development).

The conclusion of this CLA study has culminated in the permitted development map (Figure 52) showing appropriate limited location of turbines and WEF infrastructure with a 1000m buffer to either side of the roads (red shading), 1000m buffer around historic farmsteads (red circles) and no-go areas on mountain ridges and slopes (yellow). All other identified no-go areas have been included and covered by these buffers, including watercourses, CBAs, and historic routes. The reduction in turbines further maintains the recommended clustering to eight or less turbines and no infrastructure on opposite sides of a scenic route. With these buffers in place and all other recommendations followed, the impact to the cultural landscape for the proposed Fronteer WEF can be reduced from very high to moderate.

The following map shows the proposed layout of turbines in an overlay displaying the landscape elements considered for impact. The following landscape areas are not suitable for development due to the following reasons:

- Red road buffer demonstrates the area in which the visual impact of the turbines will overwhelm the rural and wilderness sense of place of the plateau and change the experience of travelling along the R350 scenic tourist route, as well as the R344 and R400 historic scenic road. A 1000m distance from the turbines will reduce the visual impact on the road by 50%, which, coupled with reduced number of turbines, will allow for opportunities of experiencing the historically and aesthetically significant view of the wider regional landscape from the study site.
- Farmstead buffers demonstrate the area in which the visual impact of the turbines will

overwhelm the experience of the historically significant places with long standing relationships to the shaping and development of the area.

- Mountain slope and ridgeline no-go areas, will reduce the visual impact of development on the surrounding cultural landscape as the proposed WEF is located on a plateau which is visible from distances beyond 35kms. The characteristic mountain ridge vistas towards and from the Great Fish River, a natural and cultural heritage resource add to the sense of place associated to the frontier history of the cultural landscape. Considering the vast area of the Makana region, no wind turbine should be constructed on a slope steeper than 10%. Locating turbines in the lower elevations of the study site and off the slopes will reduce their negative impact on the immediate and surrounding cultural landscape.
- Conservation biodiversity area no-go areas are necessary to allow for the continuing character of natural landscape and wilderness sense of place. Further, these areas are testament to the sustainable and symbiotic relationship between man and nature in the area, and as such are considered both a natural and cultural heritage resource.
- Watercourses should be avoided as they are ecologically sensitive and are frequently archaeologically sensitive as places that people have inhabited and used for millenia.

From this study it is recommended that only 7 of the proposed 48 turbines are feasible to be built for the Fronteer WEF when taking into consideration impacts to cultural landscapes. As a result, it is questionable whether the large-scale infrastructure upgrades are feasible. It must be noted that a further 12 turbines are feasible on adjacent proposed WEF Fronteer.

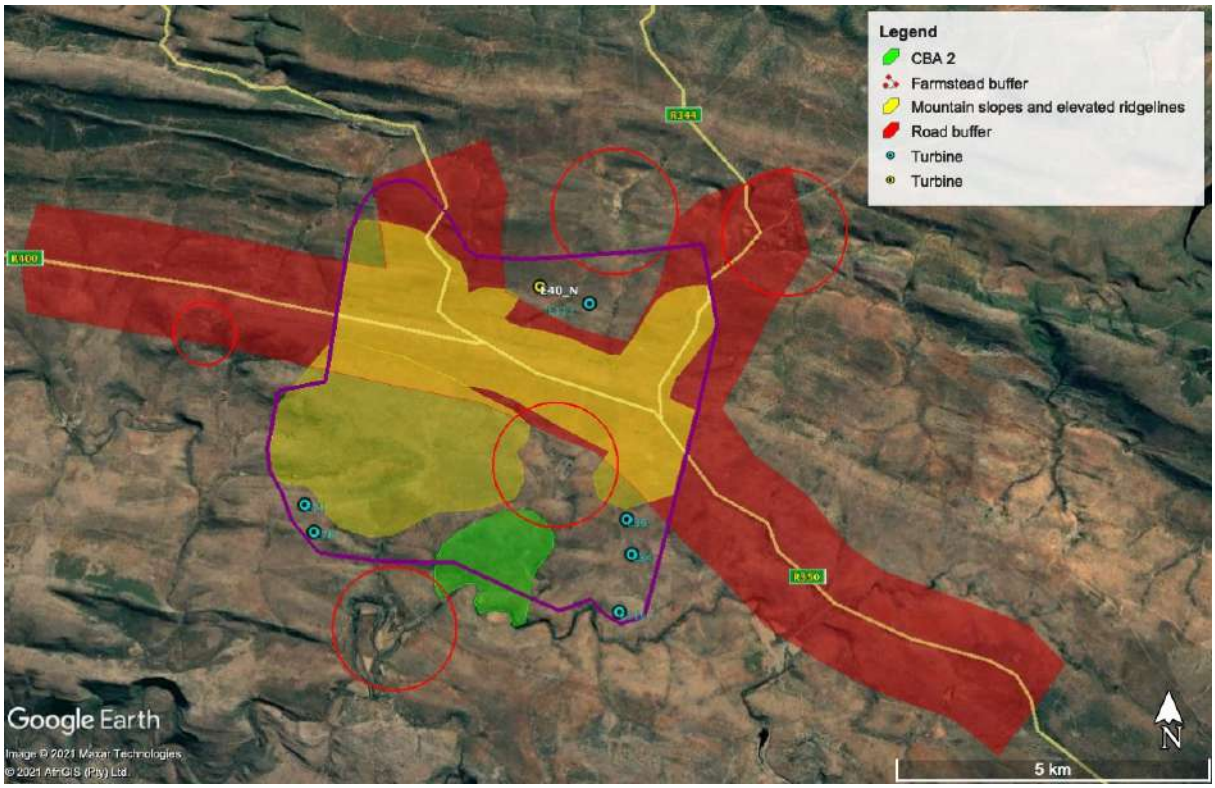

Figure 52: Map showing appropriate location of turbines and WEF infrastructure with a 1000m buffer to either side of the roads (red shading), 1000m buffer around historic farmsteads (red circles) and no-go

areas on mountain ridges and slopes (yellow). All other identified no-go areas have been included and covered by these buffers, including watercourses and historic routes. The reduction in turbines further maintains the recommended clustering to eight or less turbines and no infrastructure on opposite sides of a scenic route.

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## Maps


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1872 Adamantia. The Diamonds & Gold Fields of South Africa
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1816 Military Sketch of that part of the COLONY of the CAPE OF GOOD HOPE Bordering on the CAFFRES, and most exposed to their Depredations, with the different MILITARY POSTS, FARMS, ROADS, RIVERS, &C., Faithfully delineated By Lieut. Wily of His Majesty's 83 Regt in the year 1816. William Faden
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1856 Map of the Eastern Frontier of the Cape Colony, compiled by Henry Hall (Draughtsman to the Royal Engineers, Cape Town) From Military And Other Surveys, Dedicated by Permisssion to Lt. Gen.l Sir J. F. Burgoyne K.C.B.
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