

Scoping and Environmental Impact  
Assessment for the Proposed  
Construction and Operation of the up to  
240 MWac Ingwe Wind Energy Facility 2  
and associated infrastructure, near  
Molteno in the Eastern Cape

DRAFT  
ENVIRONMENTAL  
IMPACT  
ASSESSMENT  
REPORT

# CHAPTER 7:

## *Archaeology, Palaeontology and Cultural Heritage Assessment*



**HERITAGE IMPACT ASSESSMENT:  
SCOPING AND ENVIRONMENTAL IMPACT ASSESSMENT  
FOR THE PROPOSED INGWE WIND ENERGY FACILITY 2  
NEAR MOLTENO, CHRIS HANI MAGISTERIAL DISTRICT,  
EASTERN CAPE**

Required under Section 38 (8) of the National Heritage Resources Act (No. 25 of 1999)

SAHRA Case ID: 21563

*Report for:*

**CSIR – Environmental Management Services**

P.O. Box 320, Stellenbosch, 7599

Tel:

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*On behalf of:*

**Ingwe Wind Energy Facility 2 (Pty) Ltd**



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1<sup>st</sup> draft: 03 June 2023

Final report: 13 June 2023

# Specialist declaration



## environmental affairs

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

### DETAILS OF THE SPECIALIST, DECLARATION OF INTEREST AND UNDERTAKING UNDER OATH

	(For official use only)
File Reference Number:	
NEAS Reference Number:	DEA/EIA/
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

#### PROJECT TITLE

**Scoping and Environmental Impact Assessments for the proposed construction and operation of the two ABO Wind Ingwe Wind Energy Facilities (WEFs) 1 and 2 (i.e., the up to 240 MWac ABO Wind Ingwe WEF 1 and the up to 240 MWac ABO Wind Ingwe WEF 2), near Molteno in the Eastern Cape Province.**

#### Kindly note the following:

1. This form must always be used for applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting where this Department is the Competent Authority.
2. This form is current as of 01 September 2018. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at <https://www.environment.gov.za/documents/forms>.
3. A copy of this form containing original signatures must be appended to all Draft and Final Reports submitted to the department for consideration.
4. All documentation delivered to the physical address contained in this form must be delivered during the official Departmental Officer Hours which is visible on the Departmental gate.
5. All EIA related documents (includes application forms, reports or any EIA related submissions) that are faxed; emailed; delivered to Security or placed in the Departmental Tender Box will not be accepted, only hardcopy submissions are accepted.

#### Departmental Details

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Department of Environmental Affairs  
Attention: Chief Director: Integrated Environmental Authorisations  
Private Bag X447  
Pretoria  
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**Physical address:**  
Department of Environmental Affairs  
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Arcadia

Queries must be directed to the Directorate: Coordination, Strategic Planning and Support at:  
Email: [EIAAdmin@environment.gov.za](mailto:EIAAdmin@environment.gov.za)


**1. SPECIALIST INFORMATION**

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B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	4	Percentage Procurement recognition
			0
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Specialist Qualifications:	D.Phil (Archaeology, Oxford, UK) MA (Archaeology, UCT)		
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**2. DECLARATION BY THE SPECIALIST**

I, JAYSON ORTON, declare that -

- I act as the independent specialist 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 the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I 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;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the Specialist 

ASHA CONSULTING (PTY) LTD

Name of Company:


29 - MAY - 2023

Date

Details of Specialist, Declaration and Undertaking Under Oath


3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, JAYSON ORTON, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.

  
Signature of the Specialist

ASHA CONSULTING (PTY) LTD  
Name of Company

29 - MAY - 2023  
Date

  
Signature of the Commissioner of Oaths

29 - MAY 2023  
Date



## EXECUTIVE SUMMARY

ASHA Consulting (Pty) Ltd was appointed by the Council for Scientific and Industrial Research (CSIR) to conduct an assessment of the potential impacts to heritage resources that might occur through the proposed development of the Ingwe 2 Wind Energy Facility (WEF) on a site to the northwest of Molteno, Eastern Cape. An approximate mid-point for the study area is at S31° 18' 34" E26° 14' 30".

The proposed project will, among other things, comprise of up to 24 turbines, access roads, powerlines and a substation complex. The landscape is a rural landscape of grassy plains and hills with rock outcrops. Scattered farmsteads occur and are usually surrounded by mature trees.

Heritage resources found included light to ephemeral scatters of stone artefacts, several rock paintings, a large number of fortifications of varying size related to the Battle of Stormberg which was fought within the eastern part of the WEF study area, historic roads and railway lines and associated bridges, farmsteads and graves. The cultural landscape is also a heritage resource and includes the aesthetically pleasing rural landscape as well as the Battle of Stormberg landscape.

Due to the iterative layout design process, no significant impacts are expected, although the Battle of Stormberg landscape will have some turbines within its general vicinity which will somewhat alter its sense of place.

It is recommended that the proposed Ingwe WEF2 be authorised, but subject to the following recommendations which should be included as conditions of authorisation:

- An archaeologist must be appointed to conduct a pre-construction survey of the entire layout well before construction (preferably 6 months);
- No-go signage to be placed in the vicinity of waypoint 1971;
- If the cable through the kraal at waypoint 925 cannot avoid the walling, then it will need to be rerouted around the kraal;
- Buildings to be painted in earthy colours (where technically feasible) to reduce contrast;
- Lighting mitigation (downlighters, motion sensors) must be implemented at buildings and the substation;
- An early warning system that allows the red aircraft navigation lights to remain off until needed must be used (if available and approved at the time of construction);
- If the opportunity to reduce the number of turbines arises and all other factors are equal, then from a heritage point of view turbines 228, 214 and 222 (in that order) should be prioritised for removal;
- Effective rehabilitation must be carried out in all areas not needed during operation, as well as after decommissioning; and
- If any archaeological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.

## Glossary

**Early Stone Age:** Period of the Stone Age extending approximately between 2 million and 200 000 years ago.

**Hominid:** a group consisting of all modern and extinct great apes (i.e. gorillas, chimpanzees, orangutans and humans) and their ancestors.

**Later Stone Age:** Period of the Stone Age extending over the last approximately 20 000 years.

**Middle Stone Age:** Period of the Stone Age extending approximately between 200 000 and 20 000 years ago.

## Abbreviations

**ABW:** Anglo-Boer War

**APHP:** Association of Professional Heritage Practitioners

**ASAPA:** Association of Southern African Professional Archaeologists

**CSIR:** Council for Scientific and Industrial Research

**CRM:** Cultural Resources Management

**DFFE:** Department of Forestry, Fisheries and the Environment

**EA:** Environmental Authorisation

**ECPHRA:** Eastern Cape Provincial Heritage Resources Authority

**ECO:** Environmental Control Officer

**EGI:** Electricity Grid Infrastructure

**EIA:** Environmental Impact Assessment

**EMPr:** Environmental Management Program

**ESA:** Early Stone Age

**GPS:** global positioning system

**GP:** General Protection

**HIA:** Heritage Impact Assessment

**LSA:** Later Stone Age

**MSA:** Middle Stone Age

**NEMA:** National Environmental Management Act (No. 107 of 1998)

**NHRA:** National Heritage Resources Act (No. 25) of 1999

**REDZ:** Renewable Energy Development Zone

**SAHRA:** South African Heritage Resources Agency

**SAHRIS:** South African Heritage Resources Information System

**SEF:** Solar Energy Facility

## Compliance with Appendix 6 of the 2014 EIA Regulations

Requirements of Appendix 6 – GN R326 (7 April 2017)	Addressed in the Specialist Report
1. (1) A specialist report prepared in terms of these Regulations must contain-	Section 1.4 Appendix 1
a) details of-	
i. the specialist who prepared the report; and	
ii. the expertise of that specialist to compile a specialist report including a curriculum vitae;	
b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Page ii (Preliminary Section of this report)
c) an indication of the scope of, and the purpose for which, the report was prepared;	Section 1.3
(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;	Sections 8.6, 8.4 & 8.8
d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Section 3.2
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
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 alternatives;	Sections 1.1.3, 5 & 6.3
g) an identification of any areas to be avoided, including buffers;	Section 6.3
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;	Section 6.3
i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 3.6
j) a description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	Sections 5 & 12
k) any mitigation measures for inclusion in the EMPr;	Sections 8 & 11
l) any conditions for inclusion in the environmental authorisation;	Section 14
m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Section 11
n) a reasoned opinion-	Section 12.1
i. whether the proposed activity, activities or portions thereof should be authorised;	
(iA) regarding the acceptability of the proposed activity and activities; and	
ii. if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	
o) a description of any consultation process that was undertaken during the course of preparing the specialist report;	Not Applicable
p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Not Applicable
q) any other information requested by the competent authority.	Not Applicable
2. Where a government notice gazetted by the Minister provides for any protocol of minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply	Part A of the Assessment Protocols published in Government Notice No. 320 on 20 March 2020 is applicable (i.e. Site sensitivity verification requirements where a specialist assessment is required but no specific assessment protocol has been prescribed). See Appendix 3.



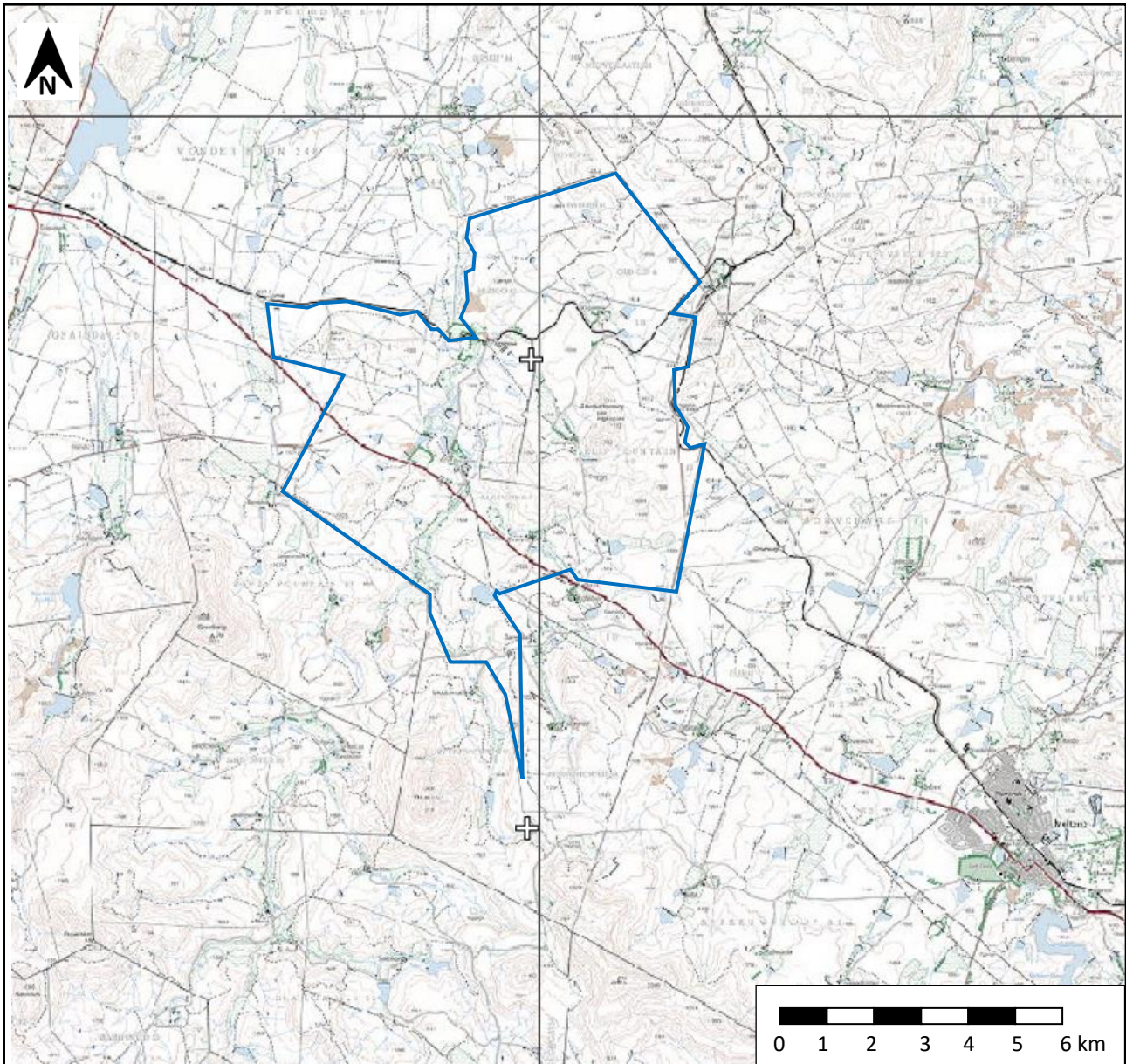
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# 1. INTRODUCTION

ASHA Consulting (Pty) Ltd was appointed by the Council for Scientific and Industrial Research (CSIR) to conduct an assessment of the potential impacts to heritage resources that might occur through the proposed development of the Ingwe Wind Energy Facility 2 (WEF 2) on a site to the northwest of Molteno, Eastern Cape (Figure 1). An approximate mid-point for the study area is at S31° 18' 34" E26° 14' 30".



**Figure 1:** Extract from 1:50 000 topographic map 3126AC and 3126AD showing the location of the site. Source: Chief Directorate: National Geo-Spatial Information. Website: [www.ngi.gov.za](http://www.ngi.gov.za).

One additional WEF (known as Ingwe WEF 1) as well as five solar PV energy facilities (called Ingwe SEF 1-5) are concurrently being proposed for development on the surrounding properties and are assessed by way of separate environmental impact assessment processes. It is proposed that Ingwe WEF 2 would comprise of up to 24 turbines with a contracted generation capacity of up to 240 MWac.

The proposed project is being developed to generate electricity via wind energy, which will feed into and supplement the national electricity grid.

The proposed Ingwe WEF 2, which can be accessed via existing public roads off the R56 provincial asphalt trunk road connecting Molteno with Steynsburg and Sterkstroom, the R397 provincial gravel main road as well as two district gravel roads, will be located within the Enoch Mgijima Local Municipality (previously the Tsolwana Local Municipality), which falls within the Chris Hani District Municipality.

The proposed Ingwe WEF 2 project site covers approximately 7346 ha and will be developed on the following farm properties with associated SG codes:

- Remainder of the Farm Klip Fountain No. 40
- Portion 8 of the Farm Klip Fountain No. 40
- Remainder of Portion 14 (Welgegund) (a portion of portion 1) of the Farm Klip Fountain No. 40
- Portion 15 (Gegund) (a portion of portion 2) of the Farm Klip Fountain No. 40
- Portion 18 (Klip Kop) (portion of portion 13) of the Farm Klip Fountain No. 40
- Portion 21 (Veg Koppies) of the Farm Klip Fountain No. 40
- Portion 22 (Boomplaas) of the Farm Klip Fountain No. 40
- Portion 24 of the Farm Klip Fountain No. 40
- Portion 25 of the Farm Klip Fountain No. 40
- Portion 26 (a portion of Portion 21 (Vegkoppies)) of the Farm Klip Fountain No. 40
- Remainder of the Farm Bamboo No. 43
- Portion 1 of the Farm Bamboo No. 43
- Remainder of Portion 6 (a portion of portion 5) of the Farm Oud Klip No. 44
- Portion 14 of the Farm Oud Klip No. 44
- Remainder of Portion 29 of the Farm Oud Klip No. 44
- Portion 8 of the Farm Modderfontein No. 58

## **1.1. The proposed project**

### **1.1.1. Project description**

Ingwe Wind Energy Facility 1 (Pty) Ltd and Ingwe Wind Energy Facility 2 (Pty) Ltd are proposing the development of two commercial Wind Energy Facilities (WEFs) and their associated infrastructure, located to the north and northwest of the town of Molteno in the Eastern Cape Province.

The proposed WEFs, which can be accessed via existing public roads off the R56 provincial asphalt trunk road connecting Molteno with Steynsburg and Sterkstroom, the R397 provincial gravel main road as well as two district gravel roads herein referred to as “DR1” and “DR2”, will be located within the Enoch Mgijima Local Municipality (previously the Tsolwana Local Municipality), which falls within the Chris Hani District Municipality.

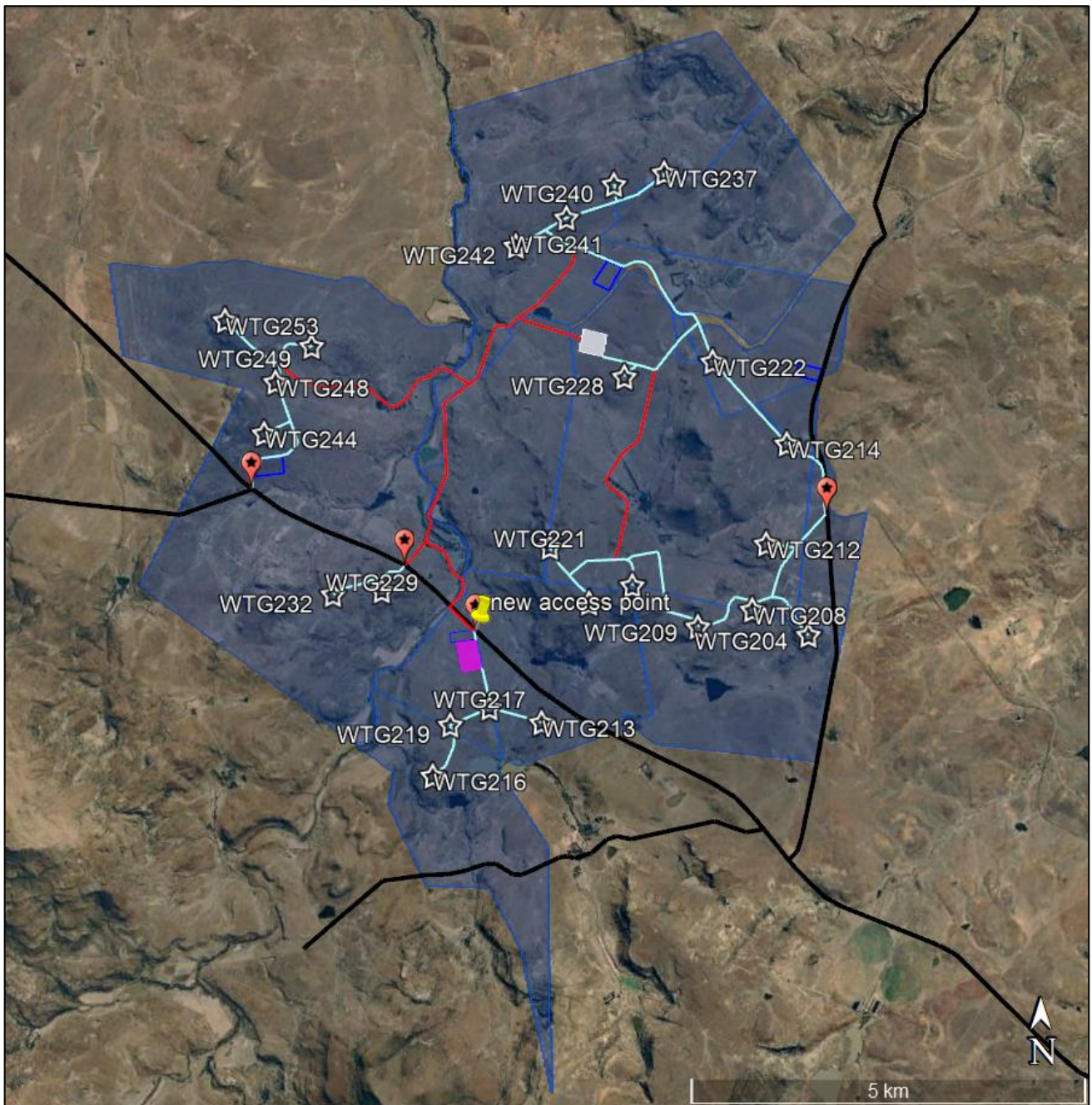
The two Ingwe WEFs (to be constructed on adjoining farm properties), as well as a further five solar PV energy facilities (called Ingwe SEFs 1-5) are concurrently being proposed on the surrounding properties and are assessed by way of separate environmental impact assessment processes.

The project details for Ingwe WEF 2 which is considered in the present report are as shown in Table 1.

**Table 1: Ingwe WEF 2 project details.**

Infrastructure	Description
Number of turbines:	Up to 24
Turbine Capacity:	Up to 10 MW
Hub Height:	Up to 180 m
Rotor (Blade) Diameter:	Up to 190 m
Blade length:	Up to 95 m
WEF Project Size / Generation Capacity:	Up to 240 MWac
Reinforced foundation and crane platform:	Up to 1 ha per turbine
On-site substation hub:	The proposed project will include an on-site substation hub incorporating the facility substation, switchyard, collector infrastructure, BESS, and associated O&M buildings. The substation hub will comprise an area of up to 22 ha. The substation-built infrastructure will have a maximum height of 10 m. Two <u>alternative</u> locations for the on-site substation hub have been identified.
Capacity of on-site substation:	33/132 kV
Construction compound and laydown areas:	Four construction compound and laydown areas of up to 10 ha each.
Internal service roads:	The proposed project will have a total internal service road network of up to approximately 27 km. Permanent service roads will be up to 10 m wide and may require side drains on one or both sides. All service roads will be gravel and may have underground cables running alongside them. During construction, an up to 12 m road corridor may be temporarily impacted upon which will be rehabilitated to a width of up to 10 m after construction has been completed. Temporary clearing of up to 50 m may be required in areas where cut and fill may be required as well for the construction of the bell mouth road junction, turning circles and temporary passing lanes on site. The network layout is designed to provide efficient access to all elements of the facility and effective accommodation of the anticipated internal traffic.
Concrete batching plant:	Up to 0.25 ha
Operational and Maintenance (O&M) Building Complex:	To be located within the development footprint of the on-site substation hub
Battery Energy Storage System (BESS):	The BESS will cover an area of approximately five (5) ha. The BESS technology types that are being assessed include: - Lithium ion, NiCd, NiMH-based Batteries - Redox Flow Batteries (VRFB, Zn-Fe, Zn-Br)
Site Access:	The proposed project and associated infrastructure will be located approximately 8 km northwest of the town of Molteno in the Eastern Cape Province. Access to the proposed project site will be facilitated via existing public roads off the R56 provincial asphalt trunk road connecting Molteno with Steynsburg and Sterkstroom, and the R397 provincial

	gravel main road. Four possible access points to the proposed project site have been identified.
Proximity to grid connection:	<p>It is proposed that the electrical grid connection component will likely comprise of a new loop-in loop-out (LILO) connection into the existing Beta-Delphi 400 kV overhead powerline, and a new LILO connection into the existing Dorper-Stormberg 132 kV overhead powerline, at the point where these existing powerlines cross the project site, to facilitate the connection of the proposed project to the national grid. Both options will include associated and supporting infrastructure for the respective projects among other associated and supporting infrastructure. In order to identify sensitivities and environmental features that need to be avoided, the specialists will assess an approximately 500 m wide corridor (250 m on either side of the overhead powerline routes) for the existing Beta-Delphi 400 kV overhead powerline and the proposed 132 kV overhead powerline.</p> <p><b>Note:</b> <i>A separate Environmental Assessment Process will be undertaken once the grid connection and the 132 kV powerline routing for the proposed project has been confirmed, and hence does <u>not</u> form part of this S&amp;EIA Process.</i></p>
Fencing:	For various reasons such as security, public protection and lawful requirements, the proposed built infrastructure on site will be secured via the installation of appropriate fencing. Existing livestock fencing on the affected farms portions may be upgraded in places where deemed insufficiently secure, whereas permanent fencing will be required around the O&M areas and on-site substation hubs. Access points will be managed and monitored by an appointed security service provider. The type and height of fencing to be installed will be confirmed during the detailed design phase prior to construction.



**Figure 2:** Aerial view of the study area showing the project site (green), turbines (WTG), project roads (turquoise), underground powerlines not along roads (red), laydown areas (blue) and substation options (preferred as white polygon, alternative 1 as pink polygon).

### 1.1.2. Identification of alternatives

Only one site has been assessed but multiple iterations of the project layout were considered during the process with the final layout designed in response to sensitivities identified by the various specialists. The final layout and overall site are smaller than those considered during the Scoping Phase. However, two alternative locations for the substation complex have been identified and are referred to as 'Preferred' and 'Alternative 1'. Various alternative battery technologies are under consideration, but these are immaterial to the heritage assessment and are not considered further in this report.

### 1.1.3. Description of project aspects relevant to the heritage study

All aspects of the proposed development are relevant, since excavations for foundations may impact on archaeological and/or palaeontological remains, while the above-ground aspects create potential visual (contextual) impacts to the cultural landscape and any significant heritage sites that might be visually sensitive.

## 1.2. Terms of reference

ASHA Consulting was asked to:

- Describe regional and local features of the receiving environment;
- Conduct a field survey to search for sensitive areas and sites of heritage significance;
- Map sensitive features and provide spatial data to inform the final project layout;
- Assess (identify and rate) the potential impacts on the environment;
- Identify relevant legislation and legal requirements; and
- Provide recommendations on possible mitigation measures, rehabilitation procedures, and management guidelines.

The Scoping Report was provided to the Eastern Cape Provincial Heritage Resources Authority (ECPHRA). They responded requesting an HIA that included specialist studies of archaeology and palaeontology.

It should also be noted, however, that following S.38(3) of the National Heritage Resources Act (No. 25 of 1999), even though certain specialist studies may be specifically requested, all heritage resources should be identified and assessed.

## 1.3. Scope, purpose and objectives of the report

A heritage impact assessment (HIA) is a means of identifying any significant heritage resources before development begins so that these can be managed in such a way as to allow the development to proceed (if appropriate) without undue impacts to the fragile heritage of South Africa. This HIA report aims to fulfil the requirements of the heritage authorities such that a comment can be issued by them for consideration by the National Department of Forestry and Fisheries and Environment (DFFE) who will review the Environmental Impact Assessment (EIA) and grant or refuse authorisation. The HIA report will outline any management and/or mitigation requirements that will need to be complied with from a heritage point of view and that should be included in the conditions of authorisation should this be granted.

## 1.4. Details of specialist

This specialist assessment has been undertaken by Dr Jayson Orton of ASHA Consulting (Pty) Ltd. He has an MA (UCT, 2004) and a D.Phil (Oxford, UK, 2013), both in archaeology, and has been conducting Heritage Impact Assessments and archaeological specialist studies in South Africa (primarily in the Western Cape and Northern Cape provinces) since 2004 (please see curriculum vitae included as Appendix 1). He has also conducted research on aspects of the Later Stone Age in these provinces and published widely on the topic. He is an accredited heritage practitioner with the Association of Professional Heritage Practitioners (APHP; Member #43) and also holds archaeological accreditation



with the Association of Southern African Professional Archaeologists (ASAPA) CRM section (Member #233) as follows:

- Principal Investigator: Stone Age, Shell Middens & Grave Relocation; and
- Field Director: Colonial Period & Rock Art.

A signed specialist statement of independence is included at the front of this specialist assessment.

Some of the desktop research was contributed by Dr Lita Webley.

## **2. LEGISLATIVE CONTEXT**

### **2.1. National Heritage Resources Act (NHRA) No. 25 of 1999**

The NHRA protects a variety of heritage resources as follows:

- Section 34: structures older than 60 years;
- Section 35: palaeontological, prehistoric and historical material (including ruins) more than 100 years old as well as military remains more than 75 years old;
- Section 36: graves and human remains older than 60 years and located outside of a formal cemetery administered by a local authority; and
- Section 37: public monuments and memorials.

Following Section 2, the definitions applicable to the above protections are as follows:

- Structures: “any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith”;
- Palaeontological material: “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”;
- Archaeological material: a) “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”; b) “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”; c) “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 respectively in sections 3, 4 and 6 of the Maritime Zones Act, 1994 (Act No. 15 of 1994), 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”; and d) “features, structures and artefacts associated with military history which are older than 75 years and the sites on which they are found”;
- Grave: “means a place of interment and includes the contents, headstone or other marker of such a place and any other structure on or associated with such place”; and
- Public monuments and memorials: “all monuments and memorials a) “erected on land belonging to any branch of central, provincial or local government, or on land belonging to any organisation funded by or established in terms of the legislation of such a branch of

government”; or b) “which were paid for by public subscription, government funds, or a public-spirited or military organisation, and are on land belonging to any private individual.”

Section 3(3) describes the types of cultural significance that a place or object might have in order to be considered part of the national estate. These are as follows:

- a) its importance in the community, or pattern of South Africa’s history;
- b) its possession of uncommon, rare or endangered aspects of South Africa’s natural or cultural heritage;
- c) its potential to yield information that will contribute to an understanding of South Africa’s natural or cultural heritage;
- d) its importance in demonstrating the principal characteristics of a particular class of South Africa’s natural or cultural places or objects;
- e) its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- f) its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- g) its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- h) its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and
- i) sites of significance relating to the history of slavery in South Africa.

While landscapes with cultural significance do not have a dedicated Section in the NHRA, they are protected under the definition of the National Estate (Section 3). Section 3(2)(c) and (d) list “historical settlements and townscapes” and “landscapes and natural features of cultural significance” as part of the National Estate. Furthermore, Section 3(3) describes the reasons a place or object may have cultural heritage value; some of these speak directly to cultural landscapes.

## **2.2. Approvals and permits**

### **2.2.1. Assessment Phase**

Section 38(8) of the NHRA states that if an impact assessment is required under any legislation other than the NHRA then it must include a heritage component that satisfies the requirements of S.38(3). Furthermore, the comments of the relevant heritage authority must be sought and considered by the consenting authority prior to the issuing of a decision. Under the National Environmental Management Act (No. 107 of 1998; NEMA), as amended, the project is subject to an EIA. The present report provides the heritage component. ECPHRA is required to provide comment on the proposed project in order to facilitate final decision making by the DFFE.

### **2.2.2. Construction Phase**

If archaeological or palaeontological mitigation is required prior to construction, then the appointed archaeologist or palaeontologist would need to obtain a permit from ECPHRA. This would be issued in their name. This is so that the heritage authority can ensure that the appointed practitioner has proposed an appropriate methodology that will result in the mitigation being done properly. A built environment permit, if required, would also need to be obtained from ECPHRA.

## 2.3. Guidelines

SAHRA have issued minimum standards documents for archaeological and palaeontological specialist studies. There is also a Western Cape Provincial guideline for heritage specialists working in an EIA context and which is generally useful. The reporting has been prepared in accordance with these guidelines. The relevant documents are as follows:

- Winter, S. & Baumann, N. 2005. Guideline for involving heritage specialists in EIA processes: Edition 1. CSIR Report No ENV-S-C 2005 053 E. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs & Development Planning, Cape Town.
- SAHRA. 2007. Minimum Standards: archaeological and palaeontological components of impact assessment reports. Document produced by the South African Heritage Resources Agency, May 2007.

## 3. APPROACH AND METHODOLOGY

### 3.1. Literature survey and information sources

A survey of available literature was carried out to assess the general heritage context into which the development would be set. The information sources used in this report are presented in Table 2 with relevant dates of each source referenced in the text as needed. Data were also collected via a field survey. The data quality is suitable for the purpose of informing this report.

*Table 2: Information sources used in this assessment.*

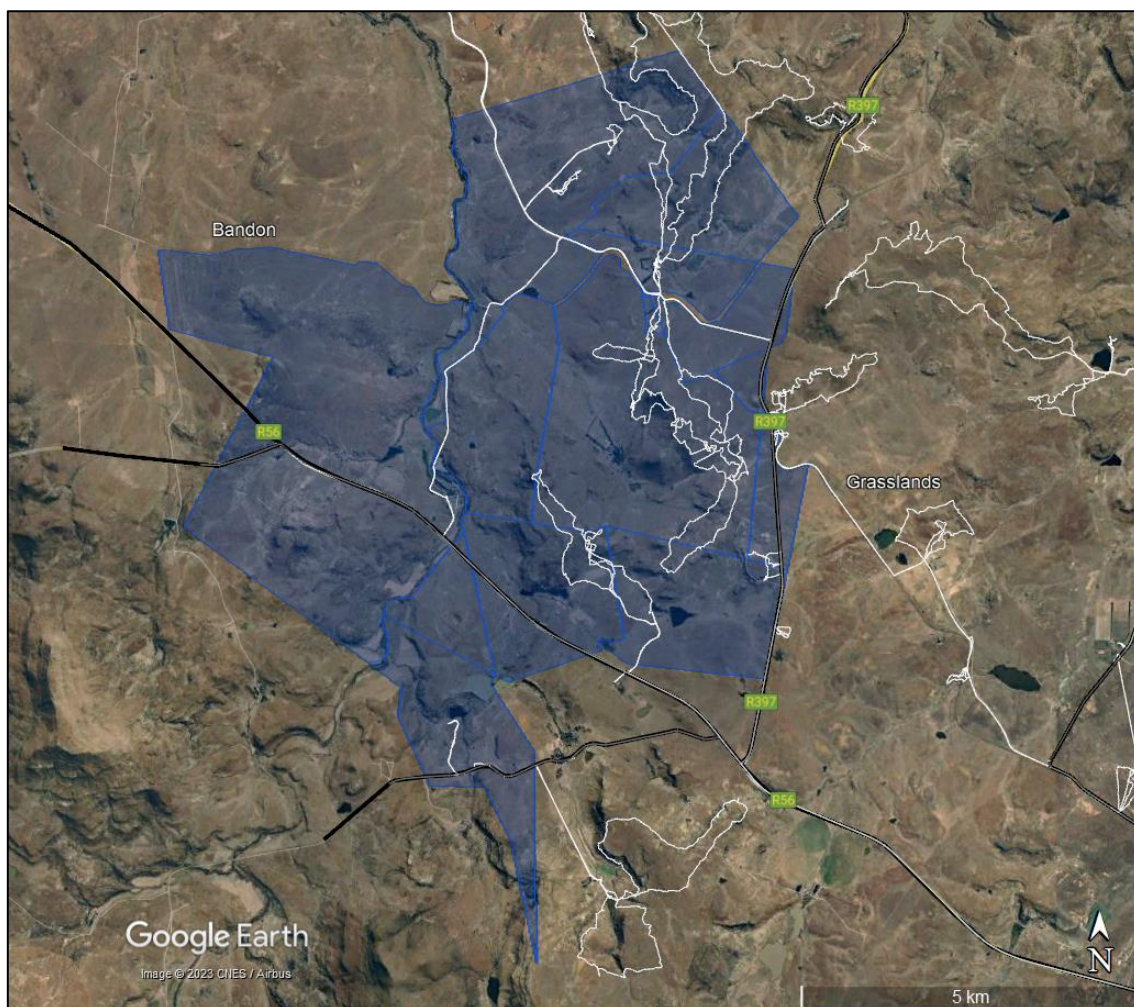
Data / Information	Source	Date	Type	Description
Maps	Chief Directorate: National Geo-Spatial Information	Various	Spatial	Historical and current 1:50 000 topographic maps of the study area and immediate surrounds
Aerial photographs	Chief Directorate: National Geo-Spatial Information	Various	Spatial	Historical aerial photography of the study area and immediate surrounds
Aerial photographs	Google Earth	Various	Spatial	Recent and historical aerial photography of the study area and immediate surrounds
Cadastral data	Chief Directorate: National Geo-Spatial Information	Various	Survey diagrams	Historical and current survey diagrams, property survey and registration dates
Background data	South African Heritage Resources Information System (SAHRIS)	Various	Reports	Previous impact assessments for any developments in the vicinity of the study area

Palaeontological sensitivity	South African Heritage Resources Information System (SAHRIS)	Current	Spatial	Map showing palaeontological sensitivity and required actions based on the sensitivity.
Background data	Books, journals, websites	Various	Books, journals, websites	Historical and current literature describing the study area and any relevant aspects of cultural heritage.
Site locations	Land owners	Current	Spatial	Site location details, especially for rock art.

### 3.2. Field survey

Foot and vehicle surveys were carried out in the wider study area from 18<sup>th</sup> to 24<sup>th</sup> March 2022. The surveys on 19<sup>th</sup>-24<sup>th</sup> all covered sections of the present study area. This was during autumn. Although there had been some heavy rains and some low-lying areas were very muddy and difficult to search, the survey focused on rock areas which were generally not affected by water and vegetation density. The season thus made no meaningful difference to the ground visibility for the archaeological survey. Other heritage resources are not affected by seasonality. During the survey the positions of finds and survey tracks were recorded on a hand-held Garmin Global Positioning System (GPS) receiver set to the WGS84 datum (Figure 3). Photographs were taken at times in order to capture representative samples of both the affected heritage and the landscape setting of the proposed development.

It should be noted that the amount of time between the dates of the field inspection and final report do not materially affect the outcome of the report.



**Figure 3:** Aerial view of the study area (blue polygon) showing the survey tracks (white lines).

### 3.3. Specialist studies

The archaeological component was carried out by the present author and is included within the HIA. The palaeontological component was compiled by Dr John Almond and is submitted as a separate report to be read alongside the HIA.

### 3.4. Impact assessment

For consistency among specialist studies, the impact assessment was conducted through application of a scale supplied by the CSIR.

### 3.5. Grading

Section 7 of the NHRA provides for the grading of heritage resources into those of National (Grade 1), Provincial (Grade 2) and Local (Grade 3) significance. Grading is intended to allow for the identification of the appropriate level of management for any given heritage resource. Grade 1 and 2 resources are intended to be managed by the national and provincial heritage resources authorities, while Grade 3 resources would be managed by the relevant local planning authority. These bodies are responsible for grading, but anyone may make recommendations for grading.

It is intended under S.7(2) that the various provincial authorities formulate a system for the further detailed grading of heritage resources of local significance but this is generally yet to happen. SAHRA (2007) has formulated its own system<sup>1</sup> and this system is used by ECPHRA. In its sites of high local significance are given Grade IIIA (with the implication that the site should be preserved in its entirety) and Grade IIIB (with the implication that part of the site could be mitigated and part preserved as appropriate) while sites of lesser significance are referred to as having 'General Protection' (GP) and rated as GP A (high/medium significance, requires mitigation), GP B (medium significance, requires recording) or GP C (low significance, requires no further action).

### **3.6. Assumptions, knowledge gaps and limitations**

The study is carried out at the surface only and hence any completely buried archaeological sites will not be readily located. Similarly, it is not always possible to determine the depth of archaeological material visible at the surface. Due to the very large size of the site the survey focused on areas considered most likely to be sensitive. These included rocky outcrops and ridges as well as the vicinity of the Battle of Stormberg. It is assumed that the majority of important heritage resources within the proponent's areas of interest will have been identified and recorded, but there are undoubtedly further resources located in unsurveyed areas, especially in the west where survey coverage was minimal. Because farm complexes were excluded from the potential development areas, no specific attempt was made to visit the many that occur in the study area. However, relevant structures and features were photographed whenever they were encountered.

With the western part of the site so minimally covered, aerial photography was examined closely in the vicinity of the proposed infrastructure to locate any further sites that were visible in this way.

### **3.7. Consultation processes undertaken**

The NHRA requires consultation as part of an HIA but, since the present study falls within the context of an EIA which includes a public participation process (PPP), no dedicated consultation was undertaken as part of the HIA. Interested and affected parties would have the opportunity to provide comment on the heritage aspects of the project during the PPP.

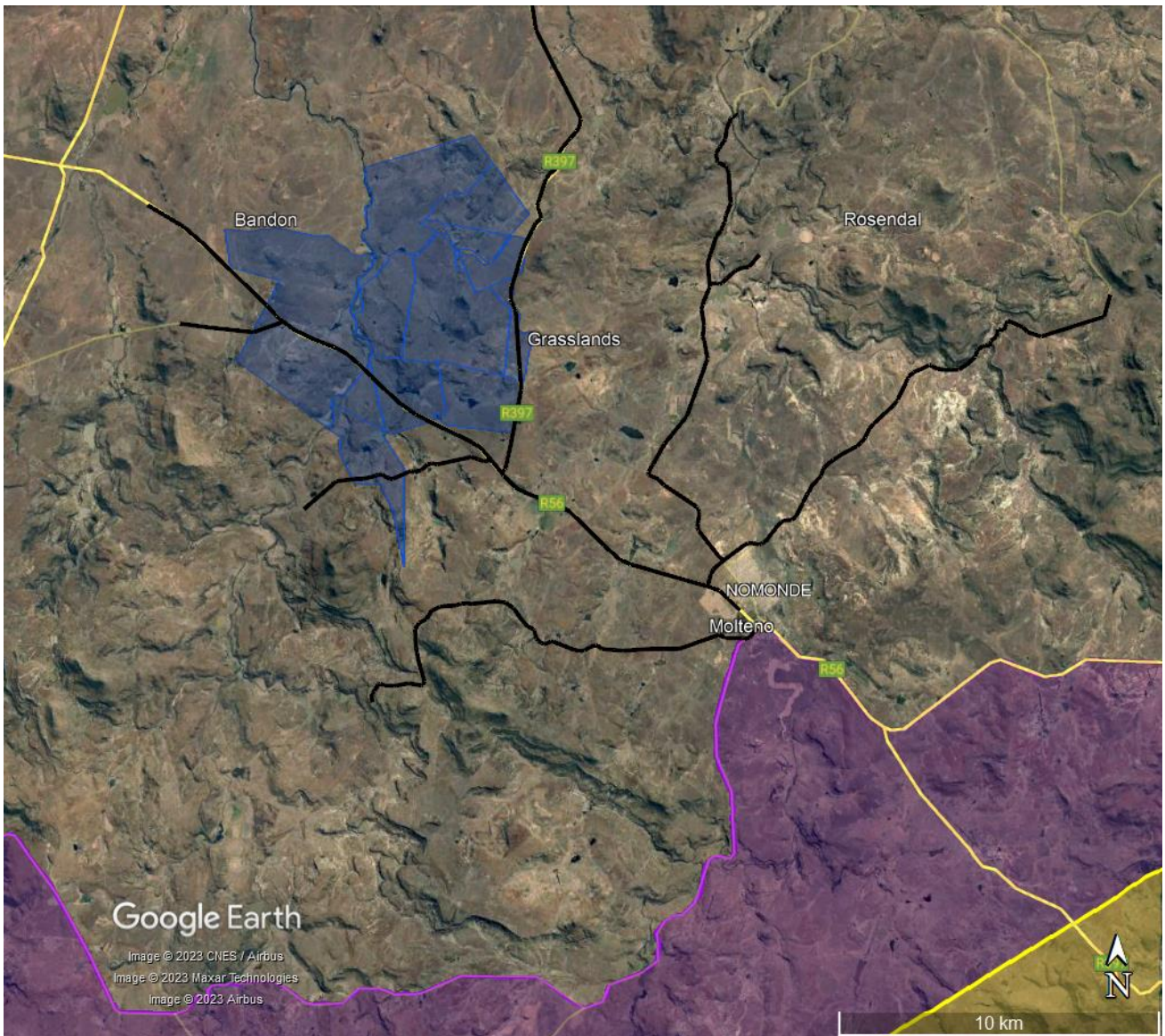
## **4. PHYSICAL ENVIRONMENTAL CONTEXT**

### **4.1. Site context**

The site lies in a rural area but is located close to the town of Molteno. Agriculture/livestock raising is the main industry in the area but in its earlier years coal mining was the dominant industry. An operational wind farm lies some 11 km southeast of Molteno. The site lies outside and to the northwest of the Stormberg Renewable Energy Development Zone (REDZ) and the Eastern Electricity Grid Infrastructure (EGI) Corridor (Figure 4).

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<sup>1</sup> The system is intended for use on archaeological and palaeontological sites only.



**Figure 4:** Map showing the location of the study area relative to the Stormberg REDZ (purple) and the Eastern EGI Corridor (yellow).

#### 4.2. Site description

The site is comprised of gently rolling plains with rocky hills protruding to varying heights. Figures 5 to 9 show the landscape.



**Figure 5:** View towards the south from the in the northern part of the site.



**Figure 6:** View towards the southwest from the western edge of the study area. The hill in view is Kissieberg (Vegkoppies).





**Figure 7:** View towards the north through the western part of the site from the R56. There is far less topographic variability in this area than over the remainder of the site.



**Figure 8:** View towards the north from a hill in the centre of the study area.



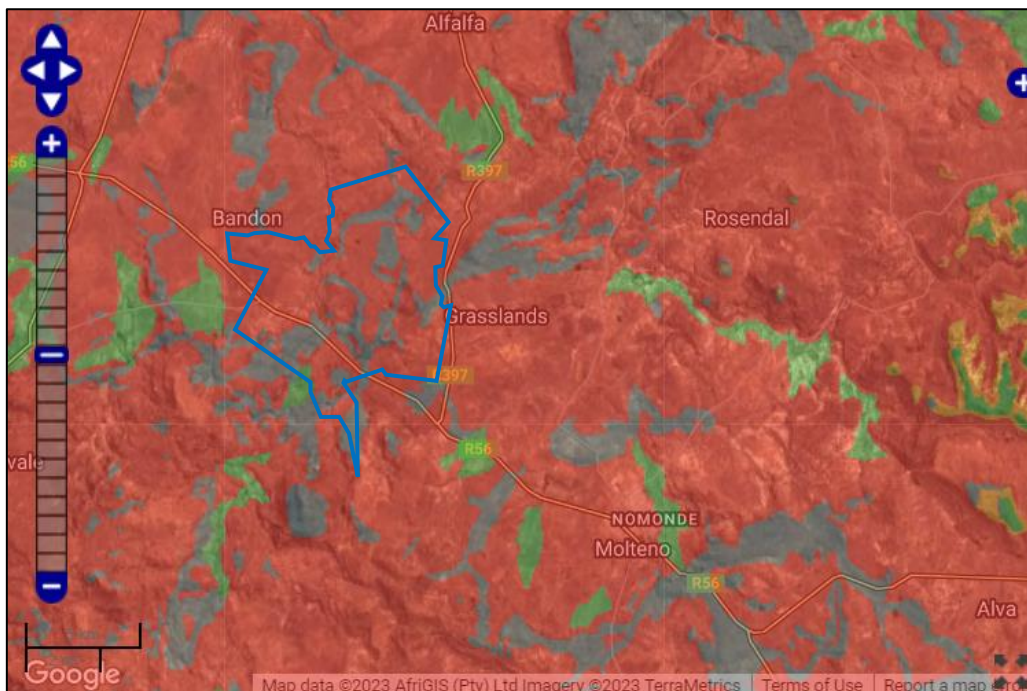
*Figure 9: View towards the southwest through the central part of the site from Kissieberg (Vegkoppies).*

## **5. FINDINGS OF THE HERITAGE STUDY**

This section describes the heritage resources recorded in the study area during the project. All individual finds are listed and described in Appendix 2 with mapping appearing in Appendix 3.

### **5.1. Palaeontology**

The SAHRIS Palaeosensitivity Map shows the site to be of largely very high palaeontological sensitivity but with small areas of medium and zero sensitivity occurring in places. The latter are where dolerite outcrops lie. Full details of the fossil and geological heritage in the area are recorded in the separate palaeontological study.



**Figure 10:** Extract from the SAHRIS Palaeosensitivity Map showing the study area (blue polygon) to be of largely very high sensitivity (red shading).

## 5.2. Archaeology

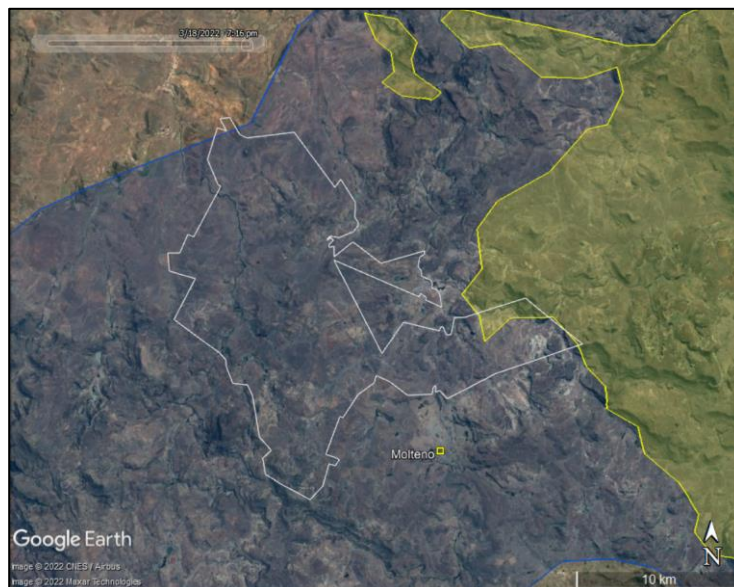
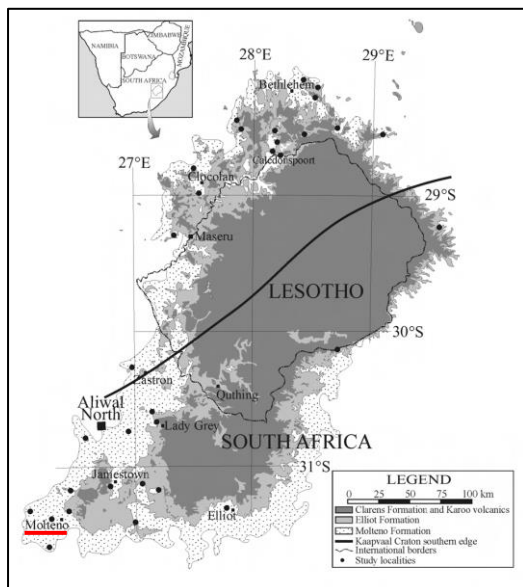
### 5.2.1. Desktop study

The nearest excavated archaeological site to the study area is called Merino Walk (Sampson 1970: 106). The cave is located in Stepelberg Kloof, a narrow valley on the southern side of the Stormberg and is situated between Dordrecht and Molteno. According to the brief description, the site was excavated in order to establish a chronology for the Later Stone Age in the area. Pottery and endscrapers had been observed on the surface. However, the excavation provided only sparse material as the cave contained a spring at the back which was found to have resulted in erosion of the deposit. Lithic numbers were very low with the formal tool component comprising mainly side and endscrapers. Sampson (1970:116) interprets the appearance of the endscaper-dominated stone industry in the upper part of Layer 17 of the site, as suggesting the arrival of a new cultural tradition with a new pattern of diet.

Rock paintings in the site included a frieze of animal and human figures. Sampson (1970:113) reported “recognizable Bantu and recognizable Bushmen” figures, as well as images of cattle, eland, wildebeest, etc. The ‘Bantu’ figures were painted in black and had flat-topped shields and clubs, while the Bushmen figures were painted in red and had bows.

Work by David Witelson to the northeast of Molteno (pers. comm. 2022) shows that rock art is more common on the Elliot Formation (Fm) Sandstone than on the underlying Molteno Fm Sandstone. These rocks tend to weather slightly differently with the Elliot Fm more likely to form rock shelters in which paintings would typically be found. He also notes that the dolerite never seems to host paintings. Bordy *et al.* (2005) have mapped these two sandstones and have shown that the Elliot Fm does not occur in the present Ingwe study area with the exception of the easternmost edge (Figures 11 & 12). Rock art is generally very common in the Stormberg region, but just one site is known to

occur within the study area, in a rock shelter near its centre (Figure 13; pers. comm. Dr L. Webley). The shelter also contained chert and hornfels flakes including a hornfels endscraper, as well as an upper grindstone, half a bored stone, and some pottery. This site falls within the Ingwe WEF2 study area and was revisited during the survey. The study area falls within the known distribution of Geometric Tradition art which has been scribed to the Khoekhoen (Eastwood & Smith 2005; Smith & Ouzman 2004; Orton 2013).



**Figure 11:** Map from Bordy et al. (2005: fig. 1) showing the spatial distribution of the Elliot (light grey) and Molteno (stippled) Sandstones. Molteno town is highlighted.

**Figure 12:** Distribution of Elliot and Molteno Formations created by superimposing the Figure 11 map in Google Earth. The Elliot Fm is mapped in yellow and the Molteno Fm in blue. The white polygon is the wider Ingwe study area.



**Figure 13:** Rock art from a small shelter above the memorial on Vegkoppie. Photograph: Lita Webley.

One other large survey has been carried out in the area to the southeast of Molteno, also for WEF development. Binneman *et al.* (2012) report scatters of Middle Stone Age (MSA) artefacts to be quite widespread in their study area but made no mention of the Early Stone Age (ESA). Later Stone Age (LSA) scatters were also seen but were noticeably associated with rocky outcrops rather than the open plains. No rock art was seen.

Historical archaeology also occurs in the region. Binneman *et al.* (2012) report stone walls, dams and house foundations, and some walling was observed in rock shelters. Historical middens were also found associated with old houses. With Anglo-Boer War (ABW) action known to have occurred in the region (see Section 5.4.1) some archaeological remnants could be expected but none were yet placed on record prior to the present assessment.

The few other projects listed on SAHRIS are all minerals-related applications and none have any heritage assessments attached to them.

### 5.2.2. Site visit

Since all the sites are individually presented in Appendix 2, this section contains only a general discussion of the various types of archaeological heritage found in the wider study area. It draws on certain examples to illustrate these types. At the end is a brief synopsis of heritage known or expected to occur in the Ingwe WEF2 study area. This approach is useful for three reasons:

- The distribution of heritage resources across the wider area is highly variable;
- The total survey coverage, although extensive, was very low and it is quite possible that many similar sites were not seen and/or recorded; and
- It provides context for the resources found within each of the various Ingwe study areas.

ESA artefacts were not seen anywhere in the study area. MSA artefacts were noted to generally occur in denuded areas where they have been revealed by erosion. The density of such scatters was variable but usually very low. Only one reasonable scatter was recorded. This was at waypoints 1889-1890 (Figure 14).



**Figure 14:** MSA artefacts from waypoint 1889. Scale in cm.

LSA deposits were absent with no rock shelter containing even a tiny deposit. However, a number of the shelters visited had at least some artefacts on their talus slopes indicating use of these shelters during the LSA. These scatters tended to be rather ephemeral. Figures 15 and 16 show an example of one of these shelters and the artefacts found there (waypoint 1643).

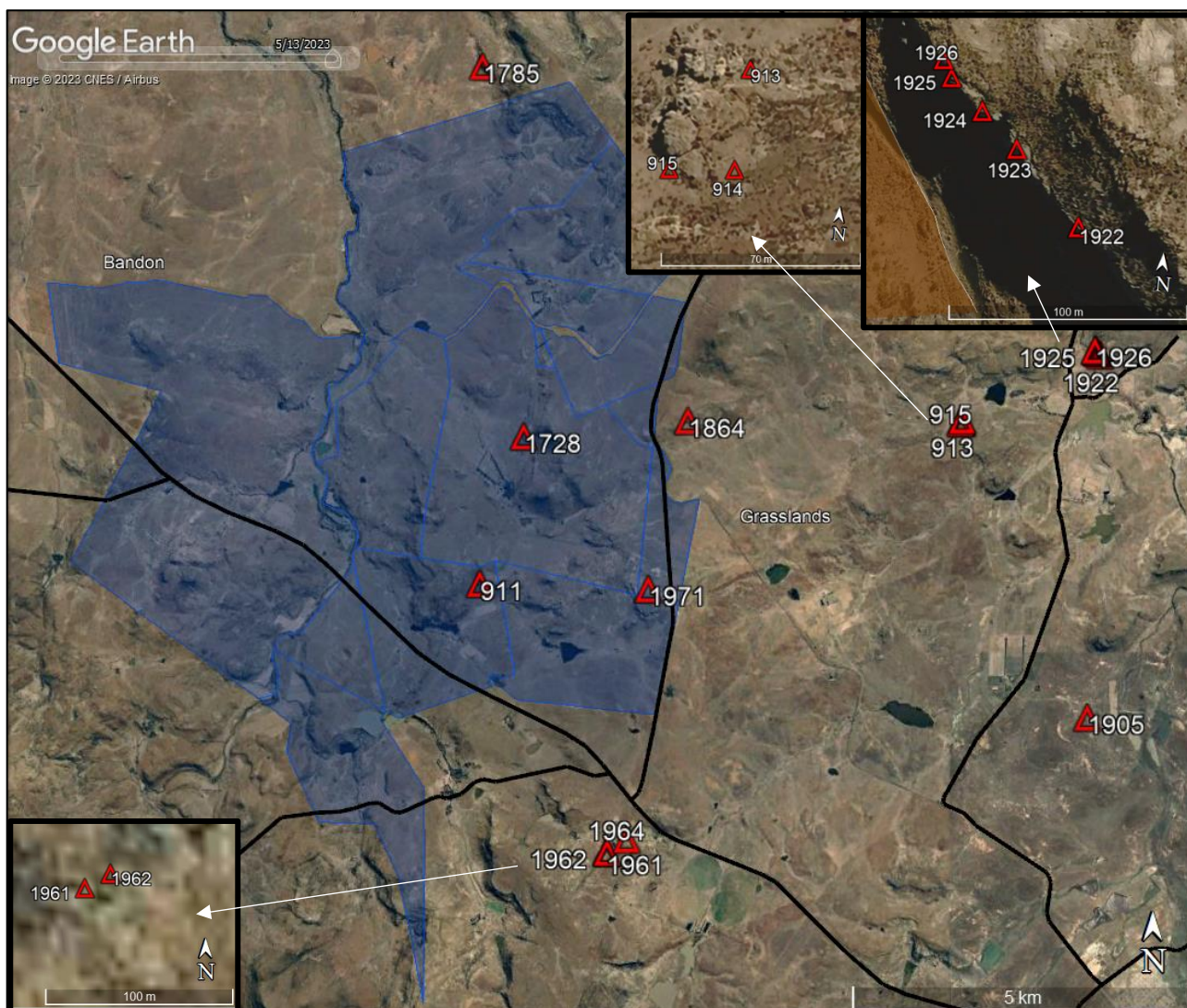


**Figure 15:** The rock shelter at waypoint 1643.



**Figure 16:** LSA artefacts from waypoint 1643. Scale in cm.

The most important Stone Age finds were rock paintings. Nine different areas within the wider study area had paintings (Figure 17). Two areas each had three sites close together and a third area was represented by a cliff with paintings scattered along about 100 m of it. This cliff overlooks a river. Several features of the rock art are worth highlighting. The vast majority of paintings were fine-line paintings ascribable to the Bushmen. However, one circular, finger-painted geometric image was also seen at waypoint 1785 (Figures 18 & 19). Whether this is a “geometric tradition” painting as ascribed to the Khoekhoen is uncertain, but it does seem likely, since the site is within the known distribution of such art. The painting at waypoint 1961 contains some aprons, a motif known from the southern reaches of the Drakensberg (Green & Eastwood 2008). As is usually the case, eland dominate the corpus of rock art (Figures 20 to 22). At waypoint 1785 there was a line of monochrome eland torsos where the other colour (this would have been white) has faded away. The site at waypoint 1905 is one of the most significant rock art sites encountered during the survey. It is the largest rock shelter and contains a large panel of polychrome eland typical of the style encountered in the Drakensberg (Figure 22). The long cliff mentioned (located at waypoints 1922 to 1926) above looks towards the west through the wider study area and contains a variety of paintings. Figure 23 shows human figures carrying various objects, while Figure 24 shows a panel of yellow and white antelope. At waypoint 1961 The last painted site highlighted here is at waypoint 1964 where a single, left-facing feline figure was painted in yellow. Its eye was painted in red (Figure 26).



**Figure 17:** Aerial view of the wider study area showing the location of all recorded rock painting sites (red triangles) relative to Ingwe WEF2 (blue).



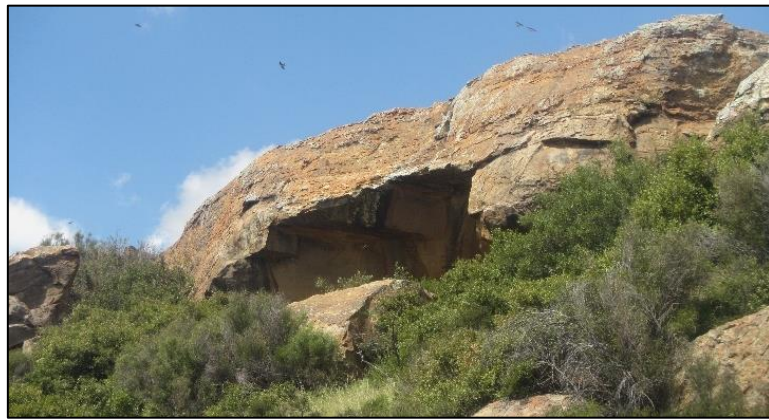
**Figure 18:** A small rock shelter at waypoint 1785 with rock paintings.



**Figure 19:** A geometric image from the rock shelter at waypoint 1785. Scale in cm.



**Figure 20:** A line of eland paintings from the rock shelter at waypoint 1785.



**Figure 21:** A larger rock shelter at waypoint 1905 with rock paintings.



**Figure 22:** The main frieze of paintings at waypoint 1905. Scale in cm.





**Figure 23:** Human figures at waypoint 1923-4. Scale in cm.



**Figure 24:** Bichrome antelope at waypoint 1923-4. Scale in cm.



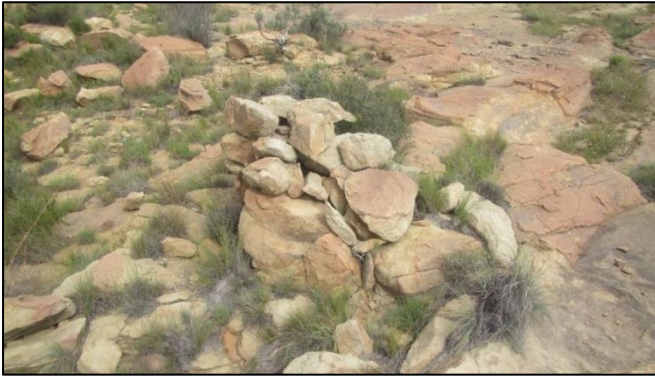
**Figure 25:** A yellow animal that looks like an elephant in the head/trunk region but might actually be a rain animal at waypoint 1961.



**Figure 26:** An unusual painting of a feline at waypoint 1964. Although not easily visible here, its eye is painted in red. Its tail is fully extended and what might be the remains of a human figure has been over-painted on the feline. Scale in cm.

The next type of archaeological heritage is stone-walled sites. A general challenge with such sites is distinguishing stone-walled structures that are related to early farming (i.e. shepherd's accommodation, boundary markers, etc) from structures related to the ABW. Many of these features were quite obviously defensive features due to (1) their positions on the landscape and (2) their relationship to other more obviously war-related features. However, those that either do not provide a good view or just do not seem to be in logically defensive positions are more enigmatic and were usually regarded as farm related.

Farming-related features take various forms including isolated cairns that may have marked farm boundaries (Figure 27), old fence lines (Figure 28), single small, informal walls of piled stones in rock shelters that might have been placed to block the wind (Figure 29), to the remains of small, informal farm structures like shepherds huts as well as larger features like kraals (Figures 30 & 31). These features were generally relatively informally made, but rare examples of ruins made from dressed stone were also seen (Figure 32). Ruins like the latter were seldom seen but are probably more common than the surveys suggest because most will be located close to existing farmsteads which were generally not examined.



**Figure 27:** A small stone cairn at waypoint 1770 with no obvious function and assumed to relate to farming activity.



**Figure 28:** These stone were packed along the base of a fence line at waypoint 1974.



**Figure 29:** Small piled stone wall, likely a windbreak, in the rock shelter at waypoint 1785 (see Figure 18).



**Figure 30:** Stone walling placed around a small rock shelter at waypoint 1687, perhaps to keep animals inside



**Figure 31:** A large stone-walled kraal built at the base of a low hill at waypoint 1771.



**Figure 32:** A ruined stone-walled kraal at waypoint 904 built with dressed stones.

The study area also contained large numbers of stone-walled features related to the ABW, and specifically to the Battle of Stormberg and the defence of the Stormberg Junction by the Boers (the historical details are reviewed below). In his description of the battle, one soldier quoted by Wilson (1900:123) mentions “a stone wall held by the enemy” near the top of the hill which confirms that the stone walls relate to the ABW. These features range from very small, informal walls built to conceal a single soldier lying on the ground (Figures 33& 34), to longer walls behind which many men could hide (Figures 35 to 37), to small circular enclosures that might have concealed a few men (Figure 38), to fully-fledged forts built with drystone walls and loopholes (Figure 39). Altogether, Boer War features occur over an area covering some 4 km west-east by 7 km north-south with the vast majority of them being along the ridges and hilltops which afforded good views over the Stormberg Junction as well as towards Molteno to the southeast (Figures 40 & 41). In the centre of the southern part of this distribution is the actual Battle of Stormberg site. Figures 42 to 46 provide a sense of the landscape context of these defensive positions.



**Figure 33:** A small stone wall at waypoint 857.



**Figure 34:** Tiny stone enclosure with a loophole built into it at waypoint 1741.



**Figure 35:** *Low stone wall perched on the edge of a cliff at waypoint 861.*



**Figure 36:** *Small semi-circular stone wall on a hilltop at waypoint 858.*



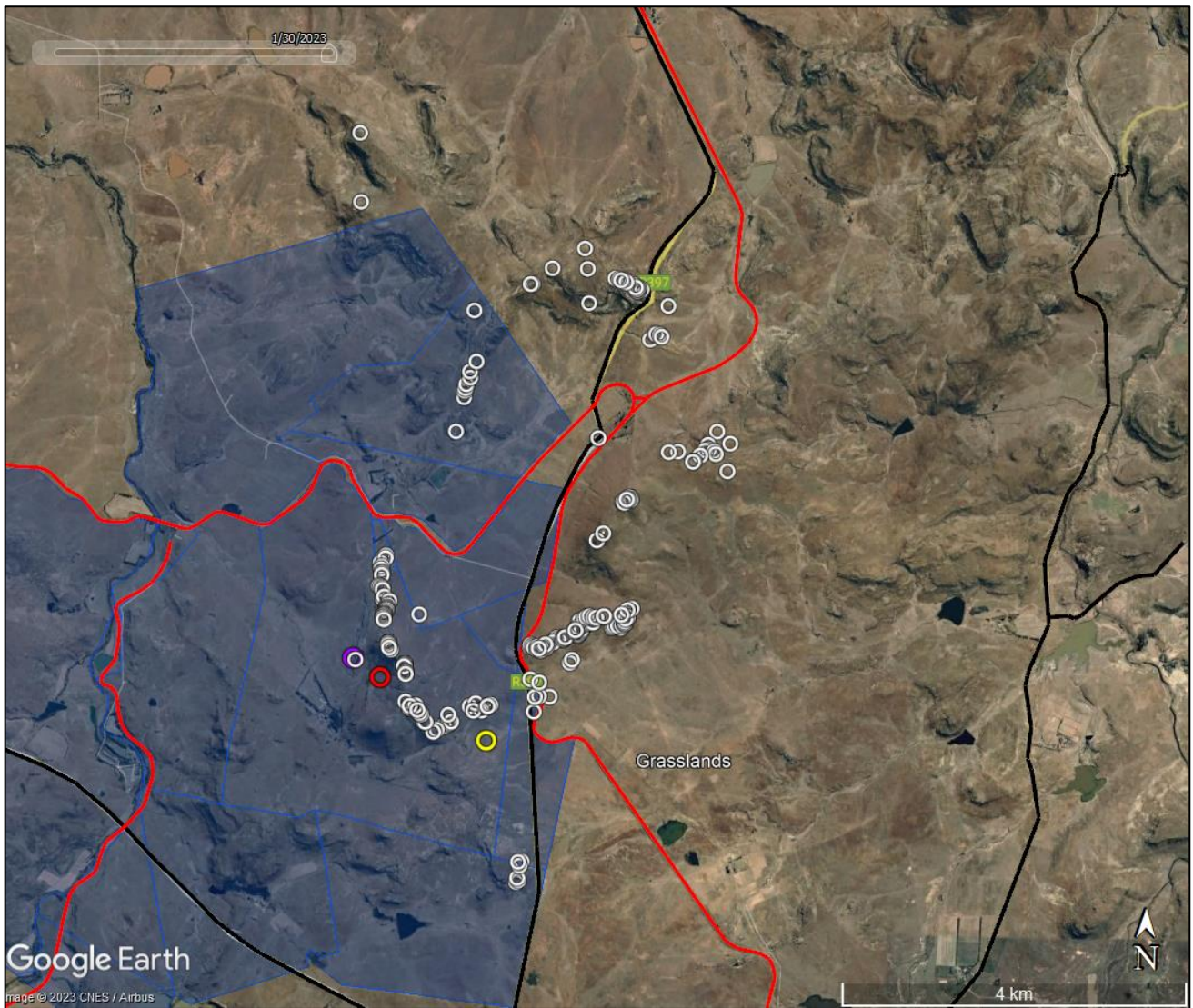
**Figure 37:** *A larger stone wall on a hilltop at waypoint 867.*



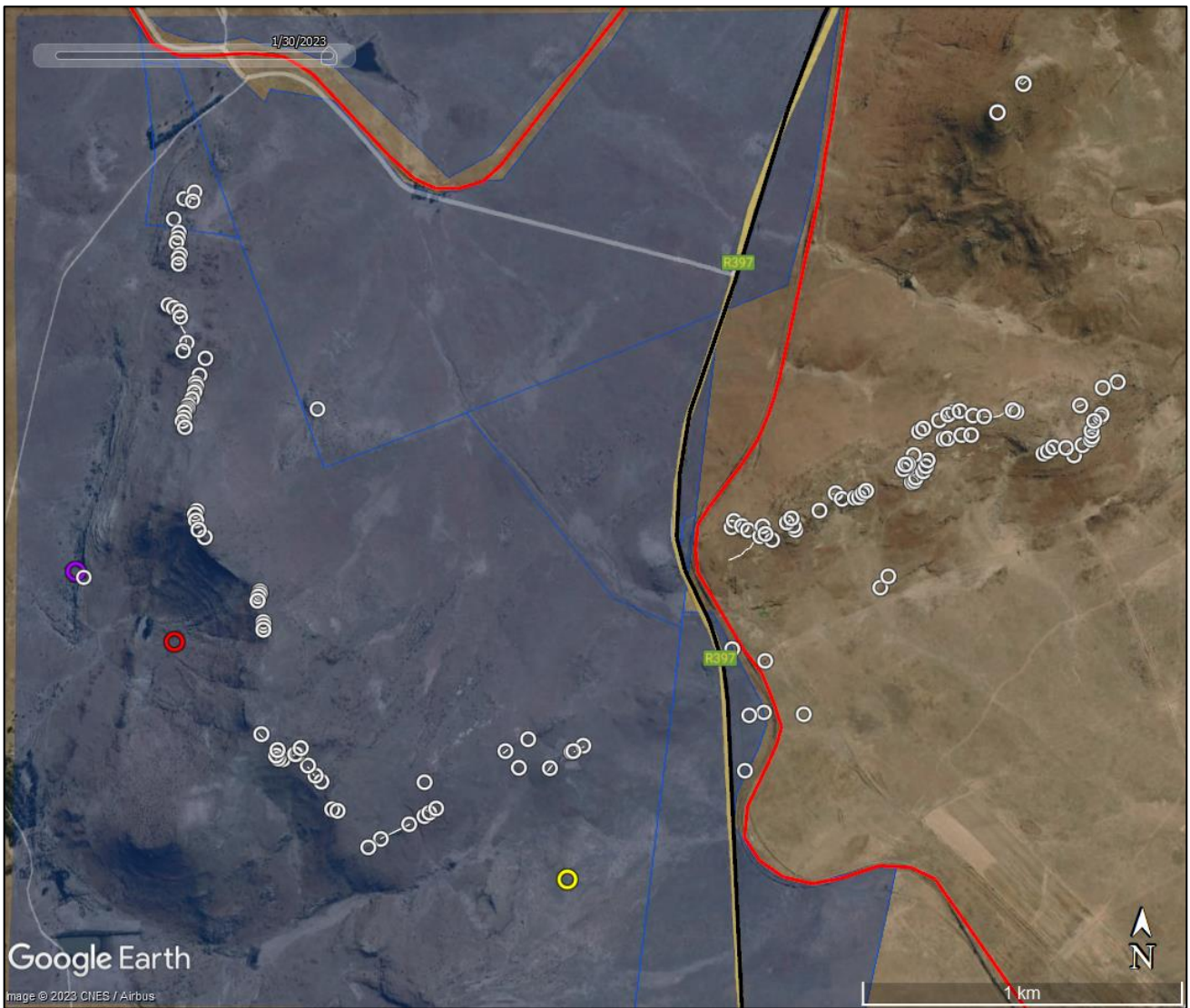
**Figure 38:** *The remains of a small fort on a hilltop at waypoint 863.*



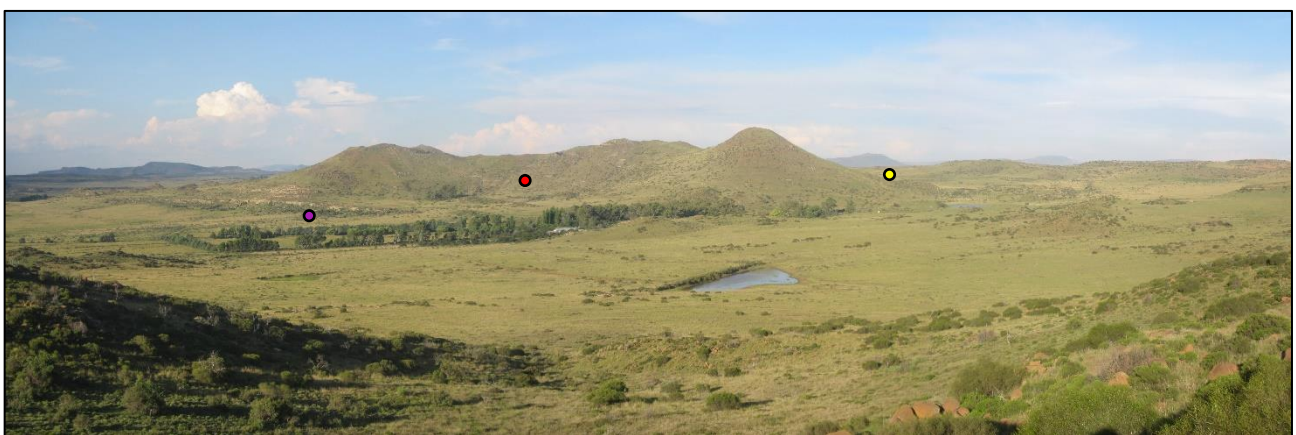
**Figure 39:** *A proper fort built with drystone walling and including loopholes at waypoint 1683.*



**Figure 40:** Aerial view showing all ABW-related sites recorded (white circles) relative to Ingwe WEF2. The probable position of the Boer Lager (yellow), the probable point of engagement between the Boers and British, and the location of the Battle of Stormberg Memorial (purple) are highlighted. The railway lines are shown by red lines. Rooi Kop lies immediately southeast of Stormberg Junction, while the point of engagement is on Kissieberg (Vegkoppies).



**Figure 41:** Enlargement from Figure 40.



**Figure 42:** View towards the east of the heavily fortified hill (Vegkoppies/Kissieberg) overlooking Klipfontein Farmhouse (located within the trees). The battle is assumed to have taken place on the slopes of the hill facing the camera (red dot). The purple dot indicates the Battle of Stormberg Memorial and the yellow dot is the approximate location of the Boer laager.



**Figure 43:** View towards the north from the northern summit of Vegkoppies/Kissieberg (left hand summit in Figure 42). Stone-walled fortifications lie along the rocky sections all down this ridge.



**Figure 44:** View towards the south from a fortified ridge directly over Stormberg Junction with the equally heavily fortified Rooi Kop in the background. Rooi Kop is the highest point in the study area at 1810 m.



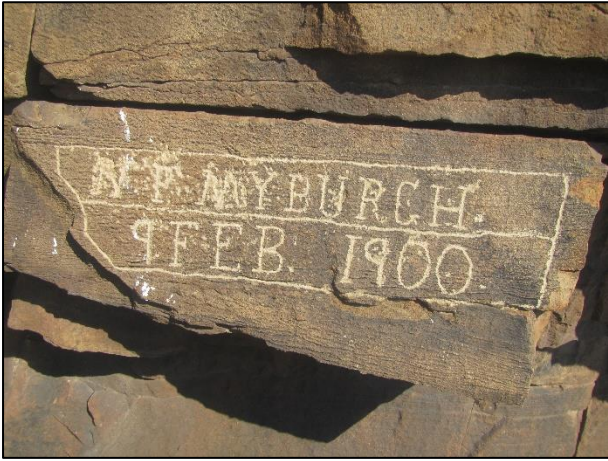


**Figure 45:** View towards the southwest of the heavily fortified hill that looks down over the Stormberg Junction which lies behind the left hand end of the hill in this view.



**Figure 46:** Looking towards the west at the ‘naturally fortified’ eastern end of the hill shown in Figure 45. This natural bastion is 1.2 km due north of the junction. The Figure 44 photograph was taken from this outcrop.

Some historical graffiti was also recorded. One site was a rock shelter at waypoint 1698 that bore many names engraved on the rear wall and on large rock slabs (Figures 47 to 50). The bulk of the dates suggest a group stationed there on 8<sup>th</sup> to 10<sup>th</sup> February 1900, but one date is from 1908. Most of the names are Afrikaans, but one person, W. Fahey, who added his number and regiment – “N1904” and “3 Lien. Regt” respectively – must have originated in Ireland (AngloBoerWar.com [2023] identifies W. Fahey as part of the 3<sup>rd</sup> Battalion Leinster Regiment, while National Army Museum (n.d.) tells us that the Leinster Regiment was from the Irish province of Leinster. Another rock shelter at waypoint 919 was also found to have historical graffiti. The names and dates in this case were older and ranged from 1845 to 1877.



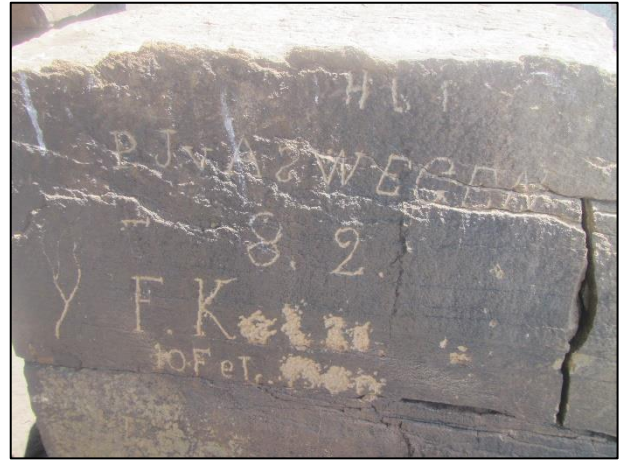
**Figure 47:** Historical graffiti from waypoint 1698.



**Figure 48:** Historical graffiti from waypoint 1698.



**Figure 49:** Historical graffiti from waypoint 1698 with some having been obliterated.



**Figure 50:** Historical graffiti from waypoint 1698. Note the reversed "s" in the name P.J. v Aswegen.

The next type of archaeology present in the area is the ruins of other built heritage resources. Figures 51 and 52 show two views of the ruined house at the Stormberg Junction. This was very likely related to the railway and probably housed the person responsible for the junction. Figure 53 shows a larger stone structure located adjacent to the old Bamboes Station which is now completely derelict and disused (Figure 54).



**Figure 51:** The ruins of a late 19<sup>th</sup>/ early 20<sup>th</sup> century house at the Stormberg Junction at waypoint 1660.



**Figure 52:** The ruins of a late 19<sup>th</sup>/ early 20<sup>th</sup> century house at the Stormberg Junction at waypoint 1660.



**Figure 53:** Ruined structure at the Bamboes railway station at waypoint 1887. Its function is unknown.



**Figure 54:** The remains of the Bamboes Railway Station at waypoint 1888.

### 5.3. Graves

As expected for most large surveys, Binneman *et al.* (2012) recorded graves in their survey to the southeast of Molteno. Graves were also found during the present study and include the Battle of Stormberg Memorial at waypoint 1729 (Figure 55). It is unclear whether soldiers were actually buried there or if the site is purely a memorial but it is listed as a graveyard by the Genealogical Society of South Africa (eGGSA n.d.). Sadly, the site has been walled with pre-cast vibracrete walling and paved with cement slabs which detracts from its character. One farm graveyard was recorded at waypoint 1788 (Figure 56) and less formal farm workers' graveyards were recorded at waypoints 1802 and 1927 (Figures 57 & 58). In a few places isolated standing stones were seen that could represent graves. Figure 59 shows an example. In the absence of evidence for their not being graves and for precautionary reasons, they were regarded as potential graves.



**Figure 55:** The recently-walled Battle of Stormberg memorial/cemetery at waypoint 1729.



**Figure 56:** A family graveyard at waypoint 1788.



**Figure 57:** *An informal graveyard at waypoint 1802.*



**Figure 58:** *An informal graveyard at waypoint 1927.*



**Figure 59:** *An isolated stone that might represent a grave at waypoint 1958.*

## **5.4. Historical aspects and the Built environment**

### **5.4.1. Desktop study**

Although the Bamboesberg of the north-eastern Cape offered running streams, sweet pasturage and warm, wet summers, it had been largely devoid of trekboer settlement until the 1820s. This was because of its harsh geography and a climate bordering on semi-arid with extremely harsh winters that brought occasional snow and frost until November (Gibb 2014:18). More importantly, there had been ongoing conflict between immigrant trekboers and San groups who used it as a summer hunting ground and a place of refuge from Boer commandos (Roux *et al.* 2019).

Surveyor General diagrams for the farms to the northwest of Molteno indicate that title had generally been granted by about 1850 or 1851, but some farms, such as Overwacht had been surveyed as early as 1839. Initially, it was a good stock farming district and it grew into an established wool producing area. Prior to the discovery of coal, it was one of the most important agricultural areas in the Cape Colony.

Molteno is situated on the Stormbergspruit in the (historically named) Albert District and is the location of South Africa's oldest coal mines which date to the late 19<sup>th</sup> century. Coal finds had been made in the area in the 1850s but by 1879, coal had been found on 18 farms in the district and by 1880 numerous formal mining companies had been established (Gibbs 2014).

Many 1820 settler descendants entered the area as traders, artisans, prospectors or businessmen and one of these was George Vice. He became aware of coal on the farm Cyphergat in 1859 and began developing his interests in mining. Mining started at Cyphergat some 5 miles south of Molteno in 1865 and the Cyphergat Coal Mining Company was formed. Vice bought Perdekraal in 1865 and opened the Penschaw mine on the neighbouring farm Onverwacht in 1868. The first proper coal mining commenced in 1880 and coal was transported to towns in the Colony. Although the Molteno-Indwe Coalfield was the first to be discovered, it is the least economically important coalfield in South Africa and is an isolated, younger deposit than the other coalfields further north (Prévost 2013).

The coal attracted an influx of people and in 1874, Vice planned the town of Molteno on his farm Onverwacht. It was officially founded in 1875 and named after John Molteno, the first Prime Minister of the Cape (Raper n.d.). Unusually, this town was founded largely in recognition of the need for a 'central place' rather than as a church town like so many others in South Africa (Myburgh 1978). The local coal was declared to be of 'superior quality' by 1879, but, despite these claims, the coal is generally considered to be of low grade in comparison with other sources and is the reason for the lack of formal development of the coal mining industry there (Cobban *et al.* 2009). A small-scale commercial mine has operated since 2008 at Indwe to the east and Government has recently considered the large-scale development of the Molteno-Indiwe Coalfields but pollution is a concern (Daniel 2020).

In 1896, a company of investors from Johannesburg opened the Cape Collieries to the southeast of Molteno. The coal diggings are recognised by deep pits dug into the earth, mining infrastructure, the houses of the workers and mine managers, and large amounts of historic debris including glass, ceramics, and other historical refuse. Figures 60 and 61 show examples of mining infrastructure that could occur in the area. Analysis of aerial photography shows various disturbed areas but it is not possible to tell whether these are historic coal diggings or more recent borrow pits for road gravel. Historical mining is shown in Figures 62 and 63.



**Figures 60 and 61:** Examples of the coal mining industrial heritage which can be found throughout the area. These are from the Cape Collieries site. Photographs by Dr Lita Webley.

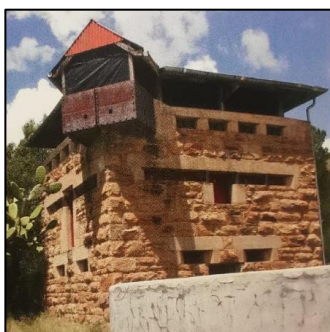


**Figures 62 and 63:** Photos of coal mining at various locations around Molteno in the late 19th and early 20th century.

The town of Molteno and its mining camps, quickly became populated with immigrants from England, Scotland and Wales. These miners entered an area already settled by Afrikaner farmers as well as Thembu and Khoekhoen tenant farmers and labourers. The majority of labourers came from the Transkei. However, in time the authorities became less content with the quality of the Stormberg coal. Increasingly mining companies were leaving Molteno for the Reef and Rhodesia. By 1910, the coal industry had almost collapsed.

Shortly after the discovery of coal, a railway was constructed to the coal fields and had a major impact on the town, as it ultimately connected Molteno with the diamond fields of Kimberley, to which much coal was shipped. The emergence of coal mining in the Stormberg is integrally connected to the expansion of the railway. The eastern railway line had reached Queenstown in 1880. In 1882, it was extended across the Bamboeshoek, reaching Molteno in 1884. In 1888, after the Colonial government confirmed that the Stormberg junction, 11 miles north of Molteno, would be the departure point to Middelburg, Molteno experienced an economic boom. Vice even built a railway line, a mile and a half long, just north of Molteno station to the mine on his farm. By the 1920s the extended railway line allowed access to the better quality coal from further northeast and mining in Molteno declined (Knowles & Knowles 1936).

There are a number of historic buildings at the Stormberg Junction with one of them having hosted a school which opened in 1898 (this latter is to the southeast of the junction and aerial photography shows that currently it has not had a roof since at least 2008). There are also two blockhouses built to protect the Stormberg Junction. One occurs at the complex of buildings to the southwest of the Stormberg Station (Figures 64 to 66), while the other is at the north-eastern end of the Junction.



**Figure 64:** A blockhouse at the Stormberg Junction.  
Source: Von der Heyde (2013:302).

**Figures 65 & 66:** Historic buildings at the Stormberg Railway Junction. Photographs by Dr Lita Webley.

A key part of local history is the Battle of Stormberg which took place within the wider study area. In 1899, war broke out between Britain and the Boer republics and spilled over into the Cape colony. Gibb (2014) describes the heightened tensions between the Afrikaans farmers and the English entrepreneurs in Molteno. As the gulf widened between them, the English town of Molteno became the first line of defence in the north-eastern Cape. Molteno braced itself as British and Boer forces focussed on the occupation of the Stormberg railway junction. The railway line was an important route for British troops and supplies and hence a target for Boer forces. The British had already occupied the Stormberg railway junction but after they had withdrawn, it was taken by the Boers. Wilson (1900) notes that a commando of about 1500 Boers arrived from Burghersdorp to sieze Stormberg Junction on 26 November 1899. In an attempt to retake the junction, the British planned to embark on a night march from Molteno to the Stormberg, taking the Boers by surprise. Various versions of how the battle played out have been written by different authors, with some even providing details that, after the field survey, seem contradictory. Davitt (1902), perhaps, provides the most reliable one. Importantly, he notes that pro-British sources claimed that there were false guides who were sympathetic to the Boers but this was not the case for the British were able to reach their target undetected by all but a farm dog who, unfortunately for them, barked and woke two Boers. As an example, Wilson (1900:118) notes that the guides “proved hopelessly untrustworthy”. He also mentions that Gatacre was delayed by one day, having planned his attack for the early hours of the 9<sup>th</sup> of December, and that this delay may have resulted in the Boers being forewarned of the potential attack. Even Pakenham (1993:119) in his well-known work states that “the column had lost its way; Gatacre had pressed on, and at dawn found himself at the mercy of the enemy”.

Davitt (1902) notes that three road options presented themselves to General Gatacre. One went northwards from Molteno towards Burghersdorp and would have been impractical for the purpose. The central option was the most direct route from Molteno to the Stormberg Junction. It followed the railway line and passed between hills guarded by the Boers which would have made it too risky. The southernmost route was the main road linking Molteno with Steynsberg and running through the Klipfontein farm. It was this route that they took. It was the longest, but safest, route and Davitt (1902) thinks that the British mis-calculated the amount of time it would take to reach their objective. The Boers woken by the dog fired on the rear part of the British column, causing panic and uncertainty over the size of the force that had surprised them from behind. Soon realising that the vast majority of the Boers were actually still ahead, they began firing on the hills. However, the Boers were well-concealed and their own fire killed many of the British soldiers below. Some British then attempted to move west<sup>2</sup> around the hills but were surprised there by further Boer forces who, on hearing the sound of guns, had rapidly proceeded towards Stormberg from their post some miles to the west. These 50 men under Du Plooy attacked the British from the west and, on thinking that this was a far larger force, the British troops surrendered. Eight officers and 300 soldiers were captured by Du Plooy. Some more of Du Plooy’s men then moved across the Molteno road and attacked the Irish Rifles. This created further panic and resulted in Gatacre beating a hasty retreat to Molteno. They were pursued by some Boers who captured two Armstrong guns and an ammunition wagon. Maps of the Battle are shown in Figures 67 and 68. The former, from Wilson (1900), is incorrect. Wilson

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<sup>2</sup> West does not make complete sense and north is the more likely direction of travel to move around Kissieberg.



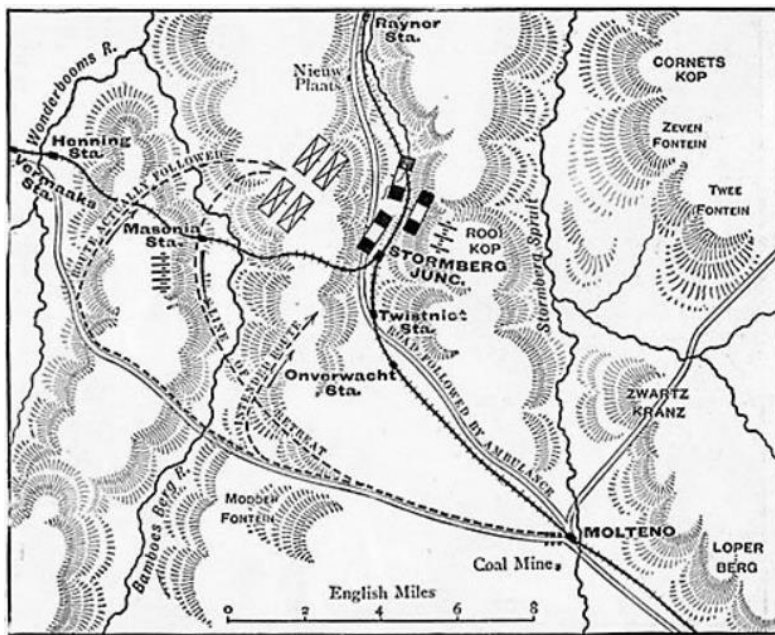
states in his text and on the map that the British engaged the Boers at Rooi Kop, but this was not the case. The battle was actually fought at Kissieberg which is today labelled ‘Vegkoppies’ on the 1:50 000 topographic map (Figure 1; this name change occurred between publication of the 1947 Edition 1 and 1972 Edition 2 maps). Wilson’s layout of the mountains, rivers and railways suggests that he may have compiled his map from oral testimony (his source is not stated). This is reinforced by the drawing of the British retreat which shows the Boer position to be atop a tall cliff (Figure 69), the likes of which – our survey showed – cannot be found in the area. Furthermore, the hill is shown with its less steep slope to the right which, in reality would suggest the east. The retreating waggons appear to be travelling towards the hill which implies north, once again showing that the source was unreliable. Such errors are unsurprising considering that the official map of the area was similarly inaccurate (Figure 70). The Figure 68 map is a modern reconstruction and seems like a more reliable version, although it still has some incorrect details.

Davitt (1902) provides the figures summarised in Table 3. His number of deaths corresponds with the memorial stone that lists 26 names, but the memorial also has “9 unknown” at the end of the list (Figure 71). The Boers retained possession of the Stormberg junction but did not attempt to take Molteno. The battle was a huge loss of prestige to the British.

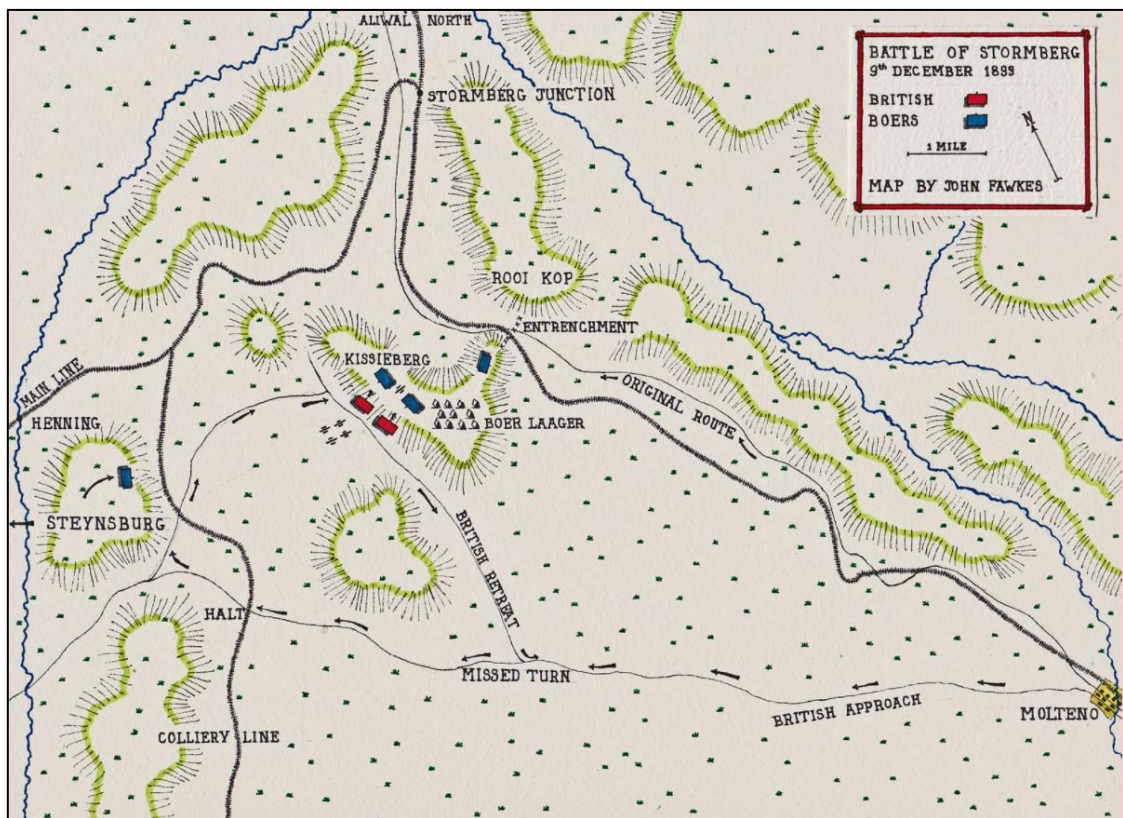
**Table 3:** Numbers of men in the Battle of Stormberg. Source: Davitt (1902).

	<b>Boers</b>	<b>British</b>
Total troops involved in the combat	c. 800.	c. 3000
Killed	5	26
Wounded	17	70
Captured	-	632

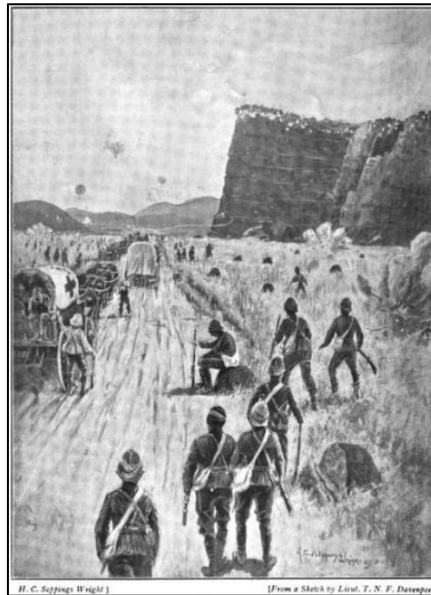
Royal Irish (2022) claims that it was a miscommunication and failure to understand General Gatacre’s plans that resulted in the guides missing the turn to the right and continuing to lead the troops up the valley, resulting in them taking longer to get into position but this would no doubt be denounced by Davitt (1902). Sources vary on the number of casualties but are not dramatically different to Davitt’s figures. Royal Irish (2022) says that the British lost 28 soldiers with a further 61 wounded, and that 634 prisoners were captured by the Boers. The Boers were said to have lost 8 men with 26 wounded. British Battles (2022) says that 26 British troops were killed, 109 wounded and 548 missing. They note Boer casualties to be trivial and unknown.



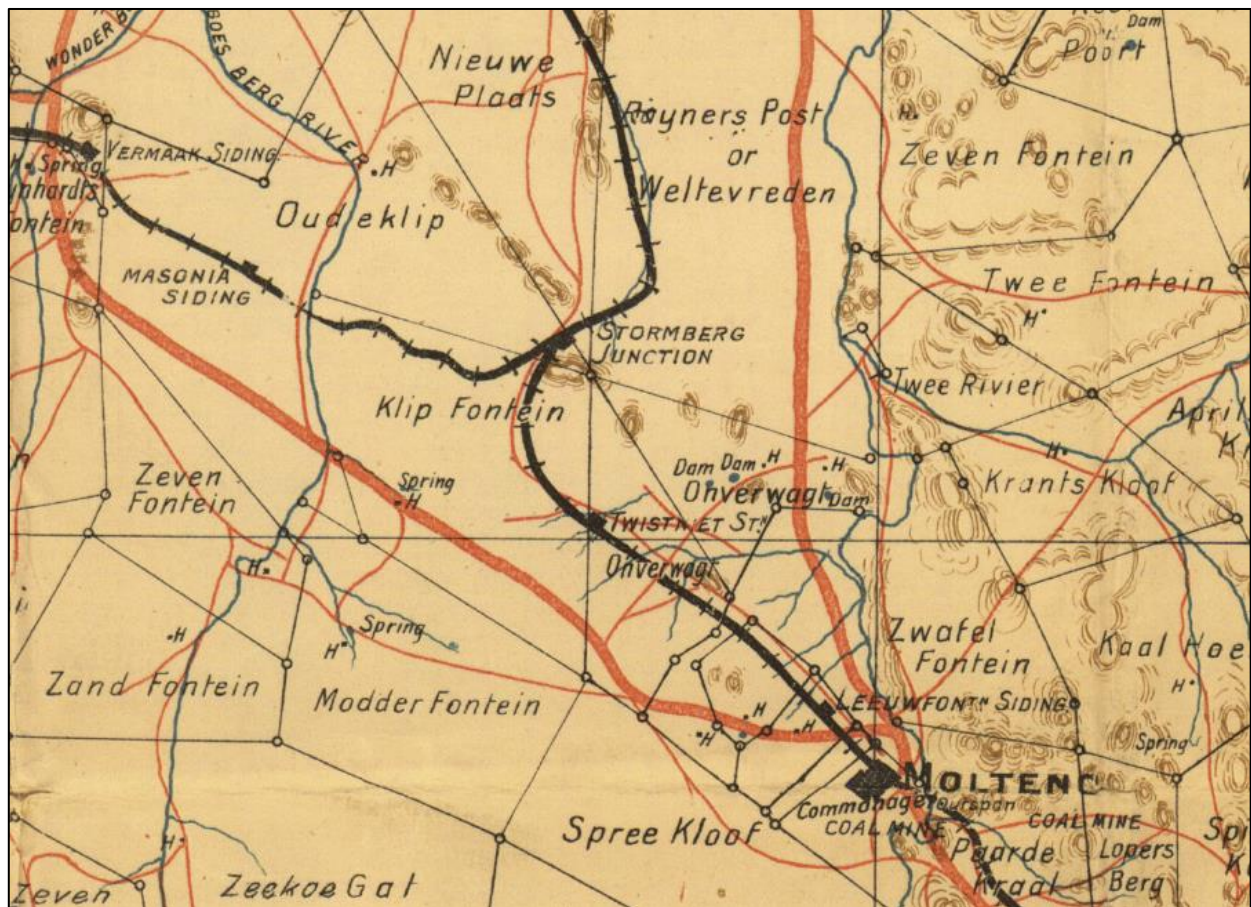
**Figure 67:** Map of the Battle of Stormberg, 10 December 1899. Boer positions = black and white boxes, British positions = boxes with cross. Source: Wilson (1902), retrieved from <https://commons.wikimedia.org/wiki/File:Wilson-stormberg-map-121.jpg>.



**Figure 68:** Illustration of the Battle of Stormberg, showing the strategic locations of Stormberg Junction, Rooi Kop and Kissieberg. Note the location of the Boer laager and the entrenchments. This map, although seemingly the most reliable, incorrectly links Rooi Kop and the low ridge to its south into a single mountain. Map by John Fawkes, *British Battles* (2022).



**Figure 69:** Drawing showing the retreat of the British from the Battle of Stormberg. It is captioned “The Retreat from Stormberg: The drawing represents the withdrawal of gun and ambulance waggons towards Molteno. The steep crags on the right were occupied by the Boers. Our men being well scattered, the enemy shells did little damage.” Source: Wilson (1900:124).



**Figure 70:** Imperial Map of South Africa, dated April 1900, showing the vicinity of the study area. The details are greatly simplified.

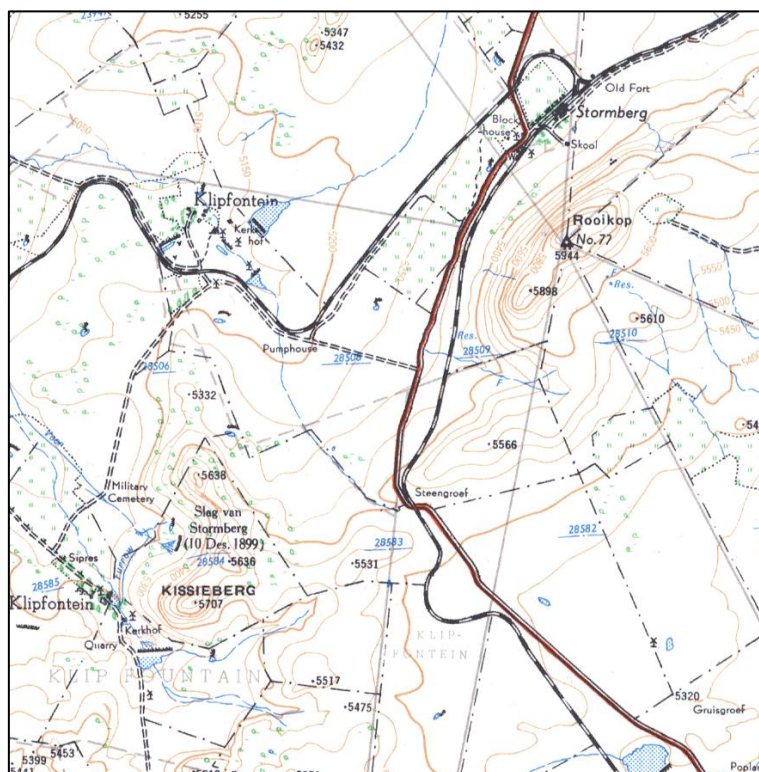


**Figure 71:** Memorial at the foot of the Kissieberg (Vegkoppies) commemorating the British soldiers who died in the Battle of Stormberg (Photograph by Dr Lita Webley).

The earliest aerial photography (Figure 72) and topographic map (Figure 73) of the area date to 1943 and 1947 respectively and show that the railway line had already been rerouted in the vicinity of the hills south of Stormberg Junction. The new R397 road had not yet been built, though, and the historical district road to the east that approximately paralleled the railway line was still in use. The topographic map marks the Battle of Stormberg site and shows the two British blockhouses at the junction as 'Blockhouse' and 'Old Fort'. We also see stone and gravel quarries marked. These were probably developed when the railway was rebuilt.



**Figure 72:** 1943 aerial photograph (40\_006\_28583) showing the newly aligned railway.



**Figure 73:** 1947 Edition 1 topographic map showing that the railway line through the study area had already been changed to its current alignment.

The only heritage survey conducted in the vicinity was by Binneman *et al.* (2012) who recorded historical houses, some abandoned, in their study area to the southeast of Molteno.

#### 5.4.2. Site visit

Many of the farmsteads in the study area include historical structures. Although most farmsteads were not examined in detail because they are always avoided by renewable energy developments, a number of farm structures were recorded. Examples are shown in Figures 74 to 80. It is notable that the older structures are all built from local sandstone with mud mortar with corrugated iron roofs. Some are in poor condition.



**Figure 74:** A restored and renovated Victorian farmhouse at waypoint 1690.



**Figure 75:** Stone-walled farm sheds with corrugated iron roofs at waypoint 1799.



**Figure 76:** Stone workers' cottages at waypoint 1800.



**Figure 77:** Stone-walled rondawel at waypoint 1881 that seems to pre-date 1945.



**Figure 78:** Stone-walled rondawels at waypoint 1884 and whose age is uncertain.



**Figure 79:** Stone-walled farm sheds at waypoint 1916. The sagging ridgeline shows that the roof trusses are collapsing.



**Figure 80:** A stone-walled barn at waypoint 1957 whose end had recently collapsed and was being rebuilt using the same materials (stone and mud mortar).

Several built heritage resources occur at the Stormberg Junction. Some have been renovated and are in use, while others are derelict. Some ruins also occur and were discussed in Section 5.2.2. Of particular note here are the two British blockhouses located to the north and south of the junction (Figures 81 & 82).



**Figure 81:** Infrastructure at the Stormberg Junction to the northeast of waypoint 1660. It includes a British Blockhouse (background; this is the northern blockhouse) and a raised metal structure that was probably a water tank (foreground).



**Figure 82:** *The southern blockhouse at waypoint 1659 which has been renovated for use as tourist accommodation.*





*Figure 83: Structures at waypoint 1659 at the Stormberg Junction.*



*Figure 83: Structure at waypoint 1659 at the Stormberg Junction. Although of modern materials, this structure predates 1943.*



**Figure 84:** Modern railway structures at waypoint 1661. They seem to post-date the 1959 aerial photography.

The historical roads and railways of the area are also heritage resources, not only for their tangible heritage value, but because of their association with the ABW. This applies especially to the railway lines and junction with the latter being the reason for the battle of Stormberg. Given that the railway line has been slightly rerouted (in places) and rebuilt during the 20<sup>th</sup> century, the rails and ballast are not of significance. However, the lines lie on top of berms built in the 19<sup>th</sup> century, some sections of which were abandoned during the 20<sup>th</sup> century rerouting. There are also many bridges which were built during the 19<sup>th</sup> century and are thus significant. While their construction methods and materials differ, all those along the railway are likely to be original. Figures 85 to 94 show a selection of features related to roads and railways.



**Figure 85:** Small bridge built of stone slabs along the old district road at waypoint 1811. Some slabs have broken and caved in.



**Figure 86:** Opposite side of the bridge shown above (waypoint 1811). On the side of the left-hand slab in view is inscribed "GEBOU DEUR PJ COETZER".



**Figure 87:** View along the historic and now abandoned railway berm at waypoint 1657. The new railway alignment is visible in the background.



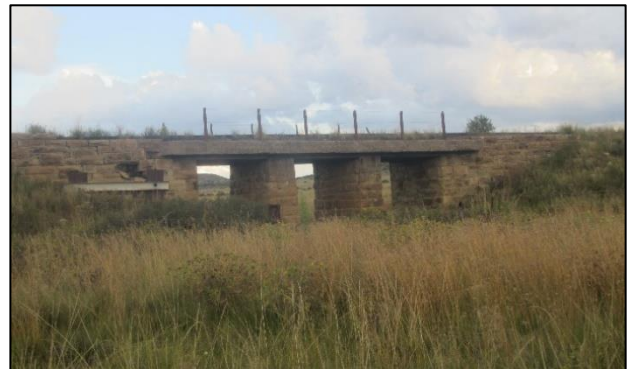
**Figure 88:** A railway bridge at waypoint 1636 with concrete walls and steel/cast iron deck.



**Figure 89:** A railway bridge with stone walls and a concrete deck at waypoint 1786.



**Figure 90:** A railway bridge at waypoint 1787 with stone walls and central pillar and a steel/cast iron deck.



**Figure 91:** A railway bridge at waypoint 1886 with stone walls and pillars and a concrete deck.



**Figure 92:** A likely mid-20<sup>th</sup> century road bridge at waypoint 1793 along the old district road.



**Figure 93:** A railway bridge at waypoint 1794 with stone walls and pillar and a concrete deck.



**Figure 94:** A stone railway bridge with arches at waypoint 1813. A concrete deck has been laid over the stonework. The wing walls are also of stone.

## 5.5. Cultural landscapes and scenic routes

There are several aspects to the cultural landscape that need to be considered here; they will be dealt with in order of age. The oldest is the precolonial landscape of rock art. Because rock art is a visual resource, the local context of the sites and their views need to be considered. There are some highly significant rock art sites in and around the study area and new infrastructure placed too close to the sites can compromise the experience of these sites. In this regard, the view out from a rock shelter is obviously more important because it is from within the site that both the paintings and the landscape setting are appreciated at the same time.

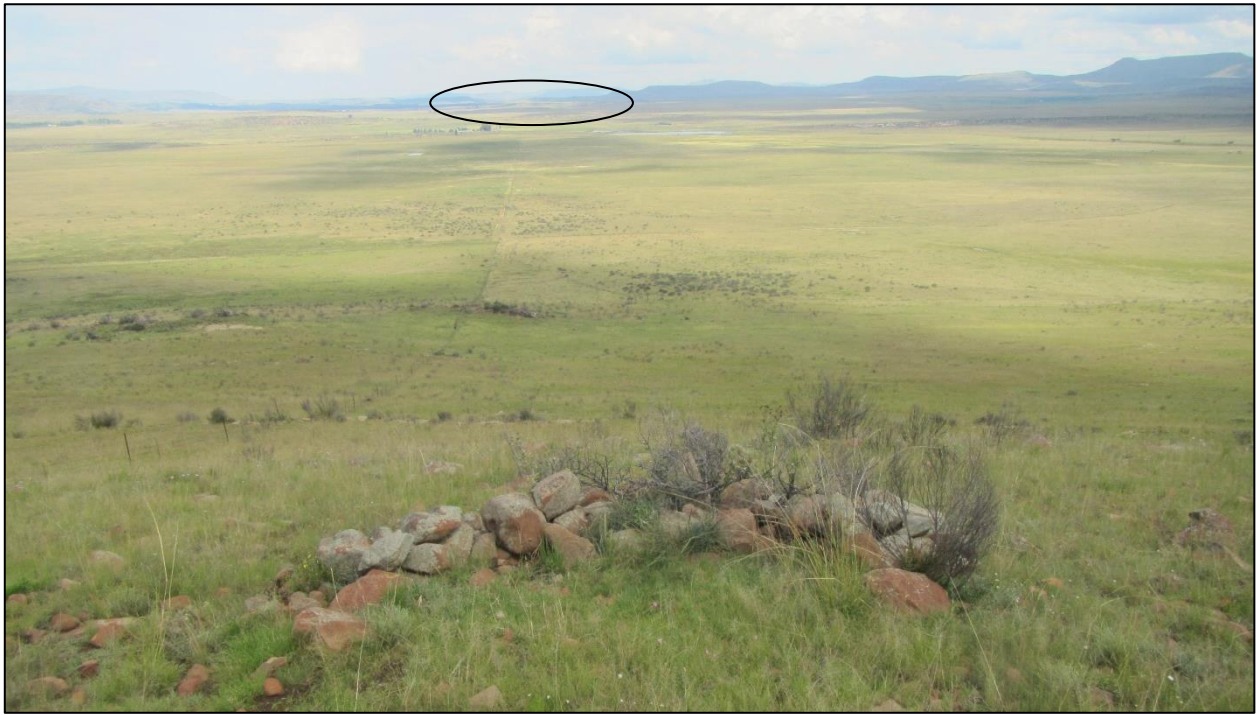
The second aspect of the landscape is the ABW landscape related to the defence of the Stormberg Junction and Battle of Stormberg. This landscape is comprised of vast numbers of stone-walled sites of varying size and nature. The Boers simply moved stones about in order to fashion their defences

from natural materials in the natural landscape. This was part of the key to their being difficult to see. Natural stone piled on top of natural rocky ridges provided excellent camouflage. The defensive strategy of the Boers was dictated by the landscape which allowed them to surround the junction with high-lying positions and gave them an excellent view over it (Figure 95) and over the approach from Molteno (Figure 96). Figure 40 illustrates the Boer use of the landscape to surround the Stormberg Junction.



**Figure 95:** View from waypoint 1938 on the summit ridge of Rooi Kop. The two British Blockhouses are arrowed and the star lies in the middle of the Stormberg Junction. The rocks in the foreground are a Boer defensive position.

A third aspect of the cultural landscape is the historical rural landscape of agriculture. The early coal miners also left some traces on the landscape but none seem to be present in the wider Ingwe study area. Therefore, although an important part of the regional landscape, mining landscape is of no concern here. The agricultural landscape has resulted in widely spaced farmsteads accompanied by groves (Figure 97) or lines of trees (Figures 98 & 99). These trees act as markers in the landscape, signalling the presence of houses and areas of greater human activity. They also contribute visual interest to the landscape which, naturally, does not have much large vegetation.



**Figure 96:** View from waypoint 1831 on a small unnamed ridge overlooking the approach from Molteno (town in the oval). The railway line leading from Molteno is out of view to the right. The stone wall in the foreground is a Boer defensive position.



**Figure 97:** Aerial view of the Vegkoppies Farmstead on the farm Klip Fountain showing the many planted trees and four farm dams (arrowed).



**Figure 98:** A tree line and stone wall mark the entrance to the Oude Klip farmstead at waypoint 1881 on Oud Klip 44.



**Figure 99:** A row of gum trees at waypoint 1695 on the farm Klip Fountain 40.

The next consideration is an entirely modern one. This is the landscape of electrical infrastructure. Importantly, although a WEF already lies to the southeast of the Ingwe study area (and indeed to the



southeast of Molteno town; Figure 100), the study area does not fall within a declared REDZ (see Figure 4). It is very close to the REDZ, however, so an increase in electrical infrastructure is expected to occur in the area and is, in fact, encouraged so as to keep renewable energy facilities clustered in certain designated locations. This factor ties most strongly to the final consideration which is that of scenic routes. The R56 leading into Molteno from Steynsburg to the west is regarded as a scenic route. It is the primary access, and only tar road, to the town. It thus offers the main opportunity to appreciate the rural landscape character and sense of place that the region has to offer.



**Figure 100:** View towards the southeast from within the Ingwe study area showing the existing WEF located beyond Molteno. This gives a sense of how the landscape would be altered with the addition of a WEF in the current study area and shows that the renewable energy land use has already been established.

## **5.6. Ingwe WEF2 summary of findings, statement of significance and provisional grading**

Section 38(3)(b) of the NHRA requires an assessment of the significance of all heritage resources. In terms of Section 2(vi), “cultural significance” means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. The reasons that a place may have cultural significance are outlined in Section 3(3) of the NHRA (see Section 2 above).

### **5.6.1. Archaeology**

Stone Age artefacts seen in the area were mostly low density LSA materials in front of rock shelters and are generally of very low significance. However, one open scatter of MSA materials at waypoint 1652 lies in the eastern part of the study area and is of low significance. Further MSA and/or LSA artefacts were seen in eroded areas at waypoints 869 and 870. Although less weathered due to relatively recent exposure, these finds are still of very low significance due to their low density. Three rock art sites occur inside the Ingwe WEF2 project area with two others located within several hundred meters outside the area. None are particularly special, but that at waypoint 1728 is the most notable of the three.

Most historical materials relate to the ABW and comprise of small stone-walled defensive positions. Many of these occur in and just outside of the eastern and north-eastern part of the Ingwe WEF2 study area and were considered as of up to medium significance on an individual basis. The closest ones to the project are some 145 m from the nearest turbine but are a set of outlying features. The nearest turbine to the main ring of defensive features surrounding the Stormberg Junction is 330 m away. Other historical sites include stone walling in rock shelters likely built by shepherds and the remains of old farmsteads and associated features. The most important individual historical site is the rock shelter with historical (ABW period) graffiti (waypoint 1698). It is notable that the four large stone forts at waypoints 1683, 1936, 1944 and 1950 all lie outside of the INGWE WEF2 study area.

In general, the archaeological resources of the wider study area are deemed to have up to high cultural significance at the local level for their scientific and historical values and can be graded up to IIIA. Within the Ingwe WEF2 study area only the rock art sites are worthy of IIIA with the ABW sites and other historical resources all being rated up to GPA individually. **It should be noted, however, that the entire collection of ABW features surrounding the Stormberg Junction is worthy of at least Grade IIIA and quite likely Grade II.** This collection is effectively a cultural landscape (see Section 5.6.4 below).

#### 5.6.2. Graves

Graves are deemed to have high cultural significance at the local level for their social value. They are allocated a grade of IIIA. The Ingwe WEF2 study area contains three graveyards (waypoint 1729 is the Stormberg Memorial, waypoints 920 and 921 are farm graveyards). All are at least 690 m from their nearest turbines.

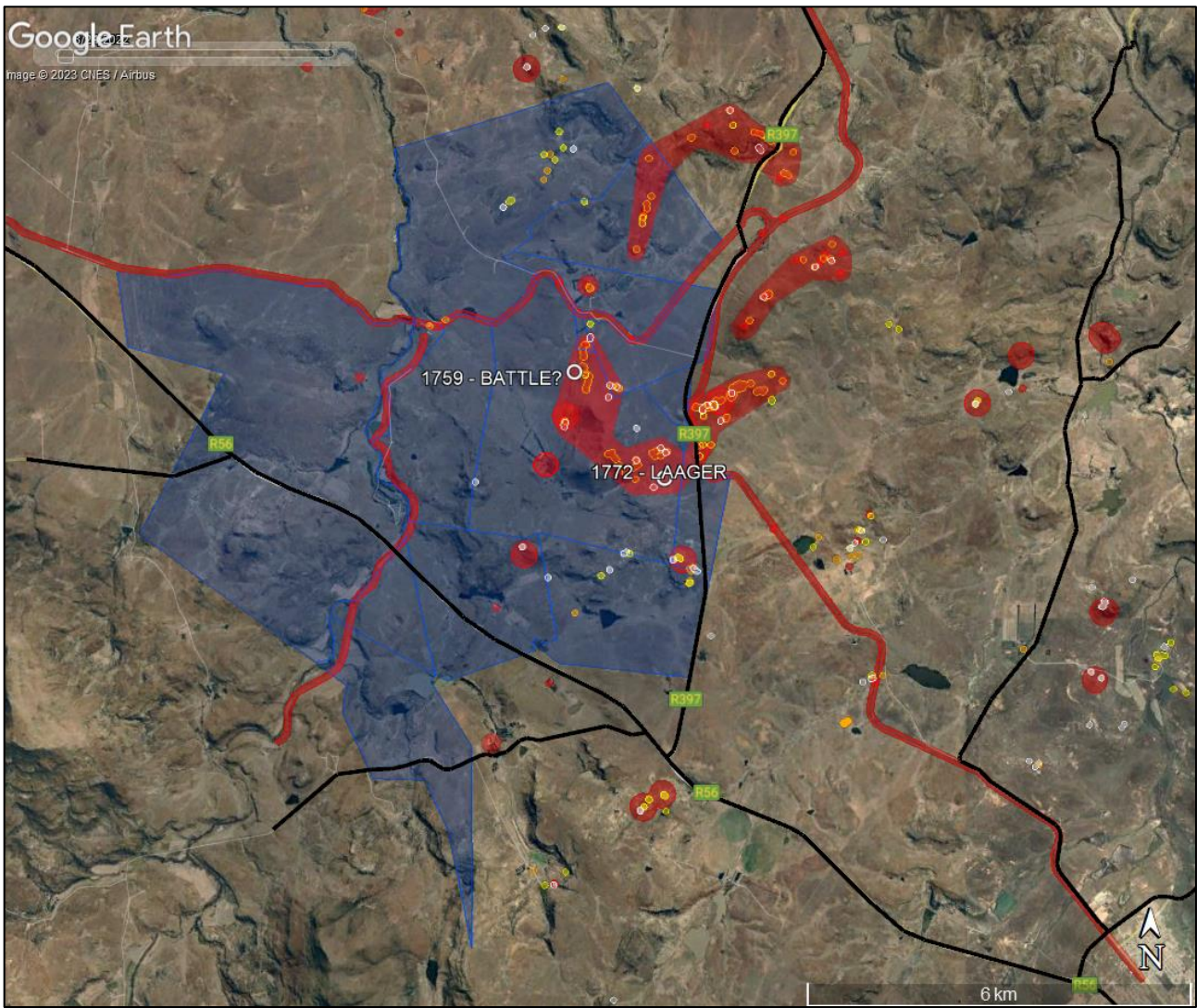
#### 5.6.3. Historical aspects and the built environment

Various farmsteads occur in the Ingwe WEF2 study area and they include structures rated up to high local significance. The railway line running west from the Stormberg Junction passes through the study area and includes two historical bridges over rivers. These features are all rated as of high local significance for their architectural, historical and social values.

#### 5.6.4. Cultural landscape

The cultural landscape has various components of which the ABW landscape is the most significant. It can be rated as of high local significance but, as noted under archaeology in Section 5.6.1, the wider landscape of ABW features is likely worthy of Provincial significance. Other aspects of the cultural landscape are less significant. The agricultural/rural landscape (which is the landscape appreciated from the R56 scenic route) is considered as of medium cultural significance at the local level for its aesthetic and historical values.

Figure 101 provides mapping of all heritage resources by grade. Further detailed mapping appears in Appendix 3.

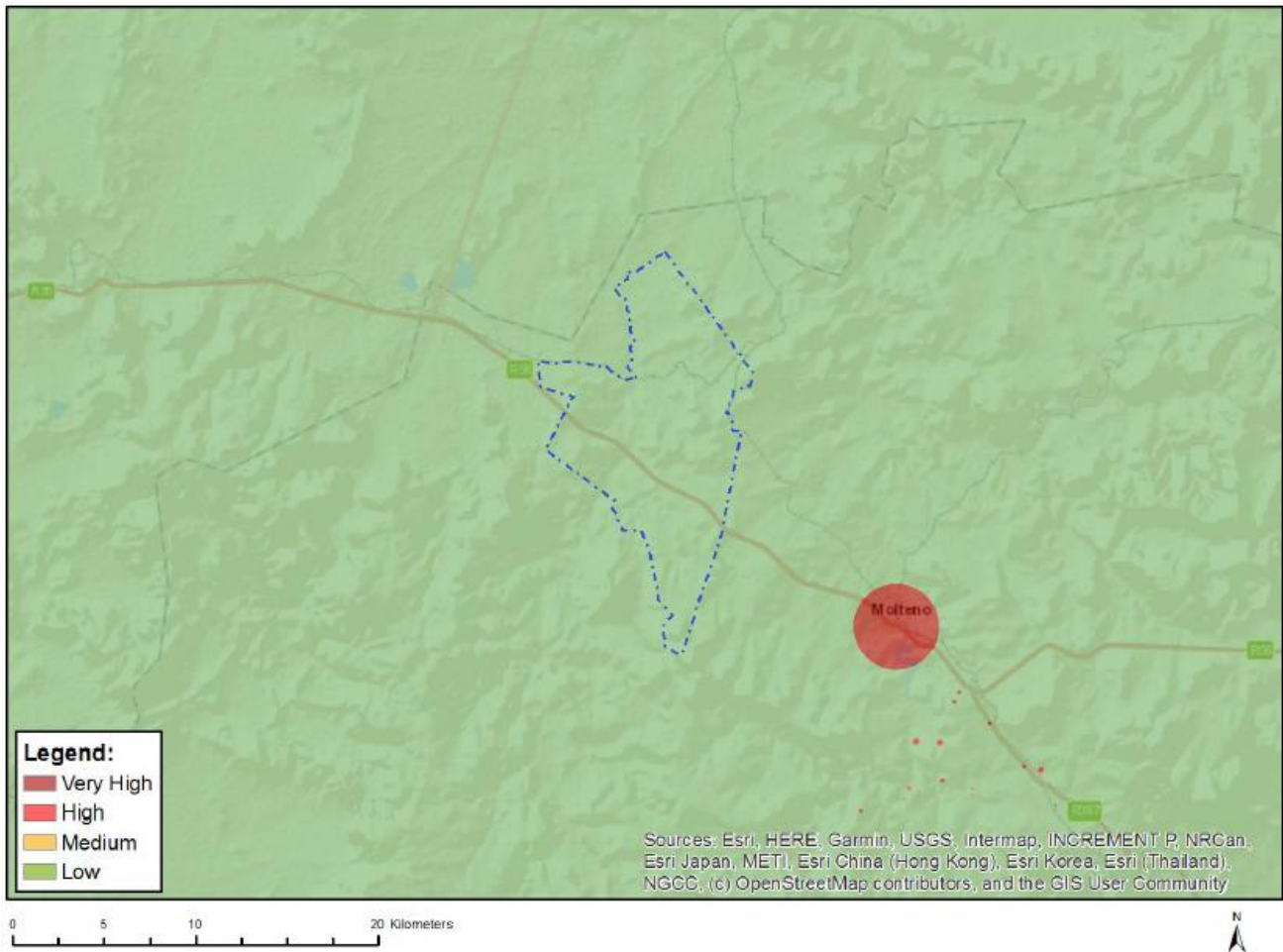


**Figure 101:** Map showing the heritage finds by grade. Red = IIIA & IIIB, Orange = GPA, Yellow = GPB, White = GPC.

## 6. IDENTIFICATION OF ENVIRONMENTAL SENSITIVITIES

### 6.1. Sensitivities identified by the National Web-Based Environmental Screening Tool

The Screening Tool report identifies no sensitive features within the Ingwe WEF2 study area (Figure 102).

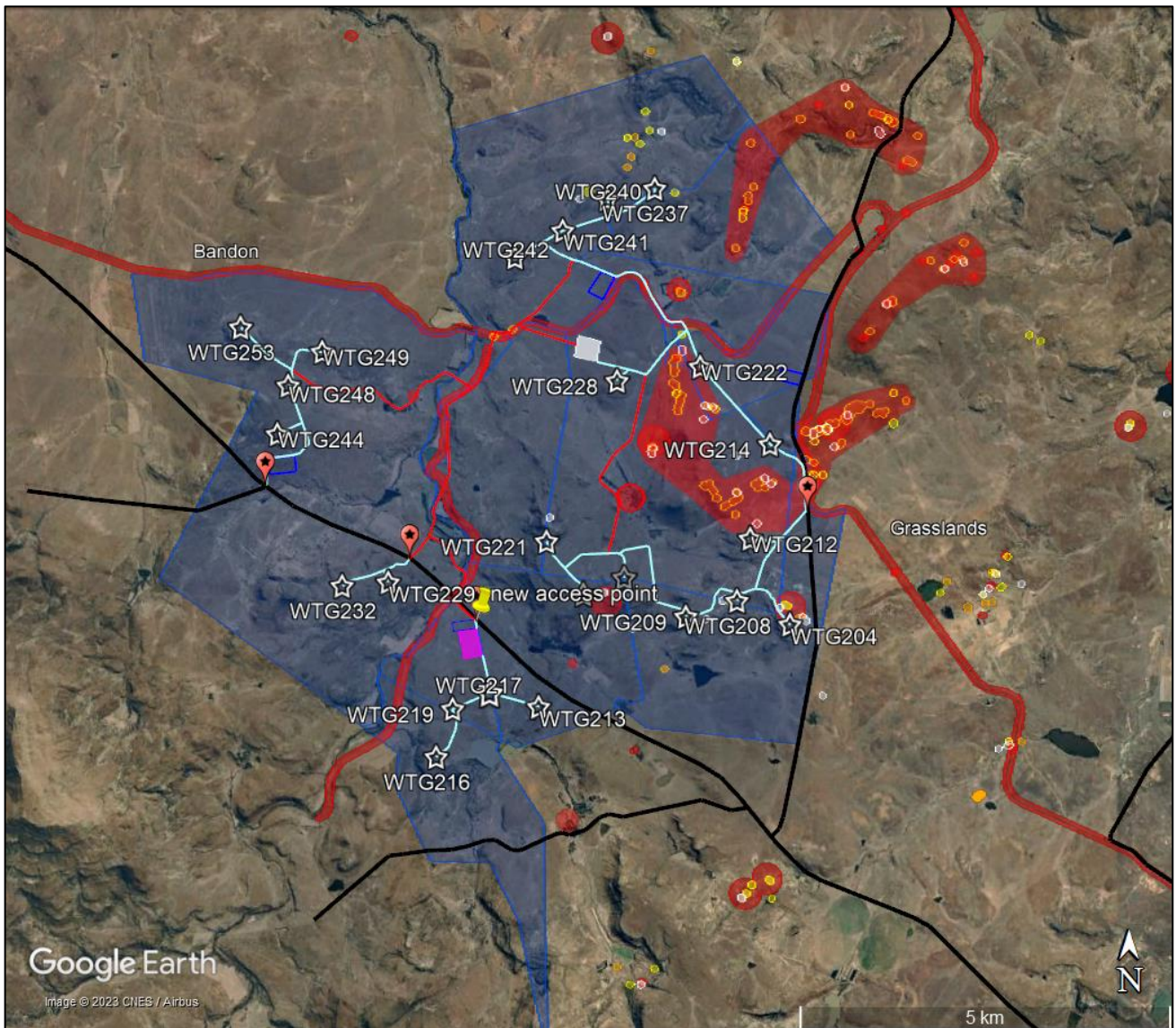


**Figure 102:** Screening Tool map provided for the archaeology and cultural heritage theme.

## 6.2. Specialist Sensitivity Analysis and Verification

This specialist assessment has identified large numbers of heritage sites scattered across the study area but with a concentration in the north around the Stormberg Junction. Although some heritage features are of very low cultural significance, the majority are of at least some significance and hence are regarded as sensitive to development. Figure 101 identifies the sensitive areas in the study area. Figure 103 shows these areas with the project overlaid. The only alternatives available for assessment are those for the substation complex (noting that BESS technologies make no difference in heritage impacts). Most project components have avoided the sensitive areas, but the following exceptions occur:

- A road to a turbine passes through the outer edge of a Grade IIIA buffer (waypoint 1971) which is acceptable;
- A project road will pass through a no-go area but this is unavoidable and the road has been sensibly placed adjacent to the railway line which is acceptable;
- A project road will run within the railway buffer but it reuses an existing road which is acceptable;
- An electrical cable will pass through a stone-walled kraal (waypoint 925) where care will need to be taken to avoid damage; and
- A cable runs inside an old railway buffer but it follows an existing road which is acceptable.



**Figure 103:** Aerial view of the study area showing the heritage sites with their buffers overlaid by the project layout. Heritage grades: Red = IIIA & IIIB, Orange = GPA, Yellow = GPB, White = GPC.

### 6.3. Sensitivity Analysis Summary Statement

The screening tool failed to identify any sensitive areas within the Ingwe WEF2 study area. In contrast, the site visit for this project has shown that many sensitive areas exist, with most of them clustered around the Stormberg Junction in and beyond the eastern and north-eastern part of the study area. The junction itself lies just outside the WEF2 study area.

## 7. ISSUES, RISKS AND IMPACTS

### 7.1. Summary of issues identified during the Scoping Phase

This assessment has identified the following potential impacts:

- Impacts to palaeontology
- Impacts to archaeology

- Impacts to graves
- Impacts to built environment heritage
- Impacts to cultural landscapes and scenic routes

No further heritage issues have been raised during consultation.

## 7.2. Identification of potential impacts/risks

Note that palaeontology is assessed in a separate report and will not be considered in the following section.

The potential impacts identified during the EIA assessment are:

### Construction Phase

- Impacts to palaeontology
- Impacts to archaeology
- Impacts to graves
- Impacts to built heritage
- Impacts to cultural landscapes and scenic routes

### Operational Phase

- Impacts to cultural landscapes and scenic routes

### Decommissioning Phase

- Impacts to cultural landscapes and scenic routes

### Cumulative impacts

- Impacts to palaeontology
- Impacts to archaeology
- Impacts to graves
- Impacts to cultural landscapes and scenic routes

## 8. IMPACT ASSESSMENT

### 8.1. Construction Phase

#### 8.1.1. Impacts to archaeological resources (both substation alternatives)

Direct impacts to archaeological resources would occur during the construction phase when equipment is brought onto site, during grubbing and excavation of foundations. Because (1) the layout has avoided all the known sites and (2) it is not expected that any highly significant archaeological sites will be present within the grasslands, the consequence is rated moderate. The potential impact significance before mitigation is **low negative** (Table 4). Mitigation will entail conducting a pre-construction archaeological survey to determine whether any further sites do occur

in the footprint. These can then either be avoided through micrositing or else sampled. With mitigation the impact significance drops to **very low negative**.

There are no fatal flaws in terms of construction phase impacts to archaeology.

#### 8.1.2. Impacts to graves (both substation alternatives)

Direct impacts to graves would occur during the construction phase when equipment is brought onto site, during grubbing and excavation of foundations. Because (1) the layout has avoided all the known graves and (2) the chances of graves occurring in the open grasslands are small, the potential impact significance before mitigation is **very low negative** (Table 4). Mitigation will entail conducting a pre-construction archaeological survey to determine whether any further graves do occur in the footprint. These can then either be avoided through micrositing or exhumed (the former option is strongly preferred). It is still possible that unmarked graves might occur, and such finds should be protected and reported if found during construction. With mitigation the impact significance remains **very low negative**.

There are no fatal flaws in terms of construction phase impacts to graves.

#### 8.1.3. Impacts to built heritage resources (both substation alternatives)

Direct impacts to built heritage relate to only one site, a stone-walled kraal located 1.7 km east of WTG248. An electrical cable will need to follow a road through the kraal. Unless the cable is placed within the road itself it is possible that the kraal could be damaged. The probability is rated likely and the resulting potential impact significance before mitigation is **moderate negative** (Table 4). Mitigation will entail ensuring that the cable does not impact on the kraal and, if necessary, routing the cable around the kraal and any associated sensitive features. With mitigation the impact significance is **very low negative**.

There are no fatal flaws in terms of construction phase impacts to built heritage.

#### 8.1.4. Impacts to the cultural landscape (using alternative 1 substation)

Direct impacts to the cultural landscape would occur during the construction phase when equipment is brought to the site and construction gets underway. The equipment and work would disrupt the sense of place and intrude into the rural/agricultural landscape. Because the project will be very prominent in the landscape and the alternative 1 substation site is located immediately adjacent to the R56 the consequence has been rated severe. Before mitigation it is expected that the impacts will be **high negative** (Table 4). Mitigation will entail keeping the construction duration as short as possible, especially in visually prominent locations, minimising landscape scarring, planting screening trees around the substation to mimic a farmstead and ensuring effective rehabilitation of areas not needed during operation. Although these measures will very slightly reduce impacts, they do not affect the significance rating which remains **high negative**.

There are no fatal flaws in terms of construction phase impacts to the cultural landscape.

#### 8.1.5. Impacts to the cultural landscape (using preferred substation)

Direct impacts to the cultural landscape would occur during the construction phase when equipment is brought to the site and construction gets underway. The equipment and work would disrupt the sense of place and intrude into the rural/agricultural landscape. Because the project will be very prominent in the landscape the consequence has been rated substantial. Before mitigation it is expected that the impacts will be **moderate negative** (Table 4). Mitigation will entail keeping the construction duration as short as possible, especially in visually prominent locations, minimising landscape scarring and ensuring effective rehabilitation of areas not needed during operation. Although these measures will very slightly reduce impacts, they do not affect the significance rating which remains **moderate negative**.

There are no fatal flaws in terms of construction phase impacts to the cultural landscape.

### 8.2. Operation Phase

#### 8.2.1. Impacts to the cultural landscape (using alternative 1 substation)

Direct impacts to the cultural landscape would occur during the operation phase because the presence of the facility would disrupt the sense of place and intrude into the rural/agricultural landscape. Because the project will be very prominent in the landscape and the alternative 1 substation site is located immediately adjacent to the R56 the consequence has been rated severe. Before mitigation it is expected that the impacts will be **high negative** (Table 4). Mitigation will entail keeping all maintenance activities within designated areas, ensuring the application of all visual recommendations with regards to lighting and installing an early-warning system to allow the red navigation lights to remain off until an aircraft is in the vicinity (if such a system is available and approved for use). Although these measures will slightly reduce impacts, especially at night, they do not affect the significance rating which remains **high negative**. It is relevant to note, however, that night-time impacts will be much reduced (potentially low negative at night) if the red navigation lights can be kept off until needed.

There are no fatal flaws in terms of operation phase impacts to the cultural landscape.

#### 8.2.2. Impacts to the cultural landscape (using preferred substation)

Direct impacts to the cultural landscape would occur during the operation phase because the presence of the facility would disrupt the sense of place and intrude into the rural/agricultural landscape. Because the project will be very prominent in the landscape the consequence has been rated substantial. Before mitigation it is expected that the impacts will be **moderate negative** (Table 4). Mitigation will entail keeping all maintenance activities within designated areas, ensuring the application of all visual recommendations with regards to lighting and installing an early-warning system to allow the red navigation lights to remain off until an aircraft is in the vicinity (if such a system is available and approved for use). Although these measures will slightly reduce impacts, especially at night, they do not affect the significance rating which remains **moderate negative**. It is relevant to note, however, that night-time impacts will be much reduced if the red navigation lights can be kept off until needed.

There are no fatal flaws in terms of operation phase impacts to the cultural landscape.



### 8.3. Decommissioning Phase

#### 8.3.1. Impacts to the cultural landscape (using alternative 1 substation)

Direct impacts to the cultural landscape would occur during the decommissioning phase when equipment is brought to the site and construction gets underway. The equipment and work would disrupt the sense of place and intrude into the rural/agricultural landscape. Because the project will be very prominent in the landscape and the alternative 1 substation site is located immediately adjacent to the R56 the consequence has been rated severe. Before mitigation it is expected that the impacts will be **high negative** (Table 4). Mitigation will entail keeping the decommissioning duration as short as possible, especially in visually prominent locations, and ensuring effective rehabilitation of all areas following the advice of the relevant specialist. The rehabilitation, in particular, will be key in reducing impacts which are likely to be **low negative** after mitigation.

There are no fatal flaws in terms of decommissioning phase impacts to the cultural landscape.

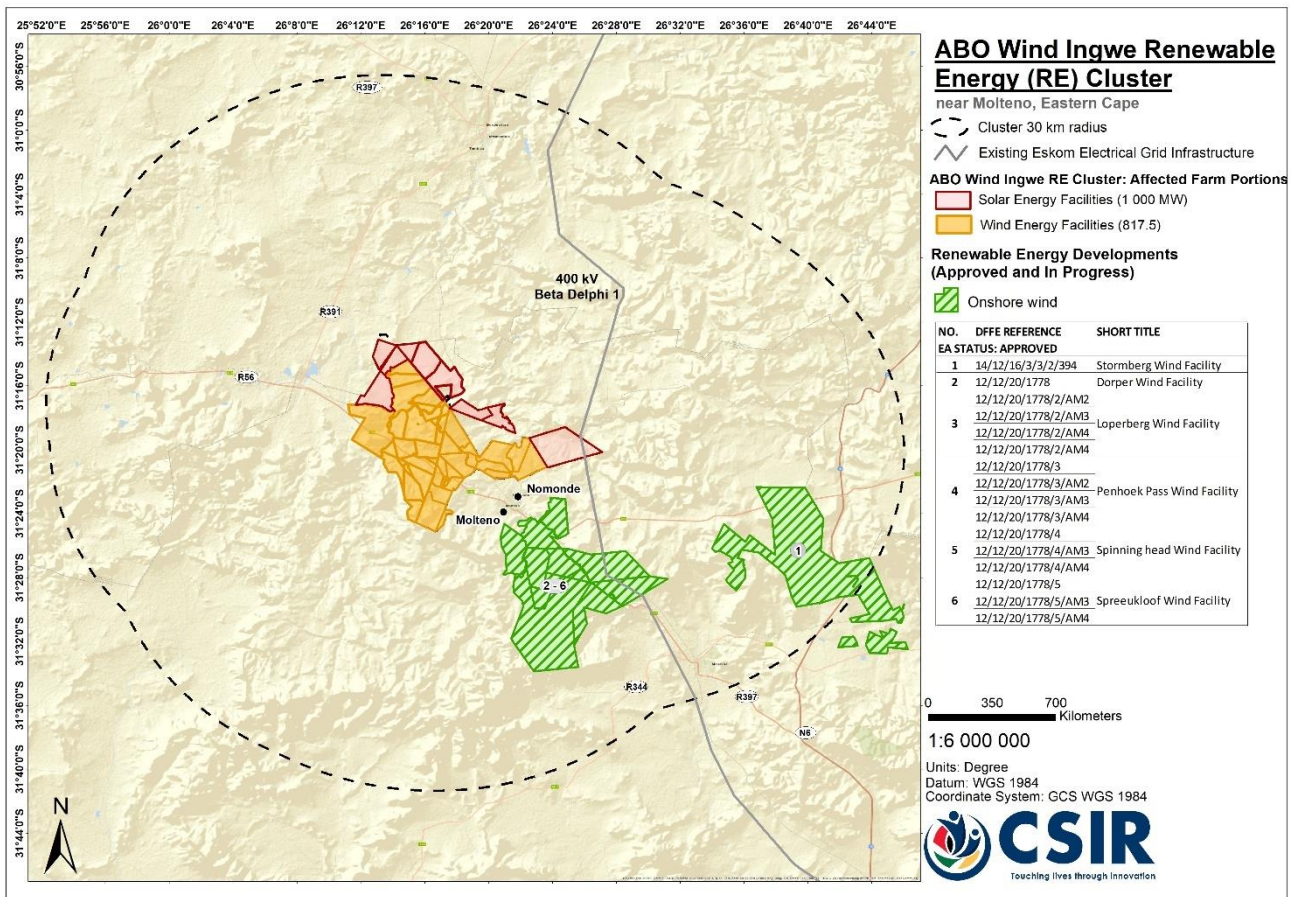
#### 8.3.2. Impacts to the cultural landscape (using preferred substation)

Direct impacts to the cultural landscape would occur during the decommissioning phase when equipment is brought to the site and decommissioning gets underway. The equipment and work would disrupt the sense of place and intrude into the rural/agricultural landscape. Because the project will be very prominent in the landscape the consequence has been rated substantial. Before mitigation it is expected that the impacts will be **moderate negative** (Table 4). Mitigation will entail keeping the decommissioning duration as short as possible, especially in visually prominent locations, and ensuring effective rehabilitation of all areas following the advice of the relevant specialist. The rehabilitation, in particular, will be key in reducing impacts which are likely to be **low negative** after mitigation.

There are no fatal flaws in terms of decommissioning phase impacts to the cultural landscape.

### 8.4. Cumulative Impacts

Cumulative impacts to heritage resources would result from multiple developments occurring in an area, whether renewable energy-related or otherwise. Most relevant to this assessment are the other renewable energy developments that have been approved in the area to the southeast of Molteno as well as the proposed Ingwe SEF projects (Figure 103). Most developments avoid heritage resources through iterative layout design (as has happened with the present Ingwe WEF2) which means that construction phase impacts to specific resources (like archaeological sites or heritage structures) are rare and the potential significance before mitigation is rated as **low negative** (Table 4). Application of mitigation measures would reduce the significance further to **very low negative**. The main heritage impact of concern is that to the cultural landscape which is generally unavoidable. Before mitigation an overall **high negative** impact could be expected. Impacts to the landscape cannot be suitably mitigated but choosing alternatives that involve construction in low visibility areas will reduce overall impacts. As such, the cumulative impacts after mitigation might drop to **moderate negative** for the Ingwe cluster on its own but, depending on perception, the impacts from more widely scattered facilities may still be seen as **high negative**.



**Figure 103:** Map showing the locations of other renewable energy facilities approved within 30 km of the Ingwe study area.

**Table 4: Assessment of impacts.**

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation)	Potential mitigation measures	Significance and Ranking (Post-Mitigation)	Confidence Level
<b>Construction Phase</b>						
<b>Damage or destruction of archaeological materials (both substation alternatives)</b>	Status	Negative	Low (4)	<ul style="list-style-type: none"> <li>- Preconstruction survey</li> <li>- Micrositing of infrastructure where possible to minimise impacts</li> <li>- Sampling of any sites that cannot be avoided (none currently known)</li> </ul>	Very low (5)	High
	Spatial extent	Local				
	Duration	Permanent				
	Consequence	Moderate				
	Probability	Likely				
	Reversibility	Non-reversible				
Irreplaceability	High					
<b>Damage or destruction of graves (both substation alternatives)</b>	Status	Negative	Very low (5)	<ul style="list-style-type: none"> <li>- Preconstruction survey</li> <li>- Micrositing of infrastructure to avoid impacts</li> <li>- Report any chance finds</li> <li>- Protect in situ and appoint archaeologist to exhume</li> </ul>	Very low (5)	High
	Spatial extent	Site specific				
	Duration	Permanent				
	Consequence	Extreme				
	Probability	Extremely unlikely				
	Reversibility	Non-reversible				
Irreplaceability	High					
<b>Damage or destruction of built heritage resources (both substation alternatives)</b>	Status	Negative	Moderate (3)	<ul style="list-style-type: none"> <li>- Route the cable to ensure avoidance of kraal and any associated features.</li> </ul>	Very low (5)	High
	Spatial extent	Site-specific				
	Duration	Permanent				
	Consequence	Substantial				
	Probability	Likely				
	Reversibility	Low				
Irreplaceability	High					
<b>Intrusion of WEF and equipment into the landscape (using alternative 1 substation)</b>	Status	Negative	High (2)	<ul style="list-style-type: none"> <li>- Minimise duration of construction period</li> <li>- Minimise cut-and-fill and landscape scarring in general</li> <li>- Plant screening trees around the substation</li> <li>- Ensure effective rehabilitation of areas not needed during operation</li> </ul>	Moderate (3)	High
	Spatial extent	Regional				
	Duration	Medium term				
	Consequence	Substantial				
	Probability	Very likely				
	Reversibility	Moderate				
Irreplaceability	Moderate					
<b>Intrusion of WEF and equipment into the landscape (using preferred substation)</b>	Status	Negative	Moderate (3)	<ul style="list-style-type: none"> <li>- Minimise duration of construction period</li> <li>- Minimise cut-and-fill and landscape scarring in general</li> <li>- Ensure effective rehabilitation of areas not needed during operation</li> </ul>	Moderate (3)	High
	Spatial extent	Regional				
	Duration	Medium term				
	Consequence	Substantial				
	Probability	Very likely				
	Reversibility	Moderate				
Irreplaceability	Moderate					

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation)	Potential mitigation measures	Significance and Ranking (Post-Mitigation)	Confidence Level
<b>Operational Phase</b>						
<b>Intrusion of WEF into the landscape (using alternative 1 substation)</b>	Status	Negative	Moderate (3)	<ul style="list-style-type: none"> <li>- Ensure that all maintenance vehicles stay within designated areas</li> <li>- Ensure that visual recommendations with regards to lighting are followed.</li> <li>- Make use of an early warning system that can switch on navigation lights only when they are needed (if such a system is available and approved at the time of construction).</li> </ul>	Moderate (3)	High
	Spatial extent	Regional				
	Duration	Long term				
	Consequence	Substantial				
	Probability	Very likely				
	Reversibility	Moderate				
	Irreplaceability	Moderate				
<b>Intrusion of WEF and equipment into the landscape (using preferred substation)</b>	Status	Negative	High (2)	<ul style="list-style-type: none"> <li>- Ensure that all maintenance vehicles stay within designated areas</li> <li>- Ensure that visual recommendations with regards to lighting are followed.</li> <li>- Make use of an early warning system that can switch on navigation lights only when they are needed (if such a system is available and approved at the time of construction).</li> </ul>	High (2)	
	Spatial extent	Regional				
	Duration	Long term				
	Consequence	Severe				
	Probability	Very likely				
	Reversibility	Moderate				
	Irreplaceability	Moderate				
<b>Decommissioning Phase</b>						
<b>Intrusion of WEF and equipment into the landscape (using alternative 1 substation)</b>	Status	Negative	High (2)	<ul style="list-style-type: none"> <li>- Minimise duration of decommissioning period</li> <li>- Ensure effective rehabilitation of all areas following advice of the relevant specialist.</li> </ul>	Low (4)	High
	Spatial extent	Regional				
	Duration	Medium term				
	Consequence	Severe				
	Probability	Very likely				
	Reversibility	Moderate				
	Irreplaceability	Moderate				
<b>Intrusion of WEF and equipment into the landscape (using preferred substation)</b>	Status	Negative	Moderate (3)	<ul style="list-style-type: none"> <li>- Minimise duration of decommissioning period</li> <li>- Ensure effective rehabilitation of all areas following advice of the relevant specialist.</li> </ul>	Low (4)	High
	Spatial extent	Regional				
	Duration	Medium term				
	Consequence	Substantial				
	Probability	Very likely				
	Reversibility	Moderate				
	Irreplaceability	Moderate				
<b>Cumulative impacts (Ingwe Cluster)</b>						
<b>Impacts to archaeology, graves</b>	Status	Negative	Low (4)	- As per measures listed above.	Very low (5)	High
	Spatial extent	Regional				
	Duration	Permanent				

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation)	Potential mitigation measures	Significance and Ranking (Post-Mitigation)	Confidence Level
<b>and built heritage (construction phase)</b>	Consequence	Moderate				
	Probability	Very unlikely				
	Reversibility	Moderate				
	Irreplaceability	Moderate				
<b>Intrusion of WEF and equipment into the landscape (all phases)</b>	Status	Negative	High (4)	- As per measures listed above.	Moderate (3)	High
	Spatial extent	Regional				
	Duration	Long term				
	Consequence	Severe				
	Probability	Very likely				
	Reversibility	Moderate				
	Irreplaceability	Moderate				
<b>Cumulative impacts (all developments)</b>						
<b>Impacts to archaeology and, graves</b>	Status	Negative	Low (4)	- As per measures listed above.	Very low (5)	High
	Spatial extent	Regional				
	Duration	Permanent				
	Consequence	Moderate				
	Probability	Very unlikely				
	Reversibility	Moderate				
	Irreplaceability	Moderate				
<b>Intrusion of WEF and equipment into the landscape</b>	Status	Negative	High (4)	- As per measures listed above.	High (4)	High
	Spatial extent	Regional				
	Duration	Long term				
	Consequence	Severe				
	Probability	Very likely				
	Reversibility	Moderate				
	Irreplaceability	Moderate				

## 8.5. Evaluation of impacts relative to sustainable social and economic benefits

Section 38(3)(d) of the NHRA requires an evaluation of the impacts on heritage resources relative to the sustainable social and economic benefits to be derived from the development.

The project will result in construction period jobs as well as a small number of operation phase jobs. However, the biggest benefit to society is in the provision of electricity to the national grid which will assist in stabilising electricity supply and, in general, improve economic activity. These are clear economic and social benefits and, if mitigation is applied as suggested above, then the socio-economic benefits outweigh the residual impacts, particularly in light of the current electricity crisis.

## 8.6. Existing impacts to heritage resources

There are currently no obvious threats to heritage resources on the site aside from the natural degradation, weathering and erosion that will affect rock art and archaeological materials. Trampling from grazing animals and/or farm/other vehicles could also occur. These impacts would be of **negligible negative** significance. It is likely, however, that significant impacts to the ABW remains have occurred in the past. Artefacts related to the war were almost entirely absent which suggests that the area has been pillaged in the past with typical items such as bottles, tins and spent ammunition having been illegally removed. This constitutes a heritage impact rated **high negative** as vast amounts of information about the Battle of Stormberg will have been lost and our understanding of this important heritage resource is severely compromised. There are no threats to the cultural landscape within the Ingwe study area.

## 8.7. The No-Go alternative

If the project were not implemented, then the site would stay as it currently is (impact significance of **neutral**). Although the heritage impacts with implementation would be greater than the existing impacts, the loss of socio-economic benefits is more significant and suggests that the No-Go option is less desirable in heritage terms.

## 8.8. Levels of acceptable change

Any impact to an archaeological or palaeontological resource or a grave is deemed unacceptable until such time as the resource has been inspected and studied further if necessary. Impacts to the landscape are difficult to quantify but in general a development that visually dominates the landscape from many publicly accessible vantage points is undesirable. The proposed project may result in this situation occurring, but keeping infrastructure a suitable distance from the main public viewpoints and corridors will keep the changes within acceptable limits.

## 9. IMPACT ASSESSMENT SUMMARY

The overall impact significance essentially follows the most significant impact in each phase following the implementation of the proposed mitigation measures. These are shown in Table 5.

*Table 5: Overall Impact Significance (Post Mitigation)*

<b>Phase (using alternative 1 substation)</b>	<b>Overall Impact Significance</b>
Construction	High
Operational	High
Decommissioning	Low
<b>Phase (using preferred substation)</b>	<b>Overall Impact Significance</b>
Construction	Moderate
Operational	Moderate
Decommissioning	Low
<b>Nature of Impact</b>	<b>Overall Impact Significance</b>
Cumulative (Ingwe Cluster) - Construction	Low
Cumulative (Ingwe Cluster) - Operational	Moderate
Cumulative (Ingwe Cluster) - Decommissioning	Low
Cumulative (all developments) - Construction	Low
Cumulative (all developments) - Operational	High
Cumulative (all developments) - Decommissioning	Low
No-Go	Negligible

## 10. LEGISLATIVE AND PERMIT REQUIREMENTS

This report and the proposed recommendations will need to be approved by ECPHRA. There are no further legislative requirements for the approval process under the NHRA but if archaeological mitigation is needed then the appointed archaeologist will need to submit a permit application to ECPHRA to do the work. This work must be carried out well in advance of construction to ensure that there is enough time for ECPHRA to approve the mitigation work before construction commences.

## 11. ENVIRONMENTAL MANAGEMENT PROGRAMME INPUTS

The actions recorded in Table 5 should be included in the environmental management program (EMPr) for the project.

**Table 5: Heritage considerations for inclusion in the EMPr.**

Impact	Mitigation / management objectives & outcomes	Mitigation / management actions	Monitoring		
			Methodology	Frequency	Responsibility
<b>Impacts to archaeology and graves</b>					
Damage or destruction of archaeological sites or graves	Avoid impacts (preferred) or locate and sample or rescue sites/burials before disturbance	<u>Planning &amp; Construction Phase</u> : Pre-construction survey, micro-siting of infrastructure, make recommendations for mitigation	Appoint archaeologist to conduct survey well before construction	Once-off	Project developer
Damage or destruction of archaeological sites or graves	Rescue information, artefacts or burials before extensive damage occurs	<u>Construction Phase</u> : Reporting chance finds as early as possible to HWC SAHRA ( <a href="https://www.sahra.org.za/contact/">https://www.sahra.org.za/contact/</a> ), protect in situ and stop work in immediate area	Inform staff to be vigilant and carry out inspections of new excavations	Ongoing basis	Construction Manager or Contractor
				Whenever on site (at least weekly during construction period only)	ECO
Damage or destruction of any known sites	Avoid impacts	<u>Construction Phase</u> : Place No-Go signage at identified sensitive locations (waypoint 1971).	Monitoring of No-Go areas (construction period only)	Ongoing basis	Construction Manager or Contractor
				Whenever on site (at least weekly)	ECO
Damage or destruction of built heritage	Minimise damage	<u>Planning &amp; Construction Phase</u> : If required, reroute the electrical cable to avoid the stone-walled kraal (waypoint 925).	Monitor that this has been carried out.	Once off	Project Developer
<b>Impacts to the cultural landscape</b>					
Visible landscape scarring	Minimise landscape scarring	<u>Construction Phase</u> : Ensure disturbance is kept to a minimum and does not exceed project requirements. Rehabilitate areas not needed during operation.	Monitoring of surface clearance relative to approved layout	Ongoing basis	Construction Manager or Contractor
				As required	ECO
Intrusion into cultural landscape	Minimise construction duration	<u>Construction Phase</u> : Ensure that all maintenance vehicles and operational activities stay within designated areas.	Undertake visual inspections and report non-compliance	As required	Environmental Manager
Intrusion into cultural landscape	Minimise contrast and light pollution	<u>Operational Phase</u> : Paint buildings in earthy colours (where technically feasible) to reduce contrast. Make use of motion detectors and downlighting to reduce night-time light pollution.	Monitor that this has been considered in the design and operation of the facility	Once off	Project Developer



Intrusion into cultural landscape	Minimise contrast and light pollution	<u>Operational Phase</u> : Make use of early warning system (if available) to allow red aircraft navigation lights to remain off at night.	Monitor that this has been considered in the design and operation of the facility	Once off	Project Developer
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## 12. CONCLUSIONS

Undoubtedly the most significant heritage resource in and around the study area is the Battle of Stormberg landscape with its multitude of archaeological features. This landscape is at least worthy of Grade IIIA (high local significance) and probably more likely Grade II (high provincial significance).

The WEF layout as currently proposed is acceptable. Two options were proposed for the facility substation complex. The applicant's preferred option is also preferred from a heritage point of view because it is much further away from public view. The alternative 1 site is located adjacent to the R56 and use of that location would negatively affect the aesthetic appeal of the landscape as viewed from the R56, even though it would be a fleeting impact.

Because of the high sensitivity of the Battle of Stormberg landscape, a buffer was placed around all the relevant archaeological remains. This also protects the landscape to a degree. However, although all proposed turbine placements are outside of the buffers, and hence acceptable as noted above, a further reduction in landscape impacts could be achieved by reducing the number of turbines located close to the Battle site. Although such a reduction is not a requirement (and is thus not a listed mitigation measure), a recommendation has been added just in case it becomes possible to reduce turbine numbers in the future (e.g. in the event that technology improvements allow for fewer turbines while still achieving the same generation capacity).

### 12.1. Statement and reasoned opinion of the specialist

Because of the iterative process followed, impacts to heritage resources have been minimised. It is still possible that archaeological sites may occur within the footprint but the chances of a resource of high significance being found are negligible. It is thus the opinion of the heritage specialist that the proposed Ingwe WEF2 may be authorised in full, but subject to the recommendations presented below. The applicant's preferred substation site is also preferred by the heritage specialist.

## 13. RECOMMENDATIONS

It is recommended that the proposed Ingwe WEF2 be authorised, but subject to the following recommendations which should be included as conditions of authorisation:

- An archaeologist must be appointed to conduct a pre-construction survey of the entire layout well before construction (preferably 6 months);
- No-go signage to be placed in the vicinity of waypoint 1971;
- If the cable through the kraal at waypoint 925 cannot avoid the walling, then it will need to be rerouted around the kraal;
- Buildings to be painted in earthy colours (where technically feasible) to reduce contrast;
- Lighting mitigation (downlighters, motion sensors) must be implemented at buildings and the substation;
- An early warning system that allows the red aircraft navigation lights to remain off until needed must be used (if available and approved at the time of construction);

- If the opportunity to reduce the number of turbines arises and all other factors are equal, then from a heritage point of view turbines 228, 214 and 222 (in that order) should be prioritised for removal;
- Effective rehabilitation must be carried out in all areas not needed during operation, as well as after decommissioning; and
- If any archaeological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.

## 14. REFERENCES

- AngloBoerWar.com. 2023. Imperial units Leinster Regiment (Prince of Wales's). Accessed online at: <https://www.angloboerwar.com/unit-information/imperial-units/569-leinster-regiment> on 11 May 2023.
- Binneman, J., Booth, C. & Higgitt, N. 2012. A Phase 1 AIA for the proposed Dorper Wind Energy Facility on a site near Molteno, CHDM, Eastern Cape Province. Report prepared for Savannah Environmental (Pty) Ltd. Grahamstown: Albany Museum.
- British Battles.com. 2022. Battle of Stormberg. Accessed online at: <https://www.britishbattles.com/great-boer-war/battle-of-stormberg/> on 6 March 2022.
- Cobban, D.A., Rossouw, J.N., Versveld, K. & Nel, D. 2009. Water quality considerations for opencast mining of the Molteno Coal Field, Indwe, Western Cape. Abstracts of the International Mine Water Conference. 19<sup>th</sup> – 23<sup>rd</sup> October 2009. Accessed online at: [file:///C:/Users/jayso/Downloads/IMWA2009\\_Cobban.pdf](file:///C:/Users/jayso/Downloads/IMWA2009_Cobban.pdf) on 5 March 2022.
- Daniel, L. 2020. Govt wants to revive SA's oldest coal mine – and says it can help generate clean power. Accessed online at: <https://www.businessinsider.co.za/plans-for-the-molteno-indiwe-coalfield-include-previously-abandoned-gasification-2020-11> on 5 March 2022.
- Davitt, M. 1902. *The Boer Fight for Freedom*. New York & London: Funk & Wagnalls Company.
- Eastwood, E.B. & Smith, B.W. 2005. Fingerprints of the Khoekhoen: geometric and handprinted rock art in the Central Limpopo Basin, Southern Africa. *South African Archaeological Society Goodwin Series* 9: 63-76.
- eGGSA. n.d. Eastern Cape, MOLTENO district, Stormberg, Klipfontein 40, Battle of Stormberg, cemetery. Accessed online at [https://graves-at-eggisa.org/main.php?g2\\_itemId=704782](https://graves-at-eggisa.org/main.php?g2_itemId=704782) on 10 May 2023.
- Gibbs, P. 2014. Coal Capital: The shaping of social relations in the Stormberg 1880-1910. Unpublished PhD: University of Witwatersrand.

- Green, D. & Eastwood, E.B. 2008. Preliminary report on female's aprons in hunter-gatherer rock paintings of the southern Drakensberg, South Africa. *South African Archaeological Bulletin* 63: 144-150.
- Knowles, L.C.A, Knowles, C.M. 1936. *The Economic Development of the British Overseas Empire Volume III: The Union of South Africa*. London: George Routledge & Sons, Limited. Accessed online at: <https://archive.org/details/economicdevelopm031295mbp/page/n6/mode/1up?view=theater> on 6 March 2022.
- National Army Museum. n.d. The Prince of Wales's Leinster Regiment (Royal Canadians). Accessed online at: <https://www.nam.ac.uk/explore/prince-wales-leinster-regiment-royal-canadians> on 11 May 2023.
- Orton, J. 2013. Geometric rock art in western South Africa and its implications for the spread of early herding. *South African Archaeological Bulletin* 68: 27-40.
- Packenham, T. 1993. *The Boer War Illustrated Edition*. Johannesburg: Jonathan Ball Publishers.
- Prévost, X. 2013. *Review of the South African Coal Mining Industry*. Pretoria: XMP Consulting cc. Accessed online at: <https://cer.org.za/wp-content/uploads/2017/12/Annexure-P.pdf> on 5 March 2022.
- Raper, P.E. *Dictionary of Southern African Place Names*. n.d. Onomastic Research Centre, Human Sciences research Council. Accessed online at [https://archive.org/stream/DictionaryOfSouthernAfricanPlaceNames/SaPlaceNames\\_djvu.txt](https://archive.org/stream/DictionaryOfSouthernAfricanPlaceNames/SaPlaceNames_djvu.txt) on 19 June 2015.
- Roux, A., Webley, L., Maguire, J., Dugmore-Strom, K., Kramer, J., Kramer, P. & Van Graan, A. 2019. *Grootzeekoegat, Molteno: Rediscovering the past from farmstead to artist's dream*. Vernacular Architecture Society of South Africa.
- Sampson, C.G. 1970. *The Smithfield Industrial Complex: Further Field Results*. National Museum, Bloemfontein. Memoir No 5.
- Smith, B.W. & Ouzman, S. 2004. Taking stock: identifying Khoekhoen herder rock art in Southern Africa. *Current Anthropology* 45: 499-526.
- Von der Heyde, N. 2015. *Field Guide to the Battlefields of South Africa*. Struik Travel & Leisure: Cape Town.
- Myburgh, D.W. 1978. The origin of towns in the eastern Cape Midlands. Accessed online at: [https://repository.nwu.ac.za/bitstream/handle/10394/5123/No\\_4%281978%29\\_Myburgh\\_DW.pdf?sequence=1&isAllowed=y](https://repository.nwu.ac.za/bitstream/handle/10394/5123/No_4%281978%29_Myburgh_DW.pdf?sequence=1&isAllowed=y) on 5 March 2022.
- Royal Irish. 2022. Battle of Stormberg. Accessed online at: <https://www.royal-irish.com/stories/battle-of-stormberg> on 6 March 2022.

- SAHRA. 2007. Minimum Standards: archaeological and palaeontological components of impact assessment reports. Document produced by the South African Heritage Resources Agency, May 2007.
- Von der Heyde, N. 2013. Field Guide to the battlefields of South Africa. Cape Town: Struik Travel and Heritage.
- Winter, S. & Oberholzer, B. 2013. Heritage and Scenic Resources: Inventory and Policy Framework for the Western Cape. Report prepared for the Provincial Government of the Western Cape Department of Environmental Affairs and Development Planning. Sarah Winter Heritage Planner, and Bernard Oberholzer Landscape Architect / Environmental Planner, in association with Setplan.

# APPENDIX 1 – Curriculum Vitae



*Curriculum Vitae*

**Jayson David John Orton**

ARCHAEOLOGIST AND HERITAGE CONSULTANT

## Contact Details and personal information:

**Address:** 23 Dover Road, Muizenberg, 7945  
**Telephone:** (021) 788 1025  
**Cell Phone:** 083 272 3225  
**Email:** jayson@asha-consulting.co.za

**Birth date and place:** 22 June 1976, Cape Town, South Africa  
**Citizenship:** South African  
**ID no:** 760622 522 4085  
**Driver's License:** Code 08  
**Marital Status:** Married to Carol Orton  
**Languages spoken:** English and Afrikaans

## Education:

SA College High School	Matric	1994
University of Cape Town	B.A. (Archaeology, Environmental & Geographical Science) 1997	
University of Cape Town	B.A. (Honours) (Archaeology)*	1998
University of Cape Town	M.A. (Archaeology)	2004
University of Oxford	D.Phil. (Archaeology)	2013

\*Frank Schweitzer memorial book prize for an outstanding student and the degree in the First Class.

## Employment History:

Spatial Archaeology Research Unit, UCT	Research assistant	Jan 1996 – Dec 1998
Department of Archaeology, UCT	Field archaeologist	Jan 1998 – Dec 1998
UCT Archaeology Contracts Office	Field archaeologist	Jan 1999 – May 2004
UCT Archaeology Contracts Office	Heritage & archaeological consultant	Jun 2004 – May 2012
School of Archaeology, University of Oxford	Undergraduate Tutor	Oct 2008 – Dec 2008
ACO Associates cc	Associate, Heritage & archaeological consultant	Jan 2011 – Dec 2013
ASHA Consulting (Pty) Ltd	Director, Heritage & archaeological consultant	Jan 2014 –

## Professional Accreditation:

Association of Southern African Professional Archaeologists (ASAPA) membership number: 233  
 CRM Section member with the following accreditation:

- Principal Investigator: Coastal shell middens (awarded 2007)  
 Stone Age archaeology (awarded 2007)  
 Grave relocation (awarded 2014)
- Field Director: Rock art (awarded 2007)  
 Colonial period archaeology (awarded 2007)

Association of Professional Heritage Practitioners (APHP) membership number: 43

- Accredited Professional Heritage Practitioner

### ➤ **Memberships and affiliations:**

South African Archaeological Society Council member	2004 – 2016
Assoc. Southern African Professional Archaeologists (ASAPA) member	2006 –
UCT Department of Archaeology Research Associate	2013 –
Heritage Western Cape APM Committee member	2013 – 2023
UNISA Department of Archaeology and Anthropology Research Fellow	2014 –
Fish Hoek Valley Historical Association	2014 –
Kalk Bay Historical Association	2016 –
Association of Professional Heritage Practitioners member	2016 –

### **Fieldwork and project experience:**

Extensive fieldwork and experience as both Field Director and Principle Investigator throughout the Western and Northern Cape, and also in the western parts of the Free State and Eastern Cape as follows:

#### Feasibility studies:

- Heritage feasibility studies examining all aspects of heritage from the desktop

#### Phase 1 surveys and impact assessments:

- Project types
  - Notification of Intent to Develop applications (for Heritage Western Cape)
  - Desktop-based Letter of Exemption (for the South African Heritage Resources Agency)
  - Heritage Impact Assessments (largely in the Environmental Impact Assessment or Basic Assessment context under NEMA and Section 38(8) of the NHRA, but also self-standing assessments under Section 38(1) of the NHRA)
  - Archaeological specialist studies
  - Phase 1 archaeological test excavations in historical and prehistoric sites
  - Archaeological research projects
- Development types
  - Mining and borrow pits
  - Roads (new and upgrades)
  - Residential, commercial and industrial development
  - Dams and pipe lines
  - Power lines and substations
  - Renewable energy facilities (wind energy, solar energy and hydro-electric facilities)

#### Phase 2 mitigation and research excavations:

- ESA open sites
  - Duinefontein, Gouda, Namaqualand
- MSA rock shelters
  - Fish Hoek, Yzerfontein, Cederberg, Namaqualand
- MSA open sites
  - Swartland, Bushmanland, Namaqualand
- LSA rock shelters
  - Cederberg, Namaqualand, Bushmanland
- LSA open sites (inland)
  - Swartland, Franschoek, Namaqualand, Bushmanland
- LSA coastal shell middens
  - Melkbosstrand, Yzerfontein, Saldanha Bay, Paternoster, Dwarskersbos, Infanta, Knysna, Namaqualand
- LSA burials
  - Melkbosstrand, Saldanha Bay, Namaqualand, Knysna
- Historical sites
  - Franschoek (farmstead and well), Waterfront (fort, dump and well), Noordhoek (cottage), variety of small excavations in central Cape Town and surrounding suburbs
- Historic burial grounds
  - Green Point (Prestwich Street), V&A Waterfront (Marina Residential), Paarl

### **Awards:**

Western Cape Government Cultural Affairs Awards 2015/2016: Best Heritage Project.

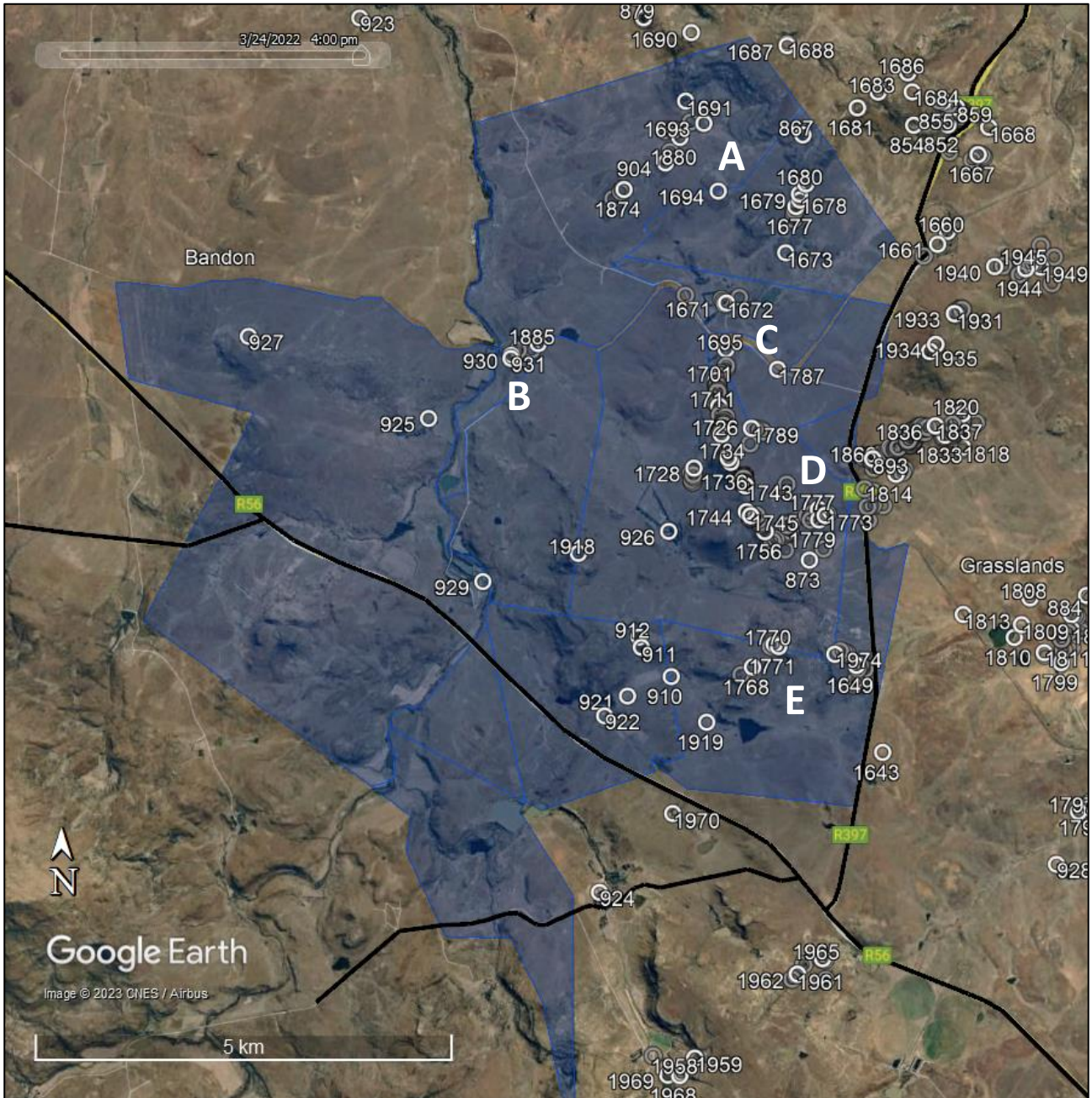
**APPENDIX 2 – Site list**

Please see separate document.

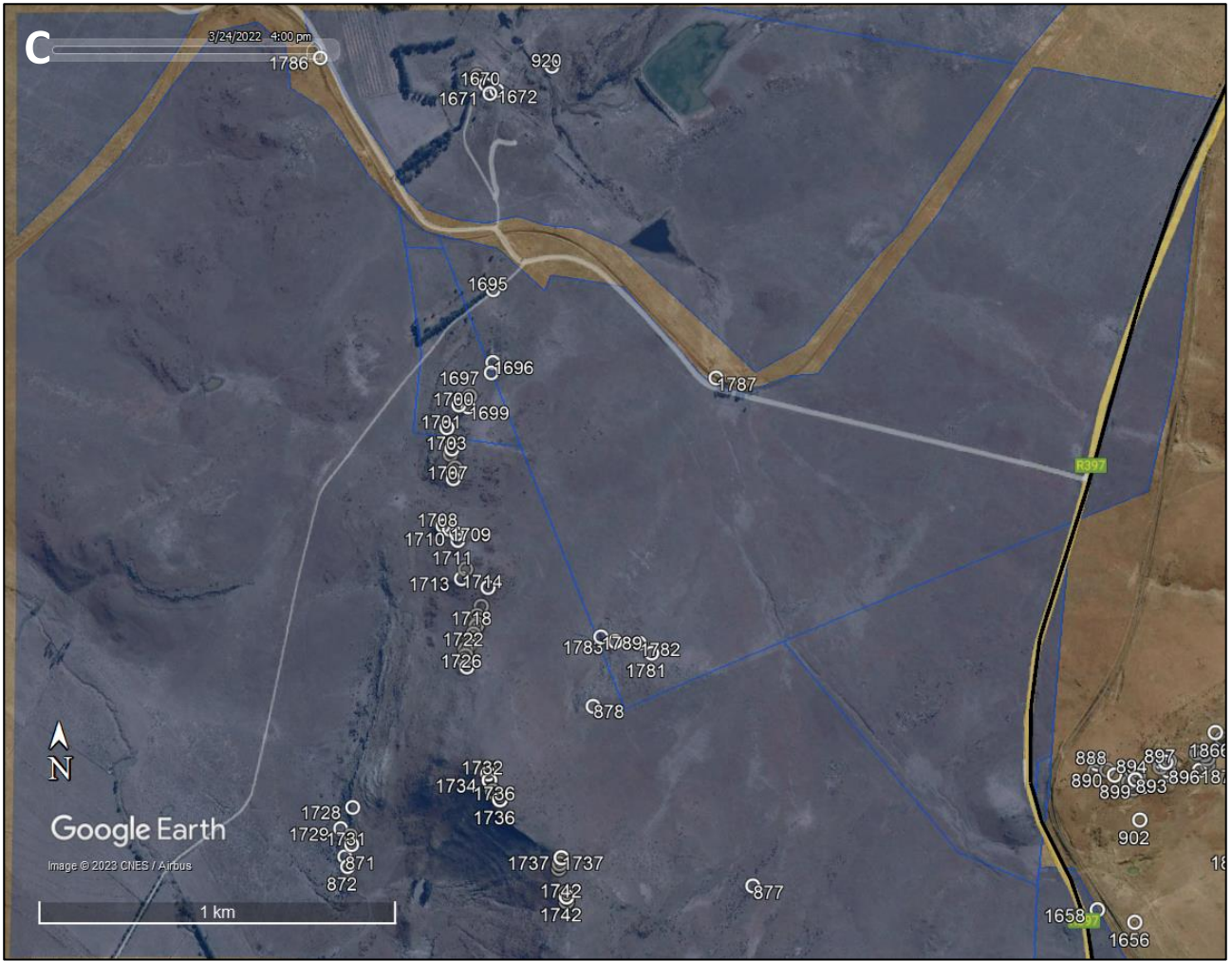


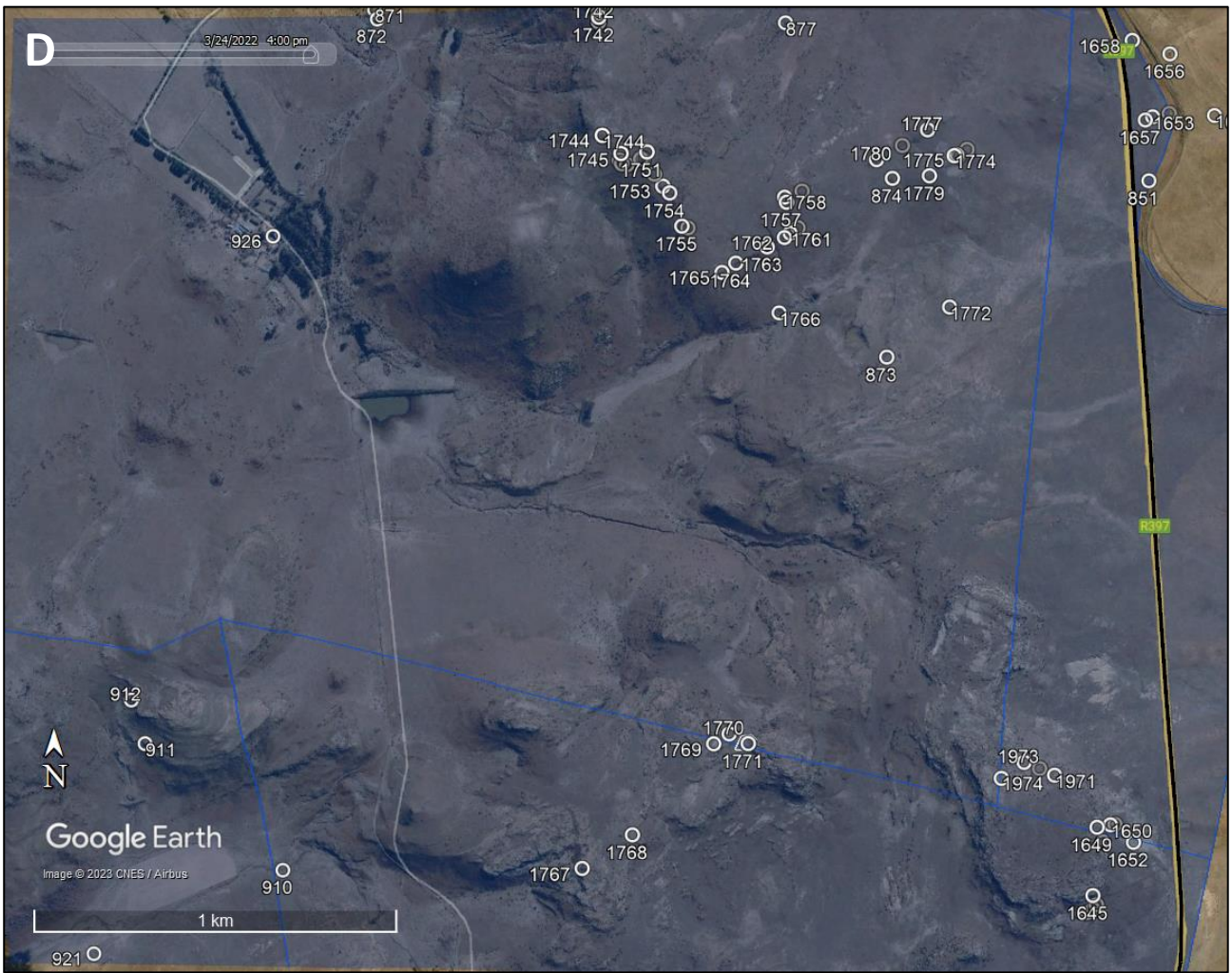
## APPENDIX 3 - Mapping

The locations of all finds in or close to the Ingwe WEF2 study area are mapped here. The large letters (A-E) refer to enlargements that follow.









## APPENDIX 4 - Site Sensitivity Verification

As required in Part A of the Government Gazette 43110, GN 320, a site sensitivity verification was undertaken in order to confirm the current land use and environmental sensitivity of the proposed project area as identified by the National Web-Based Environmental Screening Tool. The details of the site sensitivity verification are noted below:

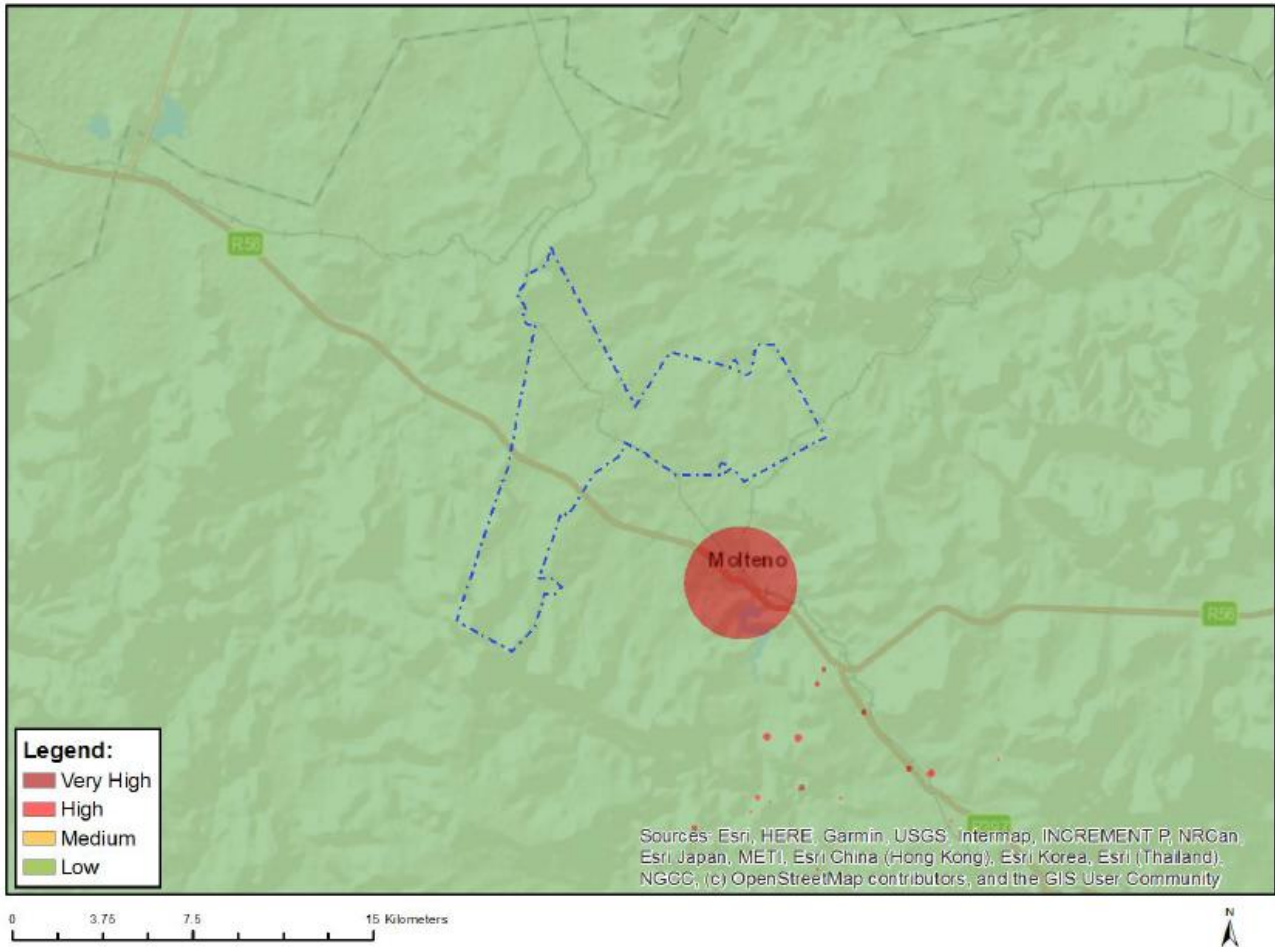
<b>Date of Site Visit</b>	18-24 March 2022
<b>Specialist Name</b>	Dr Jayson Orton
<b>Professional Registration Number</b>	Association of Southern African Professional Archaeologists (ASAPA): 233 Association of Professional Heritage Practitioners (APHP): 043
<b>Specialist Affiliation / Company</b>	ASHA Consulting (Pty) Ltd

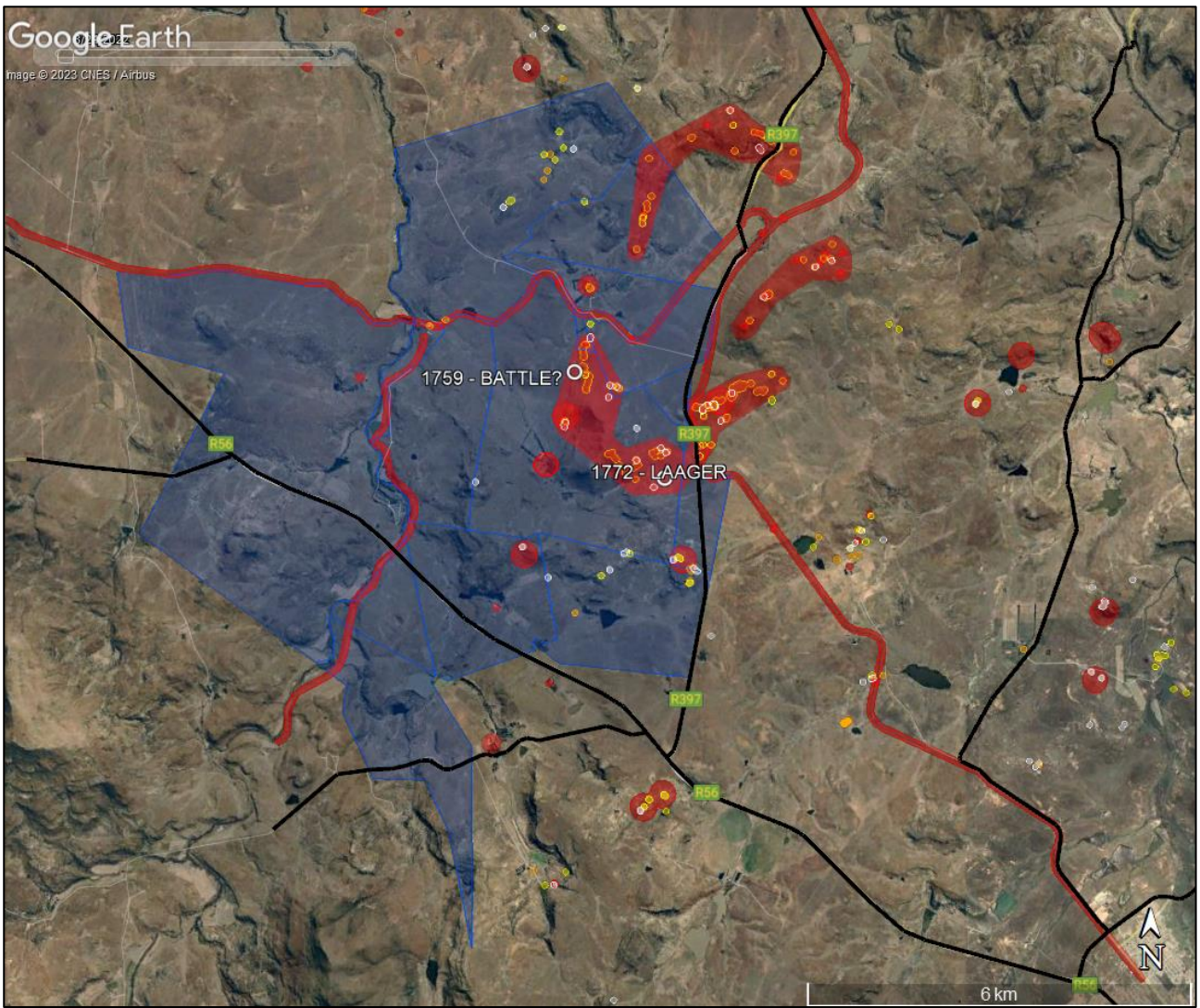
### Method of the Site Sensitivity Verification

Initial work was carried out using satellite aerial photography in combination with the author's accumulated knowledge of the local landscape as well as desktop research. Subsequent fieldwork served to ground truth the site, including areas identified as potentially sensitive. This information is presented in the report (Section 5).

### Outcome

The map below is extracted from the screening tool report and shows the archaeological and heritage sensitivity to be low throughout the study area. The site visit showed that in fact the majority of the site is of low sensitivity but that many pockets of higher sensitivity occur, primarily in association with hills and farmsteads. A photographic record and description of the relevant heritage resources are contained within the impact assessment report. The heritage specialist thus **disputes** the screening tool report in that higher sensitivity areas are not identified. In addition, the entire landscape is of medium sensitivity with the vicinity of the Battle of Stormberg being high sensitivity. The second map below shows the assigned heritage sensitivity.










Sites of Grade IIIA (high cultural significance; red), IIIB (high cultural significance; red) and GPA (medium cultural significance; orange) should be regarded as of high sensitivity. GPB sites (low cultural significance; yellow) can be seen as medium, while GPC (very low significance; white) are low sensitivity.

## APPENDIX 2 – Site list

- The waypoint numbers are colour-coded to the Ingwe projects as follows: WEF1 = green, WEF2 = yellow, PV1 = orange, PV2 = no finds, PV3 = light blue, PV4 = brown, PV5 = grey, outside project areas = clear.
- Note that for the Anglo-Boer War features where a facing direction is provided this is an indication of which way the soldiers would have been facing while making use of the defensive feature.

Waypoint	Co-ordinate	Description	Significance/ Grade
1636	S31 21 15.5 E26 22 51.9	A steel railway bridge on concrete walls. Part of a historical railway line whose tracks have been lifted.	High
			
1637	S31 19 27.3 E26 25 01.1	This is a railway bridge, but the deck has been removed and only the concrete walls remain. Part of a historical railway line whose tracks have been lifted. A concrete dam is visible in the background of the photograph.	High
			
1638	S31 20 12.3 E26 24 13.5	A concrete railway culvert made with a slab over side walls.	High
			



1639	S31 20 35.7 E26 23 27.8	A large trench that seems most likely to be a borrow pit for road or railway construction. There are no spoil heaps so not likely to be coal mining-related. Post-dates 1943 aerial photography and looks to have been dug into a dolerite dyke.	n/a
			
1640	S31 20 32.2 E26 23 22.2	A large trench that seems most likely to be a borrow pit for road or railway construction. There are no spoil heaps so not likely to be coal mining-related. Post-dates 1943 aerial photography and looks to have been dug into a dolerite dyke.	n/a
			
1641	S31 20 28.6 E26 23 14.7	A light scatter of flaked stone artefacts located among dolerite gravel on a dolerite ridge. The flakes are in stone of varying colour, but most are assumed to be hornfels. Scale in cm.	Very low / GPC



1642	S31 20 39.1 E26 23 18.3	A large trench that seems most likely to be a borrow pit for road or railway construction. There are no spoil heaps so not likely to be coal mining-related. Pre-dates 1943 aerial photography and looks to have been dug into a dolerite dyke.	n/a
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1643	S31 20 12.1 E26 17 01.1	A light scatter of stone artefacts was found in front of a low rock shelter in a rock outcrop located on relatively flat ground. There is hornfels and quartzite present and one thumbnail scraper was seen (at left in the photograph below). Scale in cm.	Very low / GPC
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1644	S31 19 45.4 E26 16 49.2	This is a low stone-walled structure of about 3 m by 4 m located on the lower slope of a rocky hill. A metal item was found nearby (scale in cm). The site is on the slope facing Molteno and is likely related to the ABW.	Medium / GPA
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1645

S31 19 44.5  
E26 16 48.7

This is a very small section of walling inside a low rock shelter. A metal fragment was also seen here. The site is on the slope facing Molteno and is likely related to the ABW.

Medium / GPA





1646

S31 19 46.1  
E26 16 48.3

Two stone-walled enclosures occur here, one on either side of a boulder. The eastern one is about 3 m by 3 m, while the western one is about 4 m by 8 m. The site is on the slope facing Molteno and is likely related to the ABW.

Medium / GPA



1647	S31 19 45.8 E26 16 48.8	A fairly dense scatter of hornfels stone artefacts was found on a rock terrace with gravel on the southern slope of a hill. Scale in cm.	Low / GPB
			
1648	S31 19 39.8 E26 16 49.6	This site is a small rock shelter that has several meters of stone walling running down the hill from its back wall. A separate rock was seen to have wire tied around it which must have held something in place. The site's function is unknown but it faces east towards the railway line and occurs on the upper slope of a hill, so might be to do with the ABW.	Medium / GPA
			
1649	S31 19 38.5 E26 16 48.9	This is a small rock shelter with informal walling around its opening. It lies near the top of an east-facing hillside overlooking the railway line and seems like a logical defensive position. It might be to do with the ABW.	Medium / GPA









1650	S31 19 38.4 E26 16 50.5	This is a 3 m by 5 m stone-walled enclosure on the lower slope of an east-facing hill overlooking the railway line. It is almost certainly a defensive position related to the ABW.	Medium / GPA
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1651	S31 19 38.4 E26 16 51.0	A light scatter of hornfels artefacts was seen on a flat rocky area at the foot of a hill.	Very low / GPC
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No photograph.

1652	S31 19 40.0 E26 16 53.0	A light scattering of quartzite flakes and cores was seen in an eroding area at the foot of a hill. The artefacts are slightly abraded, supporting their great age, and are likely from the MSA.	Very low / GPC
  			
1653	S31 18 37.0 E26 16 54.8	This shallow depression occurs alongside the railway line in the area known to have had Boer trenches. Given the hard substrate, it is unlikely that conventional trenches would have been excavated and this depression is very likely to have been one of the Boer 'trenches' during the ABW. It is located 18 m to the east of the original railway line.	Medium / GPA
			

1654	S31 18 36.8 E26 17 01.2	This is an approximately 5 m long stone alignment that runs approximately parallel to the original railway line and is 185 m from it. Its function is unknown but it may be related to the ABW. Although the alignment is oriented towards Molteno, it might have concealed men from the railway line and could have tumbled since its original construction. There are no other rocks around it indicating a taller collapsed structure.	Low / GPB
			
1655	S31 18 36.7 E26 16 56.5	This is a very low stone feature of about 2 m diameter and probably related to the ABW. It is located in the area where Boer trenches were known and is to the east of the original railway line, about 65 m from it. It does not seem large enough to have concealed a person, but may still have fulfilled this function. Erosion may have reduced its original constructed height.	Low / GPB
			
1656	S31 18 31.5 E26 16 56.5	This is a 3 m by 4 m stone-walled enclosure located 75 m northeast of the original railway line in the area suggested to have had Boer trenches. It faces towards Molteno and is almost certainly related to the ABW.	Medium / GPA

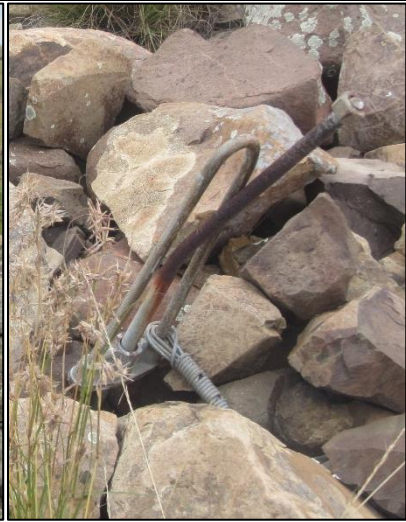


1657	S31 18 37.3 E26 16 54.0	This is the original railway line berm. It is evident from aerial photography that the railway has been realigned and rebuilt on its current alignment.	Medium / GPA
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1658	S31 18 30.4 E26 16 52.6	This stone-walled feature is badly collapsed and its overall form is difficult to determine. There is clearly a circular section about 2-3 m in diameter, but other parts seem more like a pile of rocks. An anchor point for a pole is present in the latter part and the feature has clearly been disturbed. It lies immediately adjacent to the original railway line alignment and is essentially built on top of a small cutting into the bedrock. It may well relate to the ABW.	Medium / GPA
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1659	S31 17 00.2 E26 17 20.1	<p>This is the cluster of buildings at the Stormberg Junction. They were not visited, but just photographed from the road. The yellow-walled structures are all of corrugated iron, but a stone-walled ruin (immediately adjacent to the railway line) and an ABW blockhouse also occur in the complex. A newer but still historical structure (it is visible on the 1943 aerial photography) occurs adjacent to the railway line and has 'Stormberg Trading Co' written on its northern end.</p>	Variable medium to high
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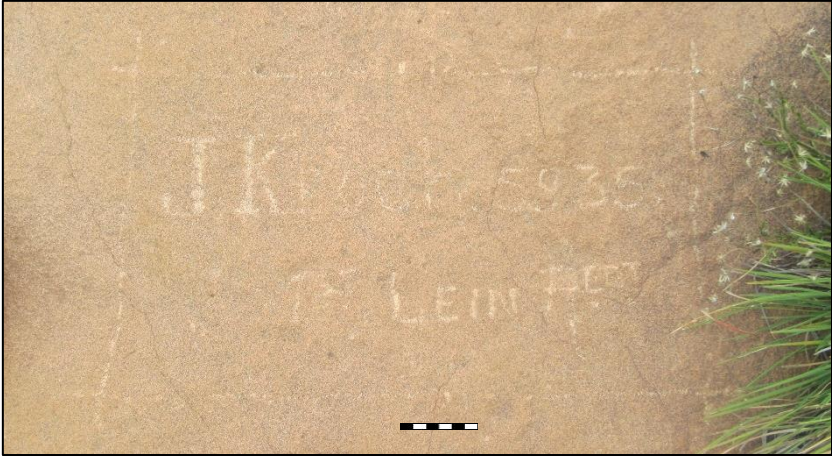




1660	S31 16 50.7 E26 17 30.7	This waypoint (1660) lies very close to the Stormberg Station and represents most of the various structures and ruins in the area. At this waypoint are two demolished structures that may, from their preserved features, have been Victorian in age. An elevated steel structure occurs to the north and, further away, there is a second British Blockhouse (located at waypoint 1660a).	Variable medium to high
1660a	S31 16 43.7 E26 17 44.0		



1661	S31 16 55.7 E26 17 26.3	Some more modern railway buildings also occur and two face brick examples – one in ruin – occur here. They are probably less than 60 years of age and thus not currently heritage.	n/a
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1662	S31 16 19.9 E26 17 31.7	A large trench that seems most likely to be a borrow pit for road or railway construction. There are no spoil heaps so not likely to be coal mining-related.	n/a
			
1663	S31 16 23.1 E26 17 41.8	A historical engraving was found on a rocky ridge which also has several ABW features. It appears to be a name (J K_och), number (5935) and military group (1 <sup>ST</sup> LEIN REGT). Scale in cm.	High / IIIA
			
1664	S31 16 20.9 E26 17 44.1	This is a space between the bedrock of the hill and a fallen boulder on the slope and which has had low stone walls constructed in the spaces. It is an excellent defensive position and affords good views directly towards the neck to the north through which the railway line runs. It is very likely related to the ABW.	Medium / GPA



1665	S31 16 21.9 E26 17 46.8	This is a section of low, partially collapsed stone walling on the edge of the rocky hill, right on the top. If lying behind it, one would have an excellent view over the plains to the north and is undoubtedly related to the ABW.	Medium / GPA
1666	S31 16 21.4 E26 17 46.1	This is a stone wall located in front of the bedrock forming the top of a hill. It affords an excellent view over the plains to the north and is undoubtedly related to the ABW.	Medium / GPA
1667	S31 16 21.1 E26 17 44.5	This is a small stone wall less than a meter long between two boulders. It affords a good view towards the north and would perfectly conceal someone lying behind it. It is related to the ABW.	Medium / GPA





1668	S31 16 10.4 E26 17 49.5	This small stone-walled feature lies on a south-facing slope and does not seem ideally situated as a defensive location but, given its clear sight line to other defensive positions, it is probably still related to the ABW.	Medium / GPA
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1669	S31 17 16.6 E26 15 48.9	This is a now restored and renovated Victorian farmhouse that retains many original features.	High
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1670	S31 17 17.4 E26 15 49.8	This is an outbuilding to the house at waypoint 1669. It has been repaired to prevent further decay.	Medium
			
1671	S31 17 18.2 E26 15 50.3	This is an outbuilding to the house at waypoint 1669. It has been repaired to prevent further decay.	Medium
			
1672	S31 17 18.0 E26 15 51.0	This waypoint represents the extensive stone walling that occurs around the farm complex at waypoints 1669 to 1671. The walls relate to kraals but a werf wall also extends around the buildings.	Medium





1673	S31 16 58.7 E26 16 17.8	An elongated stone-walled enclosure measuring 2 m by 7 m located on top of a small rocky hill overlooking Stormberg Junction to the east. This is a defensive position related to the ABW.	Medium / GPA
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1674	S31 16 45.9 E26 16 21.1	A small line of stones placed along the edge of a flat rock surface above a low cliff on a rocky hill. Almost certainly this would have been higher and some rocks have fallen over the edge. The site looks out towards the southeast with Stormberg Junction located to the east. This is a defensive position related to the ABW.	Low / GPB
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1675	S31 16 43.5 E26 16 21.3	A line of rocks placed on the flat bedrock of a rocky hilltop and looking out towards the northwest. Some rocks have become displaced with time. This is a defensive position related to the ABW.	Low / GPB
			
1676	S31 16 42.6 E26 16 21.7	A low stone wall about 5 m across and built along the edge of a cliff on a rocky hill facing towards the northwest. This is a defensive position related to the ABW.	Medium / GPA
			








1677	S31 16 41.1 E26 16 22.1	This drystone walled fort is built using formal construction methods and is about 5 m in diameter. The stones are properly laid in two skins and have a rubble fill. There is a 'bench/step' around the inside. It is unknown how high the outer wall would have originally been but it was perhaps slightly higher as there are collapsed rocks around the perimeter. The landscape photograph shows the koppie in which 1677, 1678 and 1679 are located with the latter being on the summit closest to the viewer. This is a Boer fort from the ABW.	High / IIIB
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1678	S31 16 38.6 E26 16 23.8	A circular stone-walled feature of 2 m diameter located on a rocky hill. This is a defensive position related to the ABW.	Medium / GPA
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1679	S31 16 36.4 E26 16 23.6	This is a roughly circular feature measuring about 4 m by 5 m. It is very badly collapsed. It is located on the very top of a rocky hill and likely related to the ABW (see photograph at waypoint 1677).	Medium / GPA
			
1680	S31 16 32.6 E26 16 26.4	This is an arc-shaped stone wall located on a neck between two hills. It is about 6 m wide. It looks out towards the northwest and is a defensive position related to the ABW.	Medium / GPA
			
1681	S31 16 03.5 E26 16 49.4	This small arc-shaped stone wall faces towards the southeast and is a defensive position related to the ABW. Stormberg Junction is visible in the distance in the photograph.	Medium / GPA
			

1682	S31 16 03.4 E26 16 50.1	This small arc-shaped wall was placed on top of a boulder. Its wall is about 3 m long and it faces towards the southeast and the Stormberg Junction. It is a defensive position related to the ABW.	Medium / GPA
			
1683	S31 15 57.5 E26 16 58.7	This is a formal ABW Boer blockhouse of about 8 m diameter built on the top of a high ridge with commanding views across the landscape. The north-eastern part of the blockhouse has collapsed, but about two-thirds of it is still in good condition. It has a narrow entrance facing towards the south. The walls have many small loopholes located very close together (c. 0.4 m apart). Around the inside of the walls there is a bench on which men would have stood to look or shoot through the loopholes. Around the outside of the blockhouse there is a lower stone wall which results in a small passage around the outside of the main structure. The walling is almost all drystone, but the very top few courses above the loopholes also have mud mortar.	High / IIIA
			











1684	S31 15 57.5 E26 17 14.0	A small stone cairn measuring about 1 m in all dimensions was found in an isolated position away from other stone-walled features. It is on the highest point of the hill when viewed from northwest or southeast, but just behind the summit when seen from the southwest. Considering the wealth of ABW features on this hill, it is likely also related.	Low / GPB
			
1685	S31 15 49.7 E26 17 12.7	This approximately 12 m long stone wall lies along the edge of a cliff facing out towards the northwest. Most of the wall is quite low, but one section stands higher than the rest. This is a defensive position related to the ABW.	Medium / GPA



1686	<p>S31 15 49.8 E26 17 12.3</p>	<p>This rock shelter lies just below the walling at waypoint 1685 and some hornfels and one sandstone flake were found on its talus slope. A tin can which must have originated from above was also found here. Scales in cm.</p>	<p>Very low / GPC</p>
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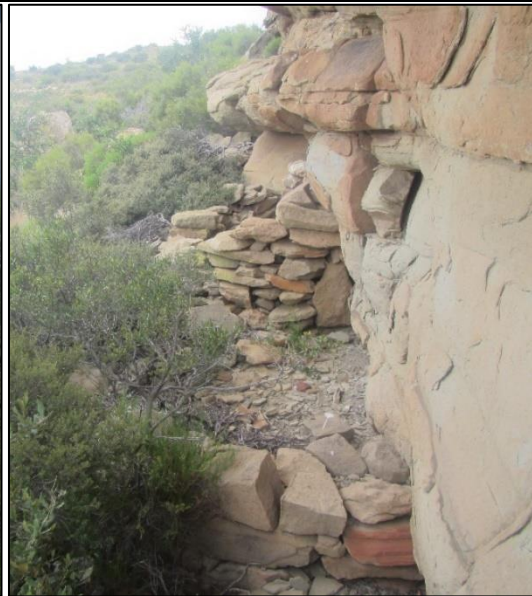


1687	<p>S31 15 38.6 E26 16 18.2</p>	<p>This stone-walled site lies in a small valley and is unlikely to be associated with the ABW since it does not have any view other than into the small valley. The stone walling surrounds a rock shelter</p>	<p>Low GPB</p>
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		<p>and extends for about 12 m. The base of a pink bottle was found in the wall and it has the word 'GALENICALS' embossed on it. A rock with three square holes in it was also found in the wall. Its purpose is unknown.</p>	
			
			
<p>1688</p>	<p>S31 15 37.9 E26 16 18.2</p>	<p>A collection of stone artefacts was found on a small terrace among gravel clasts. They are likely all from the LSA and are made on hornfels.</p>	<p>Very low / GPC</p>
			
<p>1689</p>	<p>S31 15 08.0 E26 15 33.5</p>	<p>A very small stone-walled feature was found on the northern end of a mountain far from other similar features. It faces towards the northwest. A single spent Martini Henry rifle cartridge was found here. It's headstamp has a 'K' and a 'II' on it. This is a defensive position related to the ABW.</p>	<p>Low / GPB</p>



1690	S31 15 33.8 E26 15 34.6	Two small stone-walled enclosures were found along the base of a slightly overhanging cliff. The one has higher walls than the other but both are a similar size – they are about 1 m deep and 2 m long. The shelter is north-facing and provides a reasonable view but it is not clear whether it is an ABW feature or not. The only factor that might argue for this is that it faces directly towards a small lookout point on the summit of a hill 800 m due north.	Medium / GPA
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1691	S31 15 59.5 E26 15 32.4	This stone-walled feature is likely an old animal enclosure (kraal) and is located at the foot of a hill. It faces towards the south and is quite overgrown with vegetation.	Low / GPB
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1692	S31 16 07.5 E26 15 34.7	This large farm dam has a stone-lined earth wall about 170 m long. The top of the wall is heavily vegetated.	Low
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1693	S31 16 08.1 E26 15 40.7	An ephemeral scattering of MSA artefacts was noted in the flood zone of a farm dam. Two cores are shown here (scale in cm).	Very low / GPC
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1694	S31 16 34.7 E26 15 47.1	A fence line was found to have stone pillars as fence posts. This was done in the past when other materials were not readily available.	Low
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851	S31 18 42.5 E26 16 54.4	A circular stone feature of about 1.5 m diameter. It is just to the south of the area indicated as having had Boer trenches and may be related to the ABW. It is too small to have concealed a person inside it though and is located right on the edge of the original railway berm which suggests it is not a defensive position but perhaps related to the railway line.	Low / GPB
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852	S31 16 09.8 E26 17 30.5	A few MSA stone artefacts including a core and also a fragment of historical aqua glass.	Very low GPC
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853	S31 16 08.3 E26 17 29.1	An isolated metal object, possibly related to the ABW (scale in cm). A similar one was found at an ABW feature at waypoint 1838.	Very low / GPC
			
854	S31 16 10.1 E26 17 14.9	A 2 m diameter stone circle on the south-facing lower slopes of a hill. The site is probably a defensive position related to the ABW.	Medium / GPA
			
855	S31 16 01.1 E26 17 27.9	A 4 m by 6 m ABW fort was built on top of a prominent rocky hill. Its walls are built in formal tyle using two skins and a rubble fill and there is a step around the inside. It has an entrance facing towards the south and affords a view out towards the north and along the railway line (visible to the right in the first picture below). The original height of the walls is unknown, but there is quite a lot of fallen rock around the outside of the fort.	High / IIIB
			



856	S31 16 00.8 E26 17 26.2	Some 45 m to the west of the waypoint 855 fort is a small 2 m long arc-shaped stone wall that offers extra defence for the fort. It faces out to the north. In the photograph the fort at waypoint 855 is arrowed and the railway is visible at far left. Certainly related to the ABW.	Medium / GPA
			
857	S31 16 01.4 E26 17 28.7	About 20 east-southeast of the fort at waypoint 855 is a low stone-walled oval structure measuring about 2 m by 3 m. It offers extra defence for the	Medium / GPA

		fort and looks out to the north. Certainly related to the ABW.	
			
858	S31 16 02.1 E26 17 30.9	This arc-shaped stone wall lies across a small valley on top of a hill and faces out towards the northwest. It is a defensive position related to the ABW.	Medium / GPA
			
859	S31 16 03.1 E26 17 34.3	This small, north-facing rock shelter has some stone walling in it, presumably related to the ABW. A tin can was seen close to it.	Medium / GPA
			

860	S31 16 03.9 E26 17 34.0	Dry-stone walling has been used to close off a small gulley to create a hiding place on a hilltop. This is a defensive position related to the ABW.	Low / GPB
			
861	S31 16 05.2 E26 17 35.8	This stone walling has been placed right on the edge of the top of a rocky hill overlooking the railway line. This is a defensive position related to the ABW.	Medium / GPA
			
862	S31 16 04.5 E26 17 36.1	This is a collapsed arc-shaped stone wall placed against a boulder on the top of a rocky hill overlooking the railway line and no doubt related to the ABW.	Medium / GPA



863	S31 16 04.5 E26 17 35.4	This 5 m wide circular ABW stone fort was built using the formal technique of two skins with a rubble fill. The walls are low, however, but quite a few stones lie around the base of the walling. This fort is on the top of a prominent rocky hill overlooking the railway line and is surrounded by several other smaller stone-walled features. The hill lies to the north of the Stormberg Junction.	High / IIIB
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864	S31 16 03.9 E26 17 35.0	This is some badly collapsed stone walling on a rocky hill overlooking the railway line and no doubt related to the ABW. There is a lot of stone so the wall may have been taller than most similar and better preserved features.	Medium / GPA
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