HERITAGE IMPACT ASSESSMENT

(REQUIRED UNDER SECTION 38(8) OF THE NHRA (No. 25 OF 1999)

FOR THE PROPOSED DEVELOPMENT ON PORTIONS 1 AND 2 OF THE FARM VINGERFONTEIN 162, VICTORIA WEST, NORTHERN CAPE PROVINCE.

Type of development:

Mining Permit

Client:

Greenmined Environmental (Pty) Ltd

Applicant:

Power Construction (Pty) Ltd

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Project Reference:
Project number 2589
Report date:
November 2025

APPROVAL PAGE

Project Name	The Proposed Development on Portions 1 And 2 of the farm Vingerfontein 162, Victoria West, Northern Cape Province.
Report Title	Heritage Impact Assessment for the proposed development on Portions 1 and 2 of the Farm Vingerfontein 162, Victoria West, Northern Cape Province.
Authority Reference Number	TBC
Report Status	Draft Report
Applicant Name	Power Construction (Pty) Ltd

Responsibility	Name	Qualifications and Certifications	Date
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Date	Report Reference Number	Description of Amendment

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REPORT OUTLINE

Appendix 6 of the GNR 326 EIA Regulations published on 7 April 2017 provides the requirements for specialist reports undertaken as part of the Environmental Authorisation (EA) process. In line with this, Table 1 provides an overview of Appendix 6 together with information on how these requirements have been met.

Table 1. Specialist Report Requirements.

Requirement from Appendix 6 of GN 326 EIA Regulation 2017	Chapter
(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.	Section a
(b) Declaration that the specialist is independent in a form as may be specified by the competent authority.	*Declaration of Independence*
(c) Indication of the scope of, and the purpose for which, the report was prepared.	Section 1
(cA) An indication of the quality and age of base data used for the specialist report.	Section 3.4.
(cB) A description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change.	Section 9
(d) Duration, Date and season of the site investigation and the relevance of the season to the outcome of the assessment.	Section 3.4
(e) 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 site plan identifying site alternatives.	Sections 7, 8 and 9
(g) Identification of any areas to be avoided, including buffers.	Sections 7,8 and 9
(h) 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 8
(I) Description of any assumptions made and any uncertainties or gaps in knowledge.	Section 3.7
(j) A description of the findings and potential implications of such findings on the impact of the proposed activity including identified alternatives on the environment or activities.	Section 1.3
(k) Mitigation measures for inclusion in the EMPr.	Sections 9.1 and 9.5
(I) Conditions for inclusion in the environmental authorisation.	Sections 9.1 and 9.5
(m) Monitoring requirements for inclusion in the EMPr or environmental authorisation.	Section 9.6
(n) Reasoned opinion - (i) As to whether the proposed activity, activities or portions thereof should be authorised; (iA) Regarding the acceptability of the proposed activity or activities; and (ii) If the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan.	Section 9.3
(o) Description of any consultation process that was undertaken during the course of preparing the specialist report.	Section 5
(p) A summary and copies of any comments received during any consultation process and where applicable all responses thereto.	Refer to the BA report
(q) Any other information requested by the competent authority.	No other information requested at this time

Executive Summary

Power Construction (Pty) Ltd is proposing the to extract dolerite on Portions 1 and 2 of the farm Vingerfontein 162, Victoria West, Northern Cape Province. The proposed mining operation spans approximately 5 hectares over an undisturbed area of the farm, which is occasionally used for agricultural purposes. Power Construction (Pty) Ltd appointed Greenmined Environmental (Pty) Ltd as the independent environmental assessment practitioner (EAP) to apply for Environmental Authorization for the Project. Greenmined Environmental (Pty) Ltd, in turn, appointed Beyond Heritage to conduct a Heritage Impact Assessment (HIA) for the Project and the study area was assessed through a desktop assessment and by a non-intrusive pedestrian field survey. Key findings of the assessment include:

- The project components are located in an arid sparsely vegetated landscape with the quarry area characterised by large, blackened dolerite boulders;
- During the survey, numerous rock art engraved panels (VF001, VF002, VF003) were noted in the area earmarked for the quarry attributed to the dolerite boulders being preferred surfaces for rock engravings, because the outer weathered crust (patina) provides a strong colour contrast when pecked away;
- The engraved panels seem to have been used over different time periods and are of high significance;
- According to the South African Heritage Resource Authority (SAHRA) Paleontological sensitivity map the study area is of moderate high palaeontological sensitivity, and an independent study was commissioned for this aspect (Bamford 2025).

The impact on heritage resources can be mitigated to an acceptable level, and the Project can be authorised provided that the recommendations in this report are adhered to and based on the SAHRA's approval.

Recommendations:

The following recommendations for Environmental Authorisation apply and the Project may only proceed after receiving comment from SAHRA:

- The Rock Art sites should preferably be avoided with a 100 m buffer zone and with the implementation of a site management and approved blasting plan;
    - » If avoidance is not possible the engravings should be recorded in detail through tracing and photographs and all engravings should be mapped to create a permanent digital record. After which it is recommended that the engraved stones should be moved to a local or open-air museum adhering to all legal and permit requirements;
- Development activities must be confined to the approved development footprint only;
- Monitoring of the Project area by the ECO during pre-construction and construction phases for heritage and paleontological chance finds, if chance finds are encountered to implement the Chance Find Procedure for the Project as outlined in Section 9.2

Declaration of Independence

Specialist Name	Lara Lucija Kraljević
Declaration of Independence	I declare, as a specialist appointed in terms of the National Environmental Management Act (Act No 107 of 1998) and the associated 2014 Environmental Impact Assessment (EIA) Regulations (as amended), that I: • I act as an 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 49 A of the Act.
Signature	
Date	24/11/2025

a) Expertise of the specialist

Lara Kraljević completed her masters in archaeology at the University of Pretoria specialising in chemical and mineralogical studies of Iron Age ceramics. Lara is an accredited member of the Association of South African Professional Archaeologists (ASAPA) (#661). She has authored over 100 impact assessments in Gauteng, Limpopo, Mpumalanga, Northern Cape, Eastern Cape, and North West Provinces in South Africa.

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ABBREVIATIONS

ASAPA	Association of South African Professional Archaeologists
BGG	Burial Ground and Graves
CFPs	Chance Find Procedures
CMP	Conservation Management Plan
CoGHSTA	Co-operative Governance, Human Settlements and Traditional Affairs
CRR	Comments and Response Report
CRM	Cultural Resource Management
DFFE	Department of Fisheries, Forestry and Environment,
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment*
EIA	Early Iron Age*
EAP	Environmental Assessment Practitioner
EMPr	Environmental Management Programme
ESA	Early Stone Age
ESIA	Environmental and Social Impact Assessment
GIS	Geographical Information System
GPS	Global Positioning System
GRP	Grave Relocation Plan
HIA	Heritage Impact Assessment
LIA	Late Iron Age
LSA	Late Stone Age
MEC	Member of the Executive Council
MIA	Middle Iron Age
MPRDA	Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
MSA	Middle Stone Age
NCHM	National Cultural History Museum
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NID	Notification of Intent to Develop
NoK	Next-of-Kin
PRHA	Provincial Heritage Resource Agency
SADC	Southern African Development Community
SAHRA	South African Heritage Resources Agency

**Although EIA refers to both Environmental Impact Assessment and the Early Iron Age both are internationally accepted abbreviations and must be read and interpreted in the context it is used.*

GLOSSARY

Archaeological site	Remains of human activity over 100 years old
Earlier Stone Age	~ 2.6 million to 250 000 years ago
Middle Stone Age	~ 250 000 to 40-25 000 years ago
Later Stone Age	~ 40-25 000, to the historic period
The Iron Age	~ AD 400 to 1840
Historic	~ AD 1840 to 1950
Historic building	Over 60 years old

1 Introduction

Greenmined Environmental (Pty) Ltd appointed Beyond Heritage to conduct a Heritage Impact Assessment (HIA) for a mining permit area in extent approximately 4.9 hectares comprising of a portion of portion 1 and 2 of the farm Vingerfontein 162 Victoria West Magisterial District, Northern Cape Province (Reference: NC 30/5/1/3/2/10_MP). (Figure 1.1 - 1.3).

The aim of the study was to survey the proposed development footprint to understand the cultural layering of the area, and if heritage features are found, to assess their importance within local, provincial, and national context. It further served to assess the impact of the proposed Project on non-renewable heritage resources. The study will submit appropriate recommendations with regard to the responsible cultural resources management measures that might be required to assist the developer in managing the discovered heritage resources in a responsible manner. Recommendations are included to protect, preserve, and develop such resources within the framework provided by the National Heritage Resources Act of 1999 (Act No 25 of 1999) (NHRA).

The report outlines the approach and methodology utilized before and during the survey, which includes:

- Phase 1, review of relevant literature;
- Phase 2, the physical surveying of the area on foot and by vehicle;
- Phase 3, reporting the outcome of the study.

During the survey, rock art was recorded in the study area. General site conditions and features in the study area were recorded by means of photographs, GPS locations and descriptions. Possible impacts were identified, and mitigation measures are proposed in this report.

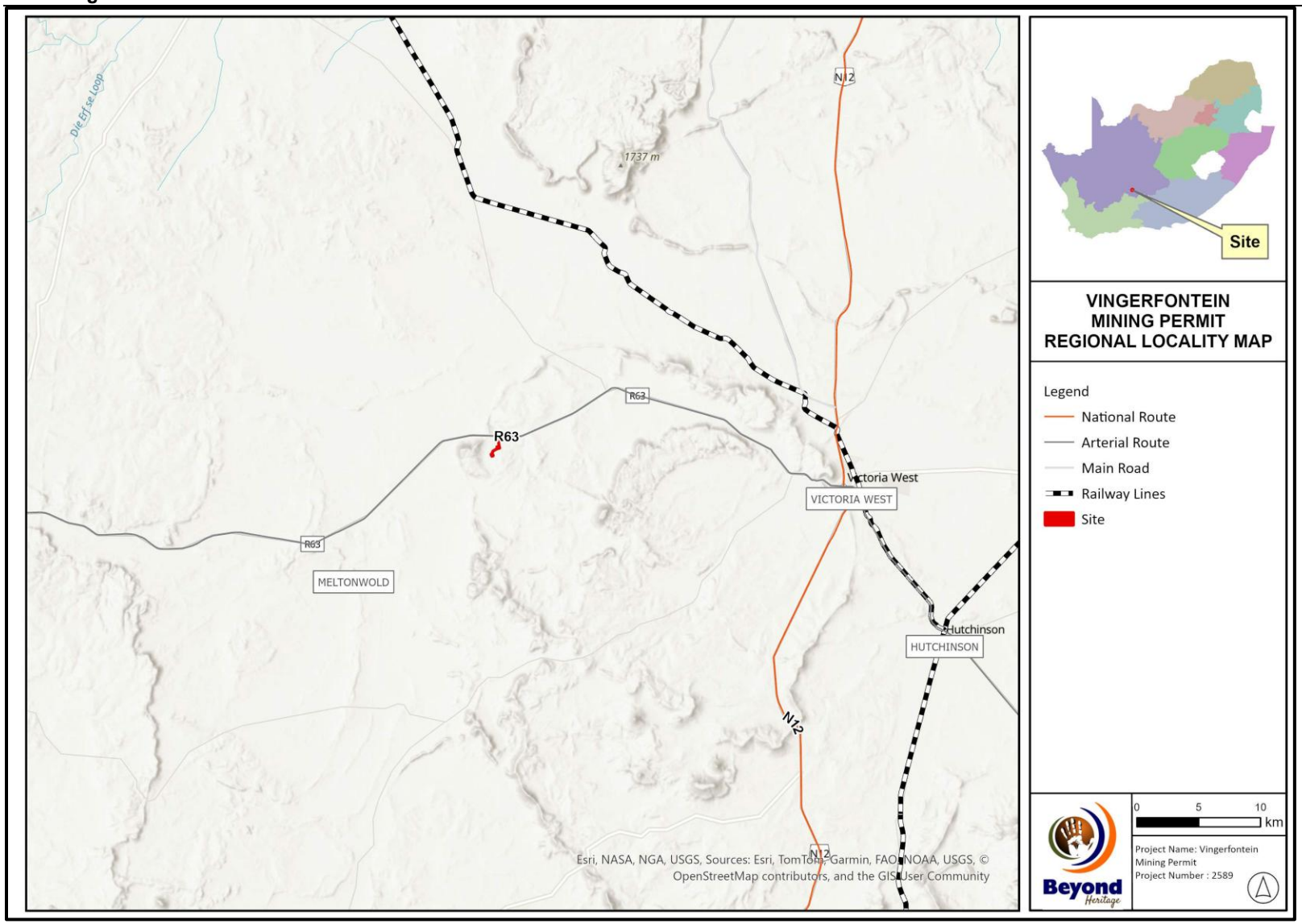


Figure 1.1.Regional setting of the Project.

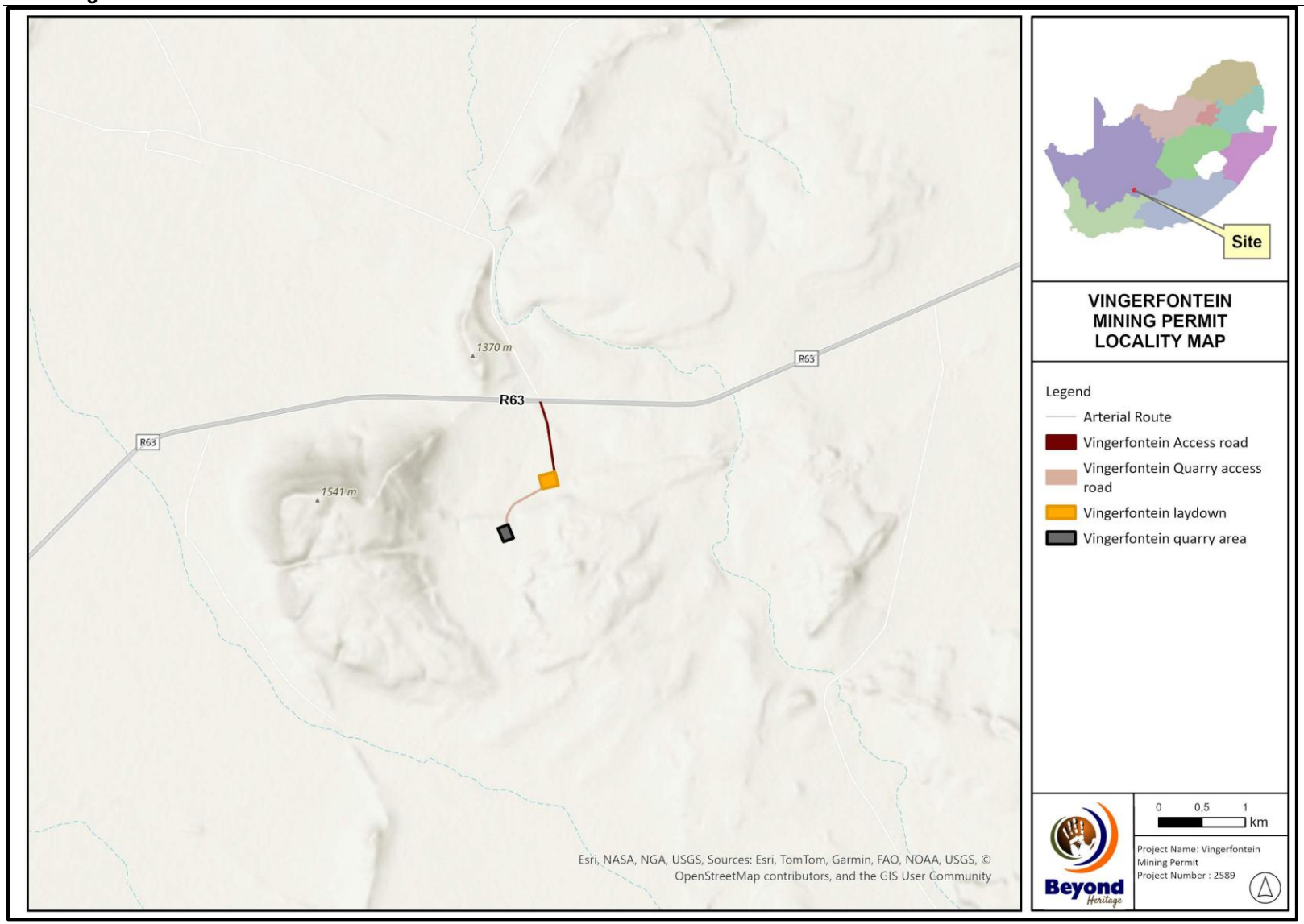


Figure 1.2. Local setting of the Project.

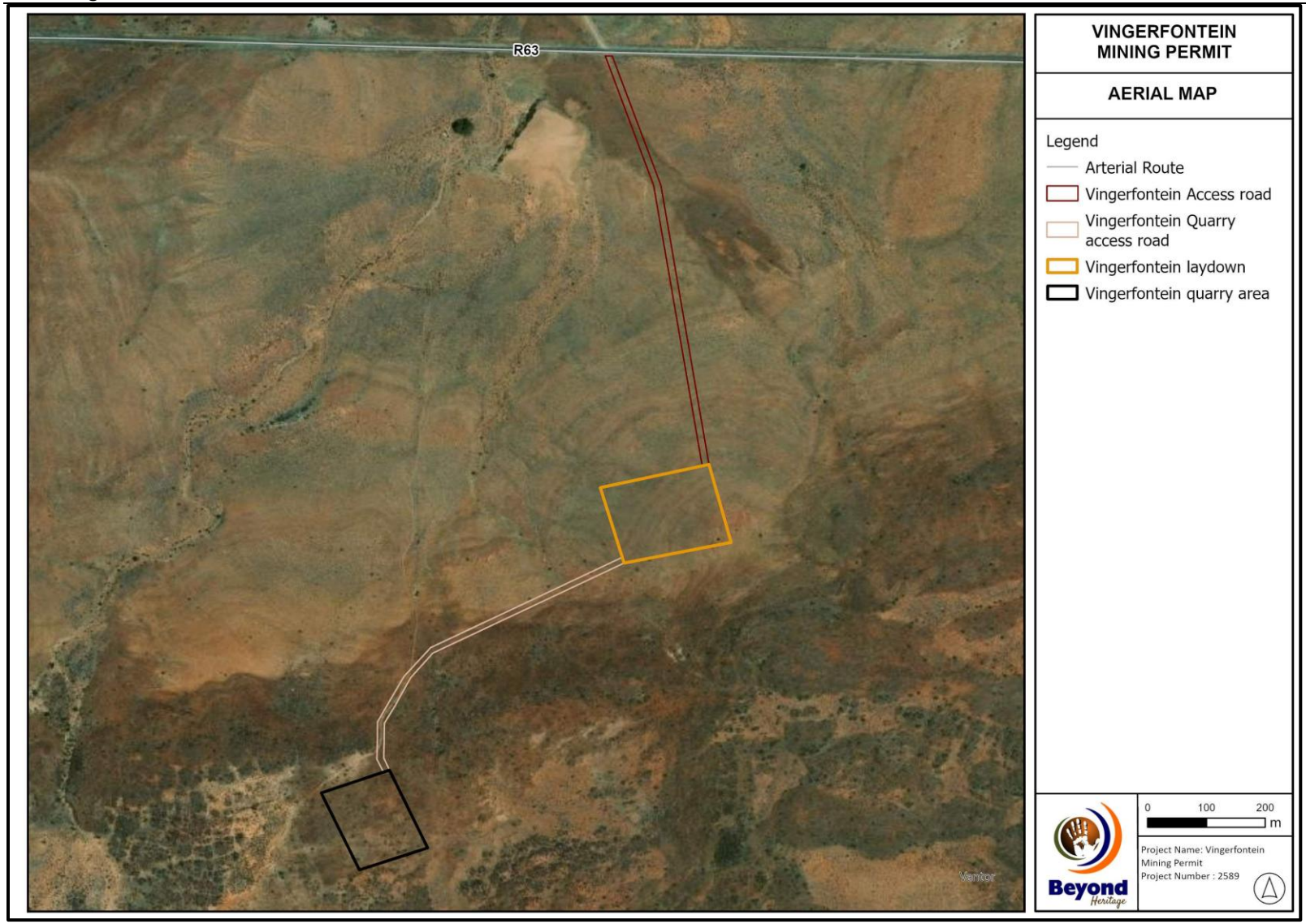


Figure 1.3. Aerial image of the Project area.

1.1 Terms of Reference

The following Terms of Reference were adhered to in conducting this HIA.

Field study

Conduct a field study to: (a) survey the development footprint to understand the heritage character of the impact area; b) record GPS points of sites/areas identified as significant areas; c) determine the levels of significance of the various types of heritage resources affected by the proposed development.

Reporting

Report on the identification of anticipated and cumulative impacts the operational units of the proposed Project activity may have on the identified heritage resources for all 3 phases of the project, i.e., construction, operation and decommissioning phases. Consider alternatives, should any significant sites be impacted adversely by the proposed project. Ensure that all studies and results comply with the relevant legislation, SAHRA minimum standards and the code of ethics and guidelines of Association of South African Professional Archaeologists (ASAPA).

Recommendations are provided to assist the developer in managing the discovered heritage resources in a responsible manner, and to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act of 1999 (Act No 25 of 1999).

1.2 Project Description

Project components and the location of the Vingerfontein Mining Permit Project are outlined in Tables 2 and 3.

Table 2. Project Description

Project Locality	A portion of portion 1 and 2 of the farm Vingerfontein 162 Victoria West Magisterial District, Northern Cape Province (Reference: NC 30/5/1/3/2/10___MP).
Central co-ordinates of the development	31°22'48.48"S 22°51'58.52"E
1:50 000 Topographic Map Number	3122 BD

Table 3. Infrastructure and project activities

Type of development	Mining
Project Details: The project comprises a mining development that will extract dolerite from an area of approximately 4,9 hectares and associated infrastructure including access roads and a laydown area.	

1.3 Alternatives

No alternatives were provided, but the area assessed allows for siting of the development to avoid impacts to heritage resources.

2 Legislative Requirements

The HIA, as a specialist study to the EIA, is required under the following legislation:

- National Heritage Resources Act ((NHRA), Act No. 25 of 1999)
- National Environmental Management Act ((NEMA), Act No. 107 of 1998 - Section 23(2)(b))

A Phase 1 HIA is a pre-requisite for development in South Africa as prescribed by SAHRA and stipulated by legislation. The overall purpose of heritage specialist input is to:

- Identify any heritage resources, which may be affected;
- Assess the nature and degree of significance of such resources;
- Assess the negative and positive impact of the development on these resources; and
- Make recommendations for the appropriate heritage management (or avoidance) of these impacts.

The HIA should be submitted, as part of the impact assessment report or EMPr, to the Provincial Heritage Resource Agency (PHRA) or to The South African Heritage Resources Agency (SAHRA). SAHRA will ultimately be responsible for the evaluation of Phase 1 HIA reports upon which review comments will be issued. 'Best practice' requires Phase 1 HIA reports and additional development information, as per the impact assessment report and/or EMPr, to be submitted in duplicate to SAHRA after completion of the study. SAHRA accepts Phase 1 HIA reports authored by professional archaeologists, accredited with ASAPA or with a proven ability to do archaeological work.

SAHRA as a commenting authority under section 38(8) of the NHRA require all environmental documents, compiled in support of an EA application as defined by the National Environmental Management Act (NEMA) (Act No 107 of 1998) to be submitted to SAHRA for commenting. Environmental Impact Assessment (EIA) Regulations section 40 (1) and (2). The Environmental Impact Assessment (EIA) Regulations, Government Notice Regulation (GN) R.982 were published on 04 December 2014 and promulgated on 08 December 2014. Together with the EIA Regulations, the Minister also published GN R.983 (Listing Notice No. 1), GN R.984 (Listing Notice No. 2) and GN R.985 (Listing Notice No. 3) in terms of Sections 24(2) and 24D of the NEMA, as amended) Upon submission to SAHRA the project will be automatically given a case number as reference. As such the EIA report and its appendices must be submitted to the case as well as the EMPr, once it's completed by the Environmental Assessment Practitioner (EAP).

Minimum accreditation requirements include an Honours degree in archaeology or related discipline and 3 years post-university CRM experience (field supervisor level). Minimum standards for reports, site documentation and descriptions are set by ASAPA in collaboration with SAHRA. ASAPA is based in South Africa, representing professional archaeology in the SADC region. ASAPA is primarily involved in the overseeing of ethical practice and standards regarding the archaeological profession. Membership is based on proposal and secondment by other professional members.

Phase 1 HIAs are primarily concerned with the location and identification of heritage sites situated within a proposed development area. Identified sites should be assessed according to their significance (refer to Section 3.5). Relevant conservation or mitigation recommendations should be made. Recommendations are subject to evaluation by SAHRA.

Section 3 of the NHRA distinguishes nine criteria for places and objects to qualify as 'part of the national estate' if they have cultural significance or other special value. These criteria are:

- Its importance in/to the community, or pattern of South Africa's history;
- Its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- Its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- Its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- Its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- Its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- Its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- Its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa;
- Sites of significance relating to the history of slavery in South Africa

Conservation or mitigation recommendations, as approved by SAHRA, are to be used as guidelines in the developer's decision-making process.

Phase 2 archaeological projects are primarily based on salvage/mitigation excavations preceding development destruction or impact on a site. Phase 2 excavations can only be conducted with a permit, issued by SAHRA to the appointed archaeologist. Permit conditions are prescribed by SAHRA and includes (as minimum requirements) reporting back strategies to SAHRA and deposition of excavated material at an accredited repository.

In the event of a site conservation option being preferred by the developer, a site management plan, prepared by a professional archaeologist and approved by SAHRA, will suffice as minimum requirement. After mitigation of a site, a destruction permit must be applied for with SAHRA by the applicant before development may proceed.

Human remains older than 60 years are protected by the National Heritage Resources Act, with reference to Section 36 and GNR 548 as well as the SAHRA BGG Policy 2020. Graves older than 60 years, but younger than 100 years fall under Section 36 of Act 25 of 1999 of the National Heritage Resources Act (NHRA), as well as the National Health Act of 2003 and are the jurisdiction of SAHRA. The procedure for Consultation Regarding Burial Grounds and Graves (Section 36[5]) of Act 25 of 1999) is applicable to graves older than 60 years that are situated outside a formal cemetery administrated by a local authority. Graves in this age category, located inside a formal cemetery administrated by a local authority, require the same authorisation as set out for graves younger than 60 years, in addition to SAHRA authorisation. If the grave is not situated inside a formal cemetery, but is to be relocated to one, permission from the local authority is required and all regulations, laws and by-laws, set by the cemetery authority, must be adhered to.

Human remains that are less than 60 years old are protected under Section 2(1) of the Removal of Graves and Dead Bodies Ordinance (Ordinance No. 7 of 1925) re-instituted by Proclamation 109 of 17 June 1994 and implemented by CoGHSTA as well as the National Health Act 2003 and are the jurisdiction of the National Department of Health and the relevant Provincial Department of Health and must be submitted for final approval to the office of the relevant Provincial Premier. Authorisation for exhumation and reinternment must also be obtained from the relevant local or regional council where the grave is situated, as well as the relevant local or regional council to where the grave is being relocated. All local and regional provisions, laws and by-laws must also be adhered to. To handle and transport human remains, the institution conducting the relocation should be authorised under the National Health Act of 2003.

3 METHODOLOGY

3.1 Literature Review and background study

A brief survey of available literature was conducted to extract data and information on the area in question to provide general heritage context into which the development would be set. This literature search included published material, unpublished commercial reports and online material, including reports sourced from the South African Heritage Resources Information System (SAHRIS). Findings are included in Section 6.1 and 6.2.

3.2 Genealogical Society and Google Earth Monuments

Google Earth and 1:50 000 topographic maps of the area were utilised to identify possible places of heritage sensitivity might be located; these locations were marked and visited during the fieldwork phase. The database of the Genealogical Society of South Africa (GSSA) was consulted to collect data on any known graves in the area. Results are included in Section 6.3.

3.3 Public Consultation and Stakeholder Engagement:

Stakeholder engagement is a key component of any HIA process; it involves stakeholders interested in or affected by the proposed development. Stakeholders are provided with an opportunity to raise issues of concern (for the purposes of this report only heritage related issues will be included). The aim of the public consultation process undertaken by the EAP was to capture and address any issues raised by community members and other stakeholders. Results are included in Section 5 and the final HIA report.

3.4 Site Investigation

The aim of the site visit was to:

a) survey the proposed Project area to understand the heritage character of the area and to record, photograph and describe sites of archaeological, historical or cultural interest;

b) record GPS points of sites/areas identified as significant areas;

c) determine the levels of significance of the various types of heritage resources recorded in the Project area.

Table 4. Site Investigation Details

	Site Investigation
Date	12 – 14 November 2025
Season	Summer – Archaeological visibility was good due to low vegetation cover. The development footprint was however sufficiently covered to understand the heritage character of the area (Figure 3.1).

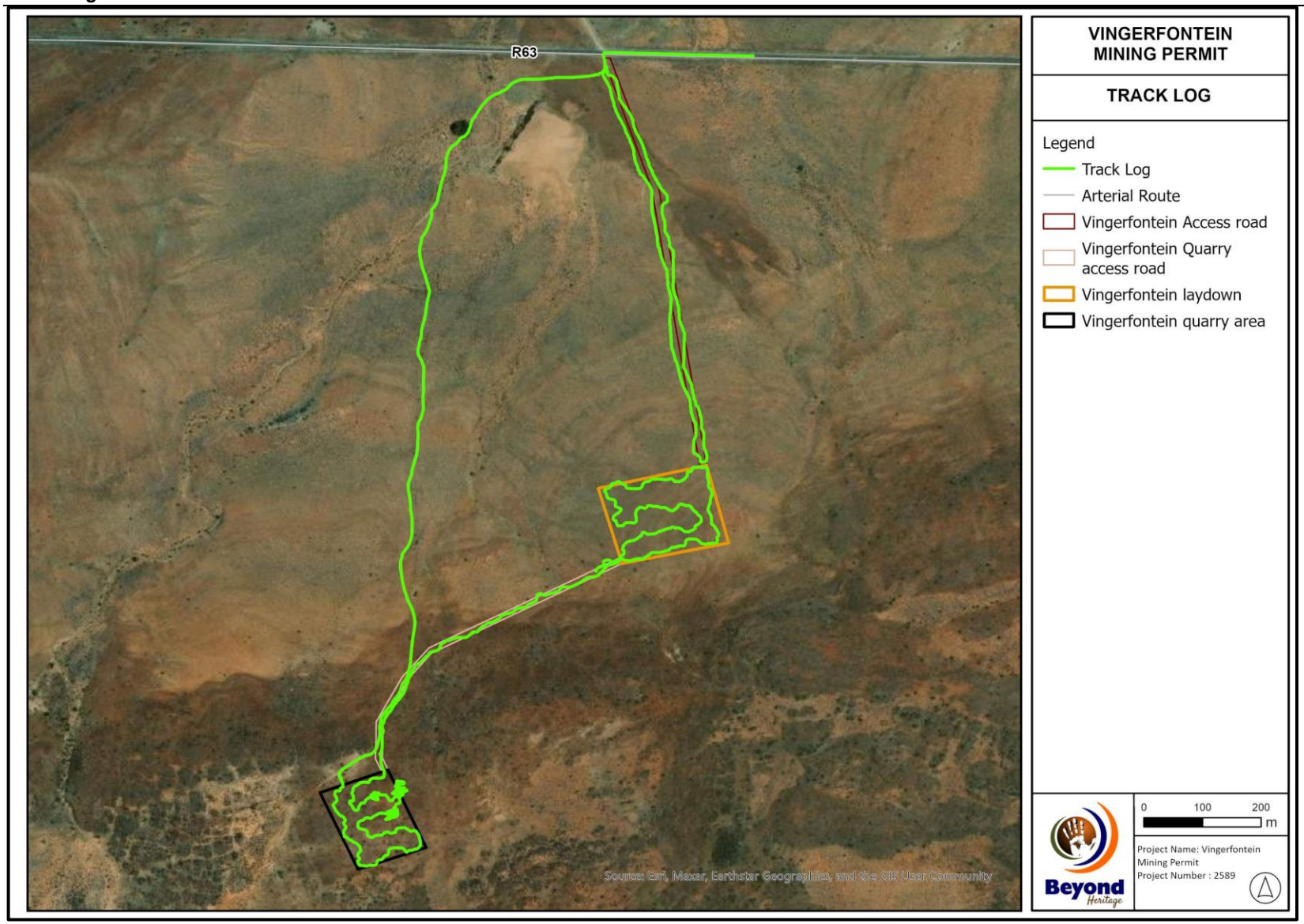


Figure 3.1. Tracklog of the survey path in green.

3.5 Site Significance and Field Rating

The presence and distribution of heritage resources define a ‘heritage landscape’. In this landscape, every site is relevant. In addition, because heritage resources are non-renewable, heritage surveys need to investigate an entire Project area, or a representative sample, depending on the nature of the project. In the case of the proposed Project the local extent of its impact necessitates a representative sample and only the footprint of the areas demarcated for development were surveyed. In all initial investigations, however, the specialists are responsible only for the identification of resources visible on the surface. This section describes the evaluation criteria used for determining the significance of archaeological and heritage sites. The following criteria were used to establish site significance with cognisance of Section 3 of the NHRA:

- The unique nature of a site;
- The integrity of the archaeological/cultural heritage deposits;
- The wider historic, archaeological and geographic context of the site;
- The location of the site in relation to other similar sites or features;
- The depth of the archaeological deposit (when it can be determined/is known);
- The preservation condition of the sites; and
- Potential to answer present research questions.

In addition to this criteria field ratings prescribed by SAHRA (2006), and acknowledged by ASAPA for the SADC region, were used for the purpose of this report. The recommendations for each site should be read in conjunction with section 9 of this report.

Table 5. Heritage significance and field ratings

FIELD RATING	***GRADE***	***SIGNIFICANCE***	***RECOMMENDED MITIGATION***
National Significance (NS)	Grade 1	-	Conservation; national site nomination
Provincial Significance (PS)	Grade 2	-	Conservation; provincial site nomination
Local Significance (LS)	Grade 3A	High significance	Conservation; mitigation not advised
Local Significance (LS)	Grade 3B	High significance	Mitigation (part of site should be retained)
Generally Protected A (GP. A)	-	High/medium significance	Mitigation before destruction
Generally Protected B (GP. B)	-	Medium significance	Recording before destruction
Generally Protected C (GP.C)	-	Low significance	Destruction

3.6 Impact Assessment Methodology

The criteria below are used to establish the impact rating on sites:

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

The **significance** is calculated by combining the criteria in the following formula:
S = (E+D+M) P
S = Significance weighting
E = Extent
D = Duration
M = Magnitude
P = Probability

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

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

3.7 Assumptions and limitations of the study

- The authors acknowledge that the brief literature review is not exhaustive of the literature of the area.
- Due to the nature of heritage resources and pedestrian surveys, the possibility exists that some features or artefacts may not have been discovered/recorded and the possible occurrence of graves and other cultural material cannot be excluded. This limitation is successfully mitigated with the implementation of a Chance Find Procedure (CFP) and monitoring of the study area by the Environmental Control Officer (ECO).
- This report only deals with the footprint area of the proposed development and consisted of non-intrusive surface surveys.
- According to the NHRA public participation should be conducted for the Project and it is assumed that the social/environmental team included this in the process run by EAP with inputs from the heritage consultant. Additional social consultation in terms of graves (relocation process) will be handled as a next phase of study if required.
- Field data were recorded by handheld GPS and Mobile GPS applications. It must be noted that during the process of converting spatial data to final drawings and maps the accuracy of spatial data may be compromised. Printing or other forms of reproduction might also distort the spatial distribution in maps. Due care has been taken to preserve accuracy.
- This study did not assess the impact on medicinal plants and intangible heritage as it is assumed that these components will be highlighted through the public consultation process if relevant. This process is facilitated by the EAP and if not done this can be considered a significant limitation and as a potential Project risk. It is possible that new information could come to light in future, which might change the results of this Impact Assessment.

4 Description of Socio-Economic Environment

According to StatsSA the Ubuntu Municipality has a total population of 15 836 people, of which 20,5% are black African. The coloured population consists of 70,0%, and the white population consists of 8,5%. In the Ubuntu municipality, 9,6% of people have no schooling, 15,1% have some form of primary schooling, and 8,1% have completed primary schooling. Of the people aged 20 and older, 30,9% have some form of secondary education, 27,2% have matric, and 7,7% have higher education. 65,2% of people have access to piped water inside their dwellings, 32,3% have access to piped water inside their yards, and 0,2% have no access to piped water (statssa.gov.za)

5 Results of Public Consultation and Stakeholder Engagement:

In line with the NHRA, stakeholder engagement is a key component of any EA process, and this is conducted by the EAP, it involves stakeholders interested in or affected by the proposed development. At the time of writing no heritage concerns have been raised.

6 Contextualising the study area

6.1 Archaeological Background

South Africa has a long and complex Stone Age sequence of more than 2 million years. The broad sequence includes the Later Stone Age, the Middle Stone Age and the Earlier Stone Age. Each of these phases contains sub-phases or industrial complexes, and within these we can expect regional variation regarding characteristics and time ranges. For (CRM) purposes it is often only expected/ possible to identify the presence of the three main phases. Yet sometimes the recognition of cultural groups, affinities or trends in technology and/or subsistence practices, as represented by the sub-phases or industrial complexes, is achievable. The three main phases can be divided as follows;

- » Later Stone Age (LSA); associated with Khoi and San societies and their immediate predecessors. - Recently to ~30 thousand years ago.
- » Middle Stone Age (MSA); associated with Homo sapiens and archaic modern human - . 30-300 thousand years ago.
- » Earlier Stone Age (ESA); associated with early Homo groups such as Homo habilis and Homo erectus. - 400 000-> 2 million years ago.

In the Northern Cape, Stone Age sites and artefacts are found in abundance spanning from the ESA (Beaumont and Morris 1990). Extensive occupation by early humans would probably date to at least the Middle Stone Age and consist of open sites near stream beds or hills and outcrops (Morris 2011). Raw material sources would have been amongst the foci for Stone Age activity. Population density might have increased during the Later Stone Age and people would have occupied rock shelters where available, as well as open air sites. During this later period, they also produced rock engravings or rock paintings. Dolerite koppies in the region are also known to have rock engravings (Fock and Fock 1989, Morris 1988). LSA associated pottery is also common within the Karoo.

Near Hanover in the Seacow River valley, Sampson (1985) conducted research that revealed three distinct phases of LSA archaeology, categorized by the types of stone artifacts uncovered. The earliest Holocene phase, termed the "Lockshoek" Industry by Sampson, was characterized by larger scrapers. This was succeeded by the "Interior Wilton" phase, where microlithic tools commonly found on mid-Holocene sites in South Africa became prominent. Pottery was evident in the latest sites of this phase and in most of the subsequent "Smithfield" sites. These three industries align with broader classifications described as "late Pleistocene – early Holocene non-microlithic," "Holocene microlithic," and "late Holocene assemblages with pottery," which are more generalized and widely applicable across the country (Deacon 1984). However, sites from the latter period often lack pottery, and assemblages from this phase are more accurately referred to as "Late Holocene assemblages" (Orton 2006). While the presence of pottery often suggests pastoralist occupation, Sampson (2010) and other researchers (Bollong et al 1993; 1997, Rudner 1979) have demonstrated that some pottery found inland is tempered with fibres, indicating it was crafted by Bushmen hunter-gatherers rather than Khoekhoe pastoralists. One notable observation from their research of LSA lithic industries in the Upper Karoo was the correlation between the age of artefacts and the patina on hornfels: dark brown to yellow indicated the Earlier Stone Age; red represented the Middle Stone Age; grey to grey-brown indicated the Lockshoek phase; light brown/tan represented the Interior Wilton phase; and black indicated the Smithfield phase (the last three belonging to the Later Stone Age). Sampson (1985) also noted the presence of multiple industries within LSA sites. LSA communities continued to occupy the landscape through to the Historical period.

Rock engravings in the Victoria West region form part of the wider Karoo–Northern Cape engraving tradition and are primarily attributed to San hunter-gatherers, with some later Khoekhoe influence (Deacon & Deacon 1999, Morris 2002). These engravings, typically found on dolerite boulders and exposed bedrock near rivers, ridges and water sources, include animal figures such as eland and antelope, geometric motifs like circles, grids and meanders, and occasional human or animal tracks (Lewis-Williams 1981, Mazel 2009). Techniques include pecking, incising and rubbing, producing imagery that may date to the last 5,000 years, with some potentially older based on weathering and superimposition (Morris 2014). Interpretations

draw heavily on San ethnography, suggesting links to trance experiences, rainmaking rituals and symbolic expressions of social or territorial identity (Lewis-Williams & Dowson 1989, Lewis-Williams & Pearce 2004). These engravings represent an important, non-renewable cultural resource protected under the National Heritage Resources Act and are considered highly significant within the archaeological landscape (SAHRA 2007).

6.1.1 Historical Information

The area that later became Victoria West was originally part of extensive grazing lands utilised by Trekboer pastoralists from the late 18th century (Penn 2005). By the mid-19th century, the Dutch Reformed Church sought a new congregation site to serve scattered farming communities. In 1843 the farm Kapjesfontein was selected, and a town was formally established and named Victoria after Queen Victoria of Britain (Burrows 1994). To distinguish it from another town also named Victoria, the settlement was officially renamed Victoria West in 1855 (Fransen 2006).

During the 19th century the town grew as a service centre for surrounding sheep farms, particularly with the growth of merino wool production, which became central to the regional economy (Beinart 2003). The establishment of a local municipality in 1863 and the construction of administrative buildings cemented its role in the district. A significant historical event was the disastrous flood of February 1871, when the Brak River burst its banks, destroying large parts of the settlement and causing widespread loss of life (Burrows 1994). The town was rebuilt on higher ground thereafter.

The arrival of the Cape Government Railways line in 1881, connecting Victoria West to Cape Town and Kimberley, transformed the town into a logistical node for wool trade and passenger movement (Worden, 2012). Throughout the early 20th century, Victoria West maintained a stable farming-based economy and developed civic infrastructure, including schools, churches, and commercial establishments typical of Karoo towns of the period. By the late 20th century, economic shifts—such as drought cycles, agricultural mechanisation and declining rural populations—affected many Karoo towns, including Victoria West (Meadows & Hoffman 2002). Despite this, the town retains important heritage features: Victorian and Edwardian architecture, churches, historic farmsteads, and the Apollo Theatre (built 1928), one of South Africa's last functioning Art Deco cinemas (Burrows 1994).

6.1 Literature Review (SAHRIS)

Several Cultural Resource Management (CRM) surveys are on record for the larger area, and the relevant results of these studies are briefly discussed below and outlined in Table 6.

Table 6. Studies consulted for the project.

Author	Year	Project	Findings
Binneman, J. & Booth, C. & Higgitt, N.	2010	A Phase 1 Archaeological Impact Assessment (AIA) for the Proposed Skietkuil Quarries 1 and 2 on the Farm Skietkuil No. 3, Victoria West, Central Karoo District, Western Cape Province	No sites were identified.
Webley, L. & Hart, T.	2010	Scoping Archaeological Impact Assessment: Proposed Prospecting on Taaiboschfontein 137 (Site 49), Victoria West, Northern Cape	No sites were identified.
Webley, L. & Halkett, D.	2011	Heritage Impact Assessment: Proposed Victoria West Mini Renewable Energy Facility on the Farm Bultfontein 217, Northern Cape Province	No sites were identified.
Dreyer, C.	2014	First Phase Archaeological and Heritage Assessment of the Proposed Solid Waste Disposal Site at Victoria West, Northern Cape	No sites identified.
Fourie, W.	2016	Heritage Impact Assessment: Basic Assessment for the Proposed construction of Supporting Electrical Infrastructure for the	Historical Farmstead identified. Stone Age find spot identified.

		Victoria West Wind Farm, Victoria West, Northern Cape Province	
Orton, J.	2022[a]	Heritage Impact Assessment: Proposed Loxton Wind Energy Facility 3, Carnarvon and Victoria West Magisterial Districts, Northern Cape	Rare artefact scatters from the LSA identified – fibre-tempered pottery and a large, abraded sandstone blade.
Orton, J.	2022[b]	Heritage Impact Assessment: Proposed Loxton Wind Energy Facility 2, Carnarvon and Victoria West Magisterial Districts, Northern Cape	Ruins of houses, Yzervarkenspoort 2 corbelled buildings, ruins of kraals, and other artefactual debris.
Orton, J.	2022[c]	Heritage Impact Assessment: Proposed Loxton Wind Energy Facility 1, Carnarvon and Victoria West Magisterial Districts, Northern Cape	Ruins of houses, kraals, and other features including some artefactual debris.
Orton, J.	2022[d]	Heritage Impact Assessment: Proposed Mura 1-4 PV Facilities, Beaufort West Magisterial District, Western Cape and Victoria West Magisterial District, Northern Cape	One potentially significant archaeological resource identified.
Kruger, N.	2025	Heritage Impact Assessment Report for the Victoria West WEF cluster EGI Project, Pixley ka Seme District Municipality, Northern Cape Province	Middle Stone Age and Early Stone Age artefacts identified. Historical Farmsteads identified. Small graveyard identified. Small historical period graveyard identified.

6.2. Google Earth and the Genealogical Society of South Africa (Graves and Burial Sites)

Google Earth and 1:50 000 maps of the area were utilised to identify possible places where archaeological and historical sites might be located. The database of the Genealogical Society of South Africa indicated no known grave sites within the study area.

7 Heritage Baseline

7.1 Description of the Physical Environment

The area falls within the arid interior plains of the Upper Karoo, characterized by gently undulating terrain, low dolerite ridges, and broad alluvial valleys associated with ephemeral drainage lines of the Brak River system. The landscape is dominated by Nama-Karoo vegetation, particularly the Upper Karoo and Eastern Upper Karoo vegetation units, consisting of low shrubs such as *Salsola, Tripteris* and *Pteronia,* interspersed with sparse grasses like *Stipagrostis ciliata* and *Enneapogon scoparius* (Mucina & Rutherford 2006).

Soil is typically shallow, calcareous and stony, with patches of deeper alluvium along drainage channels. The climate is semi-arid, marked by very hot summers, cold winters, and low, unpredictable rainfall averaging 200–300 mm annually, primarily during late summer thunderstorms (Schulze 1997). The region's hydrology is dominated by seasonal rivers and pans, resulting in highly variable surface water availability, while the geology—largely Karoo Supergroup sediments capped by dolerite—creates the characteristic flat-topped hills and boulder-strewn slopes of the Karoo landscape (Partridge et al 2006). These environmental conditions shape a rugged, sparsely vegetated landscape supporting low-density pastoral farming and a diversity of hardy arid-adapted fauna and flora. General site conditions are indicated in (Figure 7.1 to 7.4).

Figure 7.1. General site conditions showing vegetation cover.

Figure 7.2. General site conditions showing rocky areas and vegetation cover.

Figure 7.3. General site conditions showing the rocky terrain with very little vegetation cover, .

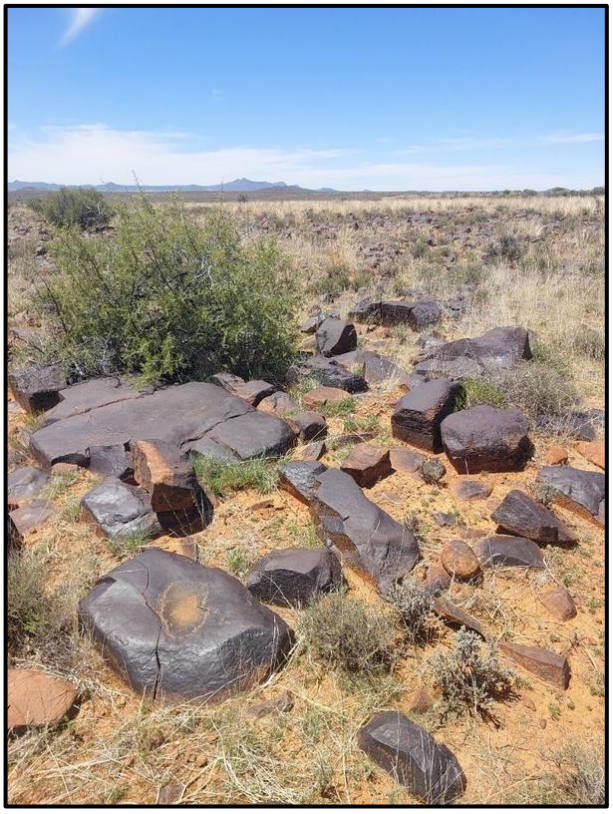


Figure 7.4. General site conditions in the proposed quarry area. Large dolerite boulders are visible across the area.

7.2 Heritage Resources

Heritage observations within the study included numerous detailed Rock Art features ranging from geometric lines, inscriptions and animals depicted on the dolerite boulders. The engraved panels seem to have been used over different time periods. Rock art clusters were recorded as waypoints with the prefix VF (Vingerfontein). The heritage significance of these features is high. General site conditions and site distribution of the recorded observations are illustrated in Figure 7.5 and briefly described in Table 7. Selected features are illustrated in Figure 7.6 to 7.16.

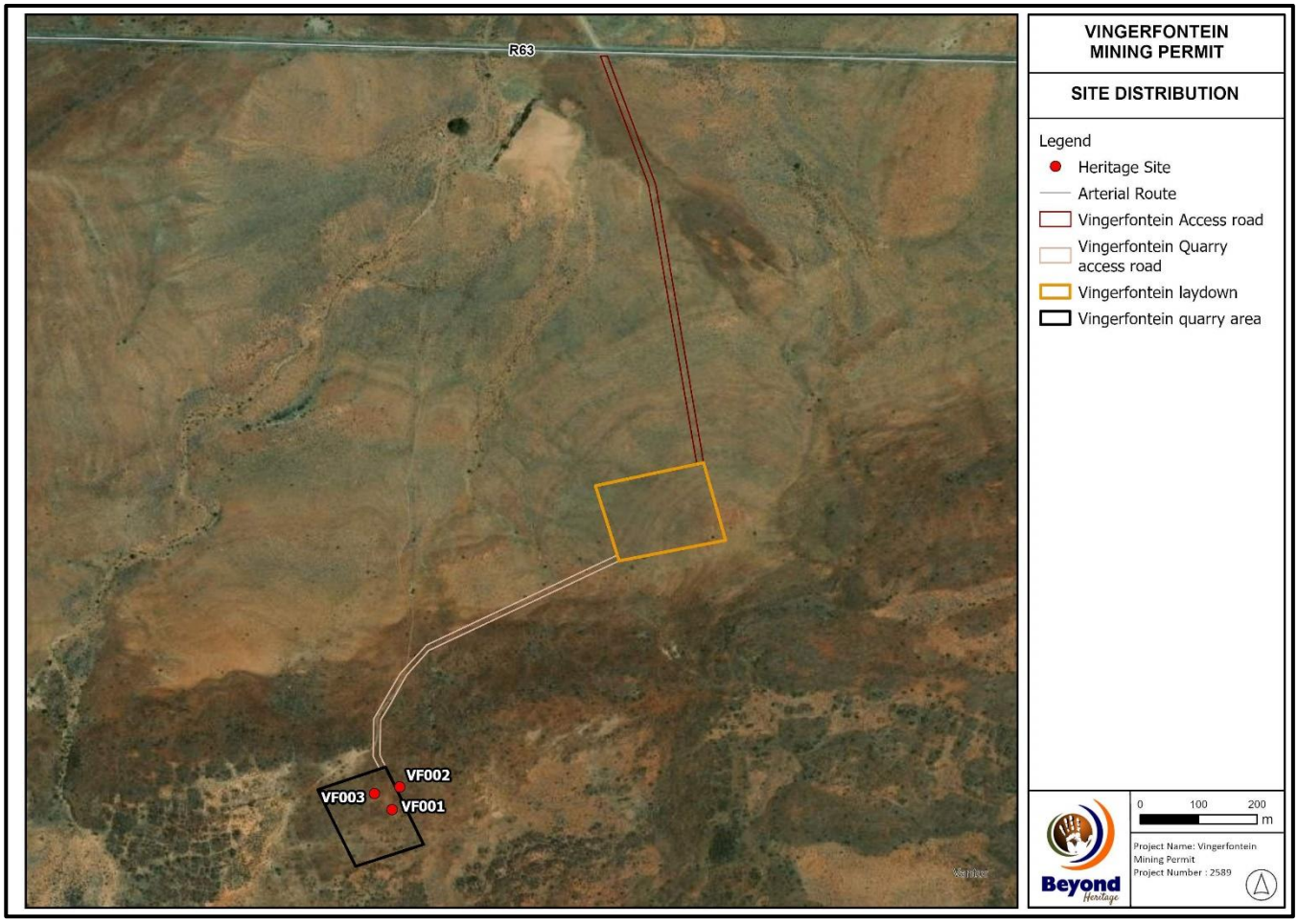


Figure 7.5. Site distribution map within the Project area.

Table 7. Sites recorded in the study area.

LABEL	LATITUDE	LONGITUDE	DESCRIPTION	SIGNIFICANCE
VF001	31°23'4.34"S	22°51'43.93"E	Large rock panels with finely detailed rock art figures.	High GP 3A
VF002	31°23'3.10"S	22°51'44.36"E	Large panels of engravings including geometric forms, animals, inscriptions and bicycles.	High GP 3A
VF003	31°23'3.47"S	22°51'42.97"E	Rock panels with inscription, geometric shapes as well as figures with rifles among the engravings.	High GP 3A

Figure 7.6. Large rock panels at VF001.

Figure 7.7. Human figures noted at VF001.

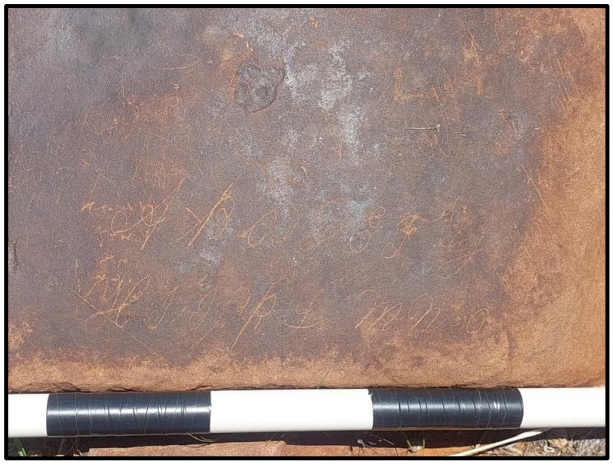


Figure 7.8. Inscriptions at VF002.

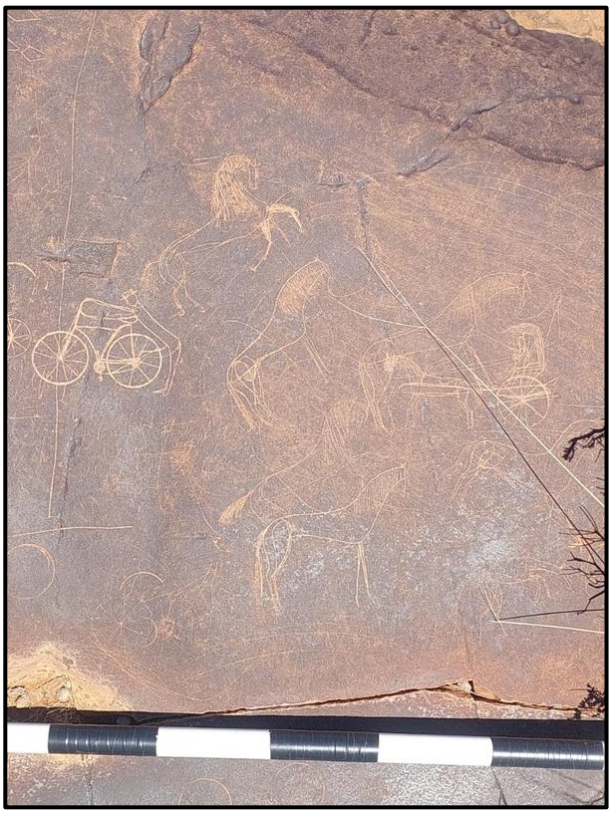


Figure 7.9. Rock art panel at VF002 with animals and bicycles depicted.

Figure 7.10. Rock art panel at VF002 with animals and bicycles depicted.

Figure 7.11. Rock art panel at VF002 with animals (horses) depicted.

Figure 7.12. Rock art panel at VF002 with an ox wagon depicted.

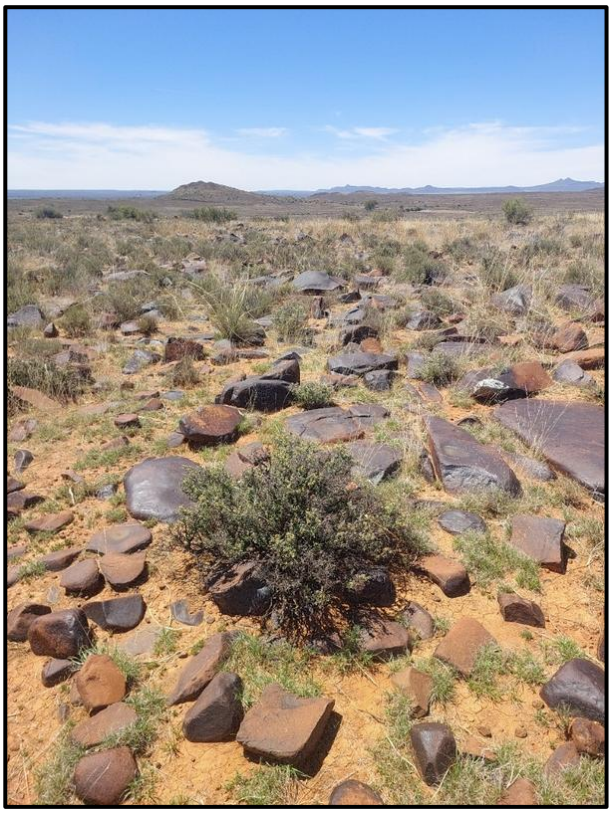


Figure 7.13. General site conditions at VF003.

Figure 7.14. Rock art panel at VF003 with animals depicted.

Figure 7.15. Inscriptions at VF003.

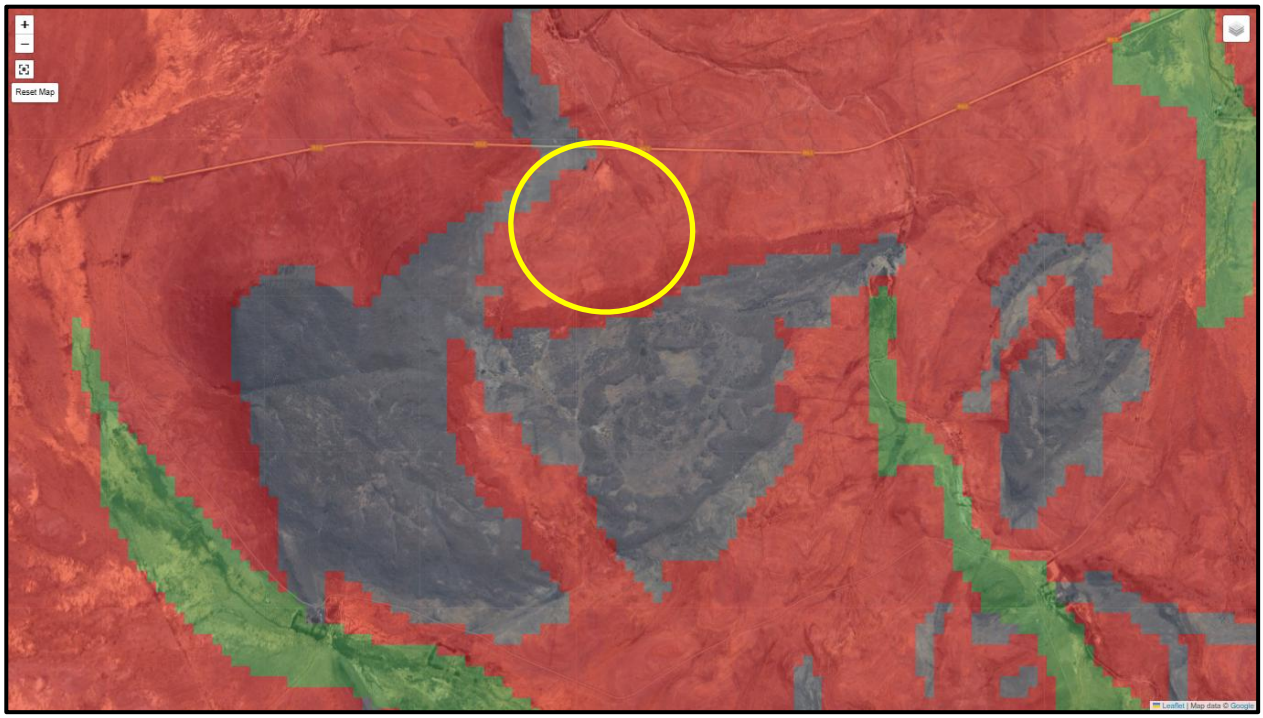
Figure 7.16. Figures with rifles at VF003.

7.3 Cultural Landscape

The study area environment formed an important corridor for hunter-gatherer groups, pastoralists and later colonial farmers, each of whom left material traces on the landscape. The region preserves an exceptionally long archaeological sequence, beginning with Victoria West–type Acheulean artefact assemblages dating to the Middle Pleistocene, representing some of the earliest organised stone-tool production in southern Africa (Kuman 2001). Much later, Late Stone Age hunter-gatherers produced fine-line and geometric rock engravings across dolerite outcrops (as noted in the study area), expressing symbolic traditions linked to ritual specialists, trance experiences and territorial marking (Deacon 1986, Smith & Ouzman 2004). From around 2 000 years ago, Khoekhoe pastoralists travelled through the region, contributing additional engraving traditions such as representational motifs of livestock and humans (Boonzaier et al. 1996). During the 18th and 19th centuries, San, Khoe, Korana, Griqua and Trekboer groups interacted in and moved across this frontier zone, adding further cultural layers including historical graffiti, ceramic scatters, and livestock enclosures (Penn 2005). Together, these archaeological signatures form a palimpsest landscape in which environmental setting, mobility patterns and successive cultural practices intersect to create a deeply layered heritage.

7.4 Paleontological Heritage

According to the SAHRA palaeontological sensitivity map, the study area is of insignificant, and very high palaeontological sensitivity (Figure 7.17), and an independent study was conducted for this aspect (Bamford 2025).



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

Figure 7.17. Palaeontological sensitivity map of the study area (yellow polygon).

8 Assessment of impacts

8.1 Impacts on tangible heritage resources

The main cause of impacts to heritage resources is physical disturbance of the cultural material itself and its context during removal of topsoil and vegetation as well as the excavations associated with the establishment of infrastructure.

The layered rock art site west of Victoria West is a heritage resource of high significance under Section 3 of the National Heritage Resources Act (NHRA 25 of 1999). Engravings on the dolerite outcrops reflect a multi-period record, including San fine-line and geometric imagery, Khoekhoe pastoralist motifs, and later historical markings from frontier-era groups. This stratified heritage offers valuable insight into long-term human movement, ritual practice, and land-use in the Karoo landscape.

In terms of Section 3(3) and Section 35 of the NHRA, the site holds aesthetic, historical, scientific, social and spiritual value, and its non-renewable nature renders it highly vulnerable to disturbance. The diversity and integrity of engravings qualify it as Grade IIIA. Avoidance of a 100m buffer zone and in situ conservation are therefore the preferred management options, with any development affecting the site requiring SAHRA-authorised mitigation. Mitigation measures if the site cannot be avoided and protected from blasting with an approved buffer zone will include extensive recording and mapping of the rock art The engravings will have to be individually recorded and traced after which it is recommended that the engraved stones be moved to a local museum. Due to the nature of the boulders, an open-air heritage site can be considered.

Any additional effects to subsurface heritage resources can be successfully mitigated by implementing a chance find procedure. Mitigation measures as recommended in this report should be implemented during all phases of the project. Impacts of the project on heritage resources is expected to be low during all phases of the development if mitigation measures are followed.

8.1.1 Cumulative impacts

If the Rock Art resources impacted on the cumulative impacts are expected to be high as it attests to landscape use over different time periods and is considered of high significance. The sites can be mitigated to an acceptable level with the adherence of the mitigation measures presented in this report.

8.2 Impact Assessment Tables

Table 8. Impact assessment for ruin KG001

Nature: During the construction phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological and paleontological material or objects.		
	Without mitigation	**With mitigation**
Extent	Local (2)	Local (2)
Duration	Permanent (5)	Permanent (5)
Magnitude	Moderate (6)	Moderate (5)
Probability	Definite (5)	Definite (5)
Significance	**65 High**	**60 Medium**
Status (positive or negative)	Negative	Negative
Reversibility	Not reversible	Not reversible
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes	
Mitigation: • The Rock Art sites should preferably be avoided with a 100 m buffer zone and with the implementation of a site management and approved blasting plan; • If avoidance is not possible the engravings should be recorded in detail through tracing and photographs and all engravings should be mapped to create a permanent digital record. After which it is recommended that the engraved stones should be moved to a local or open air museum; • Implementation of a chance find procedure for the project as outlined in Section 9.2.		
Residual Impacts: Although surface sites can be avoided or mitigated, there is a chance that completely buried sites would still be impacted on, but this cannot be quantified.		

9 Conclusion and recommendations

The study area is located in a rugged, sparsely vegetated landscape supporting low-density pastoral farming and a diversity of hardy arid-adapted fauna and flora.

During the survey, heritage resources recorded included extensive Rock Art sites of high significance. In terms of Section 3(3) and Section 35 of the NHRA, the site holds aesthetic, historical, scientific, social and spiritual value, and its non-renewable nature renders it highly vulnerable to disturbance. The diversity and integrity of engravings likely qualify it as Grade II or Grade IIIA. Avoidance with a 100m buffer zone and in situ conservation are therefore the preferred management options, with any development affecting the site requiring SAHRA-authorised mitigation. Mitigation measures if the site cannot be avoided and protected from blasting with an approved buffer zone will include extensive recording and mapping. The engravings will have to be individually recorded and traced after which it is recommended that the engraved stones should be moved to a local museum. Due to the nature of the boulders an open-air heritage site can be considered.

According to the South African Heritage Resource Authority (SAHRA) Paleontological sensitivity map the study area is of high palaeontological sensitivity, and an independent study was commissioned for this aspect (Bamford 2025).

The impact of the Project on heritage resources can be mitigated to an acceptable level, provided that the recommendations in this report are adhered to, and based on the South African Heritage Resource Authority (SAHRA) 's approval.

9.1 Recommendations for condition of authorisation

The following recommendations for Environmental Authorisation apply and the Project may only proceed based on approval from SAHRA:

- The Rock Art sites should preferably be avoided with a 100 m buffer zone and with the implementation of a site management and approved blasting plan;
    - » If avoidance is not possible, the engravings should be recorded in detail through tracing and photographs and all engravings should be mapped to create a permanent digital record. After which it is recommended that the engraved stones should be moved to a local or open air museum adhering to all legal and permit requirements;
- Development activities must be confined to the approved development footprint only;
- Monitoring of the Project area by the ECO during pre-construction and construction phases for heritage and paleontological chance finds, if chance finds are encountered to implement the Chance Find Procedure for the Project as outlined in Section 9.2

9.2 Chance Find Procedure

9.2.1 Heritage Resources

The possibility of the occurrence of subsurface finds cannot be excluded. Therefore, if during construction any possible finds such as stone tool scatters, artefacts or bone and fossil remains are made, the operations must be stopped, and a qualified archaeologist must be contacted for an assessment of the find and therefor chance find procedures should be put in place as part of the EMP. A short summary of chance find procedures is discussed below and monitoring guidelines applicable to the Chance Find procedure is discussed below and monitoring guidelines for this procedure are provided in Section 9.5.

This procedure applies to the developer's permanent employees, its subsidiaries, contractors and subcontractors, and service providers. The aim of this procedure is to establish monitoring and reporting procedures to ensure compliance with this policy and its associated procedures. Construction crews must be properly inducted to ensure they are fully aware of the procedures regarding chance finds as discussed below.

- If during the pre-construction phase, construction, operations or closure phases of this Project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.
- It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area.
- The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify the SAHRA.

9.2.2 Monitoring Programme for Palaeontology – to commence once the excavations / drilling activities begin.

1. The following procedure is only required if fossils are seen on the surface and when drilling/excavations commence.
2. When excavations begin the rocks and discard must be given a cursory inspection by the environmental officer or designated person. Any fossiliferous material (trace fossils, fossils of plants, insects, bone or coalified material) should be put aside in a suitably protected place. This way the Project activities will not be interrupted.
3. Photographs of similar fossils must be provided to the developer to assist in recognizing the fossil plants, vertebrates, invertebrates or trace fossils in the shales and mudstones (for example see Bamford 2025). This information will be built into the EMP's training and awareness plan and procedures.
4. Photographs of the putative fossils can be sent to the palaeontologist for a preliminary assessment.
5. If there is any possible fossil material found by the developer/environmental officer then the qualified palaeontologist sub-contracted for this Project, should visit the site to inspect the selected material and check the dumps where feasible.
6. Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site a SAHRA permit must be obtained. Annual reports must be submitted to SAHRA as required by the relevant permits.
7. If no good fossil material is recovered, then no site inspections by the palaeontologist will be necessary. A final report by the palaeontologist must be sent to SAHRA once the Project has been completed and only if there are fossils.
8. If no fossils are found and the excavations have finished, then no further monitoring is required.

9.3 Reasoned Opinion

The overall impact of the Project with the recommended mitigation measures is acceptable and residual impacts can be managed to an acceptable level through implementation of the recommendations made in this report. The socio-economic benefits also outweigh the possible impacts of the development if the correct mitigation measures are implemented for the Project.

9.4 Potential risk

Potential risks to the proposed Project are the occurrence of intangible features and unrecorded cultural resources (of which graves, and subsurface cultural material are the highest risk). This can cause delays during construction, as well as additional costs involved in mitigation and possible layout changes. The stakeholder engagement process will assess intangible heritage resources further if this is listed as a concern.

9.5 Monitoring Requirements

Day to day monitoring can be conducted by the ECO. The ECO or other responsible persons should be trained along the following lines:

- *Induction training:*
  - Responsible staff identified by the developer should attend a short course on heritage management and identification of heritage resources.
  - Staff should also receive training on the CFP.
- *Site monitoring and watching brief*: As most heritage resources occur below surface, all earth-moving activities need to be routinely monitored in case of accidental discoveries. The greatest potential impacts are from pre-construction and construction activities. The ECO should monitor all such activities. If any heritage resources are found, the chance finds procedure must be followed as outlined above.

Table 9. Monitoring requirements for the Project

Heritage Monitoring					
Aspect	**Area**	**Responsible for monitoring and measuring**	**Frequency**	**Proactive or reactive measurement**	**Method**
Cultural Heritage Resource Chance Find	Entire Project area	ECO	Weekly (Preconstruction and construction phase)	Proactively	If risks are manifested (accidental discovery of heritage resources) the chance find procedure should be implemented: 1. Cease all works immediately; 2. Report incident to the Sustainability Manager; 3. Contact an archaeologist to inspect the site; 4. Report incident to the competent authority; and 5. Employ reasonable mitigation measures in accordance with the requirements of the relevant authorities. Only recommence operations once impacts have been mitigated.

9.7 Management Measures for inclusion in the EMPr

Table 10. Heritage Management Plan for EMPr implementation

Area	Mitigation measures	Phase	Timeframe	Responsible party for implementation	Target	Performance indicators (Monitoring tool)
Rock Art Sites	The Rock Art sites should preferably be avoided with a 100 m buffer zone and with the implementation of a site management and approved blasting plan; If avoidance is not possible the engravings should be recorded in detail through tracing and photographs and all engravings should be mapped to create a permanent digital record. After which it is recommended that the engraved stones should be moved to a local or open-air museum adhering to all legal and permit requirements.	Pre Construction	Pre Construction	Applicant Construction Contractor	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 34, 35 and 38 of NHRA	ECO Checklist/Report
General Project area	Monitoring of the Project area by the ECO during pre-construction and construction phases for chance finds, if chance finds are encountered to implement the Chance Find Procedure for the project	Pre-Construction & Construction	Weekly	Applicant Construction Contractor	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 34, 35, 36 and 38 of NHRA	ECO Checklist/Report
General Project Area	Development activities must be confined to the approved development footprint only.	Construction	Construction	Applicant Construction Contractor	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 34, 35, 36 and 38 of NHRA	ECO Checklist/Report

10 References

Beinart, W. 2003. The Rise of Conservation in South Africa: Settlers, Livestock and the Environment 1770–1950. Oxford: Oxford University Press.

Binneman, J. & Booth, C. & Higgitt, N. 2010. A Phase 1 Archaeological Impact Assessment (AIA) for the Proposed Skietkuil Quarries 1 and 2 on the Farm Skietkuil No. 3, Victoria West, Central Karoo District, Western Cape Province.

Boonzaier, E., Malherbe, C., Smith, A.B. & Berens, P. 1996. *The Cape Herders: A History of the Khoikhoi of Southern Africa*. Cape Town: David Philip.

Burrows, E.H. 1994 Overberg Outspan: A Chronicle of People and Places in the South Western Districts of the Cape. Cape Town: Maskew Miller Longman.

Deacon, J. 1986. Myth and symbol in the southern African San rock art, *South African Archaeological Bulletin*, 41(104): 55–65.

Dreyer, C. 2014. First Phase Archaeological and Heritage Assessment of the Proposed Solid Waste Disposal Site at Victoria West, Northern Cape.

Fourie, W. 2016. Heritage Impact Assessment: Basic Assessment for the Proposed construction of Supporting Electrical Infrastructure for the Victoria West Wind Farm, Victoria West, Northern Cape Province.

Fransen, H. 2006. *Old Towns and Villages of the Cape.* Johannesburg: Jonathan Ball.

Kruger, N. 2025. Heritage Impact Assessment Report for the Victoria West WEF cluster EGI Project, Pixley ka Seme District Municipality, Northern Cape Province

Kuman, K. 2001. An Acheulean factory site with prepared core technology near Victoria West, South Africa, *South African Archaeological Bulletin*, 56(173): 8–22.

Meadows, M.E. & Hoffman, T. 2002 'The Nature, Extent and Causes of Land Degradation in South Africa', *Historical Geography*, 30:40–65.

Mucina, L. & Rutherford, M.C. 2006. *The Vegetation of South Africa, Lesotho and Swaziland*. Pretoria: South African National Biodiversity Institute.

Partridge, T.C., Maud, R.R. & Botha, G.A. 2006. Geomorphic evolution of southern Africa since the Mesozoic. *South African Journal of Geology*, 109(1–2): 1–8.

Penn, N. 2005. *The Forgotten Frontier: Colonist and Khoisan on the Cape's Northern Frontier in the 18th Century*. Cape Town: Double Storey.

Orton, J. 2022a. Heritage Impact Assessment: Proposed Loxton Wind Energy Facility 3, Carnarvon and Victoria West Magisterial Districts, Northern Cape.

Orton, J. 2022b. Heritage Impact Assessment: Proposed Loxton Wind Energy Facility 2, Carnarvon and Victoria West Magisterial Districts, Northern Cape.

Orton, J. 2022c. Heritage Impact Assessment: Proposed Loxton Wind Energy Facility 1, Carnarvon and Victoria West Magisterial Districts, Northern Cape.

Orton, J. 2022d. Heritage Impact Assessment: Proposed Mura 1-4 PV Facilities, Beaufort West Magisterial District, Western Cape and Victoria West Magisterial District, Northern Cape

Sahra Report Mapping Project Version 1.0, 2009.

Schulze, R.E. 1997. South African Atlas of Agrohydrology and Climatology. Pretoria: Water Research Commission.

Smith, B. & Ouzman, S. 2004. Taking stock: identifying Khoekhoen herder rock art in southern Africa, *Current Anthropology*, 45(4): 499–526.

Webley, L. & Hart, T. 2010. Scoping Archaeological Impact Assessment: Proposed Prospecting on Taaiboschfontein 137 (Site 49), Victoria West, Northern Cape

Webley, L. & Halkett, D. 2011. Heritage Impact Assessment: Proposed Victoria West Mini Renewable Energy Facility on the Farm Bultfontein 217, Northern Cape Province.

Worden, N. 2012 *The Making of Modern South Africa.* 5th edn. Oxford: Wiley-Blackwell Anglo-Boer War.

Electronic Sources:

www.statssa.gov.za Cited November 2025