# FRONTEER WIND FARM BETWEEN MAKHANDA AND SOMERSET EAST, EASTERN CAPE

## Heritage Impact Assessment

**Issue Date:** 1 March 2021
**Revision No.:** **0.1**
**Project No**.: 444HIA

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## Declaration of Independence

I, Cherene de Bruyn, declare that –

## General declaration:

- I act as the independent heritage practitioner in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting heritage impact assessments, 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 will take into account, to the extent possible, the matters listed in section 38 of the NHRA when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not
- All the particulars furnished by me in this form are true and correct;
- I will perform all other obligations as expected from a heritage practitioner in terms of the Act and the constitutions of my affiliated professional bodies; and
- I realise that a false declaration is an offence in terms of regulation 71 of the Regulations and is punishable in terms of section 24F of the NEMA.

## Disclosure of Vested Interest

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Regulations;

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**ACKNOWLEDGEMENT OF RECEIPT**

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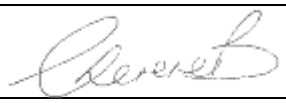
| **Author** | **Cherene de Bruyn** |  | **Archaeologist/ PGS Heritage** |
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## EXECUTIVE SUMMARY

PGS Heritage (Pty) Ltd (PGS) was appointed by Savannah Environmental (Pty) Ltd (Savannah) to undertake a Heritage Impact Assessment (HIA) and Palaeontological Impact Assessment (PIA) which will serve to inform the Basic Assessment Report (BAR) and Environmental Management Programme (EMPr) for the proposed Fronteer Wind Farm, between Makhanda and Somerset East, Eastern Cape.

The proposed development forms part of a cluster of renewable energy developments that will include several wind energy facilities as well as solar photovoltaic (PV) facilities. The location of the wind and solar energy facilities and grid connection infrastructure is within the Cookhouse Renewable Energy Development Zone (REDZ) and the Eastern Corridor of the Strategic Transmission Corridors. The site is split into two definitive areas, namely:

- Eastern Priority development area situated close to Makhanda with access from the Nquara Harbour being along the N2 to Grahamstown, along the R335 to Bedford and the wind farm site.
- The Western Priority development area situated immediately to the west of the N10 up to Somerset East.

This HIA aims to evaluate the possible impacts on heritage resources present within the proposed development footprint of the Fronteer Wind Farm. Immediate and direct impacts on archaeological and palaeontological resources were addressed through the HIA and a PIA (Appendix F).

### Statement of Significance

Heritage resources are unique and non-renewable (i.e. permanent loss) and as such, any impact on such resources must be viewed as significant and permanent. During the fieldwork and research, various heritage resources were identified including archaeological and historical sites varying in significance from grade IIIC to IIIA.

### Fieldwork

The fieldwork component of the study was aimed at identifying tangible remains of archaeological, historical and heritage significance. The fieldwork was undertaken by way of intensive walkthroughs of the study area. The fieldwork was conducted over several days on 23 March 2020 as well as from 8 to 13 June 2020. This fieldwork team consisted of an archaeologist (Cherene de Bruyn) and field assistant (Pascal Snyman). The following provides a breakdown of the heritage resources identified and graded in the study area. During the survey, five (5) heritage sites were identified. Of these five sites, four (4) sites (**EWF2-01** to

**EWF2-04**) consist of structures (Farmhouses, Labourer houses, and stone walls), and one (1) site contain graves (**EWF2-05**).

*Historical structures*

Two (2) labourer houses (**EWF2-02 and EWF2-04)**, and one (1) stone farm wall (**EWF2-03**) were rated as not conservation worthy and of no heritage significance.

A farmstead (**EWF2-01)** was also identified. This site has a medium heritage significance and heritage rating of IIIB.

*Burial Grounds and graves*

One (1) burial ground (**EWF2-05**) was identified that may be affected by the proposed project. Graves have a high heritage significance and heritage rating of IIIA.

*Palaeontology*

According to the PIA conducted by Banzai Environmental (Butler, 2021) the proposed development is by the Dwyka Group; the Fort Brown Formation of the Ecca Group (Karoo Supergroup), Adelaide Subgroup (Koonap and Middleton Formations) of the Beaufort Group (Karoo Supergroup) and the Witteberg Group of the Cape Supergroup, Karoo Dolerite (Karoo Supergroup), and Quaternary deposits. According to the PalaeoMap of SAHRIS the Palaeontological Sensitivity of the Dwyka Group is Low, the Collingham Formation, Rippon Formation, Fort Brown Formation of the Ecca Group is Moderate, while the Prince Albert Formation has a High and the Whitehill Formation of the Ecca has a Very High Palaeontological Sensitivity. The Adelaide Subgroup has a Very high Palaeontological Sensitivity while Dolerite is igneous in origin and thus has an Insignificant Paleontological Sensitivity (Almond et al, 2013; SAHRIS website).

As such, there is a moderate to high chance of finding fossils in this area. A 3-day site-specific field survey of the development footprint was conducted on foot and by a motor vehicle on 20 November to 23 November 2020. No visible evidence of fossiliferous outcrops was found.

*Cultural Landscape*

The Cultural Landscape of the area between and surrounding Makhanda (Grahamstown) and Somerset East is sparsely populated with several farmsteads and their associated structures located on the valley floors of this hilly and mountainous region. The farmsteads are connected through several farm roads and old historic ox-wagon routes that link the local communities to the busy towns of Makhanda (Grahamstown) and Somerset East. The cultural landscape of

area proposed for Fronteer Wind Farm has a medium to high heritage significance. Many of the old farm buildings, stone houses and Churches in the area contain architectural elements greater than 60 years of age and fall with the general protection of the National Heritage Resources Act (25 of 1999) (NHRA). The cultural landscape of the area comprises of both Local and Provincial heritage sites, consisting of palaeontological sites, rock art, burial grounds and graves, monuments and memorials, stonewalling, as well as historical structures. The significance grading of the cultural landscape elements ranged from IIIC to II. Although no mitigation of the impact on the sense of place of the region or the cultural landscape is possible the impact of the development on the cultural landscape can be minimised with the recommended general mitigation measures.

**Impact Statement**

Analysis of the various components of the HIA indicates a mitigated low negative impact on heritage resources and are expanded on below.

*Historical structures*

An assessment of the possible impacts of the proposed project on historical heritage resources has shown that unmitigated impacts vary between low to medium negative impacts mostly confined to the construction phase of the project. **By implementing the mitigation measures as listed in this report these impacts can be managed to low negative.**

*Burial Grounds and graves*

An assessment of the possible impacts of the proposed project on historical heritage resources has shown that unmitigated impacts consist of a high negative impact mostly confined to the construction phase of the project. **By implementing the mitigation measures as listed in this report these impacts can be managed to low negative.**

*Palaeontology*

An assessment of the possible impacts of the proposed project on palaeontological resources has shown that unmitigated impacts consist of a medium negative impact mostly confined to the construction phase of the project. **By implementing the mitigation measures as listed in this report these impacts can be managed to low negative.**

*Cultural landscape*

An assessment of the possible impacts of the proposed project on the overall cultural landscape has shown that unmitigated impacts consist of a medium negative impact mostly confined to

the construction and operation phase of the project. **By implementing the mitigation measures as listed in this report these impacts can be managed to low negative.**

*Cumulative Impacts*

Considering the development of other WEF located next to the Fronteer Wind Farm and within the broader Grahamstown (Makanda region) the cumulative unmitigated impacts on Historical structures, Burial ground and graves as well as palaeontological resources consist of a medium to high negative impact mostly confined to the construction phase of the project. This could potentially result in an unacceptable loss of heritage resources. **However, by implementing the mitigation measures as listed in this report the cumulative impacts can be managed to low negative.**

**Recommendations**

The following mitigation measures are listed in Error! Reference source not found..

*Table 1 - Heritage management recommendations.*

| Area and site no. | Mitigation measures |
|---|---|
| **General project area** | • Implement a chance to find procedures in case possible heritage finds are uncovered.<br>• A detailed "walk down" of the final approved turbine locations, access roads, powerlines and substations will be required before construction commences.<br>• Any heritage features of significance identified during this walk down will require formal mitigation (i.e. permitting where required) or where possible a slight change in design could accommodate such resources.<br>• A Heritage Management Plan (HMP) for the heritage resources needs to be compiled and approved for implementation during construction and operations where heritage features of significance are identified. |
| **Historical Structures** that were rated as NCW **(EWF2-02** to **EWF2-04)** | • No mitigation is required |
| **Historical Structures (EWF2-01)** that were rated as medium heritage significance and heritage rating of IIIB. | • Although the site is located outside of the proposed development area, it is recommended that a no-go-buffer-zone of at least 500m from the outer permitter of the farmstead (which is currently occupied) is kept to the closest WEF infrastructure (including turbines, substation facilities and roads ).<br>• If development occurs within 500m of the main homesteads need to be satisfactorily studied and recorded before impact occurs.<br>• Recording of the buildings i.e. (a) map indicating the position and footprint of all the buildings and structures (b) photographic recording of all the buildings and structures (c) measured drawings of the floor plans of the principal buildings. |
| **Graves and Burial grounds (EWF2-05**) | • The sites should be demarcated with a 30-meter no-go-buffer-zone and the graves should be avoided and left in situ.<br>• A Grave Management Plan should be developed for the graves, to be implemented during the construction and operation phases (which needs approval by Eastern Cape Provincial Heritage Authority (ECPHRA)). |

| Area and site no. | Mitigation measures |
|---|---|
| | • If the site is going to be impacted directly and the graves need to be removed a grave relocation process for these sites is recommended as a mitigation and management measure. This will involve the necessary social consultation and public participation process before grave relocation permits can be applied for with the ECPHRA under the NHRA and National Health Act regulations. |
| **Possible graves** | • When graves are discovered/uncovered the site should be demarcated with a 30-meter no-go-buffer-zone and the grave should be avoided.<br>• Undertake archaeological monitoring at earth clearance stage.<br>• If human remains are discovered a grave relocation process is recommended as a mitigation and management measure. This will involve the necessary social consultation and public participation process before grave relocation permits can be applied for with the ECPHRA under the NHRA and National Health Act regulations.<br>• If during the test excavations it is determined that the feature is not a grave, the site will then have no heritage significance and require no further mitigation. |
| **Palaeontological finds** | • If fossil remains are discovered during any phase of construction, either on the surface or exposed by fresh excavations the Chance Find Protocol must be implemented by the ECO in charge of these developments.<br>• Fossil discoveries ought to be protected and the ECO/site manager must report to SAHRA |
| **Cultural Landscape** | • Mitigation measures as proposed in the HIA for the proposed Fronteer Wind Farm Facility development that reduces negative impacts on the land use patterns and living heritage will reduce the impact of this facility on the overall load.<br>• With a detailed and comprehensive regional dataset this rating could possibly be adjusted and more accurate. Due to the limited consideration of CLAs in terms of heritage values in other projects, the mitigation measures proposed may not deal with impacts on cultural landscapes.<br>• The mitigation measures proposed for heritage resources will reduce the negative cumulative impact on the cultural landscape and should be implemented as recommended.<br>• According to the Visual impact assessment (VIA) of LOGIS by Du Plessis (2021) no mitigation of the impact on the sense of place of the region is possible as the structures will be visible regardless. However, the following general mitigation measures are proposed:<br>o The natural vegetation in all areas outside of the development footprint/servitude must be maintained/re-established during the planning phase.<br>o Maintain the general appearance of the facility as a whole during the operational phase<br>o Remove the infrastructure not required for the post-decommissioning use and rehabilitate all areas. |

**General**

The proposed location of turbines, overhead powerlines, and substations for the Fronteer Wind Farm have been negotiated through specialist input with the developer and client. Overall, this has lead to the acceptable placement of turbines (and associated infrastructure) away from heritage sensitive areas. The overall impact of the Fronteer Wind Farm, on the heritage resources identified during this report, is seen as acceptably low after the recommendations have been implemented and therefore, impacts can be mitigated to acceptable levels allowing for the development to be authorised.

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## TERMINOLOGY AND ABBREVIATIONS

**Archaeological resources**

This includes:

- material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years including artefacts, human and hominid remains and artificial features and structures;
- rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;
- wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the republic as defined in the Maritimes Zones Act, and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation;
- features, structures and artefacts associated with military history which are older than 75 years and the site on which they are found.

**Cultural significance**

This means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance

**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 linear movement route, usually in the form of a scenic drive, but which could also be a railway, hiking trail, horse-riding trail or 4x4 trail.

**Development**

This means any physical intervention, excavation, or action, other than those caused by natural forces, which may in the opinion of the heritage authority in any way result in a change to the nature, appearance or physical nature of a place or influences its stability and future well-being, including:

- construction, alteration, demolition, removal or change in use of a place or a structure at a place;
- carrying out any works on or over or under a place;
- subdivision or consolidation of land comprising a place, including the structures or airspace of a place;
- constructing or putting up for display signs or boards;
- any change to the natural or existing condition or topography of land; and
- any removal or destruction of trees, or removal of vegetation or topsoil

**Earlier Stone Age**

The archaeology of the Stone Age between ~300 000 and 3 300 000 years ago.

**Fossil**

Mineralised bones of animals, shellfish, plants and marine animals. A trace fossil is the track or footprint of a fossil animal that is preserved in stone or consolidated sediment.

**Heritage**

That which is inherited and forms part of the National Estate (historical places, objects, fossils as defined by the National Heritage Resources Act 25 of 1999).

**Heritage resources**

This means any place or object of cultural significance and can include (but not limited to) as stated under Section 3 of the NHRA,

- places, buildings, structures and equipment of cultural significance;
- places to which oral traditions are attached or which are associated with living heritage;
- historical settlements and townscapes;
- landscapes and natural features of cultural significance;
- geological sites of scientific or cultural importance;
- archaeological and palaeontological sites;

- graves and burial grounds, and
- sites of significance relating to the history of slavery in South Africa

**Holocene**

The most recent geological time period which commenced 10 000 years ago.

**Later Stone Age**

The archaeology of the last 30 000 years associated with fully modern people.

**Late Iron Age (Early Farming Communities)**

The archaeology of the last 1000 years up to the 1800's, associated with iron-working and farming activities such as herding and agriculture.

**Middle Stone Age**

The archaeology of the Stone Age between 30 000-300 000 years ago, associated with early modern humans.

**Palaeontology**

Any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.

**Site**

Site in this context refers to an area place where a heritage resource is located and not a proclaimed heritage site as contemplated under s27 of the NHRA.

*Table 2 – List of abbreviations used in this report*

| Abbreviations | Description |
|---|---|
| AIA | Archaeological Impact Assessment |
| ASAPA | Association of South African Professional Archaeologists |
| BA | Basic Environmental Assessment |
| BESS | Battery energy storage system |
| CLA | Cultural Landscape Assessment |
| CRM | Cultural Resource Management |
| DEFF | Department of Environmental Affairs, Forestry and Fisheries |
| ECPHRA | Eastern Cape Provincial Heritage Resources Authority |
| ECO | Environmental Control Officer |
| EIA | Environmental Impact Assessment |
| EIA practitioner | Environmental Impact Assessment Practitioner |
| ESA | Earlier Stone Age |
| GN | Government Notice |
| GPS | Global Positioning System |
| HIA | Heritage Impact Assessment |
| HMP | Heritage management plan |
| I&AP | Interested & Affected Party |
| LIA | Late Iron Age |
| LSA | Late Stone Age |
| MSA | Middle Stone Age |
| NEMA | National Environmental Management Act |
| NHRA | National Heritage Resources Act |
| O&M | Operation and Maintenance |
| PGS | PGS Heritage (Pty) Ltd |
| PIA | Palaeontological Impact Assessment |
| PV | Photovoltaic |
| RE | Renewable Energy |
| REDZ | Renewable Energy Development Zone |
| SADC | Southern African Development Community |
| SAHRA | South African Heritage Resources Agency |
| SAHRIS | South African Heritage Resources Information System |
| WEFs | Wind Energy Facilities |

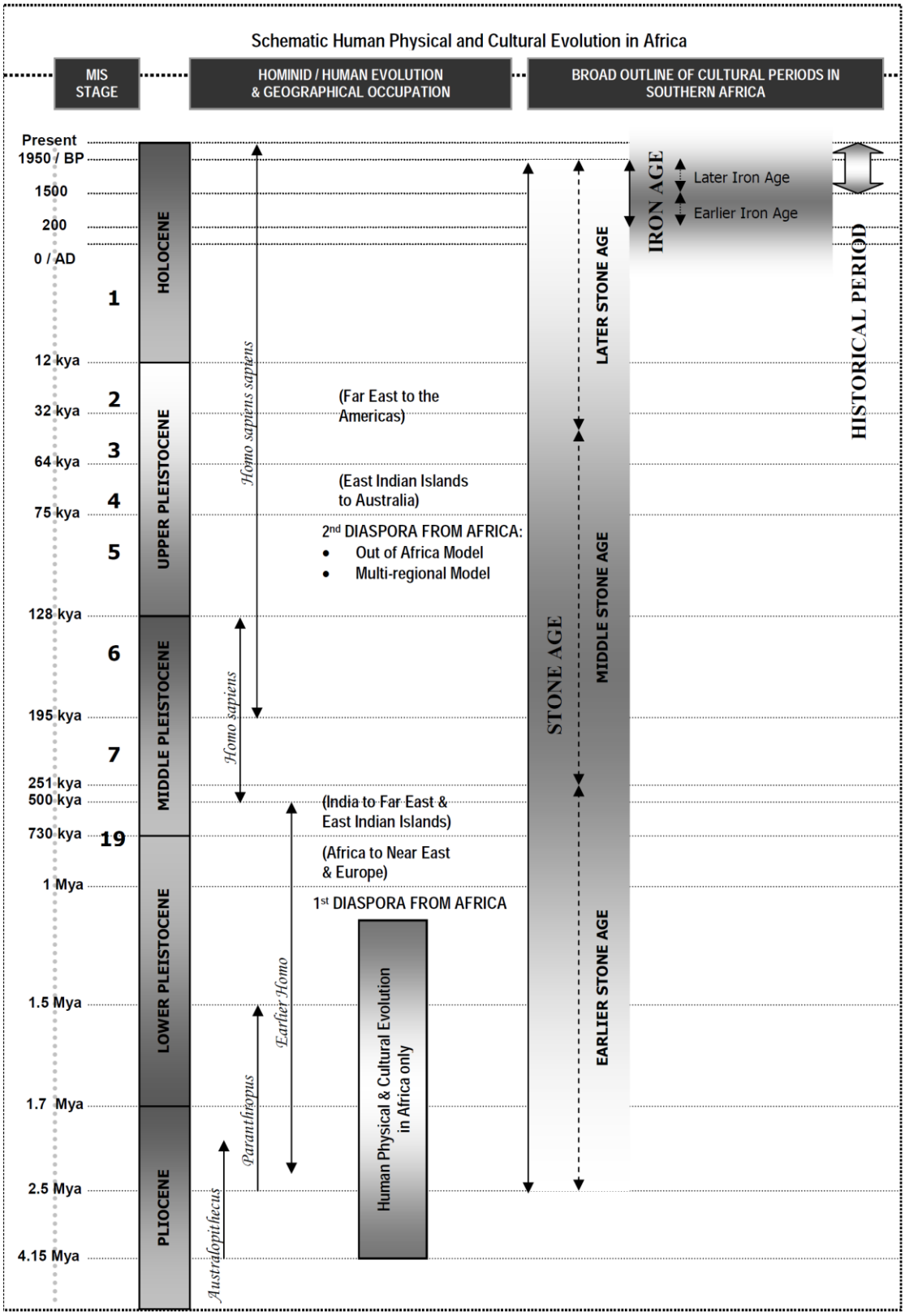



*Figure 1 – Human and Cultural Timeline in Africa (Morris, 2008)*

# 1 INTRODUCTION

PGS Heritage (Pty) Ltd (PGS) was appointed by Savannah Environmental (Pty) Ltd (Savannah) to undertake a Heritage Impact Assessment (HIA) and Palaeontological Impact Assessment (PIA) which will serve to inform the Basic Assessment Report (BAR) and Environmental Management Programme (EMPr) for the proposed Fronteer Wind Farm, between Makhanda (previously known as Grahamstown) and Somerset East, Eastern Cape.

## 1.1 Scope of the Study

The aim of the study is to identify possible heritage sites and finds that may occur in the proposed development area. The HIA aims to inform the BAR in the development of a comprehensive EMPr to assist the project applicant in managing the identified heritage resources in a responsible manner in order to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act (Act 25 of 1999) (NHRA).

## 1.2 Specialist Qualifications

This HIA was compiled by PGS.

The staff at PGS have a combined experience of nearly 90 years in the heritage consulting industry. PGS and its staff have extensive experience in managing HIA processes. PGS will only undertake heritage assessment work where they have the relevant expertise and experience to undertake that work competently.

Cherene de Bruyn, the author of this report, is registered with Association of Southern African Professional Archaeologists (ASAPA) as a Professional Archaeologist and is accredited as a Principal Investigator and Field Director, she is further also a member of the International Association for Impact Assessment South Africa (IAIASA). She holds a MA in Archaeology, BSc (Hons) in Physical Anthropology and a BA (Hons) in Archaeology.

Wouter Fourie, the Project Coordinator, is registered with the ASAPA as a Professional Archaeologist and is accredited as a Principal Investigator; he is further an Accredited Professional Heritage Practitioner with the Association of Professional Heritage Practitioners (APHP).

## 1.3 Assumptions and Limitations

Not detracting in any way from the comprehensiveness of the fieldwork undertaken, it is necessary to realise that the heritage resources located during the fieldwork do not necessarily represent all the possible heritage resources present within the area. Various factors account for this, including the subterranean nature of some archaeological sites and the current vegetation cover. Due to time

restrictions and the large extent of the proposed project area the survey was limited to priority areas, that most likely contained heritage resources. As such, should any heritage features and/or objects not included in the present inventory be located or observed, a heritage specialist must immediately be contacted.

Such observed or located heritage features and/or objects may not be disturbed or removed in any way until such time that the heritage specialist has been able to make an assessment as to the significance of the site (or material) in question. This applies to graves and cemeteries as well. In the event that any graves or burial places are located during the development, the procedures and requirements pertaining to graves and burials will apply as set out below.

## 1.4 Identification of Policies, Legislation, Standards & Guidelines

### 1.4.1 *Statutory Framework: The National Heritage Resources (Act 25 of 1999)*

The NHRA has applicability, as the study forms part of an overall HIA in terms of the provisions of Section 34, 35, 36 and 38 of the NHRA and forms part of a heritage study that serves to identify key heritage resources, informants, and issues relating to the palaeontological, archaeological, built environment and cultural landscape, as well as the need to address such issues during the Basic assessment phase of the HIA process.

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

### 1.4.2 *Section 34 – Structures*

According to Section 34 of the NHRA, no person may alter, damage or destroy any structure that is older than 60 years, and which forms part of the sites built environment, without the necessary permits from the relevant provincial heritage authority.

### 1.4.3 *Section 35 – Archaeology, Palaeontology and Meteorites*

According to Section 35 (Archaeology, Palaeontology and Meteorites) and Section 38 (Heritage Resources Management) of the NHRA, Palaeontological Impact Assessments (PIA) is required by law in the case of developments in areas underlain by potentially fossiliferous (fossil-bearing) rocks, especially where substantial bedrock excavations are envisaged, and where human settlement is known to have occurred during prehistory and the historic period.

### 1.4.4 *Section 36 – Burial Grounds & Graves*

A section 36 permit application is made to the SAHRA or the competent provincial heritage authority which protects burial grounds and graves that are older than 60 years and must conserve and generally care for burial grounds and graves protected in terms of this section, and it may make

such arrangements for their conservation as it sees fit. SAHRA must also identify and record the graves of victims of conflict and any other graves which it deems to be of cultural significance and may erect memorials associated with these graves and must maintain such memorials. A permit is required under the following conditions:

Permitting requirements for burial grounds and graves older than 60 years to the South African Heritage Resources Agency:

a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves.
b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.
d) SAHRA or a provincial heritage resources authority may not issue a permit for the destruction or damage of any burial ground or grave referred to in subsection (3)(a) unless it is satisfied that the applicant has made satisfactory arrangements for the exhumation and re-interment of the contents of such graves, at the cost of the applicant.

### 1.4.5 *Section 38 HIA as a Specialist Study within the EIA in terms of Section 38(8)*

The NHRA Section 38 (Heritage Impact Assessments) application to ECPHRA is required when the proposed development triggers one or more of the following activities:
Permitting requirements for demolition of built environment features:

a) the construction of a road, wall, power line, pipeline, canal or other similar forms of linear development or barrier exceeding 300m in length;
b) the construction of a bridge or similar structure exceeding 50 m in length;
c) any development or other activity which will change the character of a site,
    i. exceeding 5 000 $m^2$ in extent; or
    ii. involving three or more existing erven or subdivisions thereof; or
    iii. involving three or more erven or divisions thereof which have been consolidated within the past five years; or
    iv. the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
d) the re-zoning of a site exceeding 10 000 $m^2$ in extent; or
e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority

In this instance, the heritage assessment for the property is to be undertaken as a component of the Basic Assessment (BA) process for the project. Provision is made for this in terms of Section 38(8) of the NHRA, which states that:

An HIA report is required to identify, and assess archaeological resources as defined by the Act, assess the impact of the proposal on the said archaeological resources, review alternatives and recommend mitigation (see methodology above).

Section 38 (3) Impact Assessments are required, in terms of the statutory framework to conform to basic requirements as laid out in Section 38(3) of the NHRA. These are:

- The identification and mapping of heritage resources in the area affected
- The assessment of the significance of such resources
- The assessment of the impact of the development on the heritage resources
- An evaluation of the impact on the heritage resources relative to sustainable socio/economic benefits
- Consideration of alternatives if heritage resources are adversely impacted by the proposed development
- Consideration of alternatives
- Plans for mitigation in the future

### 1.4.6 *Renewable Energy Development Zone*

The proposed Fronteer Wind Farm is situated in the Cookhouse Renewable Energy Development Zone (REDZ) and the Eastern Corridor of the Strategic Transmission Corridors. The REDZ was proclaimed in February 2018 (published under Government Notice No. 114 in Government Gazette No. 41445 of 16 February 2018; and Government Gazette 43528, Notice 786 for consultation with the intention to identify three additional REDZ to the eight REDZ) and allows for the completion of a BA in the case of large-scale wind and solar developments situated within the REDZ.

### 1.4.7 *Notice 648 of the Government Gazette 45421*

Although the minimum standard for archaeological (2007) and palaeontological (2012) assessments were published by SAHRA, Government Notice (GN) 648 requires sensitivity verification for a site selected on the national web-based environmental screening tool for which no specific assessment protocol related to any theme has been identified. The requirements for this GN is listed in **Table 3** and the applicable section in this report noted.

*Table 3 - Reporting requirements for GN648.*

| **GN 648** | **Relevant section in report** | **Where not applicable in this report** |
|---|---|---|
| 2.2 (a) a desk top analysis, using satellite imagery; | section 4 | |
| 2.2 (b) a preliminary on-site inspection to identify if there are any discrepancies with the current use of land and environmental status quo versus the environmental sensitivity as identified on the national web based environmental screening tool, such as new developments, infrastructure, indigenous/pristine vegetation, etc. | section 5 | - |
| 2.3(a) confirms or disputes the current use of the land and environmental sensitivity as identified by | section 5 | - |

| GN 648 | Relevant section in report | Where not applicable in this report |
|---|---|---|
| the national web based environmental screening tool; | | |
| 2.3(b) contains a motivation and evidence (e.g. photographs) of either the verified or different use of the land and environmental sensitivity; | Section 5 provides a description of the current use and confirms the status in the screening report | |

An assessment of the Environmental Screening tool provides the following sensitivity ratings for archaeological and heritage resources (**Figure 2**) as well as palaeontological resources as a medium to high (**Figure 3**).

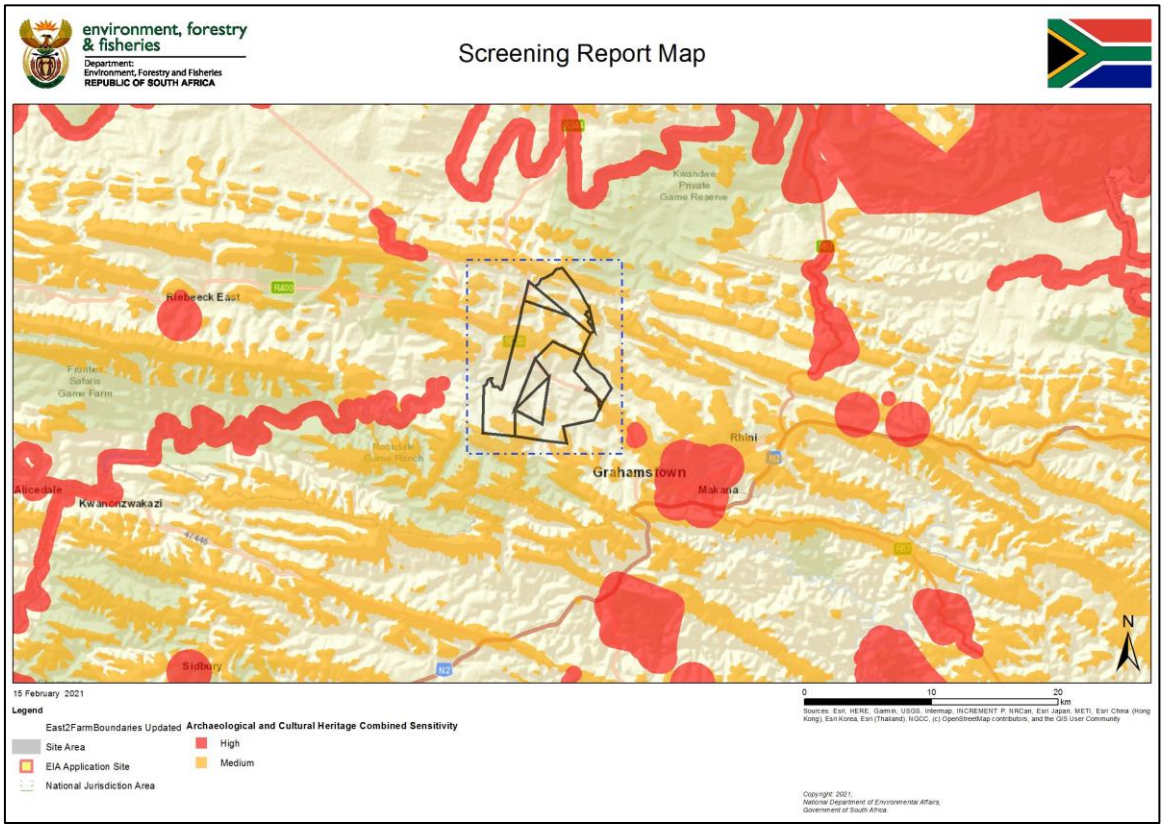



*Figure 2 - Environmental screening tool - archaeological and heritage sensitivity that includes the Fronteer Wind Farm project area.*

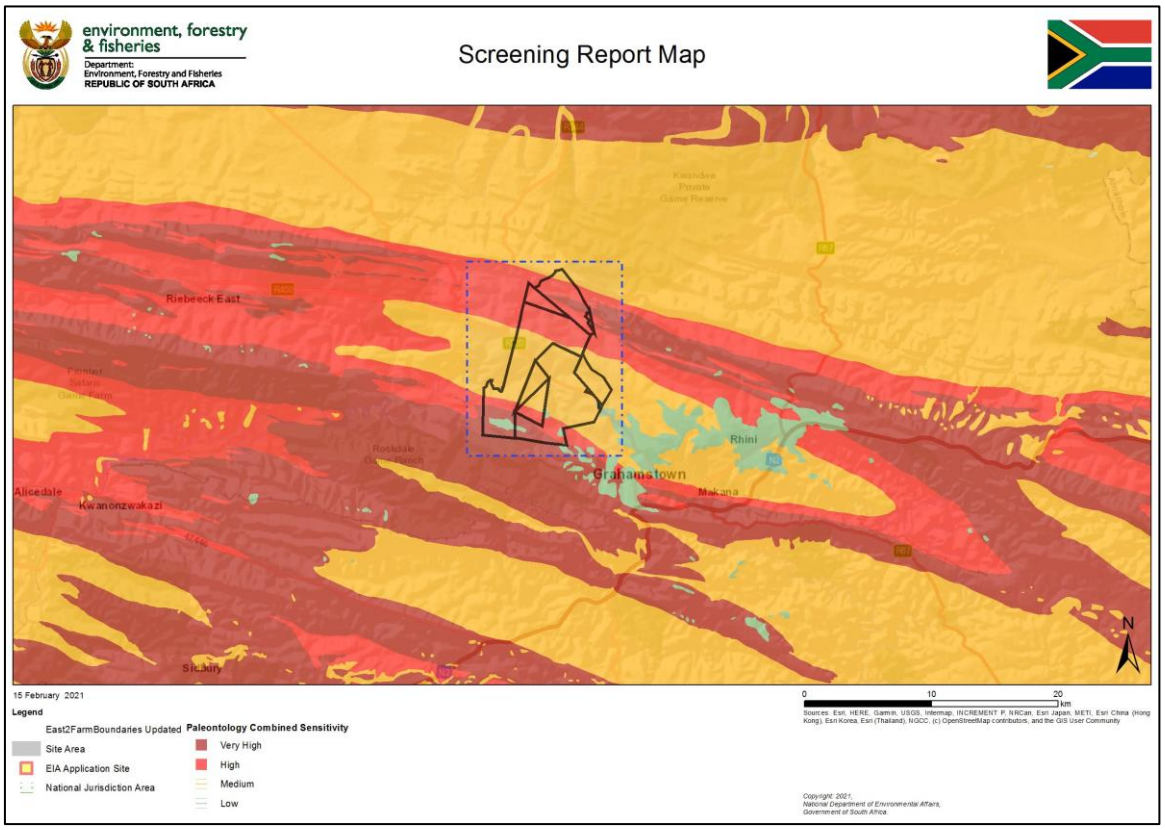



*Figure 3 - Environmental screening tool - palaeontology sensitivity that includes the Fronteer Wind Farm project area.*

### 1.4.8 *NEMA – Appendix 6 requirements*

The HIA report has been compiled considering the National Environmental Management Act (Act No. 107 of 1998) (NEMA) and Environmental Impact Assessment (EIA) Regulations, 2014 (as amended) Appendix 6 requirements for specialist reports as indicated in the table below. For ease of reference, the table below provides cross-references to the report sections where these requirements have been addressed. It is important to note, that where something is not applicable to this HIA, this has been indicated in the table below.

*Table 4 - Reporting requirements as per NEMA, as amended, Appendix 6 for specialist reports.*

| **Requirements of Appendix 6 – GN R326 EIA Regulations of 7 April 2017** | **Relevant section in report** | **Comment where not applicable.** |
|---|---|---|
| 1.(1) (a) (i) Details of the specialist who prepared the report | Page 2 of Report – Contact details and company | - |
| (ii) The expertise of that person to compile a specialist report including a curriculum vita | Section 1.2 – refer to **Appendix C** | - |
| (b) A declaration that the person is independent in a form as may be specified by the competent authority | Page ii of the report | - |
| (c) An indication of the scope of, and the purpose for which, the report was prepared | Section 1.1 | - |
| (cA) An indication of the quality and age of base data used for the specialist report | Section 3 | - |
| (cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change; | Section 67 | - |

| Requirements of Appendix 6 – GN R326 EIA Regulations of 7 April 2017 | Relevant section in report | Comment where not applicable. |
|---|---|---|
| (d) The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment | Section 3 and 4 | - |
| (e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used | Section 3 and **Appendix A and B** | - |
| (f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives; | Section 4 and 5 | - |
| (g) An identification of any areas to be avoided, including buffers | Section 4 | - |
| (h) A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers; | Figure 4 and Section 4 | |
| (i) A description of any assumptions made and any uncertainties or gaps in knowledge; | Section 1.3 | - |
| (j) A description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives, on the environment | Section 7 and 8 | |
| (k) Any mitigation measures for inclusion in the EMPr | Section 4 | |
| (l) Any conditions for inclusion in the environmental authorisation | | Non required |
| (m) Any monitoring requirements for inclusion in the EMPr or environmental authorisation | Section 4, 5 and 7 | |
| (n)(i) A reasoned opinion as to whether the proposed activity, activities or portions thereof should be authorised and | Section 8 | |
| (n)(iA) A reasoned opinion regarding the acceptability of the proposed activity or activities; and | | |
| (n)(ii) If the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan | Section 8 | - |
| (o) A description of any consultation process that was undertaken during the course of carrying out the study | | Not applicable. A public consultation process was handled as part of the BA and EMPr process. |
| (p) A summary and copies if any comments that were received during any consultation process | | Not applicable. To date no comments regarding heritage resources that require input from a specialist have been raised. |
| (q) Any other information requested by the competent authority. | | Not applicable. |
| (2) Where a government notice by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply. | NEMA Appendix 6 and GN648 SAHRA guidelines on HIAs, PIAs and AIAs | |

# 2 SITE LOCATION AND DESCRIPTION

## 2.1 Locality and Site Description

The following project background and technical description have been supplied by Savannah Environmental (Pty) Ltd.

Fronteer (Pty) Ltd is proposing the development of a commercial wind farm and associated infrastructure on a site located approximately 12km 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 4).**

A preferred project site with an extent of ~5091ha has been identified by Fronteer (Pty) Ltd as a technically suitable area for the development of the Fronteer Wind Farm with a contracted capacity of up to 213MW that can accommodate up to 38 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:

- The remainder of Farm Table Hill Farm No 187
- Portion 2 of Table Hill Farm No 187
- Portion 3 of the Farm Table Hill Farm No 187
- The remainder of the Farm Hounshow No 131
- Portion 1 of Farm Draai Farm No 184
- Portion 1 of Farm No 132
- Portion 1 of Farm Burnt Kraal No 189
- Portion 1 of Farm Table Hill No 187

The following existing infrastructure and land uses are encountered in the area:

- Provincial roads (R334);
- Residential properties:
- Agricultural properties;
- Power lines.

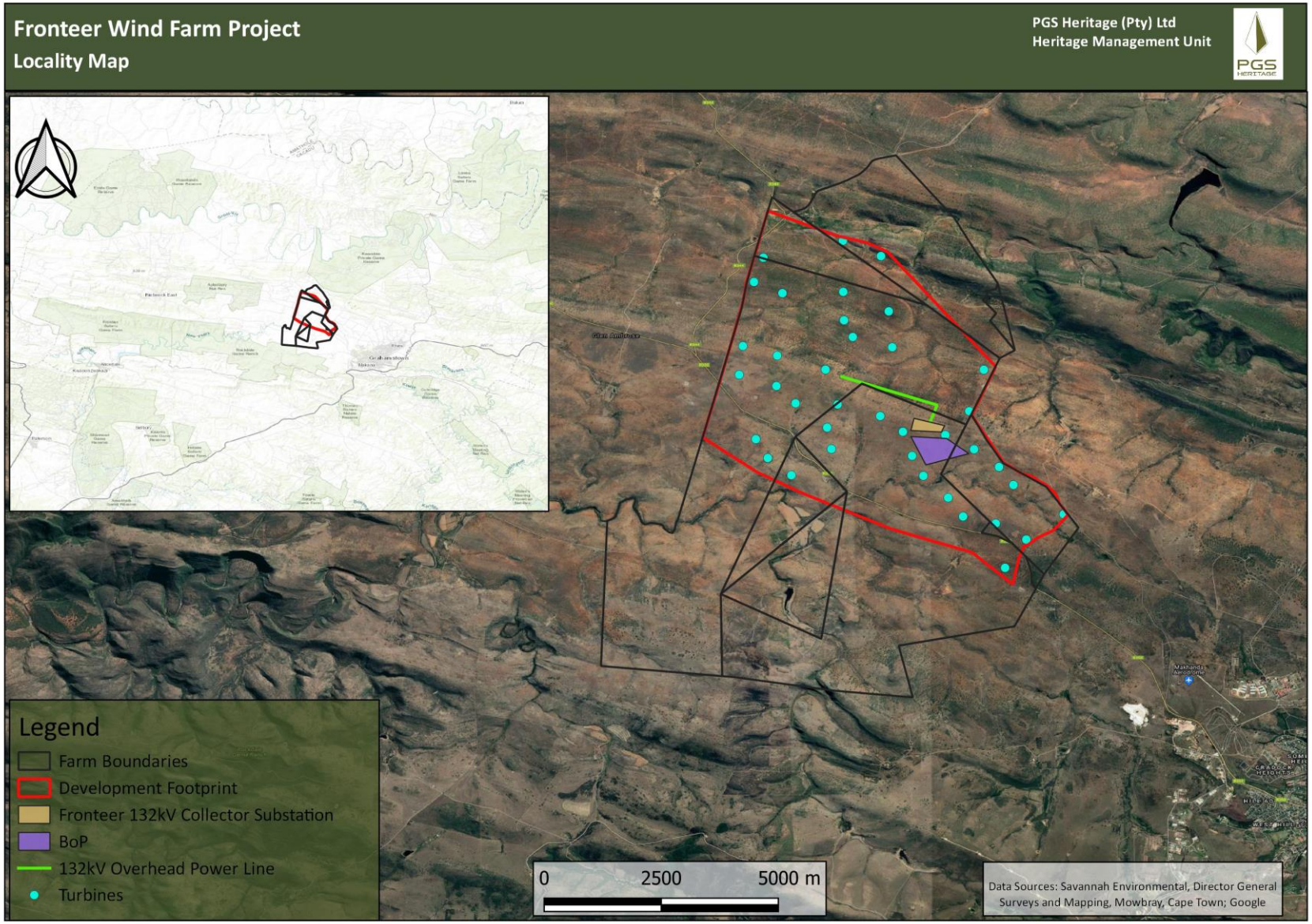



*Figure 4 –Locality map of the Fronteer Wind Farm illustrating the proposed development footprint (i.e. proposed infrastructure) within a regional context*

## 2.2 Technical Project Description

The Fronteer 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 213MW:

- Up to 38 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 gatehouse, security building, control centre, offices, warehouses, a workshop and visitors centre.

A development envelope for the placement of the wind energy facility infrastructure (i.e. development footprint) has been identified within the project site and assessed as part of the BA process. The development envelope is ~2689ha in extent and the much smaller development footprint of ~49.4ha will be placed and sited within the development envelope.

### 2.2.1 *Consideration of Alternatives:*

For this project, no alternatives have been proposed. Alternative layouts for the project could be proposed depending on the outcome of the several specialist studies forming part of the BAs process.

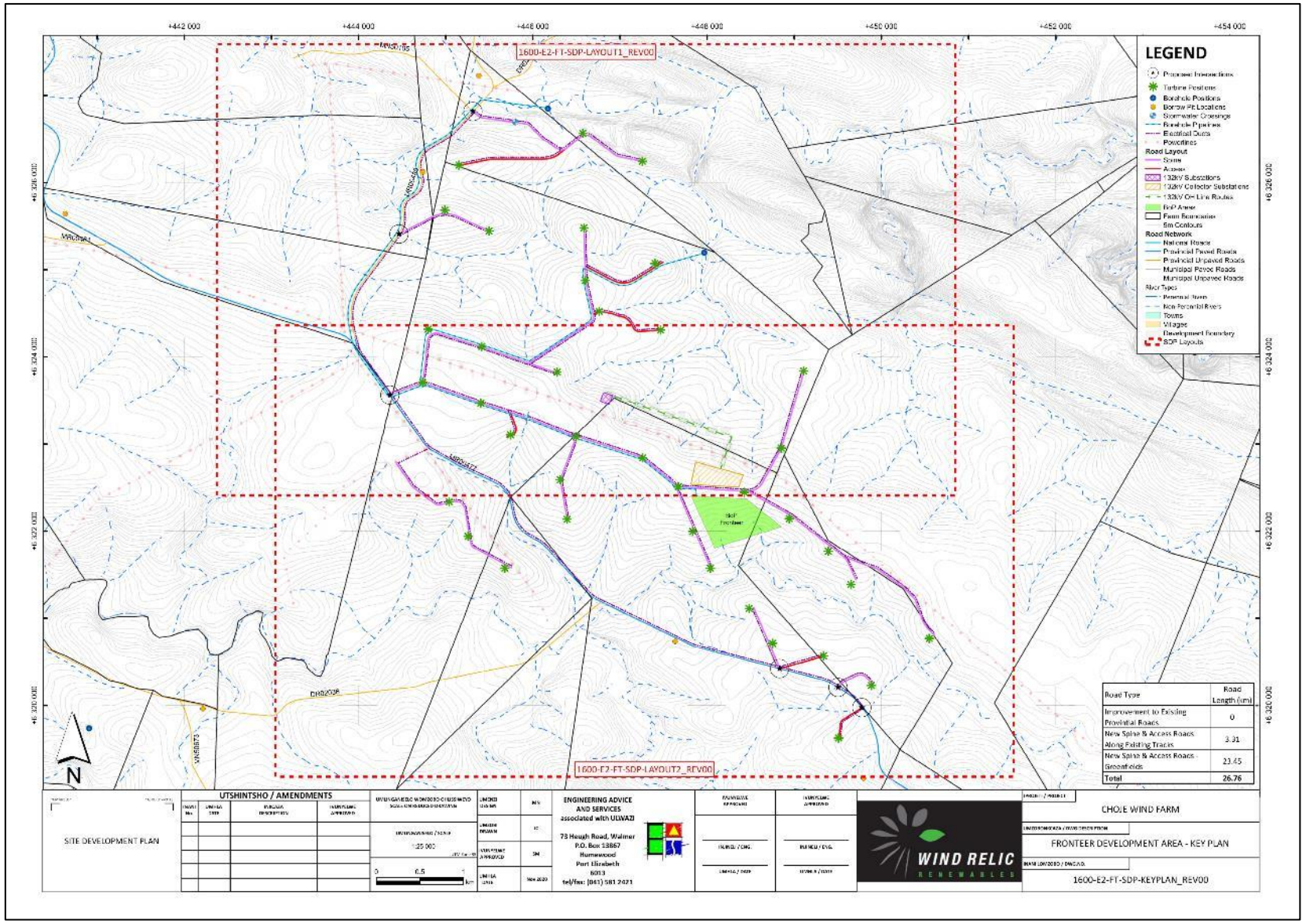



*Figure 5 - Fronteer Wind Farm Site Development Plan (Provided by WindRelic).*

# 3 CURRENT STATUS QUO

## 3.1 Site Description

The project area falls within the existing agricultural areas surrounding Makhanda (previously known as Grahamstown) and Somerset-West.

According to Mucina & Rutherford (2006), the Fronteer project area is characterised by the following vegetation types Kowie Thicket, Suurberg Quartzite Fynbos, Suurberg Shale Fynbos, Albany Broken Veld and Bhisho Thornveld. The vegetation types are briefly described below.

- Kowie Thicket: "*On mainly steep and north-facing (dry) slopes. Tall thickets dominated by succulent euphorbias and aloes with a thick understorey composed of thorny shrubs, woody lianas (Capparis, Secamone, Rhoicissus, Aloe), and shrubby succulents (Crassulaceae, Asphodelaceae). Moister south-facing slopes support thorny thickets dominated by low evergreen trees (Cussonia, Euclea, Hippobromus, Pappea, Ptaeroxylon, Schotia) and shrubs (Azima, Carissa, Gymnosporia, Putterlickia) with fewer succulent shrubs and trees"* (Mucina & Rutherford, 2006; Sanbi, 2021).
- Suurberg Quartzite Fynbos: "*Low rounded hills and mountains supporting low to medium-high, closed, ericoid shrubland or grassland, with closed restioid and/or grass understorey. Grassy fynbos is the most typical structural type, with localised patches of dense proteoid and ericaceous fynbos. On drier, north-facing slopes grassland replaces this unit, but the south-facing slopes always carry fynbos unless converted to grassland by over-burning, or to thicket by over-protection from fire. Thicket is found on the richer soils at the base of the formation and in gullies" (*Mucina & Rutherford, 2006; Sanbi, 2021).
- Suurberg Shale Fynbos: "*Low mountains or hills, supporting low to medium-high, closed, ericoid shrubland or grassland, with closed restioid and/or grass understorey. Graminoid fynbos, with localised patches of dense proteoid fynbos, also occurs (Mucina & Rutherford, 2006; Sanbi, 2021)*
- Albany Broken Veld: *Low mountain ridges and hills with an open grassy karroid dwarf shrubland with scattered low trees (Boscia oleoides, Euclea undulata, Pappea capensis, Schotia afra var. afra) with a matrix of dwarf shrubs (Becium burchellianum, Chrysocoma 12btuse12) and grasses (Eragrostis 12btuse)" (*Mucina & Rutherford, 2006; Sanbi, 2021).
- Bhisho Thornveld: "*On undulating to moderately steep slopes, sometimes in shallow, incised drainage valleys. Open savanna characterised by small trees of Acacia natalitia with a short to medium, dense, sour grassy understorey, usually dominated by Themeda triandra when in good condition" (*Mucina & Rutherford, 2006; Sanbi, 2021).

Existing surrounding land uses associated with the project area include a combination of:

- farming and agricultural areas, and
- dirt roads.

As a result, the vast majority of the Fronteer Wind Farm development footprint overlays highly disturbed terrain. Overall, the accessibility of the project footprint area was fairly good. Although the site has been disturbed by previous agricultural activities, visibility was fair.


*Figure 6 – View of Draai Farm 184.*


*Figure 7 – View of the grassland type vegetation found at the farm Table Hill 187.*

## 3.2 Overview of Study Area and Surrounding Landscape

| DATE | DESCRIPTION |
|---|---|
| 2.5 million to 250 000 years ago | The Early Stone Age is the first and oldest phase identified in South Africa's archaeological history and comprises two technological phases. The earliest of these is known as Oldowan and is associated with crude flakes and hammer stones. It dates to approximately 2 million years ago. The second technological phase is the Acheulian and comprises more refined and better made stone artefacts such as the cleaver and bifacial hand axe. The Acheulian dates back to approximately 1.5 million years ago (Korsman, & Meyer, 1999; Klein, 2000).<br><br>Some sites dating to the ESA have been identified in the general area. These are usually concentrations of stone tools found close to watercourses (van Schalkwyk, 2010). One of the more important ESA sites occurs at Ananzi Springs, near Uitenhage. This is the only ESA site in the Eastern Cape which has been excavated (Webley and Hall, 1998). Ananzi Springs was excavated by the late HJ Deacon in the 1970s and wood and seed material as well as a large number of stone artefacts was found in situ in the spring deposits (Binneman et al, 2011). Scatters of ESA tools are also often found in hollows between sand dunes like the site of Geelhoutboom near Humansdorp (Webley and Hall, ibid).<br><br>ESA stone artefacts have been found in the Addo Elephant National Park, and amongst the gravels of old river terraces which line most of the Coega River and estuary (Booth, 2011). Furthermore, a scatter of some possible ESA stone artefacts was recorded on one of the adjacent properties with the area of the already authorised Cookhouse Wind Energy Facility (Booth, 2011).<br><br>*No ESA sites are known from the immediate vicinity of the footprint area.* |
| 250 000 to 40 000 years ago | The Middle Stone Age (MSA) is the second oldest phase identified in South Africa's archaeological history. This phase is associated with flakes, points and blades manufactured by means of the so-called 'prepared core' technique (Korsman, & Meyer, 1999). Several MSA sites have been identified in the Eastern Cape.<br><br>Klasies River sites are located on the Tsitsikamma coast between Port Elizabeth and Plettenberg Bay and provides information about anatomically modern people who lived in southern Africa between 110 000 and 120 000 years ago (Steele, 2001; Mitchell, 2002). The Klasies River Mouth was excavated in 1967–1968. During the excavation's pieces of shell, animal bones and some human remains were found, that were associated with an MSA occupation of the site (Rightmire & Deacon, 1991).<br><br>Evidence of MSA occupation has been found at Strathalan Cave B, located in the Maclear district, north-eastern Cape, approximately 500 km North-east of Uitenhage by Opperman (1996). Apart from stone tools, Opperman also excavated several hearths and grass beddings at the site.<br><br>A MSA cave site, Howiesons Poort is located near Grahamstown (Shaw & Jameson, 2002). Several stone artefacts including backed blades were excavated from the site.<br><br>In 1979 Opperman conducted research in the Stormberg region. During this time, he excavated a trench at Grassridge Rockshelter, which is located in the interior region of the Eastern Cape at the base of the Stormberg Mountains and contains a rich sequence of late Pleistocene and Holocene occupations (Collins *et al.,* 2017). Opperman focused on the MSA and Late Stone Age (LSA) occupation of the site and identified several stone age tools.<br><br>During a rescue excavation by Gess (1969), two MSA lithic artefacts and bone tools were excavated from the Aloe site near St Georges Strand, Port Elizabeth.<br><br>The Albany Museum database holds records of the occurrence of MSA stone artefacts around the Cradock area and the Department of Archaeology has curated MSA stone artefacts in its collection from the Cradock area including Highlands Rock Shelter excavated by H.J. Deacon during the 1970's (Booth, 2011).<br><br>*No MSA sites are known from the immediate vicinity of the footprint area.* |
| 40 000 years ago, to the historic past | A number of LSA sites are known to occur in the region, located to the west and north of the study area. The majority of archaeological sites date from the past 10 000 years and are associated with the campsites of San hunter-gatherers and Khoi pastoralists (Binneman *et al.,* 2011). |

| DATE | DESCRIPTION |
|---|---|
| | Research by Binneman has shown that a number of very important LSA sites occur in the Kabeljousrivier area (inland of Jeffreys Bay). These sites include artefacts other than stone tools, like ostrich eggshell beads, bone arrowheads, small bored stones and occasionally wood fragments with incised markings (van Schalkwyk, 2010). Archaeologists believe that LSA people moved between the coast and the inland areas according to a seasonal pattern. Rock art sites are also associated with the LSA. These rock art sites are found mostly in the sandstone caves and shelters around Uitenhage, Grahamstown and Alicedale [Webley and Hall, 1998<br><br>Another rock shelter, Mafusing 1 containing LSA lithics, pottery and rock art is located near Matatiele. The site was excavated in 2011 as part of the Matatiele Archaeology and Rock Art or MARA research programme (Pinto *et al.,* 2018).<br><br>There are many San hunter-gatherer sites in the nearby Groendal Wilderness Area and adjacent mountains. Here, caves and rock shelters were occupied by the San during the LSA and contain numerous paintings along the walls. The last San/KhoiSan group was killed by Commando's in the Groendal area in the 1880's (Binneman *et al.,* 2011).<br><br>LSA stone artefact manufacture site and ceramic sherds have also been found in the Winterberg Mountain Range (Booth, 2011). LSA occupational deposits of the few caves and rock shelters surrounding Grahamstown that have been excavated, namely Melkhoutboom in the Suurberg (Deacon 1976), Wilton near Alicedale, Uniondale about 20km north-east of Grahamstown (Leslie-Brooker 1987), Springs Rock Shelter and Glen Craig situated immediately north and north-east of Grahamstown, and Edgehill and Welgeluk located on the Koonap River some 40km to the north of Grahamstown (Hall 1985).<br><br>*No LSA sites are known from the immediate vicinity of the footprint area.* |
| AD 450 – AD 750 | In the Eastern Cape, Early Iron Age (EIA) sites dating to around the eighth century AD (700s) have been identified at Kulubele on the Kei River and Canasta Place near East London. Excavations at Kulubele have identified evidence of ironworking, ceramic sculptures, grain pits and sheep bones, and highly decorated potsherds have been found at Canasta Place (Fourie, 2011). However, Canasta Place probably represents the most southerly evidence of early farmers in the Eastern Cape (Hall & Webley, 1998). EIA sites have also been found within the Great Kei River Valley (Booth, 2011).<br><br>EIA sites have also been recorded by Opperman (1987) during his research at Colwinton (located approximately 400km north east of Uitenhage) and Bonawe, near Barkley East (Mazel, 1992). At these sites, Iron age ceramics date to AD775. Bonawe rock shelter is located near Elliot, approximately 500km north-east of Uitenhage. The site contains both end-Pleistocene and Holocene material (Booth, 2012).<br><br>Some 2 000 years ago Khoi pastoralists occupied the region and lived mainly in small settlements. They were the first food producers in South Africa and introduced domesticated animals (sheep, goat and cattle) and ceramic vessels to southern Africa (Binneman, 2011).<br><br>*No EIA sites are known from the immediate vicinity of the footprint area.* |
| AD 1650 – AD 1850 | Hilltop settlement is mainly associated with Later Iron Age (LIA) settlement patterns that occurred during the second millennium AD (Booth, 2011). LIA settlements have been formally recorded by the Albany Museum and cover a relatively extended area including within the nearby Koonap River Valley between Bedford and Grahamstown (Booth, 2011).<br><br>The Nguni groups of South African can be divided into four distinct groups: the Zulu-speaking peoples, the Xhosa-speaking peoples, the Swazi people from Swaziland and adjacent areas and the Ndebele people (SA History, 2019c). Around 1600's the Xhosa groups began expanding their power.<br><br>Tshawe founded the Xhosa kingdom by defeating the Cirha and Jwarha groups (Peires, 1982; SA History, 2019c). His descendants expanded the kingdom by settling in new territory and bringing people living there under the control of the amaTshawe (SA History, 2019c). As the Xhosa expanded their influence westwards, they came into contact with Khoi and San groups. The Khoi and San groups were later intermarried into the Xhosa culture Jwarha groups (SA History, 2019c). His descendants expanded the kingdom by settling in new territory and bringing people living there under the control of the amaTshawe (SA History, 2019c). From about 1700, emaXhoseni, the place of the Xhosa or Xhosaland, stretched roughly along the seaboard of |

| DATE | DESCRIPTION |
|---|---|
| | South Africa between the Mbashe River and the Sundays River, from the slopes of the Khahlamba, Amathole and Winterberg mountains down the coast (Peires, 1982; Fourie, 2011).<br><br>As the first European settlers started moving north from the Cape they came into contact with Xhosa speaking groups. In the Eastern Cape, the 18th and 19th century is marked with conflict and wars between the European settlers and the Xhosa groups (SA History, 2019c). A marked change in the conflict appeared in 1820, when John Brownlee founded a mission on the Tyhume River near Alice, and William Shaw established a chain of Methodist stations throughout the Transkei (SA History, 2019c).<br><br>There are records of Observation Posts that were constructed under the leadership of Sir John Cradock, to keep the Xhosa from crossing the Fish River (Booth, 2011). These were in place and functioning between 1812 and 1817. Positions of observation posts include Addo Heights Post (Addo), Rautenbach's Drift (Addo), Sandflats (Paterson), Coerney, Swartwaterspoort and Kommadagga (Coetzee 1994; Booth, 2011). Several historical features and buildings were recorded during the survey for the already authorised Cookhouse Wind Energy Facility.<br><br>*No Late Iron Age (LIA) sites are known from the immediate vicinity of the footprint area* |

### 3.3 Previous Archaeological and Heritage Studies in and around the Study Area

A scan of the SAHRIS database has revealed the following studies conducted in and around the study area of this report. These studies are summarised below in ascending date order:

- WEBLEY, L & WAY-JONES, M. F. 2007. Phase 1 heritage impact assessment on erven 1,44,7586 and 4979, Rhodes University, Grahamstown, Eastern Cape. Prepared for Rhodes University. **No archaeological material was observed.**
- NEL, J. & DE KAMPER, G. 2008. Heritage resources scoping survey & preliminary assessment Transnet Freight Line EIA, Eastern Cape and Northern Cape. Prepared for Environmental Resource Management in Southern Africa. **Sixty-five sites, including fossils, Early, Middle and Late Stone Age, Historical sites and structures and graves were observed during the survey.**
- VAN SCHALKWYK, L. 2008. Heritage impact assessment of four borrow pits, Ndlambe and Makana Municipalities, Greater Cacadu Region, Eastern Cape Province, South Africa. Prepared for BKS (Pty) Ltd. **No heritage resources were identified within any of the proposed development areas.**
- ANDERSON, G. 2009. Heritage survey of the proposed Waainek Wind Farm, Grahamstown, Eastern Cape. Prepared for Coastal and Environmental Services. **No heritage sites were identified in the affected area.**
- BINNEMAN, J. AND BOOTH, C. 2009. A Phase 1 archaeological heritage impact assessment for the proposed subdivision and rezoning of Erf 8517, Grahamstown, Makana Municipality, Cacadu District Municipality, for the purposes of constructing residential and town housing, and business centre. Prepared for Conservation Support Services. **The area is of low cultural sensitivity. No archaeological sites were found.**

- GAIGHER, S. 2010. Heritage Impact Assessment for the Proposed Upgrading of the Storm Water Drainage Network for the Town of Somerset East, Eastern Cape Province. **Only one area containing an informal cemetery was identified.**
- HALKETT, D. & WEBLEY, L. 2010. Heritage Scoping Assessment of a proposed Wind Energy Facility to be situated on farms in the Cookhouse District, Eastern Cape. Prepared for Savannah Environmental (Pty). **No heritage sites or features were identified.**
- HALKETT, D. & WEBLEY, L. & ORTON, J.& PINTO, H. 2010. Heritage impact assessment of the propose Amakhala-Emoyeni wind energy facility, Cookhouse District, Eastern Cape. Prepared for Savannah Environmental (Pty). **Historical features, buildings and graveyards associated with farms are present within the study area.**
- BOOTH, C. 2011A. A Phase 1 Archaeological Impact Assessment for the proposed Cookhouse Ii Wind Energy Facility, Blue Crane Route Local Municipality, Eastern Cape Province. Prepared for Savannah Environmental (Pty). **Isolated surface scatters of predominantly MSA stone artefacts, a LSA site, and some historical ceramics were observed.**
- BOOTH, C. 2011B. Phase 1 archaeological impact assessment for the Golf Course Development On Portions 1 and 2 of the Farm Willow Glen and Portion 6 of Belmont Farm, Grahamstown, Makana Municipality, Cacadu District Municipality, Eastern Cape Province. Prepared for Coastal and Environmental Services. **No archaeological heritage material remains or sites were found.**
- NILSSEN, P. 2011. Proposed development of the Plan 8 Grahamstown Wind Energy Project: including Farms Gilead 361, Peynes Kraal 362 and Tower Hill 363, Grahamstown, Makana Municipality, Eastern Cape Province. Prepared for Coastal & Environmental Services. **Two unmarked graves, a cave with rock art, stone age artefacts and an old horse/oxen-drawn plough were observed in the area.**
- VAN SCHALKWYK, J. 2011. Heritage impact assessment for the proposed Eskom 400kv Electricity Transmission Line, Neptune To Poseidon Substations, East London To Cookhouse, Eastern Cape. **Several stone and iron age sites were identified.**
- VAN RYNEVELD, K. 2011. Cultural heritage impact assessment upgrade of the National Route 10 Section 3(N10/3) from Baviaans River to Rietvlei (Vrischgewaagd), between Cookhouse and Cradock, Eastern Cape, South Africa. Prepared for MPM Environmental Consultants. **No Stone Age or Iron Age sites were identified, while 2 Colonial structures and a grave was found.**
- BINNEMAN, J. 2013. An archaeological walkthrough survey of the turbine footprint for the proposed Phase 1 Amakhala Emoyeni Wind Energy Facility, Cookhouse District, Blue Crane Route Municipality, Eastern Cape Province. **The study area investigated appears to be of low archaeological and historical sensitivity**.
- BINNEMAN, J. 2013. A Phase 1 Archaeological Impact Assessment of the proposed new substation and 132kv power line and the Nojoli Wind Farm near Cookhouse, Blue Crane Route Local Municipality, Cacadu District, Eastern Cape Province. Prepared for Savannah Environmental (Pty) Ltd. **The study area investigated appears to be of low archaeological and historical sensitivity.**

- BINNEMAN, J. 2014. An archaeological walkthrough survey of the final layout of the proposed Nojoli Wind Energy Facility near Cookhouse, Blue Crane Route Local Municipality, Bedford District, Eastern Cape Province. Prepared for Savannah Environmental (Pty) Ltd. **The study area investigated appears to be of low archaeological and historical sensitivity.**
- BINNEMAN, & REICHERT, K. 2015. An archaeological walkthrough survey of the final optimised layout of the authorised Nxuba Wind Farm near Cookhouse, Blue Crane Route Local Municipality, Sarah Baartman District Municipality, Eastern Cape Province. Prepared for Savannah Environmental (Pty) Ltd. **Only a few isolated weathered Middle Stone Age stone tools of low heritage significance were observed.**
- VAN RYNEVELD, K. 2016. Phase 1 Archaeological & Cultural Heritage Impact Assessment – Proposed Hempel Quarry, Crusher and Stockpile Area, Farm No 604, near Grahamstown, Makana Local Municipality, Eastern Cape. Prepared for Terreco Environmental. **No archaeological or cultural heritage was identified.**
- SMUTS. K. & LAVIN, J. 2017. Heritage impact assessment for the proposed Spitskop Wef 132kv Power Lines. Prepared for Terramanzi Group (Pty) Ltd. **Six MSA artefacts were found**

## 3.4 Historical Background of Grahamstown, Riebeeck East

### 3.4.1 *Grahamstown (now known as Makhanda)*

Before the arrival of the British settlers, the Albany, Bathurst and Alexandria regions were known as the Zuurveld (Corry, 1920). When Britain reoccupied the Cape in 1806, the new administration found itself faced with several conflicts with the Xhosa on the Eastern frontier, as the border, the Great Fish River, was regularly breached by raiders who attaked the white farmers in the region (Erasmus, 1995). In 1811 the Xhosa launched a full scale attack against the settlers (Erasmus, 1995). This attack is known as the fourth frontier war (Erasmus, 1995). During the attack, some 20 000 Xhosa warriors stormed and drove away from the settlers once and for all (Erasmus, 1995). Many of the structures in the region were severely damaged.

In an effort to counter such an invasion Governor Sir John Cradock decided to build a line of blockhouses along the Fish River, and Colonel John Graham was selected for the task (Erasmus, 1995). When Colonel John Graham came upon the partially destroyed remains of the Rietfontein homestead he decided to build his military headquarters and garrison there (Erasmus, 1995). Grahamstown was founded in 1812 by Colonel John Graham as a frontier garrison post near the Xhosa territory (Cory, 1920). The plans for the new village were drawn up by John Knobel, the district surveyor of Uitenhage, and the first residential stands were sold in 1815 (Erasmus, 1995). The Rietfontein homestead was repaired and served as the garrison's officers mess (Erasmus, 1995). The first school in Grahamstown opened in 1814 near the wall of the garrison (Erasmus, 1995). Convent High, seen as the first "proper" school in Grahamstown opened in 1849 (Erasmus, 1995). On 22 April 1819, a large number of Xhosa warriors, under the leadership of Nxele (or Makanda), launched an attack against the British colonial forces. During the fifth frontier war, about 10 000 Xhosa Nxele (or Makanda) attacked the garrison (Erasmus, 1995). The 350 men at the

garrison stood their ground and drove away the Xhosa leaving 1000 dead (Erasmus, 1995). With the arrival of settlers in 1820, and their migration through the Eastern Cape, they began to farm (Erasmus, 1995). Records relating to the distribution of the 1820 Settlers suggest that the point at which the wagon parties divided and went their respective ways took place on the farm called Assegai Bosch (Webley 2007). Here the wagon tracks split either to Salem or to Grahamstown (Webley & Way-Jones, 2007).

In 1822 Grahamstown was proclaimed the seat of the magistracy of the new district of Albany **(Figure 8),** with Colonel Jacob Cuyler appointed as the first landdrost (Erasmus, 1995).

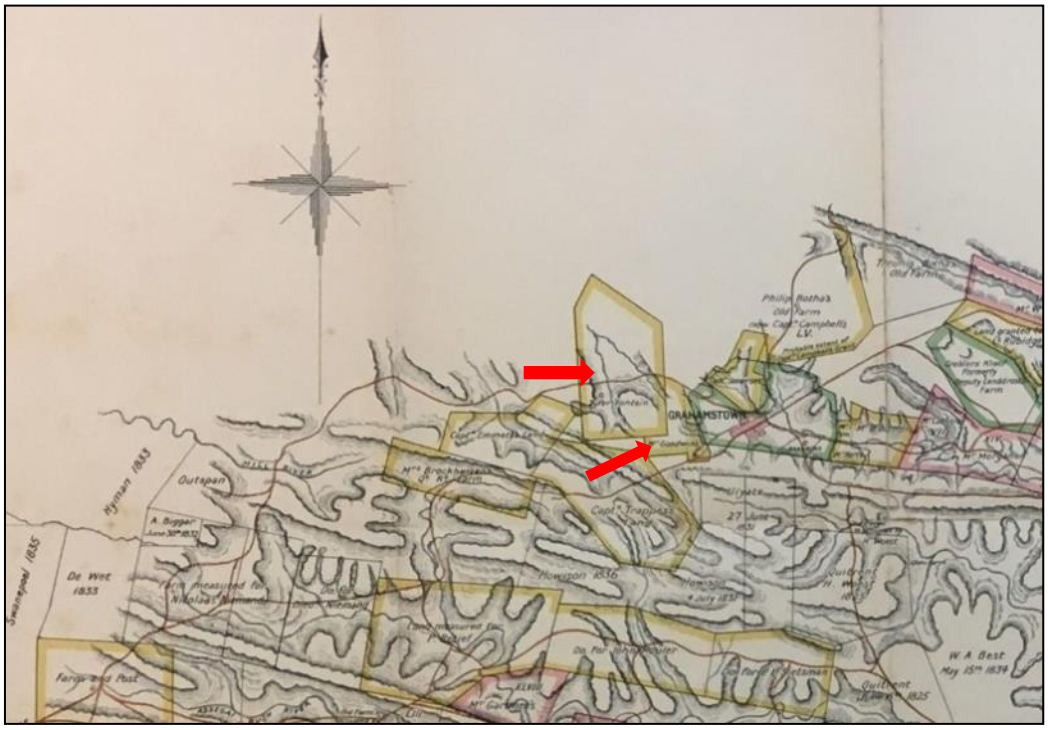



*Figure 8 - Map showing District of Albany in the Colony of Good Hope, and the location of the old roads, and the approach to Grahamstown through the farm "Zyfer Fontein'' and ''Mr Goodwins (Red Arrow) (Source: Campbell, 1897). The study area is located to the north-west of Grahamstown and not depicted on the map.*

In 1822 Grahamstown was proclaimed the seat of the magistracy of the new district of Albany, with Colonel Jacob Cuyler appointed as the first landdrost (Erasmus, 1995). In 1962 the town received full municipal status (Erasmus, 1995). Throughout 1834-1850 conflict still brewed between the Xhosa's and the settlers. During this time the sixth, seventh and eight frontier war was fought **(Figure 9)** (Erasmus, 1995). Several heritage sites are located to the east of Grahamstown including the declared Provincial Heritage Site (PHS) of Fraser's Camp Signal Tower, constructed in 1843 during the Frontier Wars and the nearby Fraser's Camp, constructed a few years earlier (1835 / 1836), as well as the Maranatha Mission, dating to circa. 1909 (Van Ryneveld, 2016). According to the SAHRIS database Grahamstown's has approximately 60 houses, buildings and other structures listed as Grade II sites.

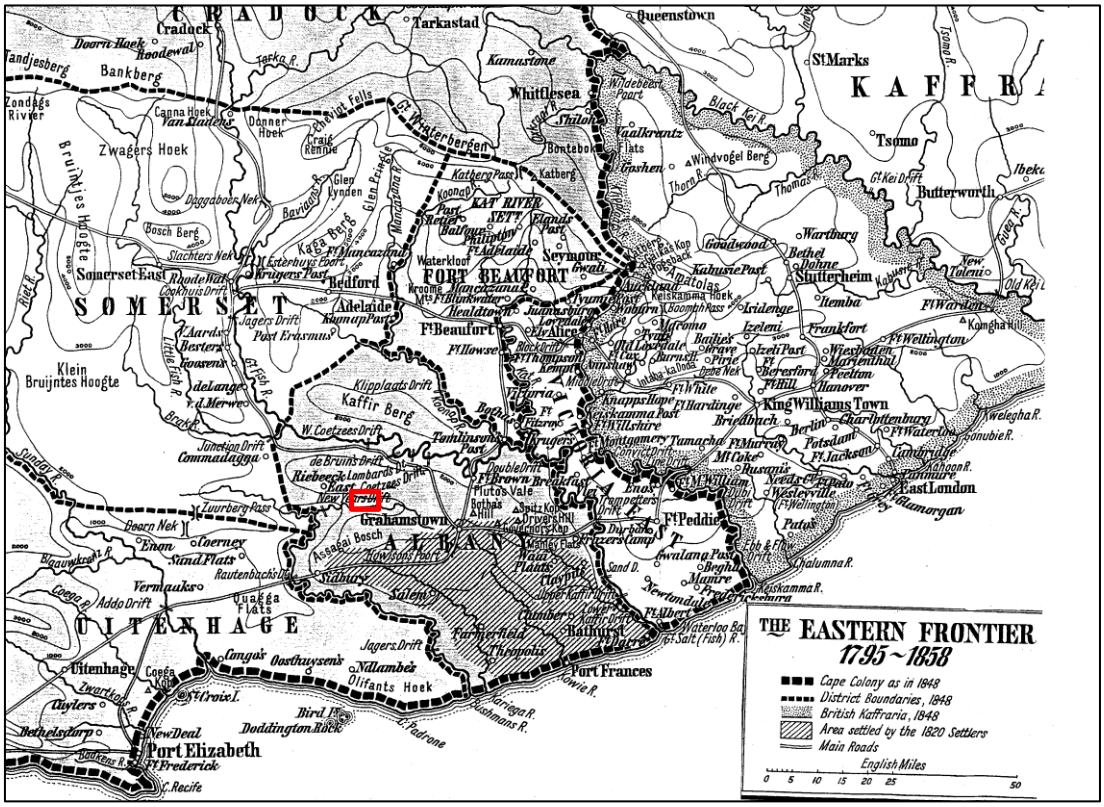



*Figure 9 - Map showing of the Eastern Frontier in 1860 (Source: Militaryhistorysa, 2017). (Study area depicted by the red square).*

### *3.4.1.1 The Farm Hilton*

The farm Hilton was first owned by Philip Schutte and was known as “Roodedraai (Webster, 1978). Ïn 1923, the farm was granted to Harry Rivers (Webster, 1978). After Harry Rivers left for Swellendam, the farm was transferred to Messrs Lee and Cock in 1825 (Webster, 1978). The farm was later owned by Coenraad Fredrick Scheepers. However, by 1836 Alexander George Cummings became the owner of the farm (Webster, 1978). The Cumming family owned the farm Hilton until 1922 when the Hilton-Barbers bought the farm (Webster, 1978). The farm was finally bough by T. C. White and Sons in 1951 (Webster, 1978).

### *3.4.1.2 The Farm Table Hill*

Table Hill Farm was first known as “Noutoe” (Webster, 1978). The farm “Noutoe” was abandoned in 1810 when many farmers in the area moved to Graaf-Reinet to escape marauding tribes (Webster, 1978). Col. Graham used “Noutoe” as the site where the Cape Regiment was to be stationed (Webster, 1978). Building began on 6 May 1812, however it stopped shortly when Stockensröm and Graham found a better site, located at the site where Grahamstown is currently located (Webster, 1978).

### 3.4.2 *Riebeek East*

In 1820 British Settlers was sent to colonize the Zuurveld area and to act as a buffer between the new colonies in the west and the Xhosa tribes in the east. The settlement of the British settlers led to an "anglicizing" of the area (Riebeeck East, 2013). Many of the independent Afrikaner farmers that lived in the area remained loyal to the Dutch Reformed Church and had to travel to Graaf-Rienet and Uitenhage to attend church services (Riebeeck East, 2013). The Afrikaans speaking community of farmers in the Albany District sent a petition for their own church, but this was declined on the basis that the English church in Grahamstown should be used by the Dutch congregation in the same way that the Dutch church in Cape Town is used by the English (Riebeeck East, 2013). One of those signatories to this petition was Piet Retief, one of the leaders on the Great Trek (Riebeeck East, 2013).

In 1830 another petition to the government was sent, and Captain campbell, the civil commissioner was instructed to appoint elders and deacons (Theal, 2010). The new elders and deacons were installed by reverent Alexander Smith I January 1831 (Theal, 2010). The first visiting preacher was Dr George Morgan who presided at the first church gathering on 7th May 1831 on the farm Driefontein (Theal, 2010; Riebeeck East, 2013). On 2 April 1839 the church appointed Dr John Pears, as the first resident clergy (Theal, 2010; Riebeeck East, 2013). In April 1840 the church council bought the farm Mooimeisiesfontein, for the purpose of establishing a village and building a church (Theal, 2010; Riebeeck East, 2013). The farm Mooimeisiesfontein had belonged to Mr Piet Retief (Theal, 2010). The village of Riebeek was established in 1842 and was named in honour of the first Dutch Governor of the Cape, Jan van Riebeeck. Its name was amended to Riebeek East in about 1881 to differentiate it from its namesake in the Division of Malmesbury (SA History, 2019).

### 3.4.3 *Cookhouse*

Located on the west bank of the Great Fish River, which, until 1819 formed the eastern boundary of the Cape Colony (Erasmus, 1995). The origin of the name of the town is still debated (Van Schalkwyk, 2011). Troops patrolling the boundary often camped in these parts and eventually built small stone houses in which they sheltered and cooked (Erasmus, 1995). Some of theses “cookhouses” were still visible into the 20th century, although most of them have disappeared (Erasmus, 1995). The railway from Port Elizabeth to the diamond fields in kimberley reached Cookhouse in 1880 (Erasmus, 1995). The original railway between Cookhouse and Bedford runs over the Farm Request as well as the original road between Cookhouse and Grahamstown (now known as Makhanda) (Booth, 2011). According to various databases consulted it has approximately 15 houses, buildings and other structures listed as provincial heritage sites.

### 3.4.4 *Somerset East*

As ear;y as 1771 land was allotted to farmer Willem Prinsloo on the banks of the Little Fish river at the Foot of the Boschberg (Erasmus, 1995). Later, part of this land came into possession of Louis Trichardt. Trichards successful cultivation of tobacco on his land prompted Lord Charles Somerset to establish

Somerset Farm (Erasmus, 1995). Lord Charles Somerset, the governor at the Cape from 1814 to 1826, founded in 1814 an experimental farm in the shadow of the Boschberg. Here many different crops were grown, including tobacco which was in short supply due to the British-American War (Gaigher, 2010). After the ending of that war, tobacco production on the farm ceased but it continued to help provision the army garrison (Gaigher, 2010).

In 1825 a township was laid out on the grounds of this farm and was named after Lord Somerset (Gaigher, 2010). The "East" was to distinguish it from the other Somerset ("West") near Cape Town and was only added 30 years later. The first street of this new township was Paulet Street, at the foot of the Boschberg, and still contains many properties dating from this early era (Gaigher, 2010). In 1835 a volunteer mounted unit of about 170 of the town's citizens was formed to take part in the 6th Frontier War and also saw action in subsequent wars (Gaigher, 2010). When Dr William Gill, the district surgeon, died in 1863 he bequeathed most of his estate for an institution of higher learning but with the stipulation that none of the money be spent on erecting or acquiring buildings (Gaigher, 2010). According to the SAHRIS database Somerset East has approximately 15 houses, buildings and other structures listed as Grade II sites.

#### 3.4.5 *Conclusions*

Archival and historical research has revealed that Grahamstown has a history of occupation.

## 3.5 Archival/historical maps

The examination of historical data and cartographic resources represents a critical tool for locating and identifying heritage resources and in determining the historical and cultural context of the study area. Relevant topographic maps and satellite imagery were studied to identify structures, possible burial grounds or archaeological sites present in the footprint area.

Topographic maps (1:50 000) for various years (1946,1976 and 1989) were assessed to observe the development of the area, as well as the location of possible historical structures and burial grounds. The maps were also used to assess the possible age of structures to determine whether they could be considered as heritage sites. Map overlays were created showing the possible heritage sites identified within the areas of concern, as can be seen below. The relevant topographical maps include:

- Grahamstown Topographic map. 1901.
- 3326AB Pigott’s Bridge, surveyed in 1955 and drawn in 1959 by the Trigonometrical Survey Office. Printed by the Government Printer in 1959.
- 3326AB Pigott’s Bridge published by the Chief Director of Surveys and Mapping. Printed by the Government Printer in 1977.
- 3326AD Salem, surveyed in 1960 and drawn in 1962 by the Trigonometrical Survey Office. Printed by the Government Printer in 1962.
- 3326AD Salem published by the Chief Director of Surveys and Mapping. Printed by the Government Printer in 1979.

It can be seen that all the map sheets consulted depict the entire project area surrounded by several huts, as well as old agricultural fields. Historical roads are also depicted.

Furthermore, from the Chief Surveyor-General database (http://csg.dla.gov.za/) the following farms was surveyed:

- Draai Farm 184 was surveyed by the Land Surveyor T. Watkins on 17 February 1827.
- Farm Hounslow 131 was surveyed by the Government Land Surveyor W. Barnfather in July 1849.
- Portion 2 of the Farm Hounslow 131 was surveyed by the Land Surveyor P. Copemanon 5 December 1910.
- Table Hill Farm 187 was surveyed by the Land Surveyor M. Hilten in February and March 1966.

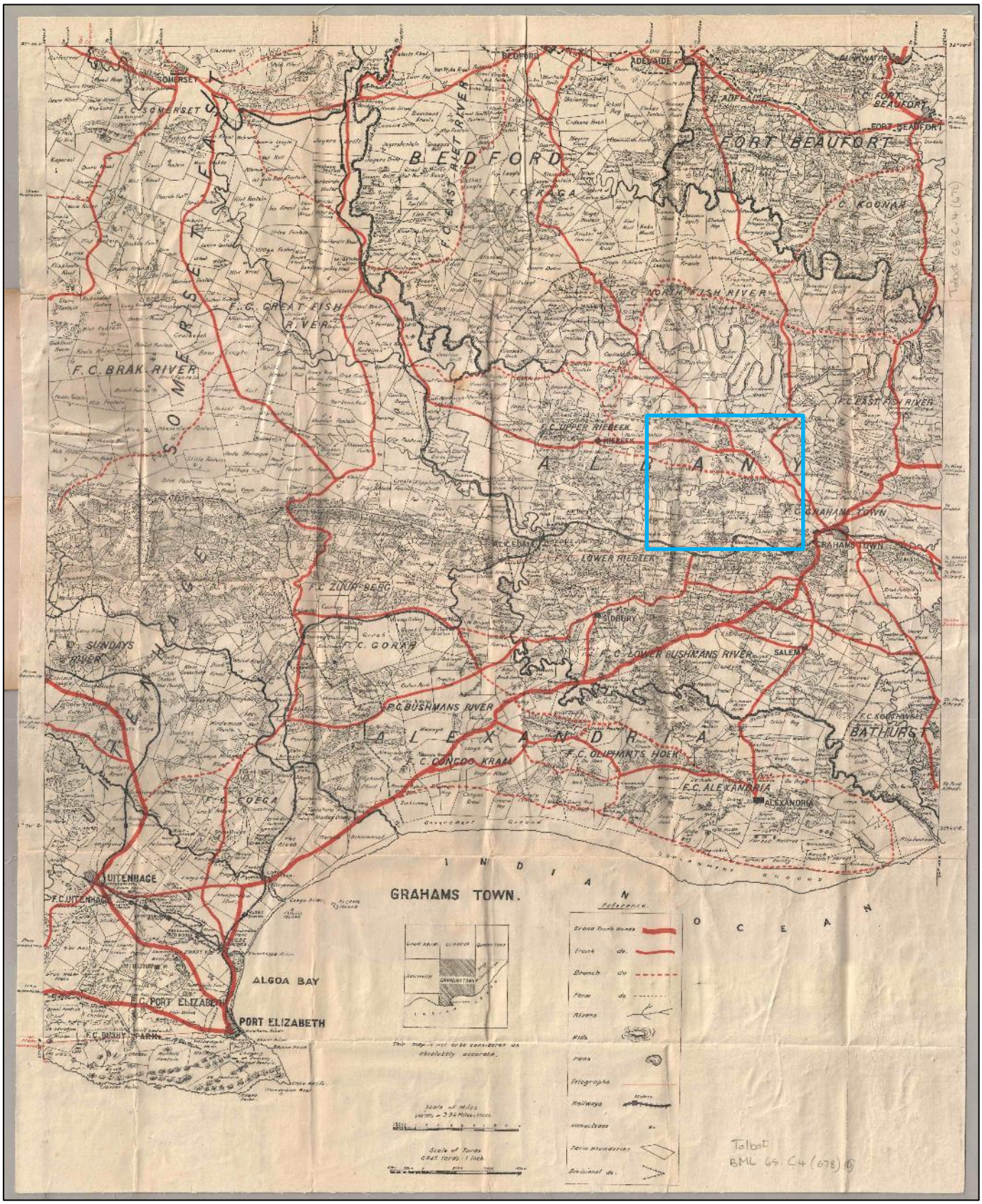



*Figure 10 – Topographic map Graham's Town dating to 1901 showing the several farms, in the project area (blue polygon).*

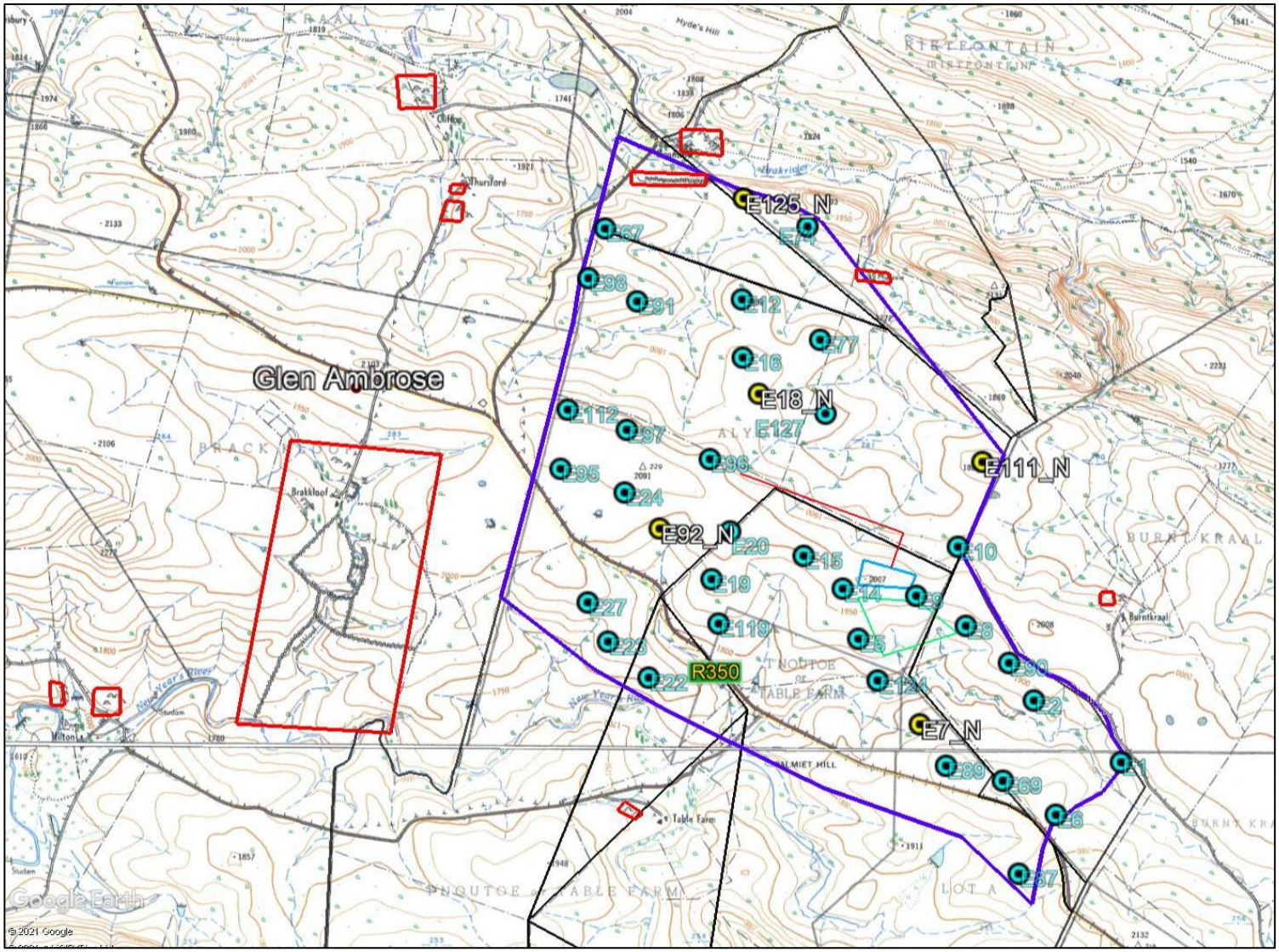



*Figure 11 – First Edition Topographic maps (1:50 000) 326AB Pigott's Bridge (1959) and 3326AD Salem (1962) showing the Fronteer Wind Farm, with several heritage features (red polygons) located in close proximity to the project development area (blue polygon).*

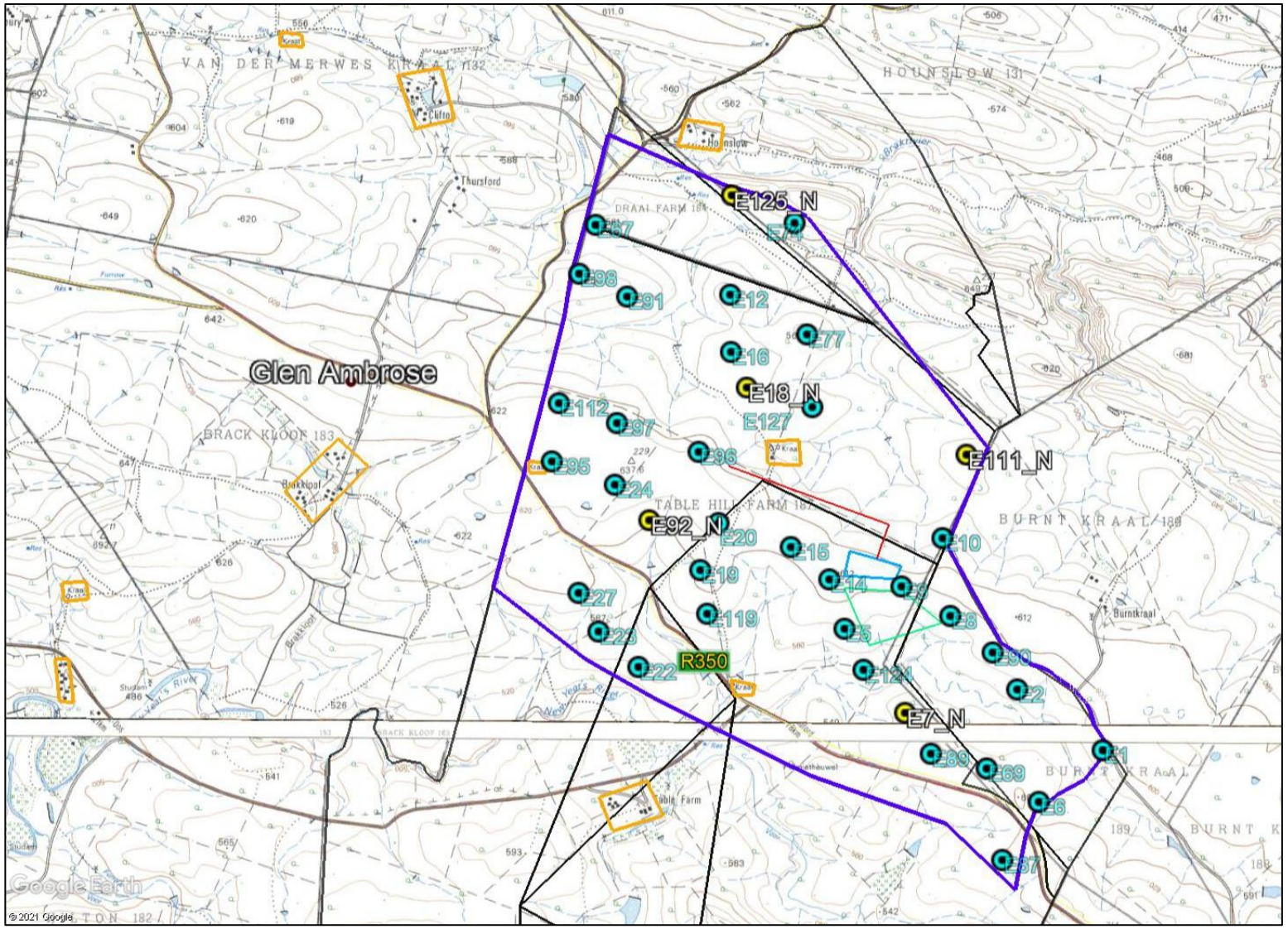



*Figure 12 –Second Edition Topographic map (1:50 000) 326AB Pigott's Bridge (1977) and 3326AD Salem (1979) showing the Fronteer Wind Farm, with several heritage features (red polygons) located in close proximity to the project development area (blue polygon).*

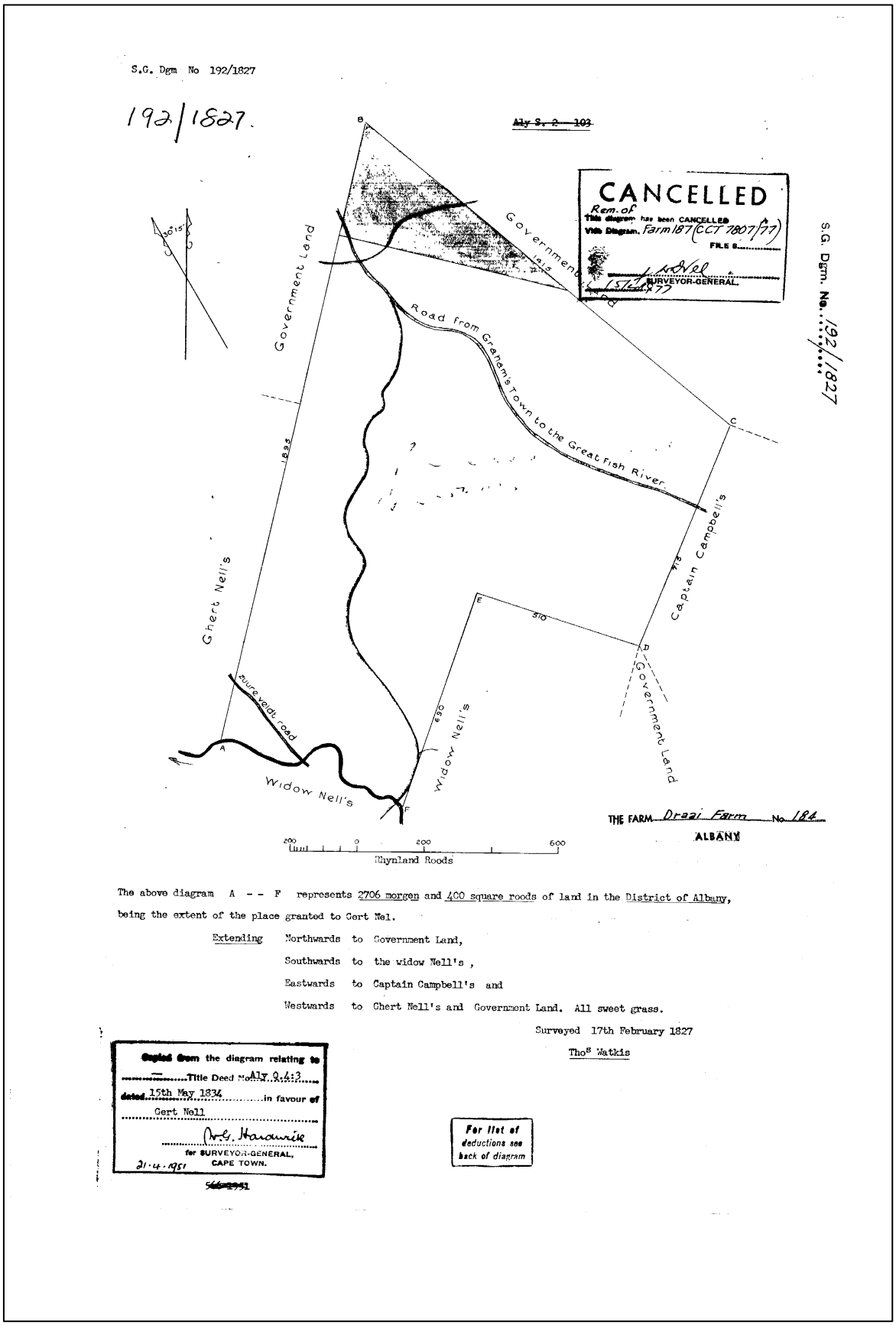



*Figure 13 – SG-Diagram from the Chief Surveyor General database for Draai Farm 184 was surveyed by the Land Surveyor T. Watkins on 17 February 1827.*

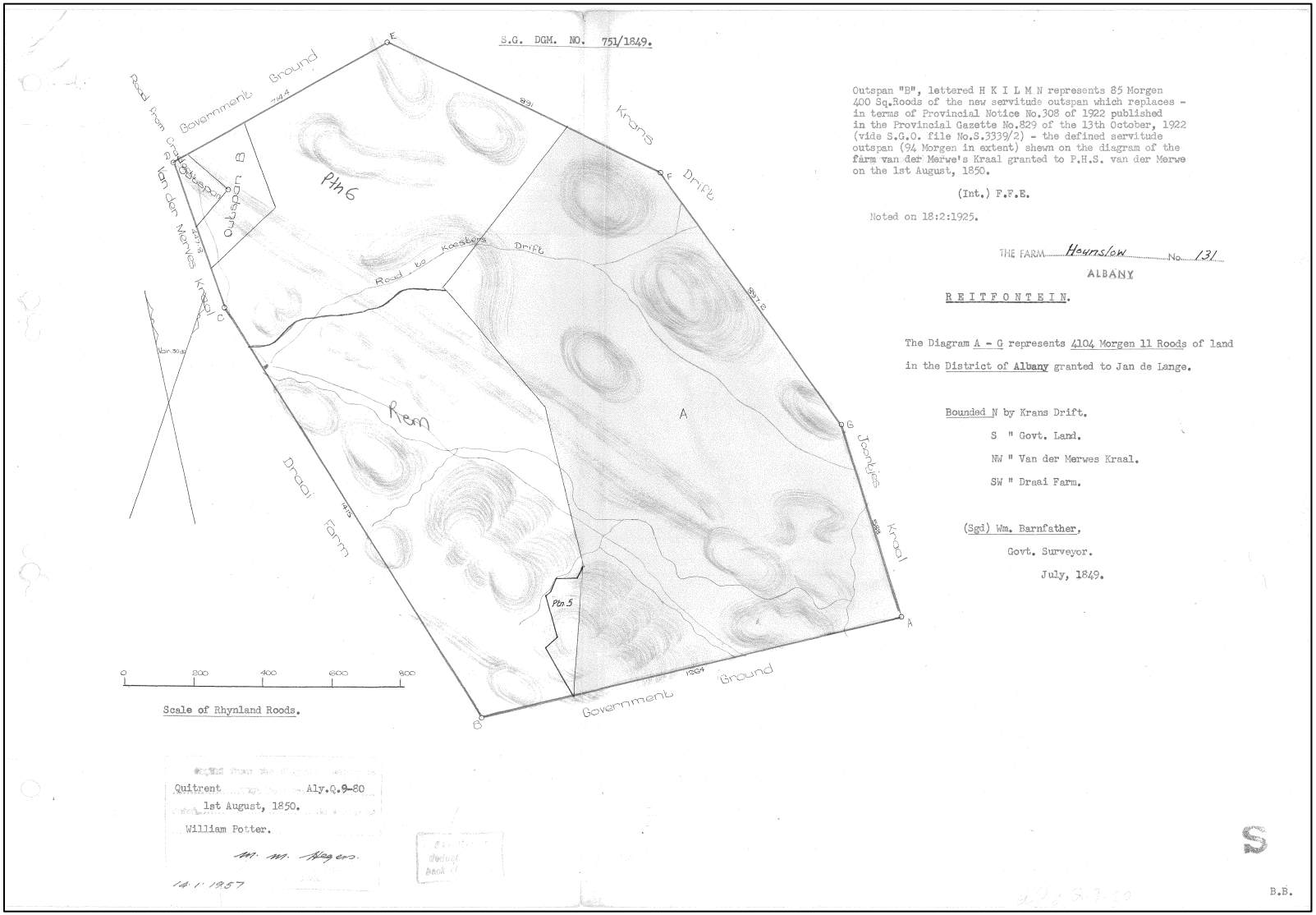



*Figure 14 – SG-Diagram from the Chief Surveyor General database for the Farm Hounslow 131 was surveyed by the Government Land Surveyor W. Barnfather in July 1849.*

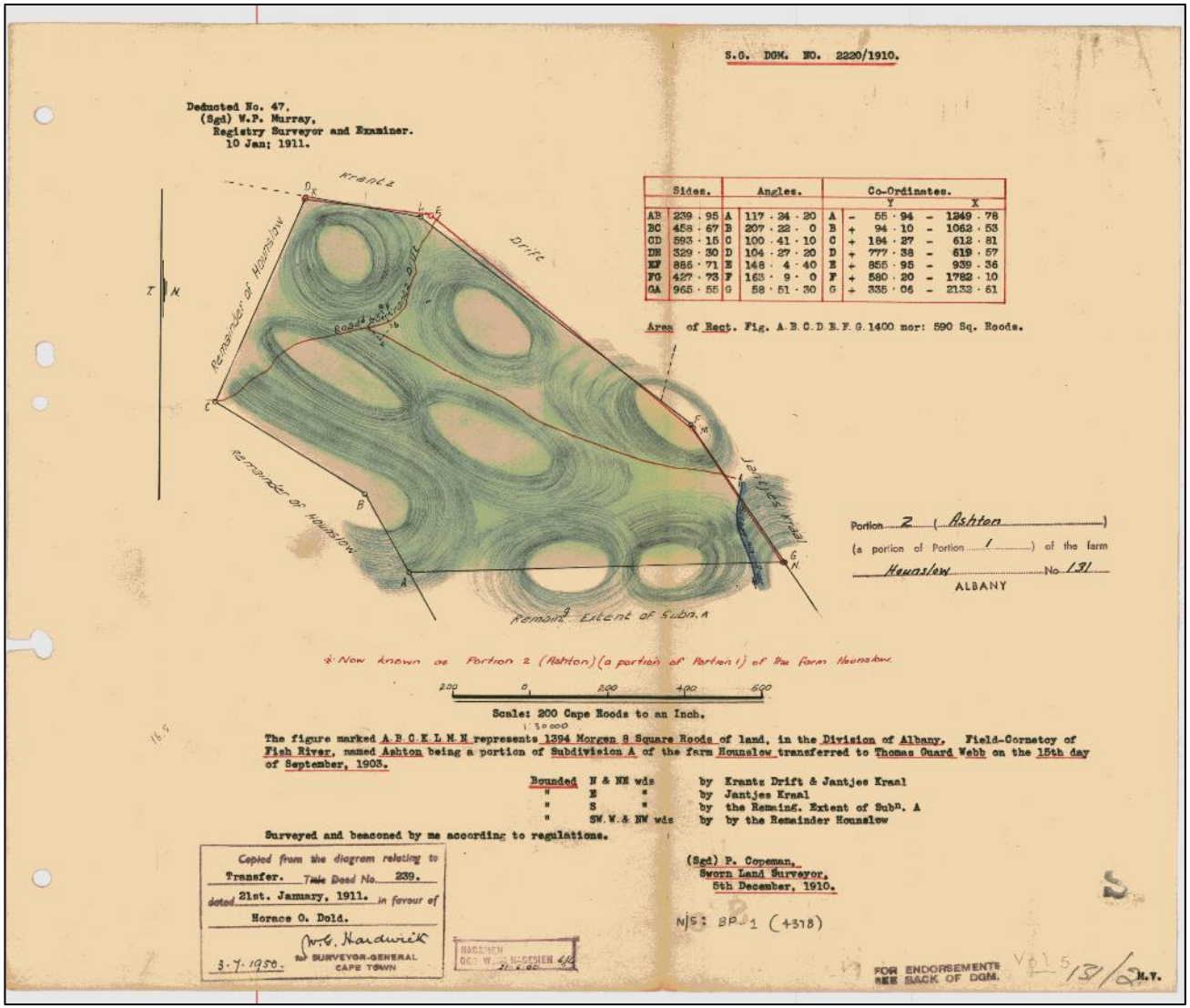
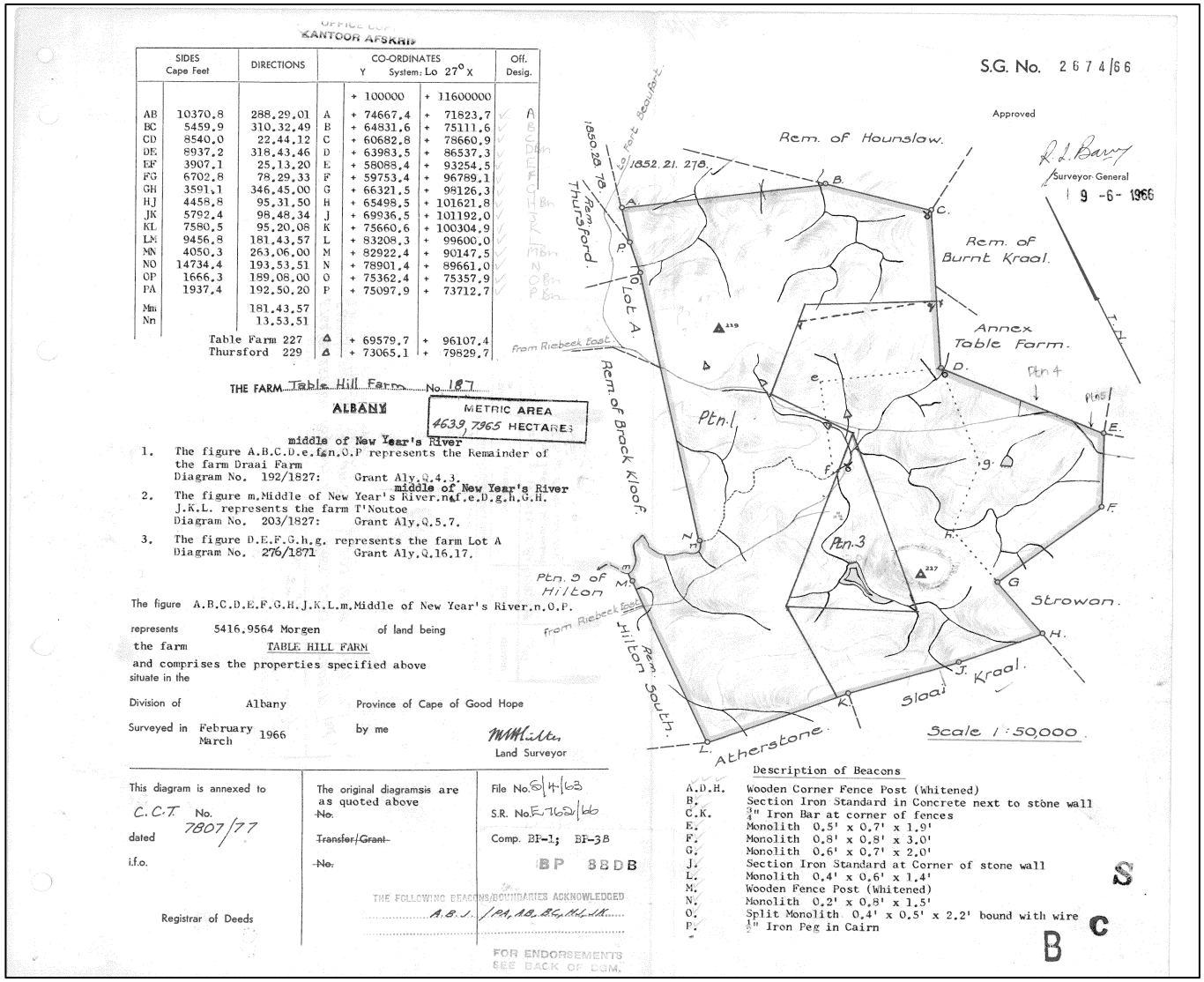



*Figure 15 – SG-Diagram from the Chief Surveyor General database for Portion 2 of the Farm Hounslow 131 was surveyed by the Land Surveyor P. Copemanon 5 December 1910.*




| | SIDES Cape Feet | DIRECTIONS | | CO-ORDINATES Y System: Lo 27° X | | Off. Desig. |
|---|---|---|---|---|---|---|
| | | | | + 100000 | + 11600000 | |
| AB | 10370.8 | 288.29.01 | A | + 74667.4 | + 71823.7 | A |
| BC | 5459.9 | 310.32.49 | B | + 64831.6 | + 75111.6 | B |
| CD | 8540.0 | 22.44.12 | C | + 60682.8 | + 78660.9 | C |
| DE | 8937.2 | 318.43.46 | D | + 63983.5 | + 86537.3 | D |
| EF | 3907.1 | 25.13.20 | E | + 58088.4 | + 93254.5 | E |
| FG | 6702.8 | 78.29.33 | F | + 59753.4 | + 96789.1 | F |
| GH | 3591.1 | 346.45.00 | G | + 66321.5 | + 98126.3 | G |
| HJ | 4458.8 | 95.31.50 | H | + 65498.5 | + 101621.8 | H |
| JK | 5792.4 | 98.48.34 | J | + 69936.5 | + 101192.0 | J |
| KL | 7580.5 | 95.20.08 | K | + 75660.6 | + 100304.9 | K |
| LM | 9456.8 | 181.43.57 | L | + 83208.3 | + 99600.0 | L |
| MN | 4050.3 | 263.06.00 | M | + 82922.4 | + 90147.5 | M |
| NO | 14734.4 | 193.53.51 | N | + 78901.4 | + 89661.0 | N |
| OP | 1666.3 | 189.08.00 | O | + 75362.4 | + 75357.9 | O |
| PA | 1937.4 | 192.50.20 | P | + 75097.9 | + 73712.7 | P |
| Mm | | 181.43.57 | | | | |
| Nn | | 13.53.51 | | | | |
| | Table Farm 227 | | Δ | + 69579.7 | + 96107.4 | |
| | Thursford 229 | | Δ | + 73065.1 | + 79829.7 | |

*Figure 16 – SG-Diagram from the Chief Surveyor General database for Table Hill Farm 1872 was surveyed by the Land Surveyor M. Hilten in February and March 1966.*

## 3.6 Findings of historical desktop study

The findings can be compiled as follows and have been combined to produce a heritage sensitivity map for the project based on the desktop assessment (Error! Reference source not found.).

### 3.6.1 *Heritage Sensitivity*

The sensitivity maps were produced by overlying:

- Satellite Imagery;
- Current Topographical Maps; and
- First to third edition Topographical Maps dating from the 1940's to 1970s.

This enabled the identification of possible heritage sensitive areas that included:

- Dwellings;
- Clusters of dwellings (homesteads, huts and farmsteads);
- Archaeological Sensitive areas; and
- Structures/Buildings.

By superimposition and analysis, it was possible to rate these structure/areas according to age and thus their level of protection under the NHRA. Note that these structures refer to possible tangible heritage sites as listed in **Table 5**.

*Table 5 -Tangible heritage sites in the study area*

| Name | Description | Legislative protection |
|---|---|---|
| Archaeology - Iron Age Sites | Older than 100 years | NHRA Sect 3 and 35 |
| Architectural Structures | Possibly older than 60 years | NHRA Sect 3 and 34 |
| Graves and Burial Grounds | 60 years or older | NHRA Sect 3 and 36 |

Additionally, evaluation of satellite imagery has indicated the following areas that may be sensitive from a heritage perspective. The analysis of the studies conducted in the area assisted in the development of the following landform type to heritage find matrix in *Table 6 - Landform type to heritage find matrix***Table 6.**

*Table 6 - Landform type to heritage find matrix*

| LANDFORM TYPE | HERITAGE TYPE |
|---|---|
| Crest and foot hill | LSA and MSA scatters, LIA settlements |
| Crest of small hills | Small LSA sites – scatters of stone artefacts, ostrich eggshell, pottery and beads |
| Watering holes/pans/rivers | LSA sites, LIA settlements |
| Farmsteads | Historical archaeological material |
| Ridges and drainage lines | LSA sites, LIA settlements |
| Forested areas | LIA sites |

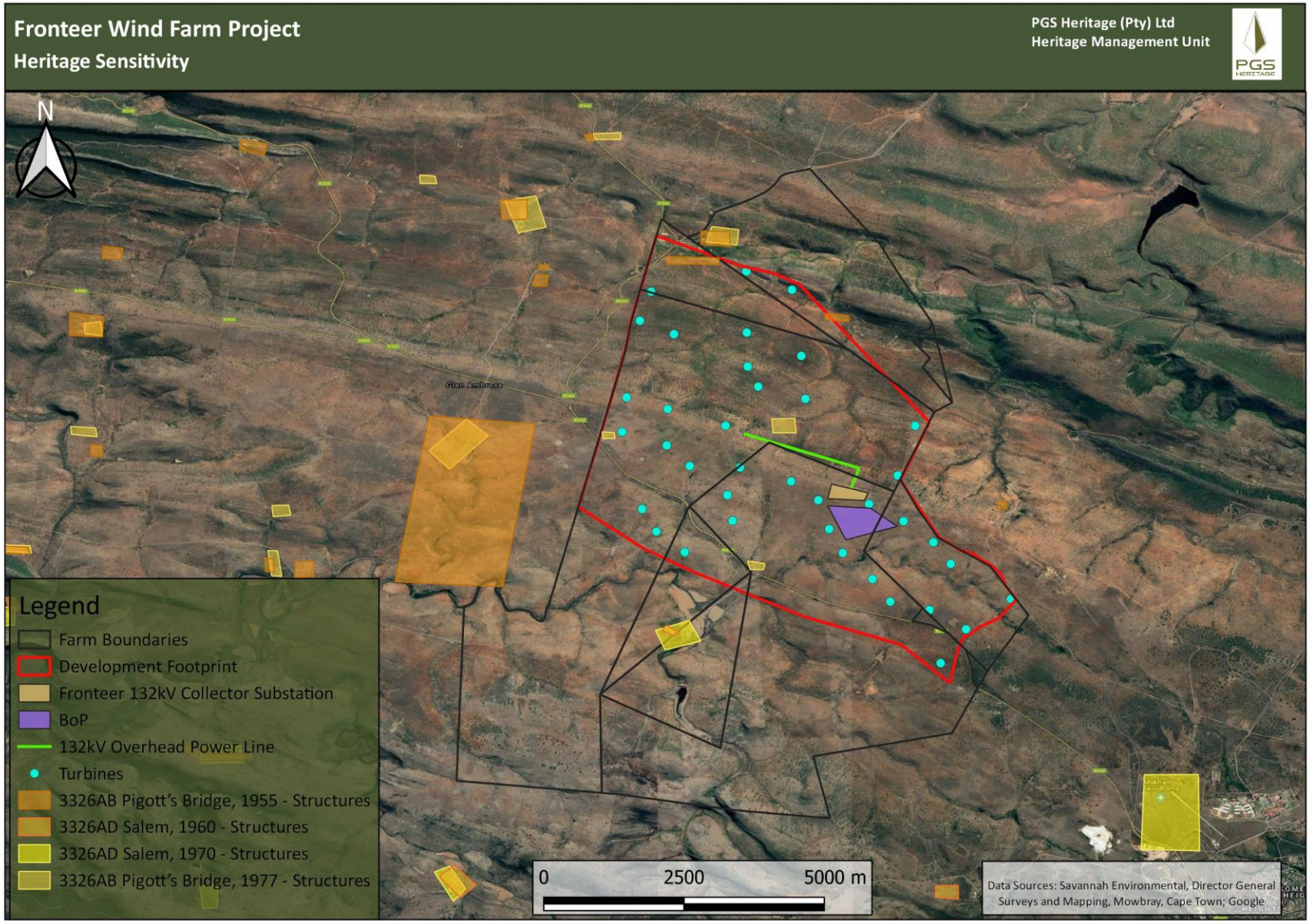



*Figure 17 - Heritage sensitivity map indicating possible sensitive areas around and within Fronteer Wind Farm site – Overview map.*

# 4 FIELDWORK AND FINDINGS

A controlled surface survey was conducted on foot and by a vehicle over a period of one day by a heritage specialist and field assistant from PGS. The fieldwork was conducted over several days on 23 March 2020 as well as from 8 to 13 June 2020. The tracklogs (in yellow) for the survey are indicated in **Figure 18**.

During the survey, five (5) heritage sites were identified. Of these five sites, four (4) sites (**EWF2-01** to **EWF2-04**) consist of structures (Farmhouses, Labourer houses, and stone walls), and one (1) site contain graves (**EWF2-05**).

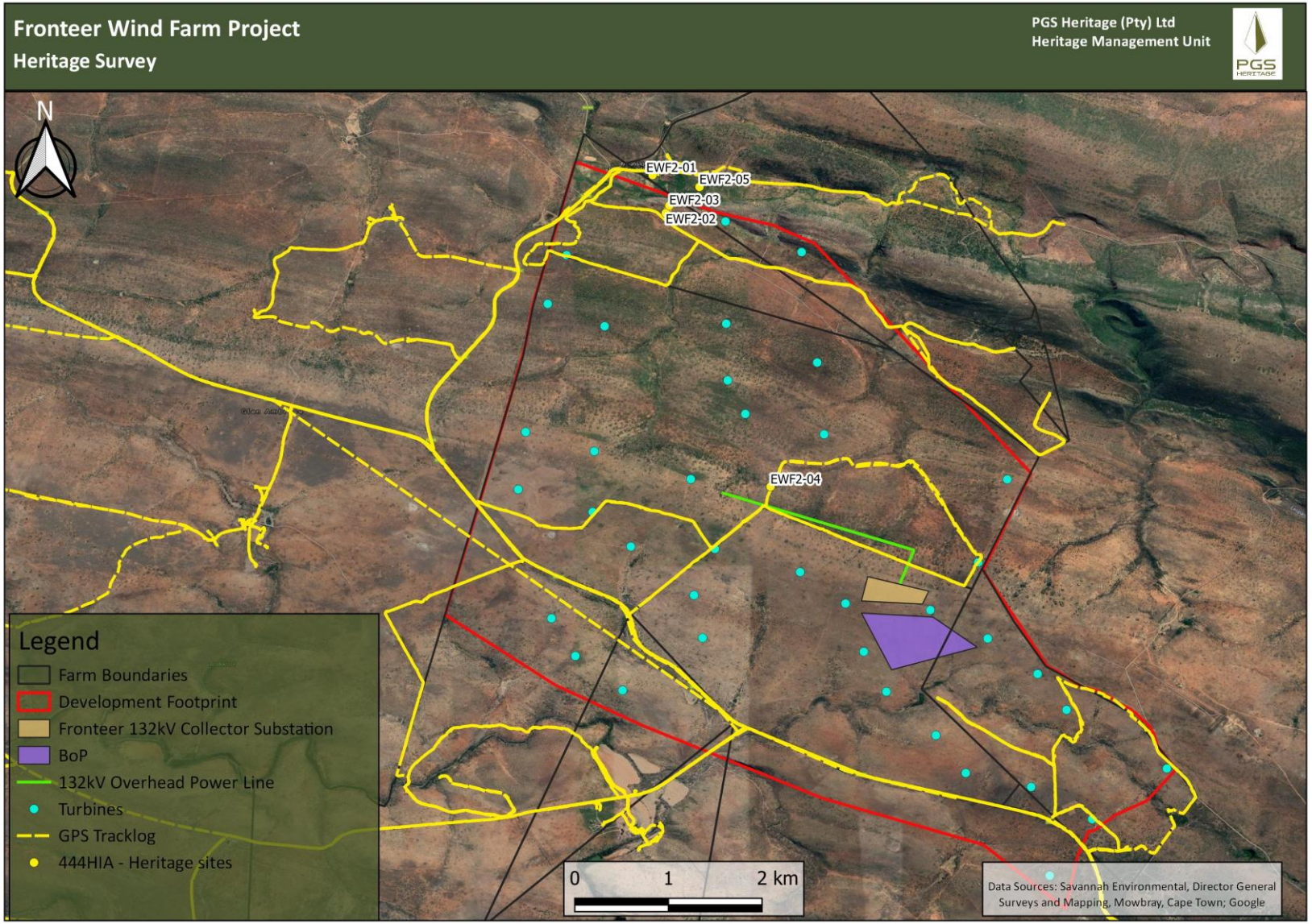



*Figure 18 – Locality of the heritage resource in the study area*

*Table 7 - Sites identified during heritage survey*

| Site[1] number | Lat | Lon | Description | Heritage Significance | Heritage Rating |
|---|---|---|---|---|---|
| EWF2-01 | 33°11'38.21"S | 26°25'11.38"E | Several structures were found on the Draai Farm 184. The structures have been converted to guest Accommodation as part of the Hounslow Lodge. Many of the buildings consist of the original old stone farm buildings with several additions made to the architecture.<br><br>Several structures were identified on the 3326AB Pigott's Bridge Topographic map dating to 1955 near the location of the main farmhouse. The main farmhouse and the stone buildings are older than 60 years and of heritage significance. The site is provisionally rated as IIIB with medium heritage significance.<br><br>It is recommended that:<br>• Although the site is located outside of the proposed development area, it is recommended that a no-go-buffer-zone of at least 500m from the outer permitter of the farmstead (which is currently occupied) is kept to the closest WEF infrastructure (including turbines, substation facilities and roads ).<br>• If development occurs within 500m of **EWF2-01** the main homesteads need to be satisfactorily studied and recorded before impact occurs.<br>• Recording of the buildings i.e. (a) map indicating the position and footprint of all the buildings and structures (b) photographic recording of all the buildings and structures (c) measured drawings of the floor plans of the principal buildings. | Medium | IIIB |

[1] *Site in this context refers to a place where a heritage resource is located and not a proclaimed heritage site as contemplated under s27 of the NHRA.*

| Site[1] number | Lat | Lon | Description | Heritage Significance | Heritage Rating |
|---|---|---|---|---|---|
|  *Figure 19 - Northern facade of the main house* | | |  *Figure 20 - Southern facade of the house* | | |
|  *Figure 21 - One of the original stone buildings at EWF2-01* | | |  *Figure 22 - Old old stone outbuilding and toilet* | | |

| Site number | Lat | Lon | Description | Heritage Significance | Heritage Rating |
|---|---|---|---|---|---|


*Figure 23 - Modern brick building used for accommodation*


*Figure 24 - A shed used for animals and farming equipment*


*Figure 25 - View of the structure (red polygon) identified on the 3326AB Pigott's Bridge 1955 Topographic map near the location of EWF2-01*

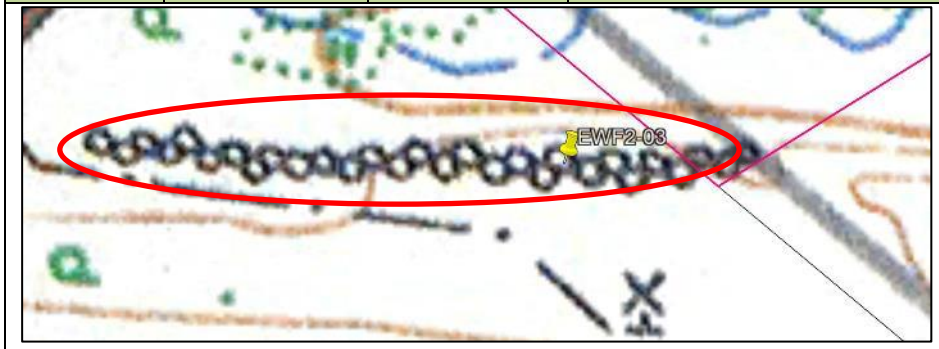
| Site number | Lat | Lon | Description | Heritage Significance | Heritage Rating |
|---|---|---|---|---|---|
| EWF2-02 | 33°11'51.49"S | 26°25'15.97"E | A brick labourer house was found on Draai Farm 184.<br><br>As far has been determined, the house does not have a special relationship between the community and the surrounding environment. Thus, the site is provisionally rated as NCW as it has no research potential or is of other cultural significance.<br><br>It is recommended that:<br>• No mitigation is required | NCW | No research potential or other cultural significance |


*Figure 26 - View of the north-eastern facade*


*Figure 27 - View of the south-western facade*

| Site number | Lat | Lon | Description | Heritage Significance | Heritage Rating |
|---|---|---|---|---|---|
| EWF2-03 | 33°11'48.71"S | 26°25'17.14"E | A historic stone pack farm wall was found on Draai Farm 184. The wall is approximately 300m long, 0,7m wide and 0,9m high. A wall was identified on the 3326AB Pigott's Bridge Topographic map dating to 1955 near the location of EWF2-03. As far has been determined, the house does not have a special relationship between the community and the surrounding environment. Thus, the site is provisionally rated as NCW as it has no research potential or is it of other cultural significance.<br><br>It is recommended that:<br>• No mitigation is required | NCW | No research potential or other cultural significance |

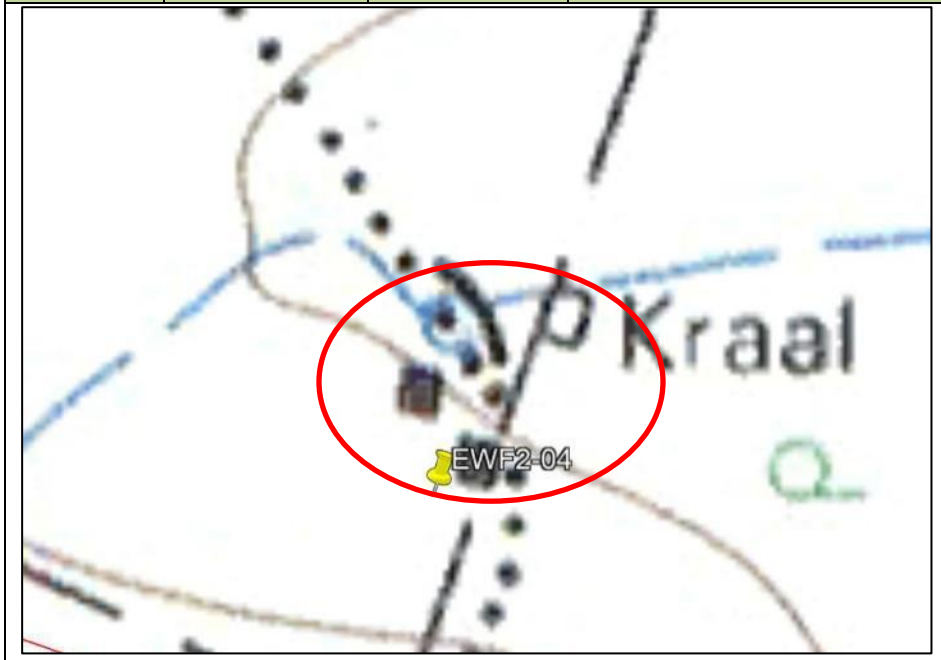

*Figure 28 - General view of the historical stone wall*

| Site number | Lat | Lon | Description | Heritage Significance | Heritage Rating |
|---|---|---|---|---|---|
|  *Figure 29 - View of the wall (red polygon) identified on the 3326AB Pigott's Bridge 1955 Topographic map near the location of EWF2-03* | | | | | |

| Site number | Lat | Lon | Description | Heritage Significance | Heritage Rating |
|---|---|---|---|---|---|
| EWF2-04 | 33°13'26.02"S | 26°25'52.07"E | A labourer house, kraal and a goat shed were found in the farm Table Hill 187.<br><br>Structures and a kraal were identified on the 3326AB Pigott's Bridge Topographic map dating to 1977 near the location of EWF2-04. As such the structure appears to be younger than 60 years and not of heritage significance. As far has been determined, the site does not have a special relationship between the community and the surrounding environment. Thus, the site is provisionally rated as NCW as it has no research potential or is it of other cultural significance.<br><br>It is recommended that:<br>• No mitigation is required | NCW | No research potential or other cultural significance |


*Figure 30 - View of the labourer house*


*Figure 31 - View of the kraal*

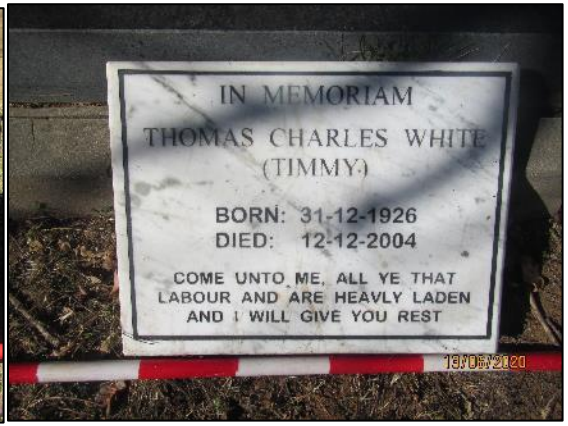
| Site number | Lat | Lon | Description | Heritage Significance | Heritage Rating |
|---|---|---|---|---|---|
|  *Figure 32 - View of the structures (red polygon) identified on the 3326AB Pigott's Bridge 1977 Topographic map near the location of EWF2-04* | | | | | |

| Site number | Lat | Lon | Description | Heritage Significance | Heritage Rating |
|---|---|---|---|---|---|
| EWF2-05 | 33°15'26.47"S | 26°25'13.88"E | Graves of the White family were found on the farm Table Hill 187. Approximately 44 graves were found. The graves contain headstones and grave dressing. The graves are fenced off with a small stone wall.<br><br>Burial grounds and graves are protected under Section 36 of the NHRA 25 of 1999. Thus, the site is provisionally rated as having a high heritage significance with a heritage rating of IIIA. All graves have high levels of emotional, religious and in some cases historical significance. It is also important to understand that the identified graves could have significant heritage value to the relevant families. The site is of Generally Protected A (GP. A) or High/Medium Significance.<br><br>It is recommended that:<br>• The site should be demarcated with a 30-meter no-go-buffer-zone and the graves should be avoided and left in situ.<br>• A Grave Management Plan should be developed for the graves, to be implemented during the construction and operation phases (which needs approval by ECPHRA.<br>• If the site is going to be impacted directly and the graves need to be removed a grave relocation process for these sites is recommended as a mitigation and management measure. This will involve the necessary social consultation and public participation process before grave relocation permits can be applied for with the ECPHRA under the NHRA and National Health Act regulations. | High | IIIA |

*Figure 33 - View of some of the headstones and graves found at EWF2-16*

| Site number | Lat | Lon | Description | Heritage Significance | Heritage Rating |
|---|---|---|---|---|---|





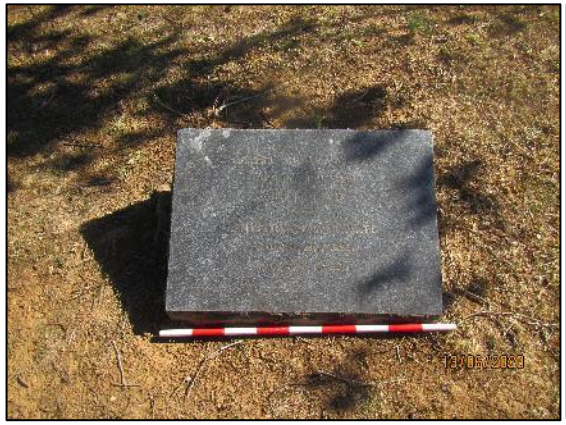




*Figure 34 - View of some of the headstones*

### 4.1 Sensitivity assessment outcome

From the desktop assessment high to low heritage sensitive areas were identified. During the survey, five (5) heritage sites were identified. Of these five sites, four (4) sites (**EWF2-01** to **EWF2-04**) consist of structures (Farmhouses, Labourer houses, and stone walls), and one (1) site contain graves (**EWF2-05**).

Of these sites, three sites **(EWF2-02** to **EWF2-04)** were rated as not conservation worthy and of no heritage significance. One site **(EWF2-01)** has a medium heritage significance and heritage rating of IIIB. The remaining site **(EWF2-05)** has a high heritage significance and sensitivity and heritage rating of IIIA.

# 5 PALAEONTOLOGY

The palaeontological impact assessment (PIA) conducted by Banzai Environmental (Butler, 2021) determined that the site is underlain by the Dwyka Group; the Fort Brown Formation of the Ecca Group (Karoo Supergroup), Adelaide Subgroup (Koonap and Middleton Formations) of the Beaufort Group (Karoo Supergroup) and the Witteberg Group of the Cape Supergroup, Karoo Dolerite (Karoo Supergroup), and Quaternary deposits. According to the PalaeoMap of SAHRIS the Palaeontological Sensitivity of the Dwyka Group is Low, the Collingham Formation, Rippon Formation, Fort Brown Formation of the Ecca Group is Moderate, while the Prince Albert Formation has a High and the Whitehill Formation of the Ecca has a Very High Palaeontological Sensitivity(**Figure 36**). The Adelaide Subgroup has a Very high Palaeontological Sensitivity while Dolerite is igneous in origin and thus has an Insignificant Paleontological Sensitivity (Almond et al, 2013; SAHRIS website). The geology of the proposed Fronteer Wind Farm is indicated on the 1: 250 000 3326 Grahams Town (Council for Geosciences) (**Figure 35**).

A 3-day site-specific field survey of the development footprint was conducted on foot and by a motor vehicle on 20 November to 23 November 2020. No visible evidence of fossiliferous outcrops was found. The scarcity of fossil heritage at the proposed development footprint indicates that the impact of the WEF and associated grid connection infrastructure will be of a low significance in palaeontological terms.

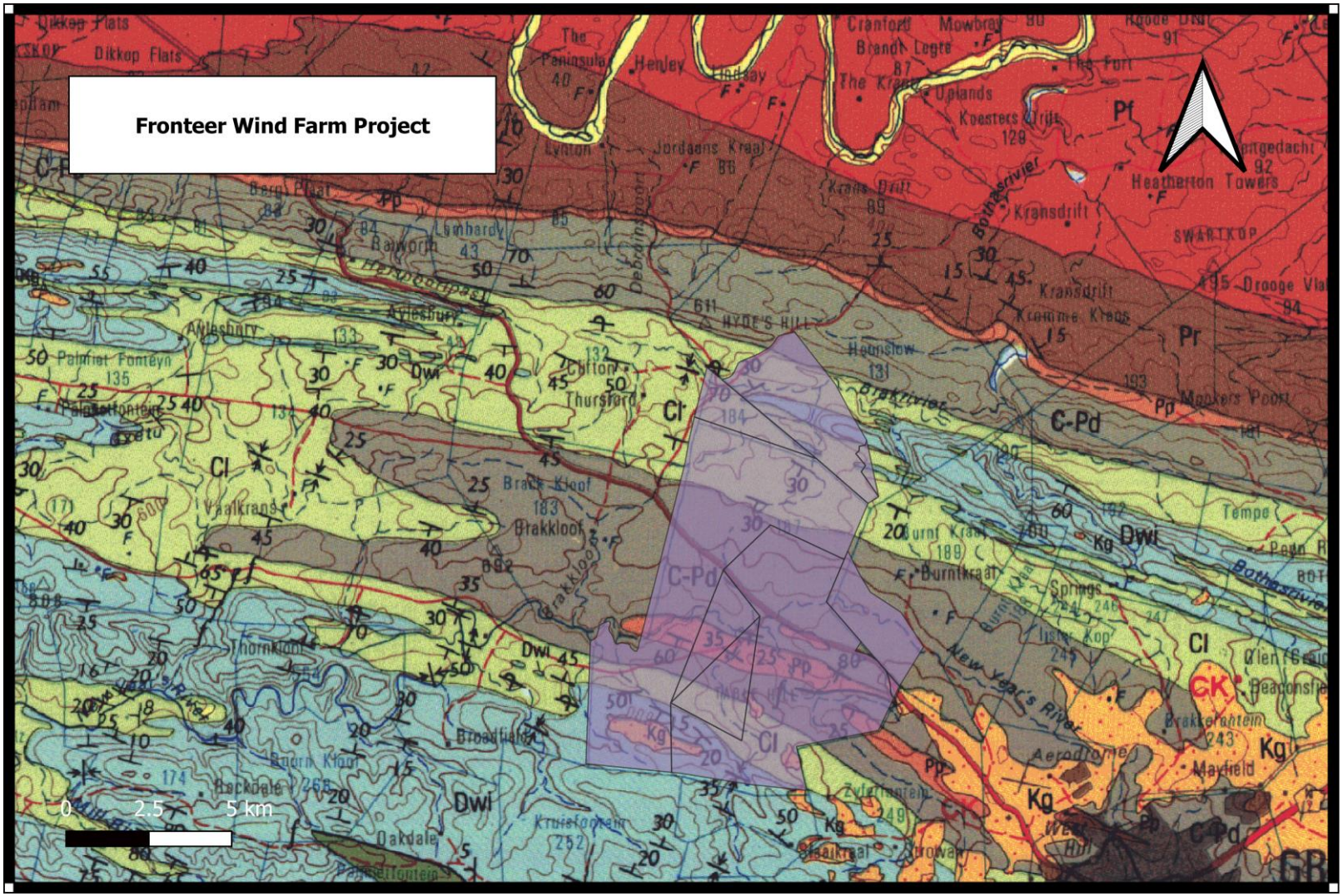
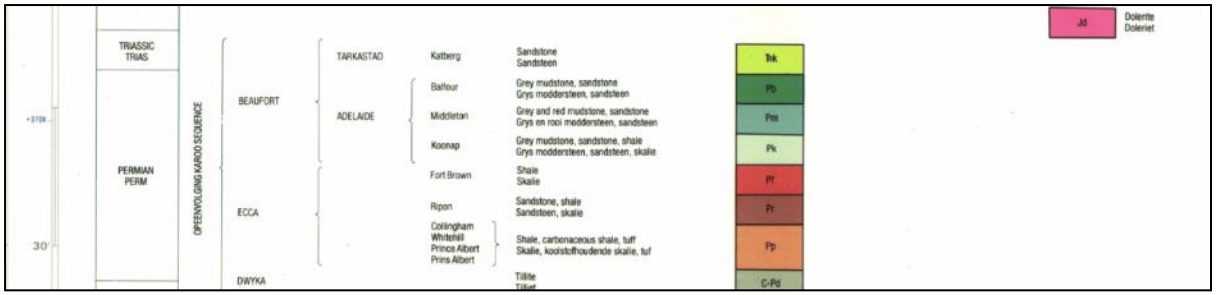



*Figure 35 - Extract of the 1:250 000 3326 Grahamstown Geological Map (Council of Geosciences [Pretoria]) indicating the Fronteer Wind Farm.*




**Legend**

Qc-Quaternary-Calcrete

Jd-Dolerite

Pb- Balfour Formation (Adelaide Subgroup, Beaufort Group, Karoo Supergroup); Sandstone and Grey mudstone

Pm- Middleton Formation (Adelaide Subgroup, Beaufort Group, Karoo Supergroup); Sandstone; Grey and red mudstone

Pk- Koonap Formation (Adelaide Subgroup, Beaufort Group, Karoo Supergroup); sandstone, shale and grey mudstone

Pf- Fort Brown Formation (Ecca Group, Karoo Supergroup); Shale

Pr-Rippon Formation (Ecca Group, Karoo Supergroup); sandstone and shale

Pp- Collingham Formation, Whitehill Formation, Prince Albert Formation (Ecca Group, Karoo Supergroup)

C-Pd- Dwyka, Tillite

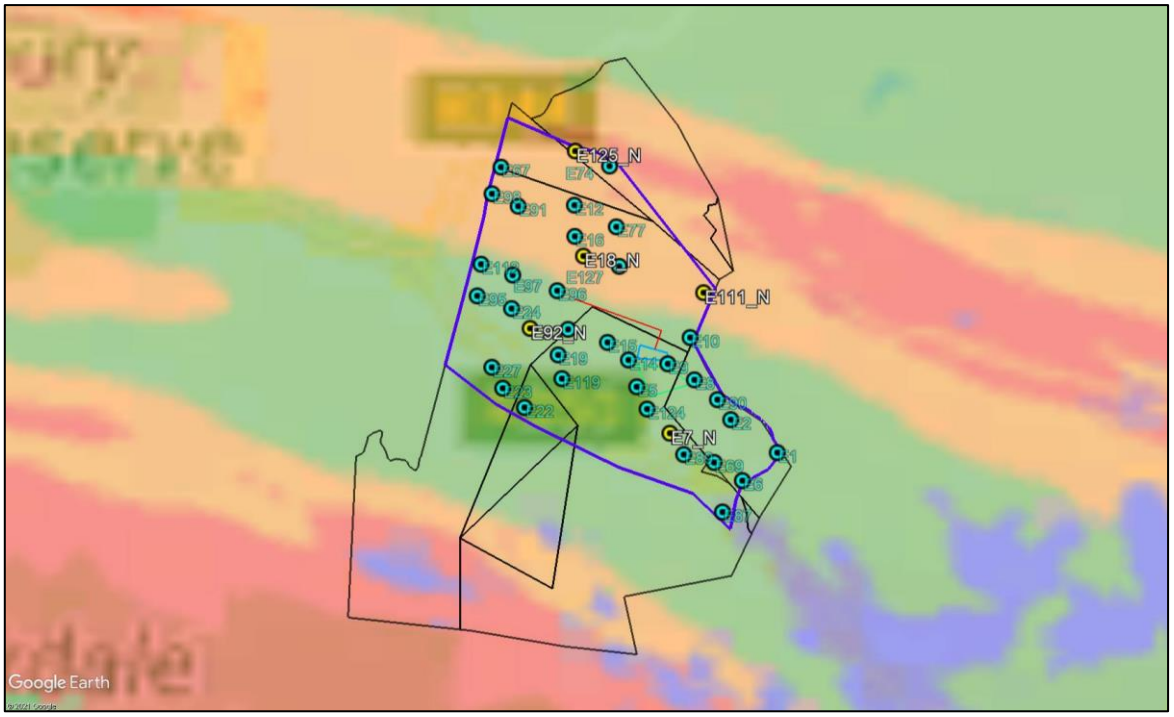



*Figure 36 – Overlay of the Fronteer Wind Farm on the palaeosensitivity map from the SAHRIS database. This shows that most of the proposed development footprint (blue polygon) falls in an area that is coloured green and orange, which is rated as Moderate to High sensitivity.*

*Table 8 - SAHRIS palaeosensitivity ratings table*

| Colour | Sensitivity | Required Action |
|---|---|---|
| **RED** | **VERY HIGH** | **Field assessment and protocol for finds is required** |
| ORANGE/YELLOW | HIGH | Desktop study is required and based on the outcome of the desktop study; a field assessment is likely |
| GREEN | MODERATE | Desktop study is required |
| BLUE | LOW | No palaeontological studies are required however a protocol for finds is required |
| GREY | INSIGNIFICANT/ZERO | No palaeontological studies are required |
| WHITE/CLEAR | UNKNOWN | These areas will require a minimum of a desktop study. As more information comes to light, sahra will continue to populate the map. |

# 6 CULTURAL LANDSCAPE

In 1992 the World Heritage Committee, defined cultural landscapes as “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” (UNESCO, 2020). Because cultural landscapes can be associated with people of specific events, they represent the interface between the effect of human culture and identity has had on physical places, and the meanings these spaces have in human memory. Several sites of cultural heritage significance have been identified in the area between and surrounding Makhanda (Grahamstown) and Somerset East.

## 6.1 Archaeological landscape

Archaeological stone age and iron age material are very sparse in the region. Several graded heritage sites of high local heritage significance have been identified in and around Cookhouse and Makhanda (Grahamstown), including palaeontological sites and rock art.

## 6.2 Historical landscape

The Cultural Landscape of the area between and surrounding Makhanda (Grahamstown) and Somerset East is sparsely populated with several farmsteads and their associated structures located on the valley floors of this hilly and mountainous region. The farmsteads are connected through several farm roads and old historic ox-wagon routes that link the local communities to the busy towns of Makhanda (Grahamstown) and Somerset East. The area proposed for the Fronteer Wind Farm has a medium to high heritage significance. Many of the old farm buildings, stone houses and the Churches in the area contain architectural elements that are older than 60 years and fall with the general protection of the NHRA (25 of 1999).

Historically the region surrounding Makhanda (Grahamstown) and Somerset East has been occupied by pre-colonial farmers and herders as well as European settlers since the 1750s (Booth, 2013). Several structures, including forts, signalling towers, monuments and memorials found in this area, provide further evidence of the conflicts and wars fought between the British and Xhosa who occupied the region. The town of Grahamstown (now known as Makhanda) was established as a result of the frontier wars of 1812 (Marchsal, 2008). The Fish river that is located to the east of Grahamstown (Makhanda) was historically the border between the Xhosa and the British (Booth, 2013).

This cultural significance of the area comprises of both tangible and intangible heritage. According to SAHRIS there are seventy (70) declared Provincial Heritage sites located around Makhanda (Grahamstown), consisting of historical structures and burial grounds, one (1) declared Provincial heritage site is located in Riebeeck East consisting of the Mooimeisiesfontein Farm, the well-known

farm of Piet Retief, and fifteen (15) declared sites around Somerset East consisting of historical structures and buildings. Several graded heritage sites of high local heritage significance have also been identified in and around Cookhouse and Makhanda (Grahamstown). These sites include burial grounds and graves, monuments and memorials, stonewalling, as well as historical structures. These structures speak to the living heritage that is widespread on this cultural landscape. In terms of the tangible heritage, several historical structures (including old churches, farmsteads and stone houses) and burial grounds have been identified in the area.

In terms of intangible heritage the oral histories, stories, and collective memory of all communities connected to this area and its built environment become relevant.

In addition, several nature reserves and game farms are located in the surrounding area of the proposed study area including the Kudu Nature Reserve, Buffalo Kloof Protected Environment, and the Kwandwe, Phumba and Shamwari Nature Reserves (Du Plessis, 2021). Though Eco-tourism many of these reserves offer game drives and outdoor activities to their visitors.

# 7 IMPACT ASSESSMENT

The impact significance rating process serves two purposes: firstly, it helps to highlight the critical impacts requiring consideration in the management and approval process; secondly, it shows the primary impact characteristics, as defined above, used to evaluate impact significance.

The impacts will be ranked according to the methodology described below. Where possible, mitigation measures will be provided to manage impacts. In order to ensure uniformity, a standard impact assessment methodology will be utilised so that a wide range of impacts can be compared with each other. Direct, indirect and cumulative impacts will be assessed in terms of the following criteria:

- **Nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- The **extent**, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional, and a value between 1 and 5 will be assigned as appropriate (with 1 being low and 5 being high):
- The **duration**, wherein it will be indicated whether:
  - the lifetime of the impact will be of very short duration (0–1 year) – assigned a score of 1;
  - the lifetime of the impact will be of short duration (2-5 years) - assigned a score of 2;
  - medium-term (5–15 years) – assigned a score of 3;
  - long term (> 15 years) - assigned a score of 4; or
  - permanent - assigned a score of 5;
- The **magnitude**, quantified on a scale from 0-10, where 0 is small and will have no effect on the environment, 2 is minor and will not result in an impact on processes, 4 is low and will cause a slight impact on processes, 6 is moderate and will result in processes continuing but in a modified way, 8 is high (processes are altered to the extent that they temporarily cease), and 10 is very high and results in the complete destruction of patterns and permanent cessation of processes.
- The **probability** *of occurrence*, which shall describe the likelihood of the impact actually occurring. The probability will be estimated on a scale of 1–5, where 1 is very improbable (probably will not happen), 2 is improbable (some possibility, but low likelihood), 3 is probable (a distinct possibility), 4 is highly probable (most likely) and 5 is definite (impact will occur regardless of any prevention measures).
- the **significance**, which shall be determined through a synthesis of the characteristics described above and can be assessed as low, medium or high; and
- the **status**, which will be described as either positive, negative or neutral.
- the degree to which the impact can be reversed.
- the degree to which the impact may cause irreplaceable loss of resources.
- the *degree* to which the impact can be *mitigated.*

The **significance** is calculated by combining the criteria in the following formula:

**S=(E+D+M) x P**

S = Significance weighting
E = Extent
D = Duration
M = Magnitude
P = Probability

The **significance weightings** for each potential impact are as follows:

- < 30 points: Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- 30-60 points: Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- > 60 points: High (i.e. where the impact must have an influence on the decision process to develop in the area).

**Assessment of Cumulative Impacts**

As per DEA's requirements, specialists are required to assess the cumulative impacts. In this regard, please refer to the methodology below that will need to be used for the assessment of Cumulative Impacts.

"Cumulative Impact", in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to existing and reasonably foreseeable impacts eventuating from similar or diverse activities[2].

The role of the cumulative assessment is to test if such impacts are relevant to the proposed project in the proposed location (i.e. whether the addition of the proposed project in the area will increase the impact). This section should address whether the construction of the proposed development will result in:

- Unacceptable risk
- Unacceptable loss
- Complete or whole-scale changes to the environment or sense of place
- Unacceptable increase in impact

The specialist is required to conclude if the proposed development will result in any unacceptable loss or impact considering all the projects proposed in the area.

[2] Unless otherwise stated, all definitions are from the 2014 EIA Regulations, GNR 326.

***Example of a cumulative impact table:***

***Nature:*** Complete or whole-scale changes to the environment or sense of place (example)

| ***Nature:*** **[Outline and describe fully the impact anticipated as per the assessment undertaken]** | | |
|---|---|---|
| | ***Overall impact of the proposed project considered in isolation*** | ***Cumulative impact of the project and other projects in the area*** |
| ***Extent*** | Low (1) | High (3) |
| ***Duration*** | Medium-term (3) | Medium-term (3) |
| ***Magnitude*** | Low (4) | Moderate (6) |
| ***Probability*** | Probable (3) | Probable (3) |
| ***Significance*** | **Low (24)** | **Medium (36)** |
| ***Status (positive or negative)*** | Negative | Negative |
| ***Reversibility*** | Low | Low |
| ***Irreplaceable loss of resources?*** | No | Yes |
| ***Can impacts be mitigated?*** | Yes | Yes |
| ***Mitigation:*** "Mitigation", means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible. Provide a description of how these mitigation measures will be undertaken keeping the above definition in mind | | |
| ***Residual Impacts:*** "Residual Risk", means the risk that will remain after all the recommended measures have been undertaken to mitigate the impact associated with the activity (Green Leaves III, 2014). | | |

## 7.1 Heritage Impacts

During the survey, five (5) heritage sites were identified. Of these five sites, four (4) sites (**EWF2-01** to **EWF2-04**) consist of structures (Farmhouses, Labourer houses, and stone walls), and one (1) site contain graves (**EWF2-05**).

Of these sites, three sites **(EWF2-02** to **EWF2-04)** were rated as not conservation worthy and of no heritage significance. One site **(EWF2-01)** has a medium heritage significance and heritage rating of IIIB. The remaining site **(EWF2-05)** has a high heritage significance and sensitivity and heritage rating of IIIA.

### 7.1.1 *Historical structures*

**EWF2-02** to **EWF2-04** were rated as not conservation worthy and of no heritage significance.
The impact significance before mitigation on the structures will be LOW negative *The impact of the proposed development will be local in extent*. **The possibility of the impact occurring is**

**probable**. The expected duration of the impact is assessed as potentially permanent. Implementation of the recommended mitigation measures will reduce this impact rating to an acceptable LOW negative impact.

**EWF2-01** has a medium heritage significance and heritage rating of IIIB.

The impact significance before mitigation on the structures will be MODERATE negative before mitigation. *The impact of the proposed development will be local in extent*. **The possibility of the impact occurring is probable**. The expected duration of the impact is assessed as potentially permanent. Implementation of the recommended mitigation measures will reduce this impact rating to an acceptable LOW negative impact.

#### 7.1.2 *Burial Grounds and graves*

**EWF2-05** has a high heritage significance and sensitivity and a heritage rating of IIIA.

The impact significance before mitigation on the graves will be HIGH negative before mitigation. *The impact of the proposed development will be local in extent.* **The possibility of the impact occurring is probable**. The expected duration of the impact is assessed as potentially permanent. Implementation of the recommended mitigation measures will reduce this impact rating to an acceptable LOW negative impact.

### 7.2 Palaeontological Impacts

According to the PIA conducted by Banzai Environmental (Butler, 2020) determined that the site is underlain by the Dwyka Group; the Fort Brown Formation of the Ecca Group (Karoo Supergroup), Adelaide Subgroup (Koonap and Middleton Formations) of the Beaufort Group (Karoo Supergroup) and the Witteberg Group of the Cape Supergroup, Karoo Dolerite (Karoo Supergroup), and Quaternary deposits. According to the PalaeoMap of SAHRIS the Palaeontological Sensitivity of the Dwyka Group is Low, the Collingham Formation, Rippon Formation, Fort Brown Formation of the Ecca Group is Moderate, while the Prince Albert Formation has a High and the Whitehill Formation of the Ecca has a Very High Palaeontological Sensitivity(Figure 37). The Adelaide Subgroup has a Very high Palaeontological Sensitivity while Dolerite is igneous in origin and thus has an Insignificant Paleontological Sensitivity (Almond et al, 2013; SAHRIS website).

According to the PIA the impact significance before mitigation on the Paleontological resources will be MODERATE negative before mitigation. *The impact of the proposed development will be local in extent*. The possibility of the impact occurring **is very likely**. The expected duration of the impact is assessed as potentially permanent. Implementation of the recommended mitigation measures will reduce this impact rating to an acceptable LOW negative impact.

## 7.3 Impact Assessment Table

*Table 9 - Impact Assessment Table for Historical structures of no heritage significance.*

| Historical Structures (**EWF2-02 to EWF2-04**) have been identified during the survey, including farmhouses and labourer houses. These sites were rated as not conservation worthy and of no heritage significance. | | |
|---|---|---|
| | **Without mitigation** | **With mitigation** |
| ***Extent*** | Low/Moderate (2) | Low (1) |
| ***Duration*** | Permanent (5) | Long Term (4) |
| ***Magnitude*** | Minor (2) | Minor (1) |
| ***Probability*** | Probable (3) | Unlikely (2) |
| ***Significance*** | **Low (27)** | **Low (12)** |
| ***Status (positive or negative)*** | Negative | Negative |
| ***Reversibility*** | Low | Low |
| ***The irreplaceable loss of resources?*** | Yes | Yes |
| ***Can impacts be mitigated?*** | Yes | |
| ***Mitigation:***<br>No mitigation is required | | |
| ***Cumulative impacts:***<br>Considering the potential incremental, interactive, sequential and synergistic cumulative impacts, it is unlikely that the impact will result in spatial and temporal cumulative change. Therefore, no cumulative impact is expected to occur. | | |
| ***Residual Impacts:***<br>Considering the nature of the sites identified in the present study, the residual risk will be minimal. | | |

*Table 10 - Impact Assessment Table for Historical structures of medium significance*

| Historical Structures (**EWF2-01)** ) have been identified during the survey, including a farmhouse. This site was rated as having a medium heritage significance and heritage rating of IIIB. | | |
|---|---|---|
| | **Without mitigation** | **With mitigation** |
| ***Extent*** | Moderate/High (4) | Low (1) |
| ***Duration*** | Permanent (5) | Moderate (3) |
| ***Magnitude*** | High (8) | Low (2) |
| ***Probability*** | Probable (3) | Unlikely (2) |
| ***Significance*** | **Medium (51)** | **Low (12)** |
| ***Status (positive or negative)*** | Negative | Negative |
| ***Reversibility*** | Low | Low |
| ***The irreplaceable loss of resources?*** | Yes | Yes |
| ***Can impacts be mitigated?*** | Yes | |
| ***Mitigation:***<br>• Although the site is located outside of the proposed development area, it is recommended that a no-go-buffer-zone of at least 500m from the outer permitter of the farmstead (which is currently occupied) is kept to the closest WEF infrastructure (including turbines, substation facilities and roads ).<br>• If development occurs within 500m of the main homesteads need to be satisfactorily studied and recorded before impact occurs.<br>• Recording of the buildings i.e. (a) map indicating the position and footprint of all the buildings and structures (b) photographic recording of all the buildings and structures (c) measured drawings of the floor plans of the principal buildings. | | |
| ***Cumulative impacts:***<br>Considering the potential incremental, interactive, sequential and synergistic cumulative impacts, it is possible that the impact could lead to the irreplaceable loss of historical resources. | | |
| ***Residual Impacts:***<br>Considering the nature of the sites identified in the present study, the residual risk will be moderate. | | |

*Table 11 - Impact Assessment Table for Graves and Burial Grounds*

| Graves and Burial Grounds (**EWF2-05**) have been identified during the survey. These sites are of high significance and rated as IIIA. | | |
|---|---|---|
| | **Without mitigation** | **With mitigation** |
| ***Extent*** | Moderate/High (4) | Low (1) |
| ***Duration*** | Permanent (5) | Long-term (4) |
| ***Magnitude*** | High (8) | Low (2) |
| ***Probability*** | Highly Probable (4) | Unlikely (2) |
| ***Significance*** | **High (68)** | **Low (14)** |
| ***Status (positive or negative)*** | Negative | Negative |
| ***Reversibility*** | Low | Low |
| ***The irreplaceable loss of resources?*** | Yes | Yes |
| ***Can impacts be mitigated?*** | Yes | |
| ***Mitigation:***<br>• The sites should be demarcated with a 30-meter no-go-buffer zone, as per the SAHRA BGG policy for General developments, and the graves should be avoided and left *in situ.*<br>• If an impact occurs within the 30m no-go-buffer zone, the graves need to be removed and a grave relocation process for these sites is recommended as a mitigation and management measure. This will involve the necessary social consultation and public participation process before grave relocation permits can be applied for with the ECPHRA under the NHRA and National Health Act regulations. | | |
| ***Cumulative impacts:***<br>Considering the potential incremental, interactive, sequential and synergistic cumulative impacts, it is possible that the impact could lead to the irreplaceable loss of burial grounds and graves. | | |
| ***Residual Impacts:***<br>Considering the nature of the sites identified in the present study, the residual risk will be moderate. | | |

*Table 12 - Impact Assessment Table for Palaeontological Resources (After Butler, 2020)*

| ***Nature:***<br>The excavations and site clearance of the Fronteer Wind Farm will involve extensive excavations into the superficial sediment cover as well as into the underlying bedrock. These excavations will change the existing topography and may destroy and seal-in fossils at or below the ground surface. These fossils will then be unavailable for research<br><br>Impacts on Palaeontological Heritage are likely to happen only within the construction phase. No impacts are expected to occur during the operation phase. | | |
|---|---|---|
| | **Without mitigation** | **With mitigation** |
| ***Extent*** | Local (1) | Development area (1) |
| ***Duration*** | Permanent (5) | Medium-term (3) |
| ***Magnitude*** | High (8) | Minor (2) |
| ***Probability*** | Highly Probable (4) | Improbable (1) |
| ***Significance*** | **Medium (-56)** | **Low (6)** |
| ***Status (positive or negative)*** | Negative | Neutral |
| ***Reversibility*** | Irreversible | |
| ***Irreplaceable loss of resources?*** | Yes | No |
| ***Can impacts be mitigated?*** | Yes | |
| ***Mitigation procedure: See Chance find protocol*** | | |

**Chance Find Procedure**

- If a chance find is made the person responsible for the find must immediately **stop working** and all work must cease in the immediate vicinity of the find.
- The person who made the find must immediately **report** the find to his/her direct supervisor which in turn must report the find to his/her manager and the Environmental Officer (EO) (if appointed) or site manager. The EO must report the find to the relevant Heritage Agency (South African Heritage Research Agency, SAHRA). (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za). The information to the Heritage Agency must include photographs of the find, from various angles, as well as the GPS co-ordinates.
- A preliminary report must be submitted to the Heritage Agency within **24 hours** of the find and must include the following: 1) date of the find; 2) a description of the discovery and a 3) description of the fossil and its context (depth and position of the fossil), GPS co-ordinates.
- Photographs (the more the better) of the discovery must be of high quality, in focus, accompanied by a scale. It is also important to have photographs of the vertical section (side) where the fossil was found.

Upon receipt of the preliminary report, the Heritage Agency will inform the EO (or site manager) whether a rescue excavation or rescue collection by a palaeontologist is necessary.

- The site must be secured to protect it from any further damage. **No attempt** should be made to remove material from their environment. The exposed finds must be stabilized and covered by a plastic sheet or sand bags. The Heritage agency will also be able to advise on the most suitable method of protection of the find.
- In the event that the fossil cannot be stabilized the fossil may be collected with extreme care by the EO (or site manager). Fossils finds must be stored in tissue paper and in an appropriate box while due care must be taken to remove all fossil material from the rescue site.
- Once Heritage Agency has issued the written authorization, the developer may continue with the development.

***Residual Impacts:***
Loss of fossil heritage

*Table 13 - Impact Assessment Table for Cultural Landscape*

| The impact that the addition of this project will have on the cultural landscape and associated heritage resources (tangible and intangible) of the region, to such an effect that it alters how the communities/visitors experience the visual and cultural landscape (usually this experience is less appealing or could be negative). | | |
|---|---|---|
| | **Without mitigation** | **With mitigation** |
| ***Extent*** | Moderate (3) | Regional (3) |
| ***Duration*** | Long term (4) | Long term (4) |
| ***Magnitude*** | Moderate (6) | Low (4) |
| ***Probability*** | Probable (3) | Improbable (2) |
| ***Significance*** | **Medium (39)** | Low **(22)** |
| ***Status (positive or negative)*** | Negative | Negative |
| ***Reversibility*** | Low | Low |
| ***The irreplaceable loss of resources?*** | Yes | Yes |
| ***Can impacts be mitigated?*** | Only best practise mitigation measures can be implemented to limit the impact on the overall cultural landscape. | |

***Mitigation:***

- Mitigation measures as proposed in the HIA for the proposed Fronteer Wind Farm Facility development that reduces negative impacts on the land use patterns and living heritage will reduce the impact of this facility on the overall load.
- With a detailed and comprehensive regional dataset this rating could possibly be adjusted and more accurate. Due to the limited consideration of Cultural Landscape assessments in terms of heritage values in other projects, the mitigation measures proposed may not deal with impacts on cultural landscapes.
- The mitigation measures proposed for heritage resources will reduce the negative cumulative impact on the cultural landscape and should be implemented as recommended.

- According to the Visual impact assessment (VIA) of LOGIS by Du Plessis (2021) no mitigation of the impact on the sense of place of the region or the cultural landscape is possible as the structures will be visible regardless. However, the following general mitigation measures are proposed:
    - The natural vegetation in all areas outside of the development footprint/servitude must be maintained/re-established during the planning phase.
    - Maintain the general appearance of the facility as a whole during the operational phase
    - Remove the infrastructure not required for the post-decommissioning use and rehabilitate all areas.

***Cumulative impacts:***

Considering the potential incremental, interactive, sequential and synergistic cumulative impacts, it is possible that the impact could lead to the irreplaceable loss of burial grounds and graves.

***Residual Impacts:***

Considering the nature of the sites identified in the present study, the residual risk will be moderate.

## 7.4 Cumulative Impacts

This section evaluates the possible cumulative impacts on heritage resources with the addition of the Fronteer Wind Farm. The cumulative impacts considered below assumes that mitigation measures have been applied.

*Table 14 – Cumulative Impact Assessment Table for Historical structures of medium significance*

| | | |
|---|---|---|
| Historical Structures have been identified during the survey. This site was rated as having a medium heritage significance and heritage rating of IIIB.<br><br>Cumulative impacts to historical resources would occur during the construction and operation phase when the ground surface is cleared and when turbine, substation foundations and roads are excavated. | | |
| | ***Overall impact of the proposed project considered in isolation*** | ***Cumulative impact of the project and other projects in the area*** |
| ***Extent*** | Low (1) | Low (1) |
| ***Duration*** | Moderate (3) | Moderate (3) |
| ***Magnitude*** | Low (2) | Low (3) |
| ***Probability*** | Unlikely (2) | Unlikely (2) |
| ***Significance*** | **Low (12)** | **Low (14)** |
| ***Status (positive or negative)*** | Negative | Negative |
| ***Reversibility*** | Low | Low |
| ***The irreplaceable loss of resources?*** | Yes | Yes |
| ***Can impacts be mitigated?*** | Yes | |
| ***Mitigation:***<br>"Mitigation", means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.<br>• Mitigation measures as proposed in the HIA's, and approved by the ECPHRA for the proposed facilities that reduce negative impacts on graves and burial grounds must be implemented in line with the NHRA 25 of 1999 and National Health Act regulations. | | |
| ***Residual Impacts:***<br>"Residual Risk", means the risk that will remain after all the recommended measures have been undertaken to mitigate the impact associated with the activity (Green Leaves III, 2014).<br><br>Considering the nature of the sites identified in the present study, the residual risk will be moderate. | | |

*Table 15 – Cumulative Impact Assessment Table for Graves and Burial Grounds*

| | | |
|---|---|---|
| Graves and Burial Grounds have been identified during the survey. These sites are of high significance and rated as IIIA.<br><br>Cumulative impacts to Burial Grounds and graves resources would occur during the construction and operation phase when the ground surface is cleared and when turbine, substation foundations and roads are excavated. | | |
| | ***Overall impact of the proposed project considered in isolation*** | ***Cumulative impact of the project and other projects in the area*** |
| ***Extent*** | Low (1) | Low (1) |
| ***Duration*** | Long-term (4) | Long-term (4) |
| ***Magnitude*** | Low (2) | Low (3) |
| ***Probability*** | Unlikely (2) | Unlikely (2) |
| ***Significance*** | **Low (14)** | **Low (16)** |
| ***Status (positive or negative)*** | Negative | Negative |

| | | |
|---|---|---|
| ***Reversibility*** | Low | Low |
| ***The irreplaceable loss of resources?*** | Yes | Yes |
| ***Can impacts be mitigated?*** | Yes | |
| ***Mitigation:***<br>"Mitigation", means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.<br>• Mitigation measures as proposed in the HIA's, and approved by the ECPHRA for the proposed facilities that reduce negative impacts on graves and burial grounds must be implemented in line with the NHRA 25 of 1999 and National Health Act regulations. | | |
| ***Residual Impacts:***<br>"Residual Risk", means the risk that will remain after all the recommended measures have been undertaken to mitigate the impact associated with the activity (Green Leaves III, 2014).<br><br>Considering the nature of the sites identified in the present study, the residual risk will be moderate. | | |

*Table 16 – Cumulative Impact Assessment Table for Palaeontological Resources (After Butler, 2020)*

| ***Nature:***<br>Cumulative impacts on fossil remain preserved at or beneath the ground surface. | | |
|---|---|---|
| | ***Overall impact of the proposed project considered in isolation*** | ***The cumulative impact of the project and other projects in the area*** |
| | **Without mitigation** | **With mitigation** |
| ***Extent*** | Local (1) | Local (1) |
| ***Duration*** | Permanent (5) | Medium-term (5) |
| ***Magnitude*** | Minor (2) | Minor (2) |
| ***Probability*** | Highly Probable (1) | Improbable (1) |
| ***Significance*** | **Medium (-8)** | **Low (+8)** |
| ***Status (positive or negative)*** | Negative | Neutral |
| ***Reversibility*** | Irreversible | |
| ***Mitigation:*** *Not necessary* | | |
| ***Residual Impacts:***<br>Loss of fossil heritage | | |

*Table 17 - Cumulative Impact Assessment Table for Cultural Landscape.*

| ***Nature:***<br>The extent that the addition of this project will have on the overall impact of developments in the region on the cultural landscape and associated heritage resources (tangible and intangible) | | |
|---|---|---|
| | ***Overall impact of the proposed project considered in isolation*** | ***The cumulative impact of the project and other projects in the area*** |
| | **Without mitigation** | **With mitigation** |
| ***Extent*** | Regional (3) | Regional (3) |
| ***Duration*** | Long term (4) | Long Term (4) |
| ***Magnitude*** | Low (4) | Moderate (6) |
| ***Probability*** | Improbable (2) | Unlikely (2) |
| ***Significance*** | Low **(22)** | **Low (26)** |
| ***Status (positive or negative)*** | Negative | Negative |
| ***Reversibility*** | Low (1) | Low (1) |

***Mitigation:***

- Mitigation measures as proposed in the HIA for the proposed Fronteer Wind Farm Facility development that reduces negative impacts to perceptual qualities, land use patterns and living heritage will reduce the impact of this facility on the overall load.
- With a detailed and comprehensive regional dataset this rating could possibly be adjusted and more accurate. Due to the limited consideration of Cultural Landscape assessments in terms of heritage values in other projects, the mitigation measures proposed may not deal with impacts on cultural landscapes.
- A mitigation measures proposed for heritage resources will reduce the negative cumulative impact on the cultural landscape and should be implemented as recommended.
- According to the VIA by Du Plessis (2021) no mitigation of the impact on the sense of place of the region is possible as the structures will be visible regardless. However, the following general mitigation measures are proposed:
    - The natural vegetation in all areas outside of the development footprint/servitude must be maintained/re-established during the planning phase.
    - Maintain the general appearance of the facility as a whole during the operational phase
    - Remove the infrastructure not required for the post-decommissioning use and rehabilitate all areas.

***Residual Impacts:***

*"Residual Risk", means the risk that will remain after all the recommended measures have been undertaken to mitigate the impact associated with the activity (Green Leaves III, 2014).*

*Considering the nature of the sites identified in the present study, the residual risk will be moderate**.***

## 7.5 Management recommendations and guidelines

### 7.5.1 *Construction phase*

The project will encompass a range of activities during the construction phase, including ground clearance, the establishment of construction camp areas and small-scale infrastructure development associated with the project.

It is possible that cultural material will be exposed during construction and may be recoverable, keeping in mind delays can be costly during construction and as such must be minimised. Development surrounding infrastructure and construction of facilities results in significant disturbance, however, foundation holes do offer a window into the past and it thus may be possible to rescue some of the data and materials. It is also possible that substantial alterations will be implemented during this phase of the project and these must be catered for. Temporary infrastructure developments, such as construction camps and laydown areas, are often changed or added to the project as required. In general, these are low impact developments as they are superficial, resulting in a little alteration of the land surface, but still, need to be catered for.

During the construction phase, it is important to recognize any significant material being unearthed, making the correct judgment on which actions should be taken. It is recommended that the following chance find procedure should be implemented.

### 7.5.2 *Chance find procedure*

- A heritage practitioner/archaeologist should be appointed to develop a heritage induction program and conduct training for the ECO as well as team leaders in the identification of heritage resources and artefacts.
- An appropriately qualified heritage practitioner/archaeologist must be identified to be called upon in the event that any possible heritage resources or artefacts are identified.
- Should an archaeological site or cultural material be discovered during construction (or operation), the area should be demarcated, and construction activities halted.
- The qualified heritage practitioner / archaeologist will then need to come out to the site and evaluate the extent and importance of the heritage resources and make the necessary recommendations for mitigating the find and the impact on the heritage resource.
- The contractor therefore should have some sort of contingency plan so that operations could move elsewhere temporarily while the materials and data are recovered.
- Construction can commence as soon as the site has been cleared and signed off by the heritage practitioner/archaeologist.

### 7.5.3 *Possible finds during construction and operation*

The study area occurs within a greater historical and archaeological site as identified during the desktop and fieldwork phase. Soil clearance for infrastructure as well as the proposed reclamation activities could uncover the following:

- stone foundations;
- ash middens associated with the historical structures that can contain bone, glass and clay ceramics, ash, metal objects such as spoons, forks, and knives.
- unmarked graves

## 7.6 Timeframes

It must be kept in mind that mitigation and monitoring of heritage resources discovered during construction activity will require permitting for collection or excavation of heritage resources and lead times must be worked into the construction time frames. Table 18 gives guidelines for lead times on permitting.

*Table 18 - Lead times for permitting and mobilisation*

| Action | Responsibility | Timeframe |
|---|---|---|
| Preparation for field monitoring and finalisation of contracts | The contractor and service provider | 1 month |
| Application for permits to do necessary mitigation work | Service provider – Archaeologist and SAHRA | 3 months |
| Documentation, excavation and archaeological report on the relevant site | Service provider – Archaeologist | 3 months |
| Handling of chance finds – Graves/Human Remains | Service provider – Archaeologist and SAHRA | 2 weeks |

| | | |
|---|---|---|
| Relocation of burial grounds or graves in the way of construction | Service provider – Archaeologist, SAHRA, local government and provincial government | 6 months |

## 7.7 Heritage Management Plan for EMPr implementation

*Table 19 - Heritage Management Plan for EMPr implementation*

| Area and site no. | Mitigation measures | Phase | Timeframe | Responsible party for implementation | Monitoring Party (frequency) | Target | Performance indicators (monitoring tool) |
|---|---|---|---|---|---|---|---|
| **General project area** | • Implement a chance to find procedures in case possible heritage finds are uncovered.<br>• A detailed "walk down" of the final approved turbine locations, access roads, powerlines and substations will be required before construction commences.<br>• Any heritage features of significance identified during this walk down will require formal mitigation (i.e. permitting where required) or where possible a slight change in design could accommodate such resources.<br>• A Heritage management plan (HMP) for the heritage resources needs to be compiled and approved for implementation during construction and operations where heritage features of significance are identified. | Construction | During construction | Applicant<br>ECO<br>Heritage Specialist | ECO (monthly / as or when required) | Ensure compliance with relevant legislation and recommendations from SAHRA under Section 36 and 38 of NHRA | ECO Monthly Checklist/Report |
| **Historical Structures** that were rated as NCW **(EWF2-02** to **EWF1-04)** | • No mitigation is required | Construction | Prior to and during construction | Applicant<br>ECO | Applicant<br>ECO | Ensure compliance with relevant legislation and recommendations from SAHRA under Section 36 and 38 of NHRA | ECO Monthly Checklist/Report |
| **Historical Structures (EWF2-01)** that were rated as medium heritage significance and heritage rating of IIIB. | • Although the site is located outside of the proposed development area, it is recommended that a no-go-buffer-zone of at least 500m from the outer permitter of the farmstead (which is currently occupied) is kept to the closest WEF infrastructure (including | Construction | Prior to and during construction | Applicant<br>ECO | Applicant<br>ECO | Ensure compliance with relevant legislation and recommendations from SAHRA under Section 36 and 38 of NHRA | ECO Monthly Checklist/Report |

| Area and site no. | Mitigation measures | Phase | Timeframe | Responsible party for implementation | Monitoring Party (frequency) | Target | Performance indicators (monitoring tool) |
|---|---|---|---|---|---|---|---|
| | turbines, substation facilities and roads ).<br>• If development occurs within 500m of the main homesteads need to be satisfactorily studied and recorded before impact occurs.<br>• Recording of the buildings i.e. (a) map indicating the position and footprint of all the buildings and structures (b) photographic recording of all the buildings and structures (c) measured drawings of the floor plans of the principal buildings. | | | | | | |
| **Graves and Burial grounds (EWF2-05**) | • The sites should be demarcated with a 30-meter no-go-buffer-zone and the graves should be avoided and left in situ.<br>• A Grave Management Plan should be developed for the graves, to be implemented during the construction and operation phases (which needs approval by Eastern Cape Provincial Heritage Authority (ECPHRA).<br>• If the site is going to be impacted directly and the graves need to be removed a grave relocation process for these sites is recommended as a mitigation and management measure. This will involve the necessary social consultation and public participation process before grave relocation permits can be applied for with the ECPHRA under the NHRA and National Health Act regulations. | Construction | Prior to and during construction | Applicant<br>ECO | Applicant<br>ECO | Ensure compliance with relevant legislation and recommendations from SAHRA under Section 36 and 38 of NHRA | ECO Monthly Checklist/Report |

| Area and site no. | Mitigation measures | Phase | Timeframe | Responsible party for implementation | Monitoring Party (frequency) | Target | Performance indicators (monitoring tool) |
|---|---|---|---|---|---|---|---|
| **Possible graves** | • When graves are discovered/uncovered the site should be demarcated with a 30-meter no-go-buffer-zone and the grave should be avoided.<br>• Undertake archaeological monitoring at earth clearance stage.<br>• If human remains are discovered a grave relocation process is recommended as a mitigation and management measure. This will involve the necessary social consultation and public participation process before grave relocation permits can be applied for with the ECPHRA under the NHRA and National Health Act regulations.<br>• If during the test excavations it is determined that the feature is not a grave, the site will then have no heritage significance and require no further mitigation. | Construction | During Construction | Applicant<br>Environmental Control Officer (ECO)<br>Heritage specialist | Applicant<br>ECO | Ensure compliance with relevant legislation and recommendations from SAHRA under Section 36 and 38 of NHRA | ECO Monthly Checklist/Report |
| **Palaeontological finds** | • If fossil remains are discovered during any phase of construction, either on the surface or exposed by fresh excavations the Chance Find Protocol must be implemented by the ECO in charge of these developments.<br>• Fossil discoveries ought to be protected and the ECO/site manager must report to SAHRA | Construction | Construction | Applicant<br>ECO<br>Palaeontologist | Monthly | Ensure compliance with relevant legislation and recommendations from SAHRA under Section 35 of NHRA | Final report to be used by the developer to apply for a destruction permit under s35 of the NHRA |
| **Cultural Landscape** | • Mitigation measures as proposed in the HIA for the proposed Fronteer Wind Farm Facility development that reduces negative impacts on the land use patterns and living heritage will reduce the impact of this facility on the overall load. | Construction | Construction | Applicant<br>ECO<br>Palaeontologist | Monthly | Ensure compliance with relevant legislation and recommendations from SAHRA under Section 35 of NHRA | Final report to be used by the develop to apply for a destruction permit under s35 of the NHRA |

| Area and site no. | Mitigation measures | Phase | Timeframe | Responsible party for implementation | Monitoring Party (frequency) | Target | Performance indicators (monitoring tool) |
|---|---|---|---|---|---|---|---|
| | • With a detailed and comprehensive regional dataset this rating could possibly be adjusted and more accurate. Due to the limited consideration of Cultural Landscape assessments in terms of heritage values in other projects, the mitigation measures proposed may not deal with impacts on cultural landscapes.<br>• The mitigation measures proposed for heritage resources will reduce the negative cumulative impact on the cultural landscape and should be implemented as recommended.<br>• According to the VIA (Du Plessis, 2021) no mitigation of the impact on the sense of place of the region is possible as the structures will be visible regardless. However, the following general mitigation measures are proposed:<br>o The natural vegetation in all areas outside of the development footprint/servitude must be maintained/re-established during the planning phase.<br>o Maintain the general appearance of the facility as a whole during the operational phase<br>o Remove the infrastructure not required for the post-decommissioning use and rehabilitate all areas. | | | | | | |

# 8 CONCLUSIONS

The HIA has shown that the study area and surrounding area has some heritage resources situated within the proposed development boundaries. Through data analysis and a site investigation, the following issues were identified from a heritage perspective.

## 8.1 Heritage Sites

The fieldwork component of the study was aimed at identifying tangible remains of archaeological, historical and heritage significance. The fieldwork was undertaken by way of intensive walkthroughs of the study area. The fieldwork was conducted over several days on 23 March 2020 as well as from 8 to 13 June 2020. This fieldwork team consisted of an archaeologist (Cherene de Bruyn) and field assistant (Pascal Snyman). The following provides a breakdown of the heritage resources identified and graded in the study area. During the survey, five (5) heritage sites were identified. Of these five sites, four (4) sites (**EWF2-01** to **EWF2-04**) consist of structures (Farmhouses, Labourer houses, and stone walls), and one (1) site contain graves (**EWF2-05**).

### 8.1.1 *Historical structures*

Two (2) labourer houses (**EWF2-02 and EWF2-04)**, and one (1) stone farm wall (**EWF2-03**) were rated as not conservation worthy and of no heritage significance.

A farmstead (**EWF2-01)** was also identified. This site has a medium heritage significance and heritage rating of IIIB.

### 8.1.2 *Burial Grounds and graves*

One (1) burial ground (**EWF2-05**) was identified that may be affected by the proposed project. Graves have a high heritage significance and heritage rating of IIIA.

### 8.1.3 *Palaeontology*

According to the PIA conducted by Banzai Environmental (Butler, 2020) the proposed development is by the Dwyka Group; the Fort Brown Formation of the Ecca Group (Karoo Supergroup), Adelaide Subgroup (Koonap and Middleton Formations) of the Beaufort Group (Karoo Supergroup) and the Witteberg Group of the Cape Supergroup, Karoo Dolerite (Karoo Supergroup), and Quaternary deposits. According to the PalaeoMap of SAHRIS the Palaeontological Sensitivity of the Dwyka Group is Low, the Collingham Formation, Rippon Formation, Fort Brown Formation of the Ecca Group is Moderate, while the Prince Albert Formation has a High and the Whitehill Formation of the Ecca has a Very High Palaeontological Sensitivity. The Adelaide Subgroup has a Very high Palaeontological Sensitivity while Dolerite is igneous in origin and thus has an Insignificant Paleontological Sensitivity (Almond et al, 2013; SAHRIS website).

As such, there is a moderate to high chance of finding fossils in this area. A 3-day site-specific field survey of the development footprint was conducted on foot and by a motor vehicle on 20 November to 23 November 2020. No visible evidence of fossiliferous outcrops was found.

#### 8.1.4 *Cultural Landscape*

The Cultural Landscape of the area between and surrounding Makhanda (Grahamstown) and Somerset East sparsely populated with several farmsteads and their associated structures located on the valley floors of this hilly and mountainous region. The farmsteads are connected through several farm roads and old historic ox-wagon routes that link the local communities to the busy towns of Makhanda (Grahamstown) and Somerset East. The area proposed for Fronteer Wind Farm has a medium to high heritage significance. Many of the old farm buildings, stone houses and the Churches in the area contain architectural elements greater than 60 years of age and fall with the general protection of the National Heritage Resources Act (25 of 1999) (NHRA). This significance of the area comprises of both Local and Provincial heritage sites, consisting of palaeontological sites, rock art, burial grounds and graves, monuments and memorials, stonewalling, as well as historical structures. The significance grading of the cultural landscape elements ranged from IIIC to II. Although no mitigation of the impact on the sense of place of the region or the cultural landscape is possible the impact of the development on the landscape can be minimised with the recommended general mitigation measures.

### 8.2 Impact Statement

Analysis of the various components of the HIA indicates a mitigated low negative impact on heritage resources and are expanded on below.

#### 8.2.1 *Historical structures*

An assessment of the possible impacts of the proposed project on historical heritage resources has shown that unmitigated impacts vary between low to medium negative impacts mostly confined to the construction phase of the project. **By implementing the mitigation measures as listed in this report these impacts can be managed to low negative.**

#### 8.2.2 *Burial Grounds and graves*

An assessment of the possible impacts of the proposed project on historical heritage resources has shown that unmitigated impacts consist of a medium negative impact mostly confined to the construction phase of the project. **By implementing the mitigation measures as listed in this report these impacts can be managed to low negative.**

#### 8.2.3 *Palaeontology*

An assessment of the possible impacts of the proposed project on palaeontological resources has shown that unmitigated impacts consist of a medium negative impact mostly confined to the

construction phase of the project. **By implementing the mitigation measures as listed in this report these impacts can be managed to low negative.**

### 8.2.4 *Cultural landscape*

An assessment of the possible impacts of the proposed project on the overall cultural landscape has shown that unmitigated impacts consist of a medium negative impact mostly confined to the construction and operation phase of the project. **By implementing the mitigation measures as listed in this report these impacts can be managed to low negative.**

### 8.2.5 *Cumulative Impacts*

Considering the development of other WEF located next to the Fronteer Wind Farm and within the broader Grahamstown (Makanda region) the cumulative unmitigated impacts on Historical structures, Burial ground and graves as well as palaeontological resources consist of a medium to high negative impact mostly confined to the construction phase of the project. This could potentially result in an unacceptable loss of heritage resources. **However, by implementing the mitigation measures as listed in this report the cumulative impacts can be managed to low negative.**

## 8.3 Recommendations

The following mitigation measures are listed in Table 18.

*Table 20 - Heritage management recommendations.*

| Area and site no. | Mitigation measures |
|---|---|
| **General project area** | • Implement a chance to find procedures in case possible heritage finds are uncovered.<br>• A detailed "walk down" of the final approved turbine locations, access roads, powerlines and substations will be required before construction commences.<br>• Any heritage features of significance identified during this walk down will require formal mitigation (i.e. permitting where required) or where possible a slight change in design could accommodate such resources.<br>• A Heritage Management Plan (HMP) for the heritage resources needs to be compiled and approved for implementation during construction and operations where heritage features of significance are identified. |
| **Historical Structures** that were rated as NCW **(EWF2-02** to **EWF2-04)** | • No mitigation is required |
| **Historical Structures (EWF2-01)** that were rated as medium heritage significance and heritage rating of IIIB. | • Although the site is located outside of the proposed development area, it is recommended that a no-go-buffer-zone of at least 500m from the outer permitter of the farmstead (which is currently occupied) is kept to the closest WEF infrastructure (including turbines, substation facilities and roads ).<br>• If development occurs within 500m of the main homesteads need to be satisfactorily studied and recorded before impact occurs.<br>• Recording of the buildings i.e. (a) map indicating the position and footprint of all the buildings and structures (b) photographic recording of all the buildings and structures (c) measured drawings of the floor plans of the principal buildings. |

| Area and site no. | Mitigation measures |
|---|---|
| | |
| **Graves and Burial grounds (EWF2-05**) | • The sites should be demarcated with a 30-meter no-go-buffer-zone and the graves should be avoided and left in situ.<br>• A Grave Management Plan should be developed for the graves, to be implemented during the construction and operation phases (which approval by ECPHRA.<br>• If the site is going to be impacted directly and the graves need to be removed a grave relocation process for these sites is recommended as a mitigation and management measure. This will involve the necessary social consultation and public participation process before grave relocation permits can be applied for with the ECPHRA under the NHRA and National Health Act regulations. |
| **Possible graves** | • When graves are discovered/uncovered the site should be demarcated with a 30-meter no-go-buffer-zone and the grave should be avoided.<br>• Undertake archaeological monitoring at earth clearance stage.<br>• If human remains are discovered a grave relocation process is recommended as a mitigation and management measure. This will involve the necessary social consultation and public participation process before grave relocation permits can be applied for with the ECPHRA under the NHRA and National Health Act regulations.<br>• If during the test excavations it is determined that the feature is not a grave, the site will then have no heritage significance and require no further mitigation. |
| **Palaeontological finds** | • If fossil remains are discovered during any phase of construction, either on the surface or exposed by fresh excavations the Chance Find Protocol must be implemented by the ECO in charge of these developments.<br>• Fossil discoveries ought to be protected and the ECO/site manager must report to SAHRA |
| **Cultural Landscape** | • Mitigation measures as proposed in the HIA for the proposed Fronteer Wind Farm Facility development that reduces negative impacts on the land use patterns and living heritage will reduce the impact of this facility on the overall load.<br>• With a detailed and comprehensive regional dataset this rating could possibly be adjusted and more accurate. Due to the limited consideration of Cultural Landscape assessments in terms of heritage values in other projects, the mitigation measures proposed may not deal with impacts on cultural landscapes.<br>• The mitigation measures proposed for heritage resources will reduce the negative cumulative impact on the cultural landscape and should be implemented as recommended.<br><br>• According to the VIA (Du Plessis, 2021) no mitigation of the impact on the sense of place of the region is possible as the structures will be visible regardless. However, the following general mitigation measures are proposed:<br>o The natural vegetation in all areas outside of the development footprint/servitude must be maintained/re-established during the planning phase.<br>o Maintain the general appearance of the facility as a whole during the operational phase<br>o Remove the infrastructure not required for the post-decommissioning use and rehabilitate all areas. |

## 8.4 General

The proposed location of turbines, overhead powerlines, and substations (and other associated infrastructure) for the Fronteer Wind Farm have been negotiated through specialist input with the developer and client. Overall, this has lead to the acceptable placement of turbines away from heritage sensitive areas. The overall impact of the Fronteer Wind Farm, on the heritage resources identified during this report, is seen as acceptably low after the recommendations have been implemented and therefore, impacts can be mitigated to acceptable levels allowing for the development to be authorised.

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**Appendix A**

## Heritage Assessment Methodology

The applicable maps, tables and figures, are included as stipulated in the NHRA (no 25 of 1999), the NEMA (no 107 of 1998). The HIA process consisted of three steps:

Step I – Literature Review: The background information to the field survey relies greatly on the Heritage Background Research.

Step II – Physical Survey: A physical survey was conducted by vehicle through the proposed project area by a qualified heritage specialist. The survey was conducted over one day (21 August 2019), aimed at locating and documenting sites falling within and adjacent to the proposed development footprint.

Step III – The final step involved the recording and documentation of relevant archaeological resources, the assessment of resources in terms of the HIA criteria and report writing, as well as mapping and constructive recommendations.

The significance of heritage sites was based on four main criteria:

- Site integrity (i.e. primary vs. secondary context),
- Amount of deposit, range of features (e.g., stonewalling, stone tools and enclosures),
- Density of scatter (dispersed scatter)
    - Low - <10/50m2
    - Medium - 10-50/50m2
    - High - >50/50m2
- Uniqueness; and
- Potential to answer present research questions.

Management actions and recommended mitigation, which will result in a reduction in the impact on the sites, will be expressed as follows:

A - No further action necessary;
B - Mapping of the site and controlled sampling required;
C - No-go or relocate development activity position;
D - Preserve site, or extensive data collection and mapping of the site; and
E - Preserve site.

Impacts on these sites by the development will be evaluated as follows:

**Site Significance**

Site significance classification standards use is based on the heritage classification of s3 in the NHRA and developed for implementation keeping in mind the grading system approved by SAHRA for archaeological impact assessments. The update classification and rating system as developed by Heritage Western Cape (2016) is implemented in this report

Site significance classification standards prescribed by the Heritage Western Cape Guideline (2016), were used for the purpose of this report (**Table A 1**and **Table A 2)**.

*Table A 1:* Rating system for archaeological resources

| Grading | Description of Resource | Examples of Possible Management Strategies | Heritage Significance |
|---|---|---|---|
| I | Heritage resources with qualities so exceptional that they are of special national significance.<br>Current examples: Langebaanweg (West Coast Fossil Park), Cradle of Humankind | May be declared as a National Heritage Site managed by SAHRA. Specific mitigation and scientific investigation can be permitted in certain circumstances with sufficient motivation. | Highest Significance |
| II | Heritage resources with special qualities which make them significant, but do not fulfil the criteria for Grade I status.<br>Current examples: Blombos, Paternoster Midden. | May be declared as a Provincial Heritage Site managed by ECPHRA. Specific mitigation and scientific investigation can be permitted in certain circumstances with sufficient motivation. | Exceptionally High Significance |
| III | Heritage resources that contribute to the environmental quality or cultural significance of a larger area and fulfils one of the criteria set out in section 3(3) of the Act but that does not fulfil the criteria for Grade II status. Grade III sites may be formally protected by placement on the Heritage Register. | | |
| IIIA | Such a resource must be an excellent example of its kind or must be sufficiently rare.<br>Current examples: Varschedrift; Peers Cave; Brobartia Road Midden at Bettys Bay | Resource must be retained. Specific mitigation and scientific investigation can be permitted in certain circumstances with sufficient motivation. | High Significance |
| IIIB | Such a resource might have similar significances to those of a Grade III A resource, but to a lesser degree. | Resource must be retained where possible where not possible it must be fully investigated and/or mitigated. | Medium Significance |
| IIIC | Such a resource is of contributing significance. | Resource must be satisfactorily studied before impact. If the recording already done (such as in an HIA or permit application) is not sufficient, further recording or even mitigation may be required. | Low Significance |
| NCW | A resource that, after appropriate investigation, has been determined to not have enough heritage significance to be retained as part of the National Estate. | No further actions under the NHRA are required. This must be motivated by the applicant or the consultant and approved by the authority. | No research potential or other cultural significance |

*Table A 2: Rating system for built environment resources*

| Grading | Description of Resource | Examples of Possible Management Strategies | Heritage Significance |
|---|---|---|---|
| I | Heritage resources with qualities so exceptional that they are of special national significance.<br>Current examples: Robben Island | May be declared as a National Heritage Site managed by SAHRA. | Highest Significance |
| II | Heritage resources with special qualities which make them significant in the context of a province or region, but do not fulfil the criteria for Grade I status.<br>Current examples: St George's Cathedral, Community House | May be declared as a Provincial Heritage Site managed by ECPHRA | Exceptionally High Significance |
| II | Such a resource contributes to the environmental quality or cultural significance of a larger area and fulfils one of the criteria set out in section 3(3) of the Act but that does not fulfil the criteria for Grade II status. Grade III sites may be formally protected by placement on the Heritage Register. | | |
| IIIA | Such a resource must be an excellent example of its kind or must be sufficiently rare.<br>These are heritage resources which are significant in the context of an area. | This grading is applied to buildings and sites that have sufficient intrinsic significance to be regarded as local heritage resources; and are significant enough to warrant that any alteration, both internal and external, is regulated. Such buildings and sites may be representative, being excellent examples of their kind, or may be rare. In either case, they should receive maximum protection at local level. | High Significance |
| IIIB | Such a resource might have similar significances to those of a Grade III A resource, but to a lesser degree.<br>These are heritage resources which are significant in the context of a townscape, neighbourhood, settlement or community. | Like Grade IIIA buildings and sites, such buildings and sites may be representative, being excellent examples of their kind, or may be rare, but less so than Grade IIIA examples. They would receive less stringent protection than Grade IIIA buildings and sites at local level. | Medium Significance |
| IIIC | Such a resource is of contributing significance to the environs.<br>These are heritage resources which are significant in the context of a streetscape or direct neighbourhood. | This grading is applied to buildings and/or sites whose significance is contextual, i.e. in large part due to its contribution to the character or significance of the environs.<br>These buildings and sites should, as a consequence, only be regulated if the significance of the environs is sufficient to warrant protective measures, regardless of whether the site falls within a Conservation or Heritage Area. Internal alterations should not necessarily be regulated. | Low Significance |
| NCW | A resource that, after appropriate investigation, has been determined to not have enough heritage significance to be retained as part of the National Estate. | No further actions under the NHRA are required. This must be motivated by the applicant and approved by the authority. Section 34 can even be lifted by ECPHRA for structures in this category if they are older than 60 years. | No research potential or other cultural significance |

**Appendix B**

***Project team CV's***

**WOUTER FOURIE**

**Professional Heritage Specialist and Professional Archaeologist and Director PGS Heritage**

**Summary of Experience**

Specialised expertise in Archaeological Mitigation and excavations, Cultural Resource Management and Heritage Impact Assessment Management, Archaeology, Anthropology, Applicable survey methods, Fieldwork and project management, Geographic Information Systems, including *inter alia* -

Involvement in various grave relocation projects (some of which relocated up to 1000 graves) and grave "rescue" excavations in the various provinces of South Africa

Involvement with various Heritage Impact Assessments, within South Africa, including -

- Archaeological Walkdowns for various projects
- Phase 2 Heritage Impact Assessments and EMPs for various projects
- Heritage Impact Assessments for various projects
    - Iron Age Mitigation Work for various projects, including archaeological excavations and monitoring
    - Involvement with various Heritage Impact Assessments, outside South Africa, including -
- Archaeological Studies in Democratic Republic of Congo
- Heritage Impact Assessments in Mozambique, Botswana and DRC
- Grave Relocation project in DRC

**Key Qualifications**

BA [Hons] (Cum laude) - Archaeology and Geography - 1997

BA - Archaeology, Geography and Anthropology - 1996

Professional Archaeologist - Association of Southern African Professional Archaeologists (ASAPA) - Professional Member

Accredited Professional Heritage Specialist – Association of Professional Heritage Practitioners (APHP)

CRM Accreditation (ASAPA) -

- Principal Investigator - Grave Relocations
- Field Director – Iron Age
- Field Supervisor – Colonial Period and Stone Age
- Accredited with Amafa KZN

**Key Work Experience**

2003- current - Director – Professional Grave Solutions (Pty) Ltd

2007 – 2008 - Project Manager – Matakoma-ARM, Heritage Contracts Unit, University of the Witwatersrand

2005-2007 - Director – Matakoma Heritage Consultants (Pty) Ltd

2000-2004 - CEO– Matakoma Consultants

1998-2000 - Environmental Coordinator – Randfontein Estates Limited. Randfontein, Gauteng

1997-1998 - Environmental Officer – Department of Minerals and Energy. Johannesburg, Gauteng

Worked on various heritage projects in the SADC region including, Botswana, Mozambique, Malawi, Mauritius, Zimbabwe and the Democratic Republic of the Congo

**PROFESSIONAL CURRICULUM FOR CHERENE DE BRUYN**

**Professional Archaeologist for PGS Heritage**

## KEY QUALIFICATIONS

| | |
|---|---|
| 2016-2017 | MA in Archaeology<br>University College London, United Kingdom |
| 2015 | BSC Honours in Physical Anthropology,<br>University of Pretoria, South Africa |
| 2013 | BA Honours in Archaeology<br>University of Pretoria, South Africa |
| 2010-2012 | BA (General)<br>University of Pretoria, South Africa<br>Major subjects: Archaeology and Anthropology |

## PROFESSIONAL QUALIFICATIONS:

- Association of Southern African Professional Archaeologists - Professional Member (#432)
- International Association for Impact Assessment South Africa - Member (#6082)
- Association of Southern African Professional Archaeologists - CRM Accreditation
    - Principal Investigator: Grave relocation
    - Field Director: Colonial period archaeology, Iron Age archaeology
    - Field Supervisor: Rock art, Stone Age archaeology
    - Laboratory Specialist: Human Skeletal Remains
- KZN Amafa and Research Institute - Accredited Professional Heritage Practitioner

## Languages:

Afrikaans & English

## SUMMARY OF EXPERIENCE

Expertise in Heritage Impact Assessment Management, Historical and Archival Research, Archaeology, Physical Anthropology, Grave Relocations, Fieldwork, Geographic Information Systems and Project Management including *inter alia* -

Involvement in various grave relocation projects

- Grave exhumation, test excavations and grave “rescue” excavations in the various provinces of South Africa.
- Permit applications with SAHRA BGG and AMAFA, including relevant Munciplaities and Authorities for grave relocation projects.

Involvement with various Heritage Impact Assessments,

- Heritage Impact Assessments and Management for various projects within Eastern Cape, Free State, Gauteng, KwaZulu-Natal, Limpopo, Mpumalanga, Northern Cape, North West and Western Cape Province.
- Archaeological Walkdowns for various projects.
- Instrument Survey and recording for various projects.
- Desktop, archival and heritage screening for projects.

## Heritage Assessment Projects

Below a selected list of Heritage Impact Assessments (HIA) Projects involvement:

- Heritage Management Plan for the proposed development of the 305MW Oya solar photovoltaic (PV) facility and associated infrastructure near Matjiesfontein, Western Cape.
- Heritage Impact Assessment for the Proposed Township Establishment on the Remainder of Portion 8 of the Farm Boschoek 103 JQ, near Boschoek, North West Province.

- The Proposed Irenedale Water Pipeline Between Bosjesspruit Colliery And A Local Reservoir, Located In The Lekwa Local Municipality And The Govan Mbeki Local Municipality, Gert Sibande District Municipality, Mpumalanga Province.
- Heritage Impact Assessment for the proposed development of the Msobo Coal Tselentis Colliery: Albion Opencast project, Near Breyten, Mpumalanga Province.
- Heritage Impact Assessment for the Proposed Development Of An Airport For Kolomela Mine In Postmasburg, Northern Cape.
- Heritage Impact Assessment for the Proposed South African Coal Estates (SACE) Clydesdale Pit Project, near Emalahleni, Mpumalanga Province.
- Heritage Impact Assessment for the Amendment of the Mogalakwena Mine Expansion Project, near Mokopane, Limpopo Province.
- Heritage Impact Assessment for the Mogalakwena Mine Integrated Permitting Project near Mokopane, Limpopo Province.
- Heritage Impact Assessment for the Proposed Solar PV Plant at Armoede, near Mokopane, Limpopo Province.
- Heritage Impact Assessment for the Proposed New Cargo Precinct For The O.R. Tambo International Airport On The Farm Witkoppie 64, Gauteng Province.
- Heritage Impact Assessment for the upgrade of road d4407 between Hluvukani and Timbavati, road d4409 at Welverdiend and road d4416/2 between Welverdiend and road P194/1 in the Bohlabela region of the Mpumalanga Province.
- Heritage Impact Assessment for the proposed Piggery on Portion 46 of the farm Brakkefontien 416, within the Nelson Mandela Bay Municipality, Eastern Cape.
- Heritage Impact Assessment for proposed development On Erf 30, Letamo Town, Farm Honingklip 178 Iq, Mogale Local Municipality, Gauteng Province.
- Heritage Impact Assessment for the proposed Prospecting Right Application on the Farm Reserve No 4 15823 And 7638/1, near St Lucia, within the jurisdiction of the Mfolozi Local Municipality in the King Cetshwayo District Municipality, KwaZulu-Natal Province.

**Grave Relocation Projects**

Below, a selection of grave relocation projects involvement:

- Report On Test Excavations. Ivn_078 Maruma Graves, Farm Turfspruit 241 Kr, Mokopane, Limpopo Province. Test Excavation Of Possible Burial Ground As Identified By The Maruma Family.
- Relocation Of Two Infant Graves From The Farm Wonderfontein 428 Js, Belfast, Mpumalanga Province.
- Relocation Of Approximately 4 Stillborn Graves From Farm Wonderfontein 428 Js, Umsimbithi Mining (Pty) Ltd, Belfast, Chief Albert Luthuli Local Municipality, Mpumalanga Province.

**EMPLOYMENT SUMMARY:**

**Positions Held**

- 2020 – to date: Archaeologist - PGS Heritage (Pty) Ltd
- 2018 – 2019: Manager of the NGT ESHS Heritage Department – NGT Holdings (Pty) Ltd
  Archaeologist and Heritage Consultant – NGT Holdings (Pty) Ltd
- 2015-2016: Archaeological Contractor - BA3G, University of Pretoria
- 2014 – 2015: DST-NRF Archaeological Intern, Forensic Anthropological Research Centre

***Appendix C***

***Palaeontological Impact Assessment***