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PROPOSED CONSTRUCTION OF THE PATATSKLOOF WIND ENERGY FACILITY, BATTERY ENERGY STORGAE SYSTEM (BESS) AND ASSOCIATED GRID INFRASTRUCTURE, NEAR CERES, WESTERN CAPE PROVINCE, SOUTH AFRICA

Archaeological Impact Assessment

DFFE Reference: TBA
Report Prepared by: **PGS Heritage Pty Ltd**
Issue Date: 21 November 2022
Version No.: 0.2

Declaration of Independence

I, Cherene de Bruyn, declare that –

General declaration:

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

Disclosure of Vested Interest

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

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SIGNATURE: 

Report Title	PROPOSED CONSTRUCTION OF THE PATATSKLOOF WIND ENERGY FACILITY AND ASSOCIATED GRID INFRASTRUCTURE, NEAR CERES, WESTERN CAPE PROVINCE, SOUTH AFRICA		
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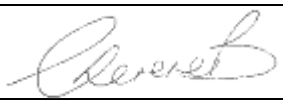
Author	Cherene de Bruyn		Archaeologist/ PGS Heritage
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Reviewed			SiVEST/Environmental Division

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For:	SiVEST Environmental Division

PGS confirms that this HIA report is done in accordance with the QMS implemented by PGS Heritage. The report structure and format followed is that of SIVEST Environmental as per the appointment scope and deliverable of SIVEST. The authors did implement the PGS HIA SOP and requirements

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PROPOSED CONSTRUCTION OF THE PATATSKLOOF WIND ENERGY FACILITY, BATTERY ENERGY STORAGE SYSTEM (BESS) AND ASSOCIATED GRID INFRASTRUCTURE, NEAR CERES, WESTERN CAPE PROVINCE, SOUTH AFRICA

ARCHAEOLOGICAL IMPACT ASSESSMENT

EXECUTIVE SUMMARY

PGS Heritage (Pty) Ltd (PGS) was appointed by SiVEST SA (Pty) Ltd (hereafter referred to as "SiVEST"), on behalf of South African Mainstream Power Developments (Pty) Ltd (hereafter referred to as "Mainstream"), to undertake an Archaeological Impact Assessment (AIA) for the development of the 250 MWac Pataskloof Wind Energy Facility (WEF), Battery Energy Storage System (BESS) and associated grid connection infrastructure. The proposed development site is located approximately 18km and 25km north-east respectively of Touws River in the Western Cape Province and is within the Witzenberg Local Municipality, in the Cape Winelands District Municipality

1. SITE NAME

The Pataskloof WEF, BESS and grid infrastructure.

2. LOCATION

The proposed WEF, BESS and associated grid connection infrastructure is located approximately 18km and 25km north-east respectively of Touws River in the Western Cape Province and is within the Witzenberg Local Municipality, in the Cape Winelands District Municipality
(**Figure 1**).

The Patatskloof application site is approximately 6612 hectares (ha) in extent. The proposed project incorporates the following farm portions:

- Remainder Of the Farm Upper Stinkfontein No 246;
- Remainder Of the Farm Melkbosch Kraal No 250;
- Portion 1 Of the Farm Drinkwaters Kloof No 251;
- Farm Platfontein No 240.
- Portion 1 Of the Farm Tooverberg No 244;
- Remainder Of the Farm Tooverberg No 244;
- Farm Lower Stinkfontein No 245.
- Remainder Of the Farm Drinkwaters Kloof No 251; and

- Remainder Of the Farm Zand Rivier No 252.

A smaller buildable area (2905.4 ha) has however been identified as a result of a preliminary suitability assessment undertaken by Mainstream and this area is likely to be further refined with the exclusion of sensitive areas determined through various specialist studies being conducted as part of the BA process.

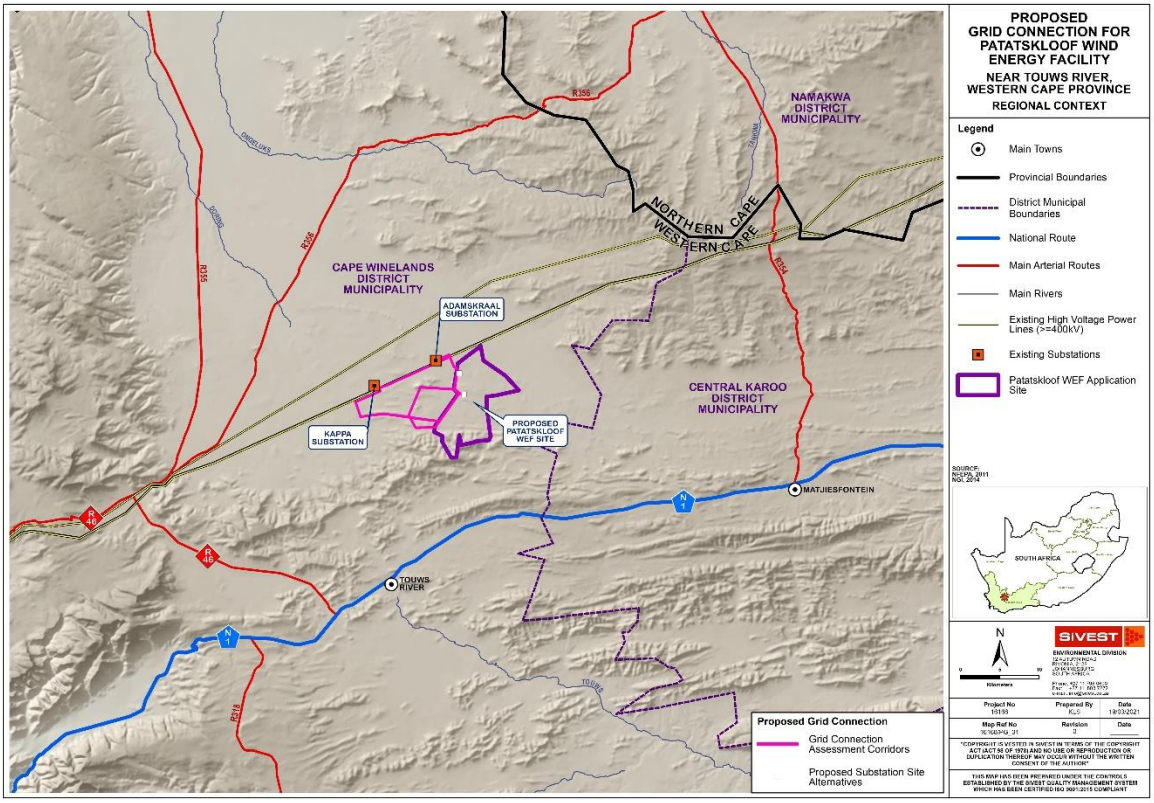

Figure 1: Locality of Patatskloof study area.

3. DESCRIPTION OF THE PROPOSED DEVELOPMENT

It is anticipated that the proposed Patatskloof WEF will comprise up to thirty-five (35) wind turbines with a maximum total energy generation capacity of up to approximately 250MWac (**Figure 2**). The electricity generated by the proposed WEF development will be fed into the national grid via a 132kV overhead power line. The 132kV overhead power line will however require a separate EA and is subject to a separate BA process, which is currently being undertaken in parallel to this WEF BA process (**Figure 3**). A BESS will be located next to the onsite 33/132kV substation.

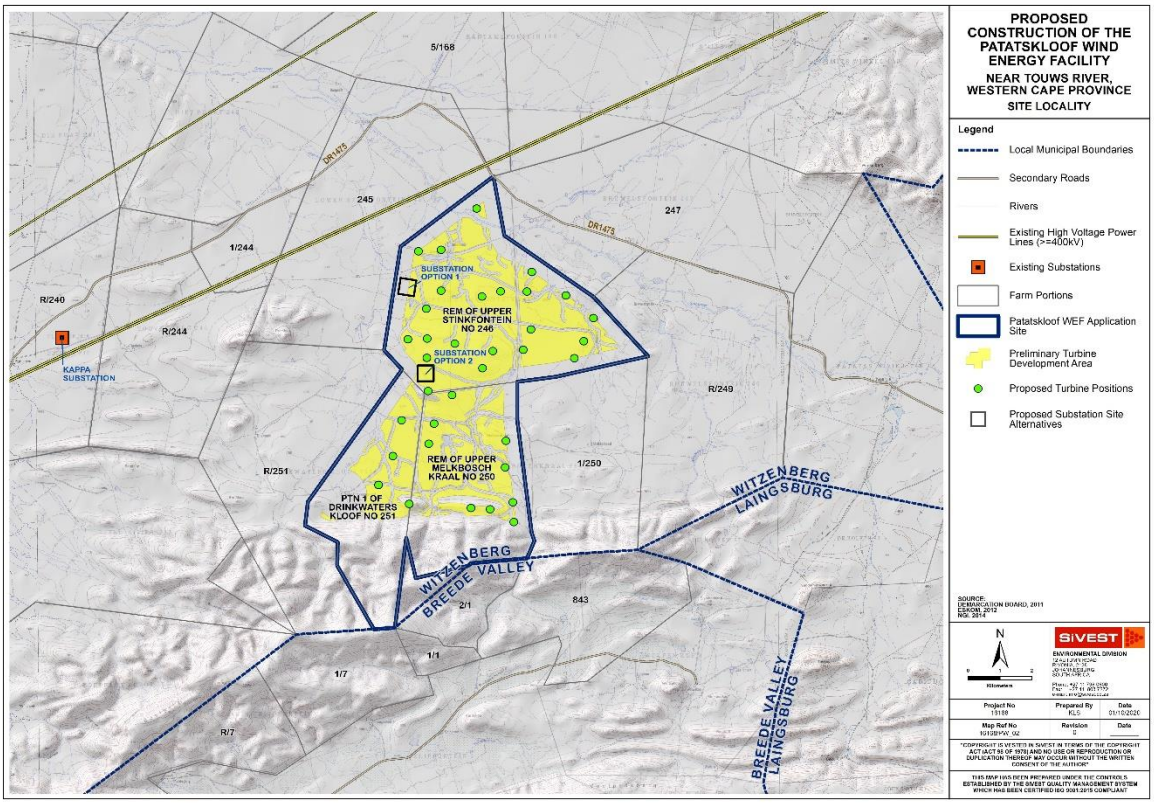

Figure 2: Preliminary Turbine layout and development area.

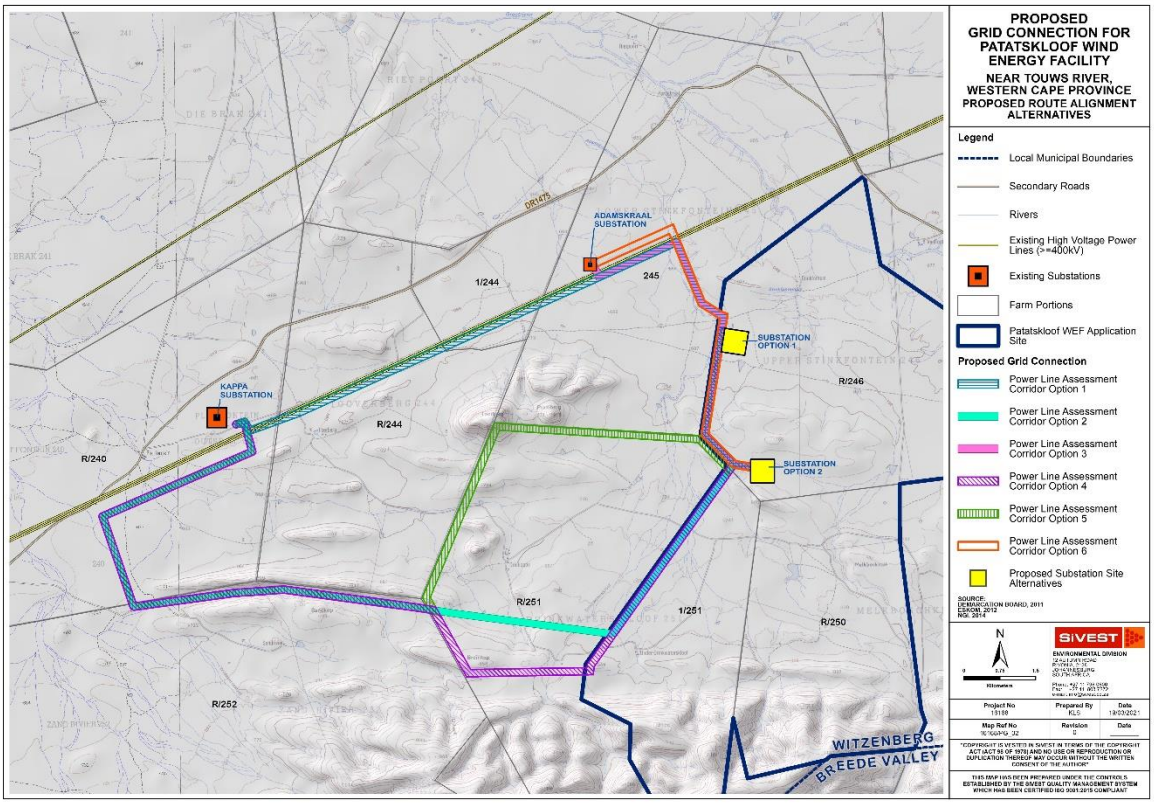

Figure 3: Proposed Substation and 132kV Power Line Route Alignment.

4. HERITAGE RESOURCES IDENTIFIED

The fieldwork component of the study was aimed at identifying tangible remains of archaeological, historical and heritage significance. Due to the nature of cultural remains, a systematic controlled-exclusive surface survey was conducted on foot, over a period of five days by two archaeologists from PGS. This fieldwork team consisted of consisting of an archaeologist (Cherene de Bruyn) and field assistant (Ruan van der Merwe). The fieldwork was conducted between 2 to 6 November 2020. An additional survey of the grid connection was conducted from 11-13 April 2022. This fieldwork team consisted of consisting of three archaeologists (Cherene de Bruyn, Michelle Sachse and Nicolas Fletcher) and a field assistant (Xander Fourie).

Heritage resources are unique and non-renewable and as such any impact on such resources must be seen as significant.

Archaeology, built environment and burial grounds and graves

The fieldwork conducted for the evaluation of the possible impact of the new Patatskloof WEF, BESS and associated grid connection infrastructure has revealed the presence of forty-seven (47) heritage resources.

Burial Grounds and graves

A total of two (2) burial grounds were identified on the farm Upper Stinkfontein. The two burial grounds (**PK43, PK44**) were rated as having high heritage significance.

Historical structures

A total of twenty-four (24) structures were identified, including ten (10) houses (including farmsteads, labourer houses, and old stone houses with associated kraals), seven (7) kraals, two (2) dam walls, one (1) reservoir, two (2) stone packed cairns, and two (2) circular stone hunting shelters.

Four of these sites (**PK-06**, **PK-15, PK 20, PK 24**) were of medium heritage significance but located more than 100m away from the proposed development. As a result, no impact is expected from the proposed development on these sites.

Archaeological features

A total of twenty-three (23) archaeological resources/areas were identified, including seventeen (17) that can be classified as find spots with varying collections of LSA and some MSA material present. Three (3) areas that can be classified as archaeological sites due to the presence of stone tools and other cultural material such as OES beads, three (2) sites consisted of a rock shelter with rock art, and one (1) site containing a possible rock art as indicated by residents.

Three archaeological sites (**PK-29, PK-42, PK 46**) were rated as having a high heritage significance and three sites (**PK 09**, **PK 37**, **PK 41**) medium heritage significance. All of these are located more than 100m away from the proposed development. As a result, no impact is expected from the proposed development on these sites.

5. ANTICIPATED IMPACTS ON HERITAGE RESOURCES

The pre-construction and construction phase of the proposed WEF will entail extensive surface clearance as well as excavations into the superficial sediment cover and underlying bedrock (e.g., for widened or new access roads, wind turbine foundations, hardstanding areas, on-site substation, underground cables, construction laydown area, O&M building and BESS). The possible pre-construction impacts calculated on the tangible cultural heritage resources is overall reduced to a **LOW NEGATIVE** impact after the recommendations have been implemented.

6. RECOMMENDATIONS

The calculated impact as summarized in **Section 9** of this report confirms the impact of the new Patatskloof WEF, BESS and associated grid connection infrastructure will be reduced with the implementation of the mitigation measures. This finding in addition to the implementation of a chance finds procedure, as part of the Environmental Management Programme (EMPr), will mitigate possible

impacts on unidentified heritage resources. An assessment of the final footprint of the new Patatskloof WEF, BESS and associated grid connection infrastructure must be conducted with the final walkdown of the area during the implementation of the EMPr.

The following mitigation measures will be required:

- An archaeological walk down of the final approved layout will be required before construction commences;
- Implement a 50-meter buffer around all structures with a rating of IIIC and higher.
- Implement a 500-meter buffer around the farmstead site at **PK 06 and PK 15.**
- Implement a 200-meter buffer around the rock art sites at **PK 29**, **PK 42** and **PK 46**.
- Demarcate the resources rated as IIIB-IIIA no-go areas.
- A management plan for the heritage resources needs then to be compiled and approved for implementation during construction and operations.
- A chance finds protocol must be developed that includes the process of work stoppage, site protection, evaluation and informing HWC of such finds and a final process of mitigation implementation.

General

If heritage resources are discovered during site clearance, construction activities must stop in the vicinity, and a qualified archaeologist must be appointed to evaluate and make recommendations on mitigation measures.

7. FINAL PROPOSED BUILDABLE AREA

The final proposed buildable area took the specialist recommendations identified during the 2021 and 2022 field assessments into consideration (**Figure 4** - **Figure *6***). From an archaeological and historical structure perspective, the proposed footprint areas will not change the impact on the identified heritage resources in the AIA.

As such the recommended mitigation measures as described in the AIA report remain.

We have no objection to the proposed buildable area associated with the Patatskloof WEF project.

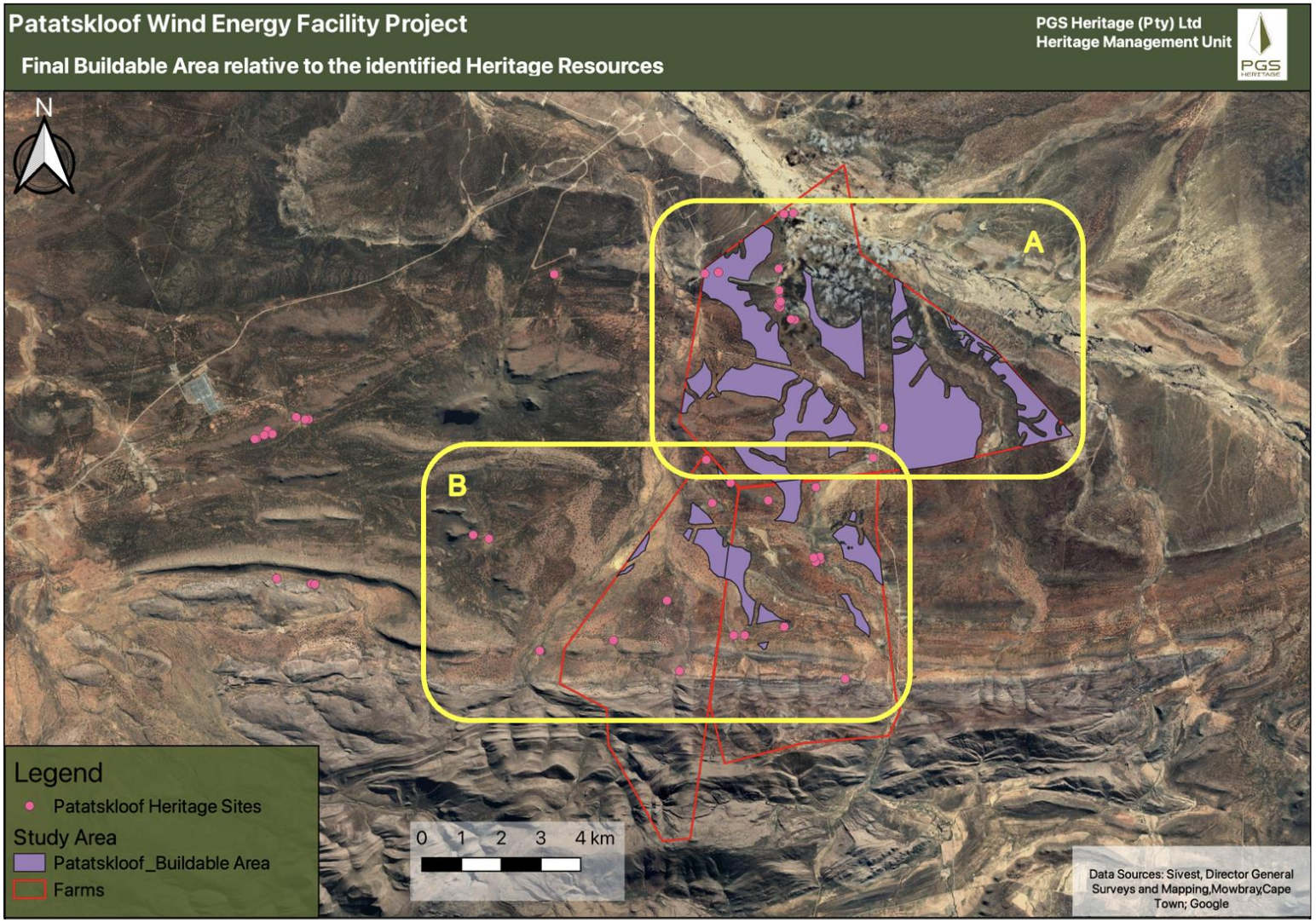

Figure 4: Final proposed buildable area relative to the locality of the heritage resources identified within the study area. See inset A and B below.

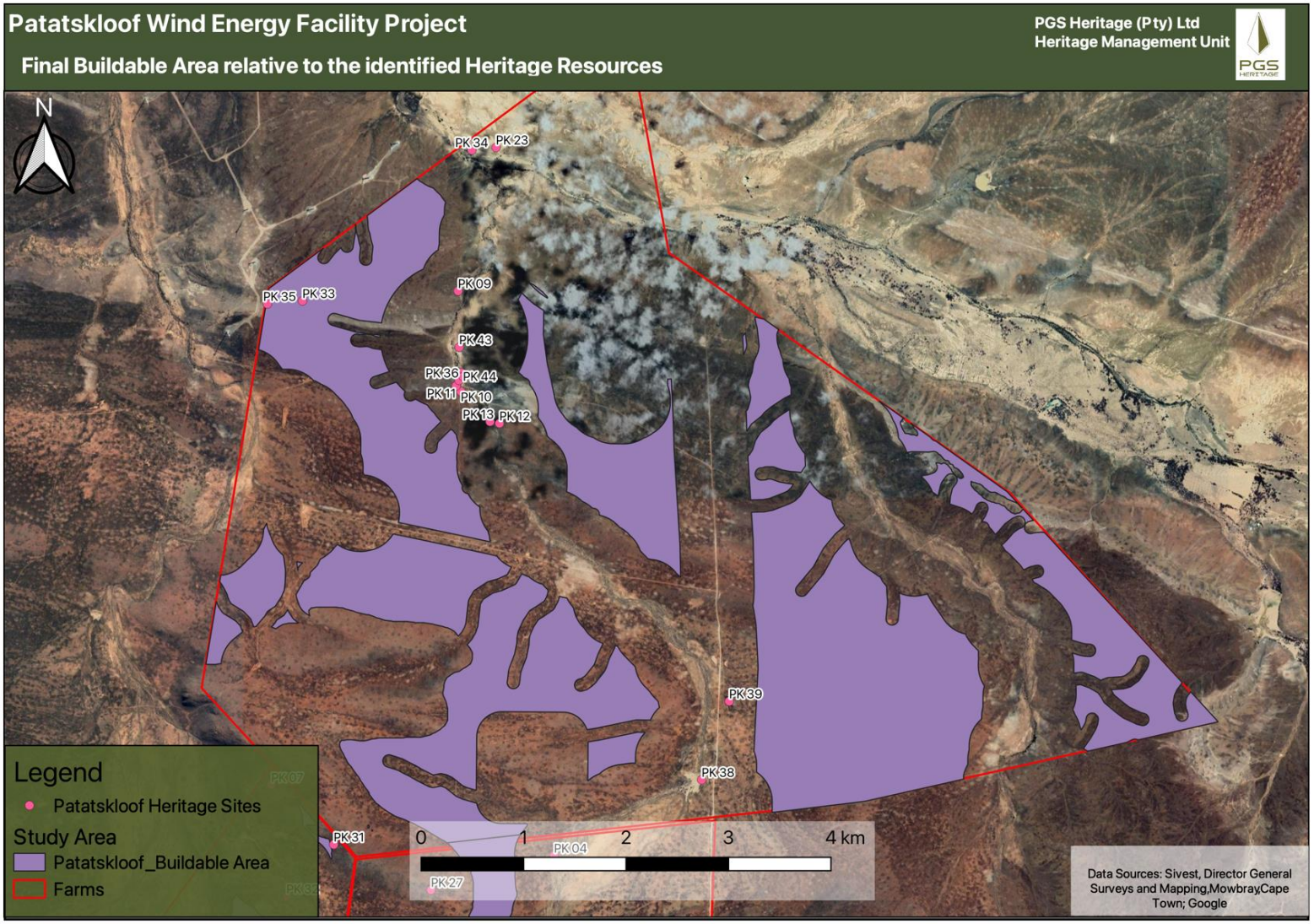

Figure 5: Inset A.

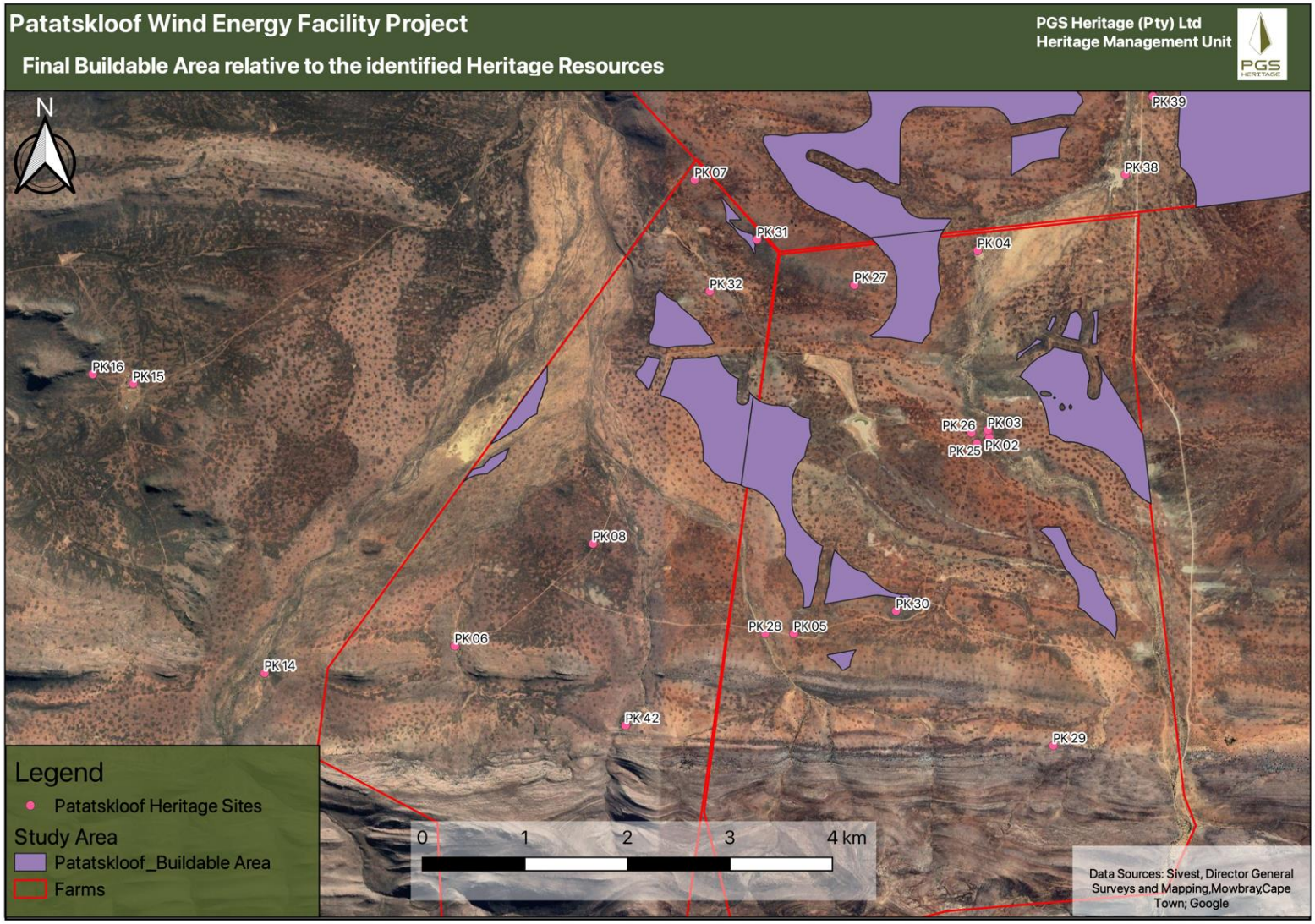

Figure 6: Inset B.

NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998) AND ENVIRONMENTAL IMPACT REGULATIONS, 2014 (AS AMENDED) - REQUIREMENTS FOR SPECIALIST REPORTS (APPENDIX 6)

Regulation GNR 326 of 4 December 2014, as amended 7 April 2017, Appendix 6	**Section of Report**
1. (1) A specialist report prepared in terms of these Regulations must contain- 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;	Page ii of Report- Contact details and company Section 1.2 and **Appendix A**
b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Page ii
c) an indication of the scope of, and the purpose for which, the report was prepared;	Section 1.1
(cA) an indication of the quality and age of base data used for the specialist report;	Section 2, 6 and 7
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 8, 9 and 10
d) the date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Section 2 and 6
e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 2
f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 7 and 8
g) an identification of any areas to be avoided, including buffers;	Section 8 and 12
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 8
i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 3
j) a description of the findings and potential implications of such findings on the impact of the proposed activity, (including identified alternatives on the environment) or activities;	Executive Summary and Section 9, 10, 11 and 12
k) any mitigation measures for inclusion in the EMPr;	Section 8 and 11
l) any conditions for inclusion in the environmental authorisation;	Section 8 and 11
m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Section 8 and 11

n) a reasoned opinion- i. (as to) whether the proposed activity, activities or portions thereof should be authorised; (iA) regarding the acceptability of the proposed activity or activities; and ii. if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	Executive Summary; Section 12
o) a description of any consultation process that was undertaken during the course of preparing the specialist report;	To be updated following PPP.
p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	To be updated following PPP.
q) any other information requested by the competent authority.	None to date.
2) Where a government notice *gazetted* by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	NEMA Appendix 6 and GN648

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ARCHAEOLOGICAL IMPACT ASSESSMENT

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Glossary of Terms

Archaeological resources

This includes:

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

Cultural significance

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

Development

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

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

Early Stone Age

The archaeology of the Stone Age between 700 000 and 2 500 000 years ago.

Fossil

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

Heritage

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

Heritage resources

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

- places, buildings, structures and equipment of cultural significance;
- places to which oral traditions are attached or which are associated with living heritage;
- historical settlements and townscapes;
- landscapes and natural features of cultural significance;
- geological sites of scientific or cultural importance;
- archaeological and palaeontological sites;
- graves and burial grounds, and
- sites of significance relating to the history of slavery in South Africa.

Holocene

The most recent geological time period which commenced 20 000 years ago.

Late Stone Age

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

Late Iron Age (Early Farming Communities)

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

Middle Stone Age

The archaeology of the Stone Age between 20 000-300 000 years ago, associated with early modern humans.

Site

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

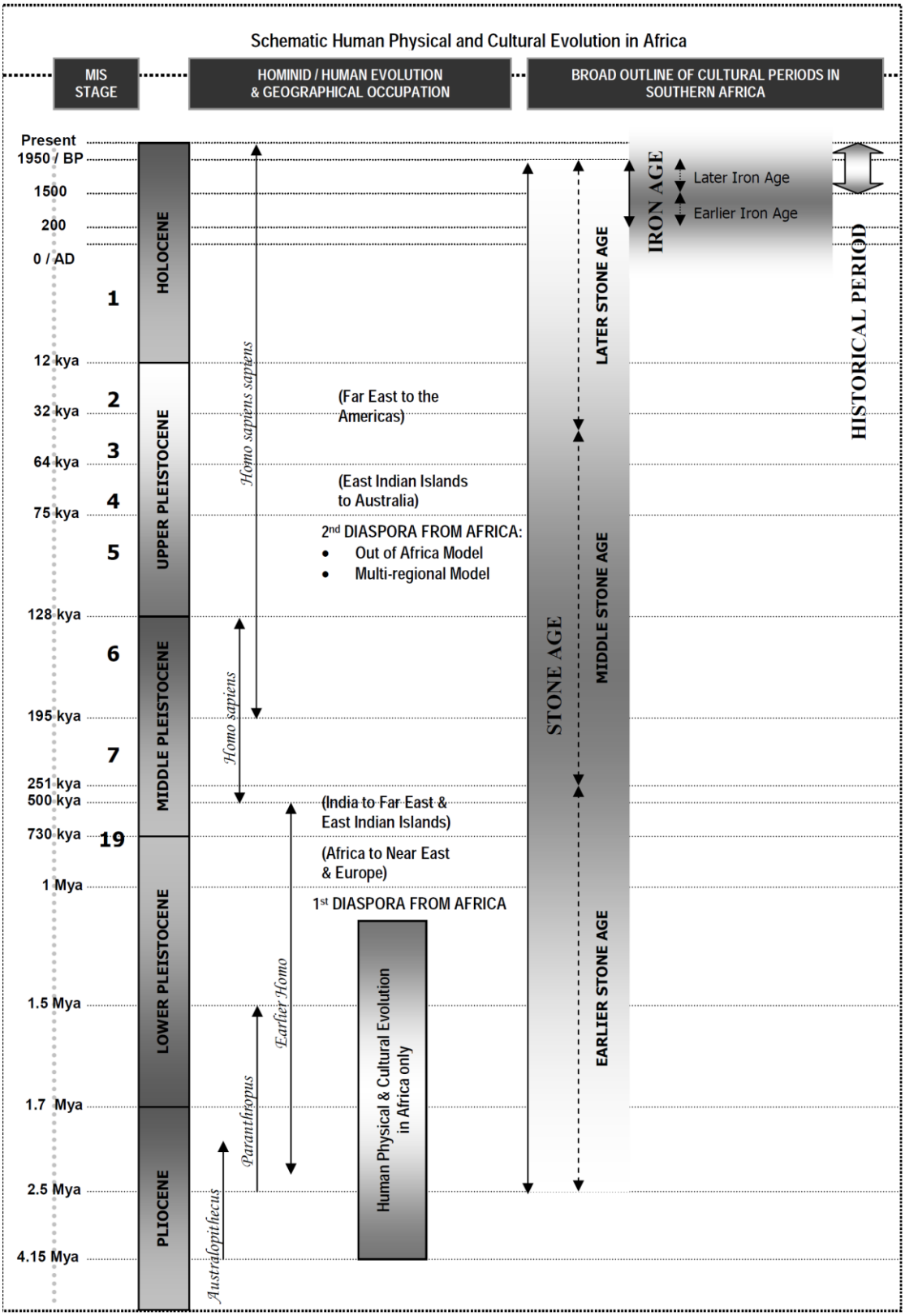


Figure 7: Human and Cultural Timeline in Africa (Morris, 2008)

List of Abbreviations

Abbreviations	Description
AIA	Archaeological Impact Assessment
APHP	Association of Professional Heritage Practitioners
ASAPA	Association of South African Professional Archaeologists
BESS	Battery Energy Storage System
CRM	Cultural Resource Management
DFFE	Department of Forestry, Fisheries and Environment
DWS	Department of Water and Sanitation
ECO	Environmental Control Officer
EIA practitioner	Environmental Impact Assessment Practitioner
EIA	Environmental Impact Assessment
ESA	Early Stone Age
GN	Government Notice
GPS	Global Positioning System
HIA	Heritage Impact Assessment
HWC	Heritage Western Cape
I&AP	Interested & Affected Party
LSA	Late Stone Age
LIA	Late Iron Age
Mainstream	South Africa Mainstream Renewable Power Developments (Pty) Ltd
MSA	Middle Stone Age
MIA	Middle Iron Age
NCA	National Competent Authority
NCW	Not Conservation Worthy
NEMA	National Environmental Management Act
NHRA	National Heritage Resources Act
O&M	Operation and Maintenance
OES	Ostrich eggshell
PGS	PGS Heritage (Pty) Ltd
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
SADC	Southern African Development Community
SAHRA	South African Heritage Resources Agency
SIVEST	SiVEST (PTY) Ltd
WEF	Wind Energy Facility

SiVEST SA (PTY) LTD

PROPOSED CONSTRUCTION OF THE PATATSKLOOF WIND ENERGY FACILITY, BATTERY ENERGY STORAGE SYSTEM (BESS) AND ASSOCIATED GRID INFRASTRUCTURE, NEAR CERES, WESTERN CAPE PROVINCE, SOUTH AFRICA

ARCHAELOGICAL IMPACT ASSESSMENT

1. INTRODUCTION

South Africa Mainstream Renewable Power Developments (Pty) Ltd (hereafter referred to as "Mainstream"), has appointed SiVEST SA (Pty) Ltd (hereafter referred to as "SiVEST") to undertake the required BA Processes for the proposed construction of the 250MWac Patatskloof Wind Energy Facility (WEF), Battery Energy Storage System (BESS) and associated grid infrastructure near Touws River in the Western Cape Province. PGS Heritage (Pty) Ltd (PGS) was appointed by SiVEST to undertake the Archaeological Impact Assessment (AIA) for the development of the Pataskloof WEF.

The overall objective of the development is to generate electricity by means of renewable energy technology capturing wind energy to feed into the National Grid.

It is anticipated that the proposed Patatskloof WEF will comprise thirty-five (35) wind turbines with a maximum total energy generation capacity of up to approximately 250MW. The electricity generated by the proposed WEF development will be fed into the national grid via a 132kV overhead power line.

In terms of the Environmental Impact Assessment (EIA) Regulations, which were published on 04 December 2014 [GNR 982, 983, 984 and 985) and amended on 07 April 2017 [promulgated in Government Gazette 40772 and Government Notice (GN) R326, R327, R325 and R324 on 7 April 2017], various aspects of the proposed development are considered listed activities under GNR 327 and GNR 324 which may have an impact on the environment and therefore require authorisation from the National Competent Authority (CA), namely the Department of Forestry, Fisheries and Environment (DFFE), prior to the commencement of such activities. Specialist studies have been commissioned to assess and verify the project under the new Gazetted specialist protocols.

1.1. Scope of the Study

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

1.2. Specialist Credentials

This study was compiled by PGS and its appointed specialists and is detailed below:

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

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

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

Nikki Mann, the co-author, graduated with her Master's degree (MSc) in Archaeology and is registered as a Professional Archaeologist with the Association of Southern African Professional Archaeologists (ASAPA).

2. ASSESSMENT METHODOLOGY

The archaeological methodology included fulfilling the requirements of the National Heritage Resources Act (NHRA) (section 35 and 36) that protects the following features in the landscape:

- Material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures;
- Rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;
- Graves and burial grounds, including ancestral graves, royal graves, graves of traditional leaders, graves of victims of conflict, historical graves and cemeteries, and other human remains not covered by the Human Tissue Act (1983) (Act No 65 of 1983).

This AIA report was compiled by PGS for the inclusion in the HIA for the proposed development of the Pataskloof WEF. The applicable maps, tables and figures, are included as stipulated in the NHRA (no 25 of 1999), the National Environmental Management Act (NEMA) (no 107 of 1998). The AIA process consisted of three steps:

Step I – Literature Review: The literature review and other specialist studies are extracted from the background research from various WEF AIAs and HIAs in the region.

Step II – Physical Survey: A physical survey was conducted on foot of the alternative grid corridors as well as the approved infrastructure, by two qualified archaeologists, which aimed at locating and documenting sites falling within and adjacent to the approved development footprint (November 2020). To address changes in layout a further physical survey (April 2022) was conducted on foot of the proposed development, by a qualified archaeologist and two field assistants, which aimed at locating and documenting sites falling within and adjacent to the approved development footprint.

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

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

- Site integrity (i.e., primary vs. secondary context),
- Amount of deposit, range of features (e.g., stonewalling, stone tools and enclosures),
- Density of scatter (dispersed scatter)
    - Low - <10/50m^2
    - Medium – 10-50/50m^2
    - High - >50/50m^2
- Uniqueness; and
- Potential to answer present research questions.

2.1. Site Significance classification standards

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

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

Table 1: Rating system for archaeological resources

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

Table 2: Rating system for built environment resources

Grading	Description of Resource	Examples of Possible Management Strategies	Heritage Significance
I	Heritage resources with qualities so exceptional that they are of special national significance. Current examples: Robben Island	May be declared as a National Heritage Site managed by SAHRA.	Highest Significance
II	Heritage resources with special qualities which make them significant in the context of a province or region, but do not fulfil the criteria for Grade I status. Current examples: St George's Cathedral, Community House	May be declared as a Provincial Heritage Site managed by HWC.	Exceptionally High Significance
II	Such a resource contributes to the environmental quality or cultural significance of a larger area and fulfils one of the criteria set out in section 3(3) of the Act but that does not fulfil the criteria for Grade II status. Grade III sites may be formally protected by placement on the Heritage Register.		
IIIA	Such a resource must be an excellent example of its kind or must be sufficiently rare. These are heritage resources which are significant in the context of an area.	This grading is applied to buildings and sites that have sufficient intrinsic significance to be regarded as local heritage resources; and are significant enough to warrant that any alteration, both internal and external, is regulated. Such buildings and sites may be representative, being excellent examples of their kind, or may be rare. In either case, they should receive maximum protection at local level.	High Significance
IIIB	Such a resource might have similar significances to those of a Grade III A resource, but to a lesser degree. These are heritage resources which are significant in the context of a townscape, neighbourhood, settlement or community.	Like Grade IIIA buildings and sites, such buildings and sites may be representative, being excellent examples of their kind, or may be rare, but less so than Grade IIIA examples. They would receive less stringent protection than Grade IIIA buildings and sites at local level.	Medium Significance
IIIC	Such a resource is of contributing significance to the environs These are heritage resources which are significant in the context of a streetscape or direct neighbourhood.	This grading is applied to buildings and/or sites whose significance is contextual, i.e., in large part due to its contribution to the character or significance of the environs. These buildings and sites should, as a consequence, only be regulated if the significance of the environs is sufficient to warrant protective measures, regardless of whether the site falls within a Conservation or	Low Significance

Grading	Description of Resource	Examples of Possible Management Strategies	Heritage Significance
		Heritage Area. Internal alterations should not necessarily be regulated.	
NCW	A resource that, after appropriate investigation, has been determined to not have enough heritage significance to be retained as part of the National Estate.	No further actions under the NHRA are required. This must be motivated by the applicant and approved by the authority. Section 34 can even be lifted by HWC for structures in this category if they are older than 60 years.	No research potential or other cultural significance

3. ASSUMPTIONS AND LIMITATIONS

Not detracting in any way from the comprehensiveness of the fieldwork undertaken, it is necessary to realise that the heritage resources located during the fieldwork do not necessarily represent all the possible heritage resources present within the area. Various factors account for this, including the subterranean nature of some archaeological sites and the current dense vegetation cover. As such, should any heritage features and/or objects not included in the present inventory be located or observed, a heritage specialist must immediately be contacted.

Such observed or located heritage features and/or objects may not be disturbed or removed in any way until such time that the heritage specialist has been able to make an assessment as to the significance of the site (or material) in question. This applies to graves and cemeteries as well. In the event that any graves or burial places are located during the development, the procedures and requirements pertaining to graves and burials will apply as set out in Section 11.

4. TECHNICAL DESCRIPTION

4.1. Project Location

The proposed WEF and associated grid infrastructure is located approximately 18km and 25km north-east respectively of Touws River in the Western Cape Province and is within the Witzenberg Local Municipality, in the Cape Winelands District Municipality (**Figure *8***).

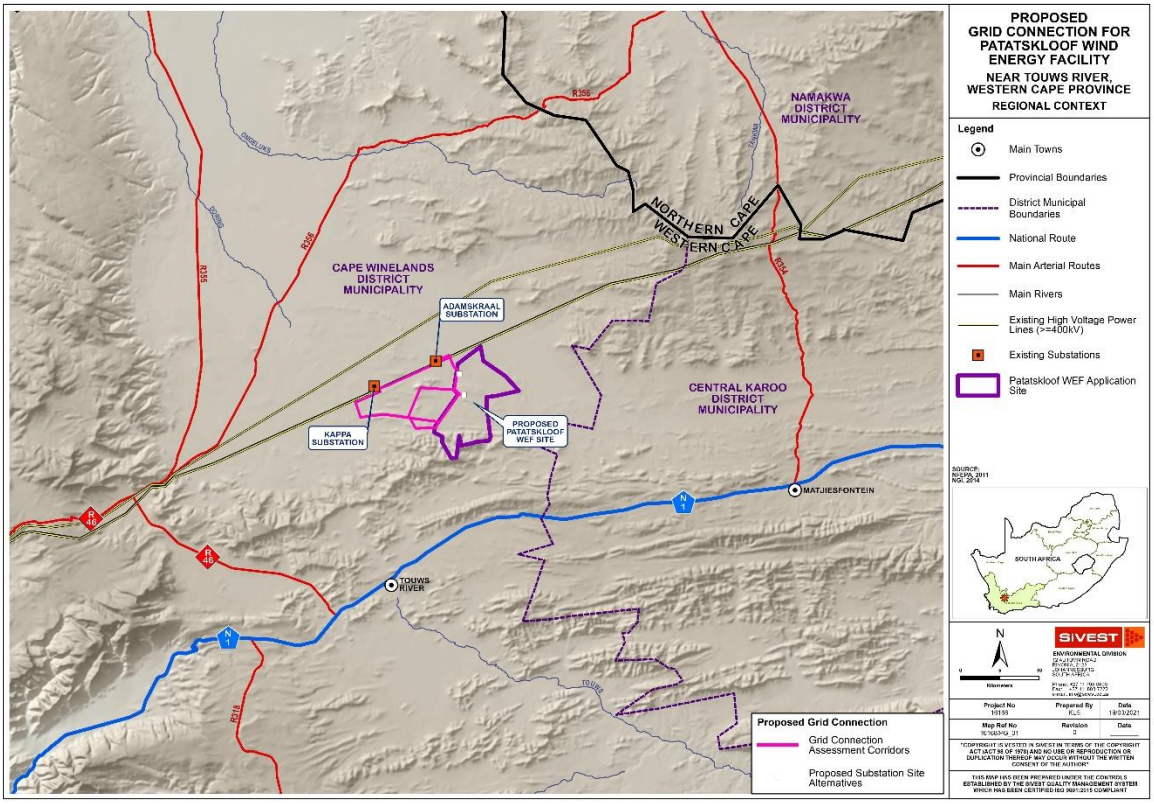


Figure 8: Regional Context Map

4.1.1. WEF

The WEF application site as shown on the locality map below (**Figure *9***) is approximately 6 612 hectares (ha) in extent and incorporates the following farm portions:

- Remainder of the Farm Upper Stinkfontein No 246
- Remainder of the Farm Upper Melkbosch Kraal No 250; and
- Portion 1 of the Farm Drinkwaters Kloof No 251.

A smaller buildable area (2 905.4 ha) has however been identified as a result of a preliminary suitability assessment undertaken by Mainstream and this area is likely to be further refined with the exclusion of sensitive areas determined through various specialist studies being conducted as part of the BA process.

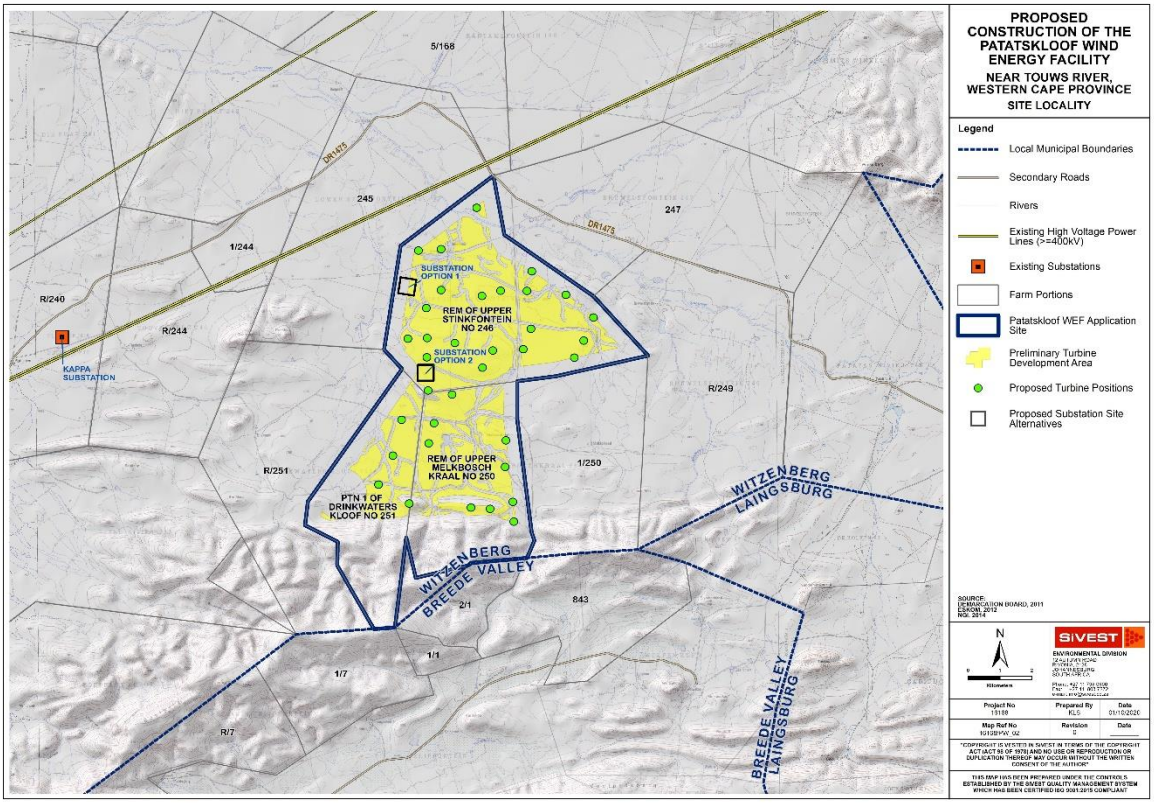


Figure 9: Patatskloof WEF Site Locality

4.1.2. Grid Connection

At this stage, it is proposed that the 132kV power lines will connect the Pataskloof WEF on-site substation to the national grid, either via Kappa Substation or via the Adamskraal substation (**Figure *10***). The following properties are affected by the proposed grid connection:

- Remainder Of the Farm Upper Stinkfontein No 246;
- Remainder Of the Farm Melkbosch Kraal No 250;
- Portion 1 Of the Farm Drinkwaters Kloof No 251;
- Farm Platfontein No 240;
- Portion 1 Of the Farm Tooverberg No 244;
- Remainder Of the Farm Tooverberg No 244;
- Farm Lower Stinkfontein No 245;
- Remainder Of the Farm Drinkwaters Kloof No 251; and
- Remainder Of the Farm Zand Rivier No 252.

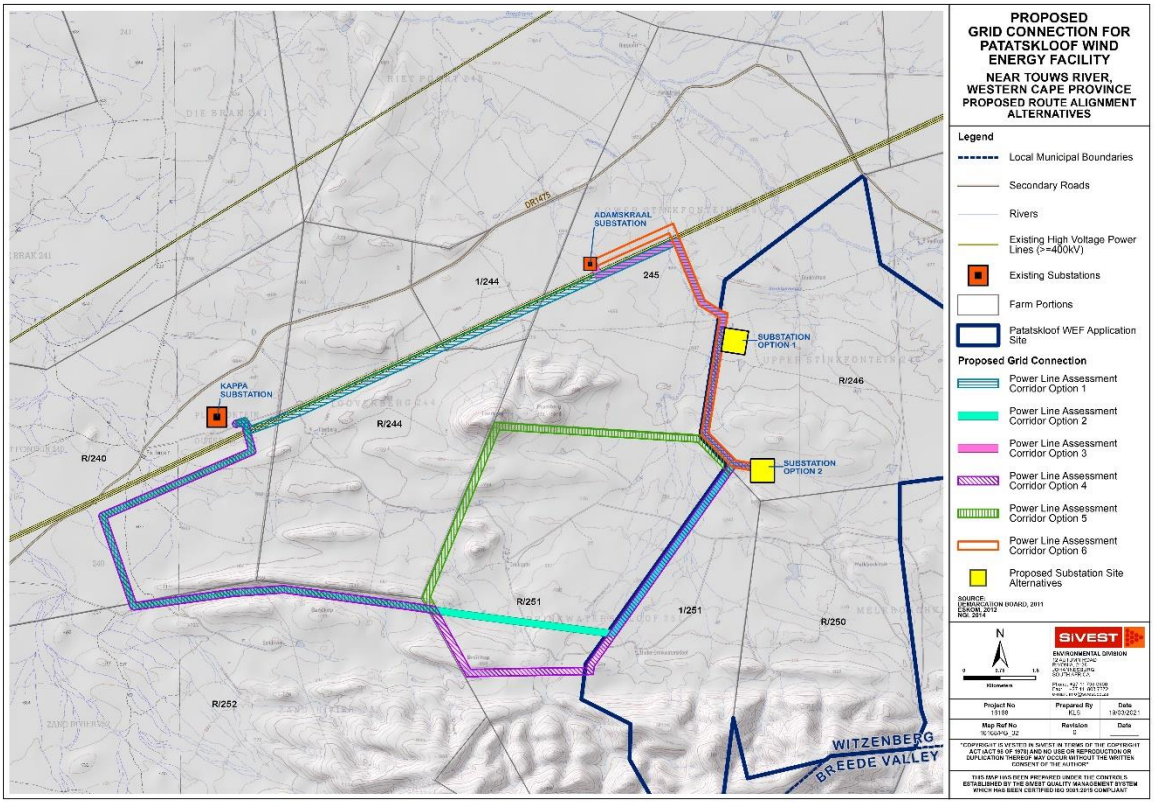


Figure 10: 132kV power line route alignment options

4.2. Project Description

It is anticipated that the proposed Patatskloof WEF will comprise up to thirty-five (35) wind turbines with a maximum total energy generation capacity of up to approximately 250MWac. The electricity generated by the proposed WEF development will be fed into the national grid via a 132kV overhead power line. The 132kV overhead power line will however require a separate EA and is subject to a separate BA process, which is currently being undertaken in parallel to this WEF BA process.

4.2.1. Wind Farm Components

- Up to 35 wind turbines, with a maximum export capacity of approximately 250MW. This will be subject to allowable limits in terms of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP);
- Each wind turbine will have a hub height of between 120m and 200m and rotor diameter of up to approximately 200m;
- Permanent compacted hardstanding areas / platforms (also known as crane pads) of approximately 100m x 100m (total footprint of approx. 100 00m2) per turbine during

construction and for on-going maintenance purposes for the lifetime of the proposed development;

- Each wind turbine will consist of a foundation of up to approximately 30m in diameter. In addition, the foundations will be up to approximately 4m in depth;
- Electrical transformers (690V/11 to 33kV) adjacent to each wind turbine (typical footprint of up to approximately 3m x 2.5m) to step up the voltage to between 11kV and 33kV;
- One (1) new 11kV - 33/132kV on-site substation consisting of two (2) portions: IPP portion / yard (33kv portion of the shared 33kv/132kv portion) and an Eskom portion (132kv portion of the shared 33kv/132kv portion) including associated equipment and infrastructure, occupying a total area of approximately 25ha (i.e. 250 000m2) i.e. 15.5 ha for the IPP Portion and 15.5 ha for the Eskom Portion. The Eskom portion will be ceded over to Eskom once the IPP has constructed the onsite substation. The necessary Transfer of Rights will be lodged with DFFE when required;
- A Battery Energy Storage System (BESS) will be located next to the IPP portion / yard of the shared onsite 33/132kV substation and will be included as part of the 15.5ha. The storage capacity and type of technology would be determined at a later stage during the development phase, but most likely comprise an array of containers, outdoor cabinets and/or storage tanks;
- The wind turbines will be connected to the proposed substation via 11 to 33kV underground cabling and overhead power lines.
- Road servitude of 8m and a 20m underground cable or overhead line servitude.
- Internal roads with a width of up to approximately 5m wide will provide access to each wind turbine. Existing site roads will be used wherever possible, although new site roads will be constructed where necessary. Turns will have a radius of up to 50m for abnormal loads (especially turbine blades) to access the various wind turbine positions. It should be noted that the proposed application site will be accessed via the N1 National Route and DR1475, MR316 and MR319 WCG provincial Roads; One (1) construction laydown / staging area of up to approximately 3ha to be located on the site identified for the substation. It should be noted that no construction camps will be required in order to house workers overnight as all workers will be accommodated in the nearby town;
- Operation and Maintenance (O&M) buildings, including offices, a guard house, operational control centre, O&M area / warehouse / workshop and ablution facilities to be located on the site identified for the substation. This will be included in the 33kv portion/yard of the substation area i.e.15.5 ha of the IPP portion of the onsite substation
- A wind measuring lattice (approximately 120m in height) mast has already been strategically placed within the wind farm application site in order to collect data on wind conditions. A permanent met mast will also be installed;
- No new fencing is envisaged at this stage. Current fencing is standard farm fence approximately 1-1.5m in height. Fencing might be upgraded (if required) to be up to approximately 2m in height; and
- Water will either be sourced from existing boreholes located within the application site or will be trucked in, should the boreholes located within the application site be limited.
- Optic fibre overhead or underground line from the Adamskraal Substation to the proposed on-site substation.

4.2.2. Grid Components

The proposed grid connection infrastructure to serve the Patatskloof WEF will include the following components (**Figure *10***):

- One (1) new 11-33/132kV on-site substation, situated on a site of occupying an area of up to approximately 2ha. The proposed substation will be a step-up substation and will include an Eskom portion and an IPP portion, hence the substation has been included in both the BA for the WEF and in the BA for the grid infrastructure to allow for handover to Eskom. The applicant will remain in control of the low voltage components (i.e., 33kV components) of the substation, while the high voltage components (i.e. 132kV components) of this substation will likely be ceded to Eskom shortly after the completion of construction; and
- One (1) new 132kV overhead power line connecting the on-site substation to either Kappa Substation or Adamskraal Substation and thereby feeding the electricity into the national grid. Power line towers being considered for this development include self-supporting suspension monopole structures for relatively straight sections of the line and angle strain towers where the route alignment bends to a significant degree. Maximum tower height is expected to be approximately 25m.

4.3. Alternatives

4.3.1. Wind Energy Facility

No other activity or site alternatives are being considered. Renewable Energy development in South Africa is highly desirable from a social, environmental and development point of view and a wind energy facility is considered suitable for this site due to the high wind resource in this area.

The choice of technology selected for the Patatskloof WEF is based on environmental constraints and technical and economic considerations. No other technology alternatives are being considered as wind energy facilities are more suitable for the site than other forms of renewable energy due to the high wind resource.

The size of the wind turbines will depend on the development area and the total generation capacity that can be produced as a result. The choice of turbine to be used will ultimately be determined by technological and economic factors at a later stage.

Design and layout alternatives will be considered and assessed as part of the BA. These include alternatives for the Substation locations and also for the construction / laydown area. The proposed preliminary layout is shown in **Figure 11** below.

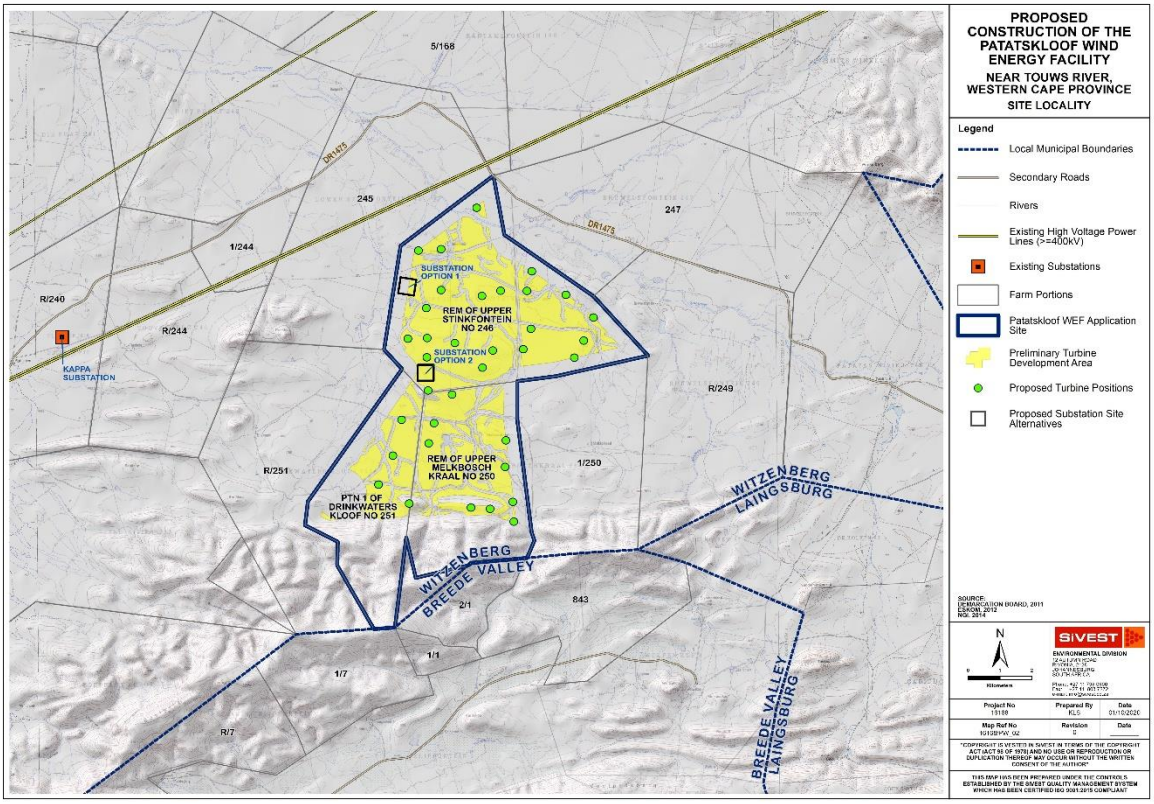


Figure 11: Preliminary Turbine layout and development area

4.3.2. Grid Components

The grid connection infrastructure proposals include two (2) substation site alternatives, each of which are 25 hectares in extent, and six (6) power line route alignment alternatives (**Figure 12**). These alternatives will be considered and assessed as part of the BA process and will be amended or refined to avoid identified environmental sensitivities.

All power line route alignments will be assessed within a 150m wide assessment corridor (75m on either side of power line). These alternatives are described below:

- Power Line Corridor Option 1 is approximately 16km in length, linking either Substation Option 1 or Substation Option 2 to Kappa Substation.
- Power Line Corridor Option 2 is approximately 24km in length, linking either Substation Option 1 or Substation Option 2 to Kappa Substation.
- Power Line Corridor Option 3 is approximately 8km in length, linking either Substation Option 1 or Substation Option 2 to Adamskraal Substation.
- Power Line Corridor Option 4 is approximately 25km in length, linking either Substation Option 1 or Substation Option 2 to Kappa Substation.

- Power Line Corridor Option 5 is approximately 24km in length, linking either Substation Option 1 or Substation Option 2 to Kappa Substation. It should be noted that the assessment corridor applied to a short section of this route alignment serving Substation Option 2 has been widened to 300m.
- Power Line Corridor Option 6 is approximately 8km in length, linking either Substation Option 1 or Substation Option 2 to Adamskraal Substation.

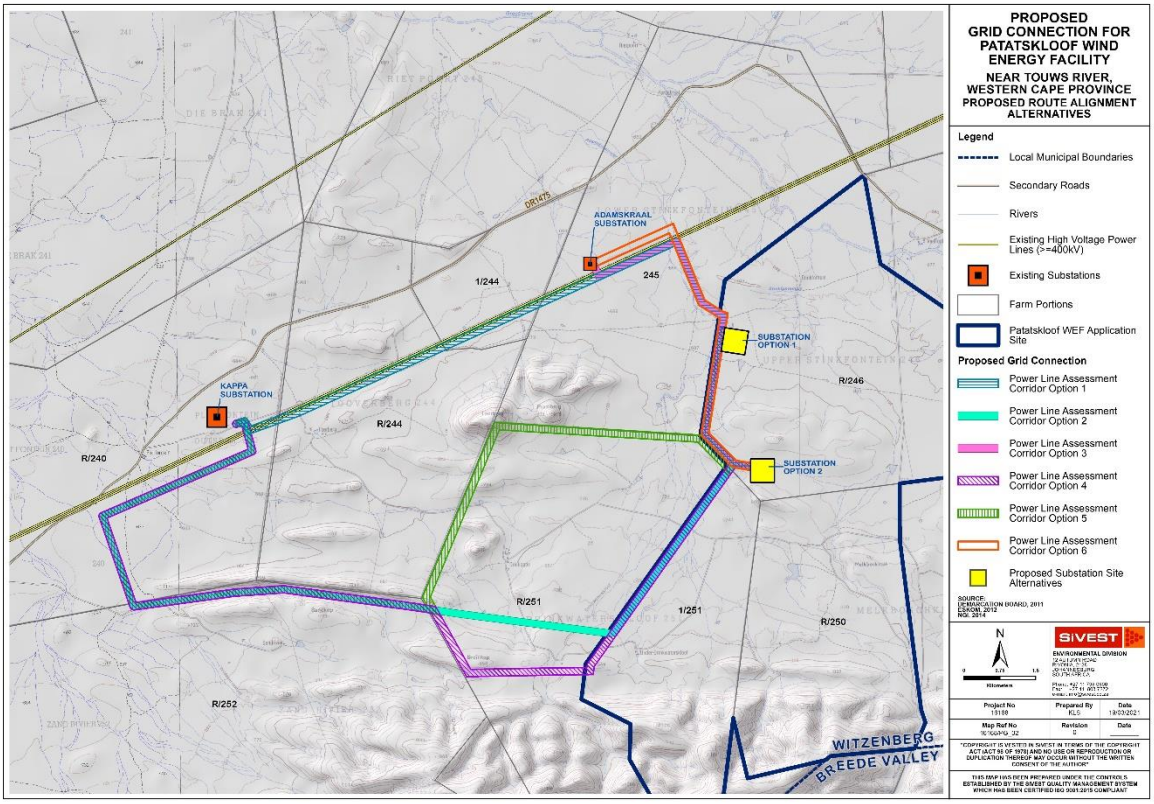


Figure 12: Proposed Substation and Power line options

4.3.3. No-go Alternative

The 'no-go' alternative is the option of not undertaking the proposed grid connection infrastructure projects. Hence, if the 'no-go' option is implemented, there would be no development. This alternative would result in no environmental impacts from the proposed project on the site or surrounding local area. It provides the baseline against which other alternatives are compared and will be considered throughout the report.

The 'no-go' option is a feasible option; however, this would prevent the proposed development from contributing to the environmental, social and economic benefits associated with the development of the renewable energy sector.

5. LEGAL REQUIREMENT AND GUIDELINES

5.1. Statutory Framework: The National Heritage Resources (Act 25 of 1999)

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

5.1.1. Section 35 – Archaeology, Palaeontology and Meterorites

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

5.1.2. Section 36 – Burial Grounds & Graves

A section 36 permit application is made to the Heritage Western Cape (HWC) or the competent provincial heritage authority which protects burial grounds and graves that are older than 60 years and must conserve and generally care for burial grounds and graves protected in terms of this section, and it may make such arrangements for their conservation as it sees fit. HWC must also identify and record the graves of victims of conflict and any other graves which it deems to be of cultural significance and may erect memorials associated with these graves and must maintain such memorials. A permit is required under the following conditions:

Permitting requirements for burial grounds and graves older than 60 years (prehistoric) and historic burials to the HWC:

a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves.

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

5.1.3. Section 38 HIA as a Specialist Study within the EIA in Terms of Section 38(8)

A NHRA Section 38 (Heritage Impact Assessments) application to HWC is required when the proposed development triggers one or more of the following activities:

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

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

This is an HIA submitted to the relevant authority (DFFE) in terms of Section 38(8) of the National Heritage Resources Act. The commenting authority is HWC.

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

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

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

5.1.4. Notice 648 of the Government Gazette 45421

Although minimum standards for archaeological (2007) and paleontological (2012) assessments[1] were published by SAHRA and Heritage Western Cape[2][3], GN.648 requires sensitivity verification for a site selected on the national web based environmental screening tool for which no specific assessment protocol related to any theme has been identified. The requirements for this Government Notice (GN) are listed in **Table 3** and the applicable section in this report noted. The screening tool indicated a **low** archaeological and cultural heritage significance (**Figure 13**).

Table 3: Reporting requirements for GN648

GN 648	Relevant section in report	Where not applicable in this report
2.2 (a) a desktop analysis, using satellite imagery;	Section 7	
2.2 (b) a preliminary on-site inspection to identify if there are any discrepancies with the current use of land and environmental status quo versus the environmental sensitivity as identified on the national web-based environmental screening tool, such as new developments, infrastructure, indigenous/pristine vegetation, etc.	Section 6	-
2.3(a) confirms or disputes the current use of the land and environmental sensitivity as identified by the national web- based environmental screening tool;	Section 6	-

[1] South African Heritage Resources Agency. 2007. *Minimum Standards: Archaeological and Palaeontological Components of Impact Assessment Reports*. May 2007.
[2] Heritage Western Cape. 2016. *Guide for Minimum Standards for Archaeology and Palaeontology Reports Submitted to Heritage Western Cape*. June 2016.
[3] Heritage Western Cape 2016. *Guidelines for Heritage Impact Assessments required in terms of Section 38 of the National Heritage Resources Act (Act 25 of 1999).*

2.3(b) contains motivation and evidence (e.g., photographs) of either the verified or different use of the land and environmental sensitivity;	Section 6 provides a description of the current use and confirms/doesn't confirm the status in the screening report.	-

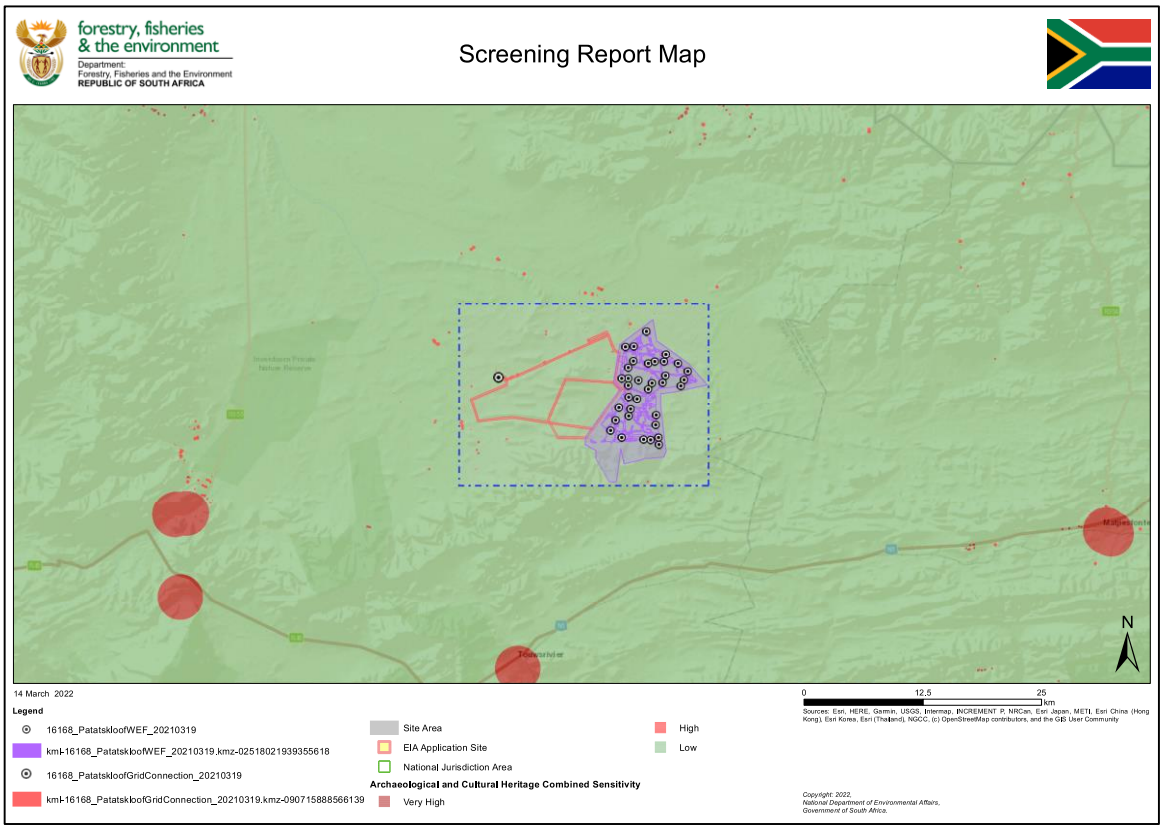


Figure 13: DFFE Screening tool outcome indicating low significance.

5.1.5. NEMA – Appendix 6 requirements

The HIA report has been compiled considering the National Environmental Management Act (Act No. 107 of 1998) (NEMA) and EIA Regulations, 2014 (as amended) Appendix 6 requirements for specialist reports as indicated in the table on page vi and vii of this report.

6. DESCRIPTION OF THE RECEIVING ENVIRONMENT

The proposed development site is situated approximately 18km north-east of Touws River in the Western Cape Province and is within the Witzenberg Local Municipality, in the Cape Winelands District Municipality.

The proposed development area is currently being used predominantly for game farming. The area is largely undisturbed except for several fences which demarcate the individual properties; tracks which cross the properties. An existing WEF was observed to the north-west of the proposed development footprint (**Figure 13**).

The landscape comprises various ridges, valleys and surrounding plains. The prevailing vegetation type and landscape features of the area form part of the Central Mountain Shale Renosterveld within the Fynbos Biome and the Koedoesberge-Moordenaars Karoo within the Succulent Karoo Biome The Central Mountain Shale Renosterveld is described as slopes and broad ridges of low mountains and escarpments, with tall shrub-land dominated by *Renosterbos* and large suites of mainly non-succulent Karoo shrubs and with a rich geophytic flora in the undergrowth or in more open, wetter or rocky habitats (**Figure 14** and **Figure 15**). The Koedoesberge- Moordenaars Karoo is described as a slightly undulating to hilly landscape covered by low succulent scrub and dotted by scattered tall shrubs, patches of 'white' grass visible on plains, the most conspicuous dominants being dwarf shrubs of *Pteronia*, *Drosanthemum* and *Galenia* (Mucina & Rutherford, 2006).

Figure 14: Several non-perennial streams flow throughout the project area.

Figure 15: Flat plain surrounded by low rises

Figure 16: View of existing turbines.

7. BACKGROUND RESEARCH

The previous section provided a topographical description of the proposed development area. This section seeks to describe the historical origins of the receiving environment.

The examination of heritage databases, historical data and cartographic resources represents a critical additional tool for locating and identifying heritage resources and in determining the historical and cultural context of the study area. Therefore, an internet literature search was conducted, and relevant archaeological and historical texts were also consulted. Relevant topographic maps and satellite imagery were studied.

7.1. Archival/Historical Maps

Historical topographic maps (1:50 000) for various years (1969, 1987, 2007) were available for utilisation in the background study. These maps were assessed to observe the development of the area, as well as the location of possible historical structures and burial grounds. The study area was overlain on the map sheets to identify structures or graves situated within or immediately adjacent to the study area that could possibly be older than 60 years and thus protected under Section 34 and 36 of the NHRA.

There were several structures identified within the vicinity of the proposed development area. Most of the structures identified were farmsteads or kraals as illustrated in the 1969 topographic map 3320AA (**Figure 17, Figure 18**).

7.1.1. 1: 50 000 Topographical Map 3320AA - First Edition 1969

A section of the First Edition of the 3320AA (BREWELSFONTEIN) Topographical Sheet is depicted in **Figure 17** and **Figure 18.** This map sheet was based on aerial photography undertaken in 1963, was surveyed and drawn by the Trigonometrical Survey Office in 1969.

Several sites containing structures are depicted in the vicinity of the study area. All these identified sites are likely to be at least 52 years old.

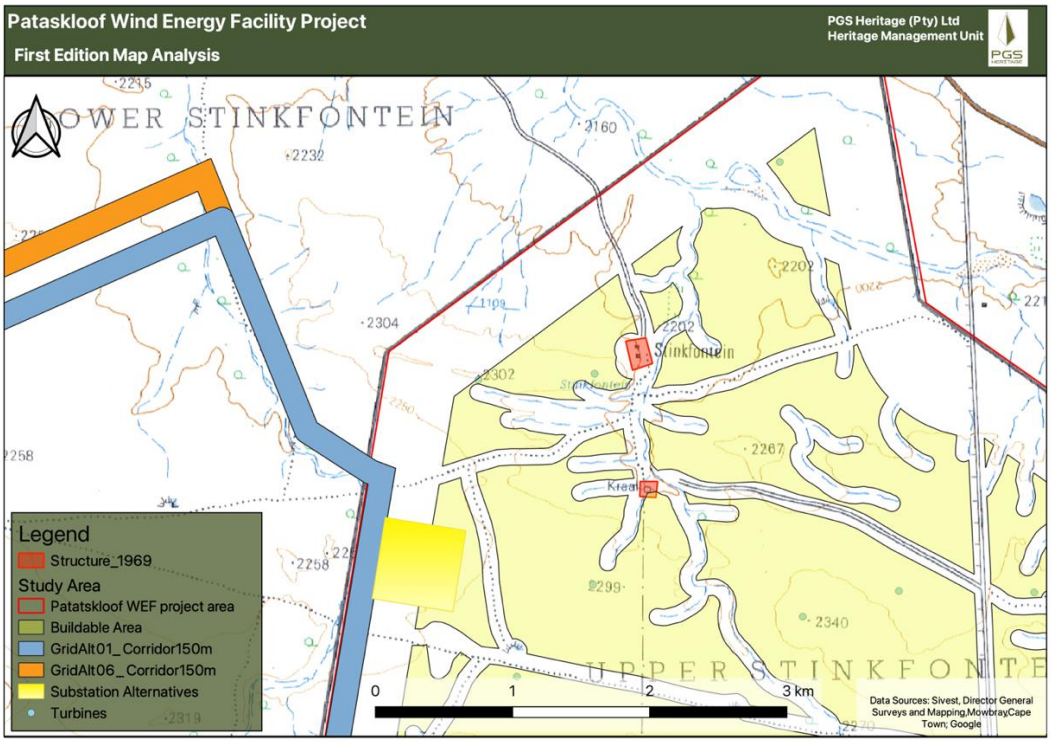


Figure 17: First Edition of 3320AA Topographic Map 1: 50 000 dating to 1969, showing the proposed Patatskloof WEF, with two possible heritage features (Structure: red polygon) located within the project area.

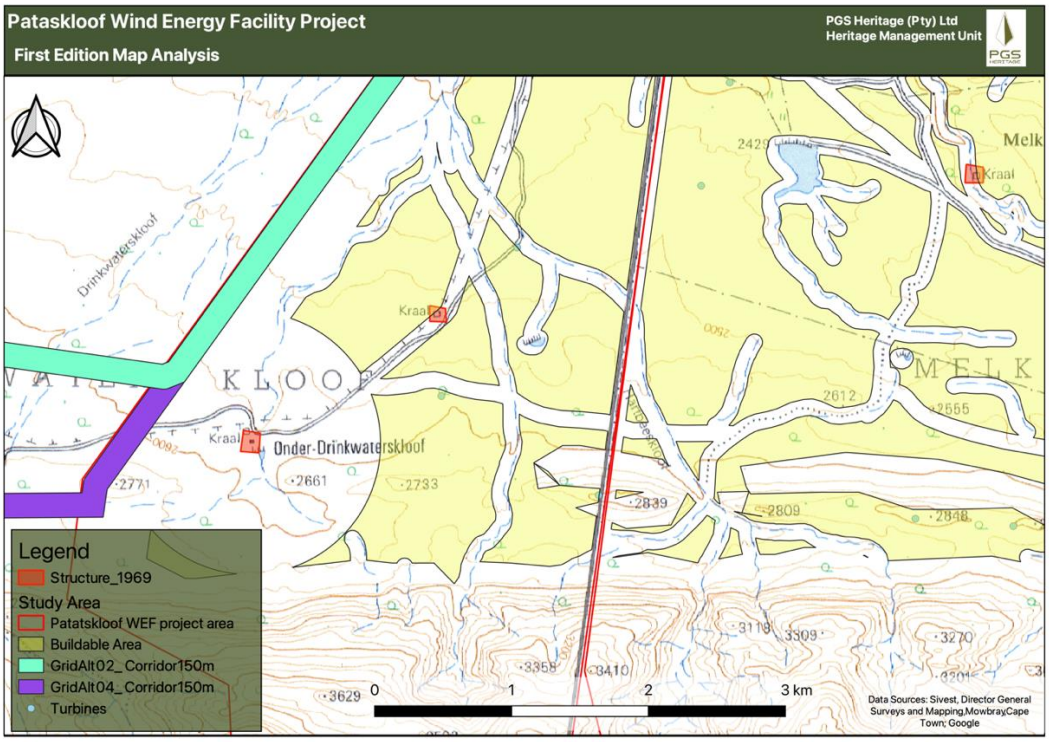


Figure 18: First Edition of 3320AA Topographic Map 1: 50 000 dating to 1969, showing the proposed Patatskloof WEF, with three possible heritage features (structure: red polygon) located within the project area.

7.1.2. 1: 50 000 Topographical Map 3320AA – Second Edition 1987

A section of the Second Edition of the 3320AA (BREWELSFONTEIN) Topographical Sheet is depicted in **Figure 19.** This map sheet was published by the Chief Director of Surveys and Mapping in 1987.

One site containing a ruin is depicted in the vicinity of the study area. This identified site is likely to be at least 34 years old.

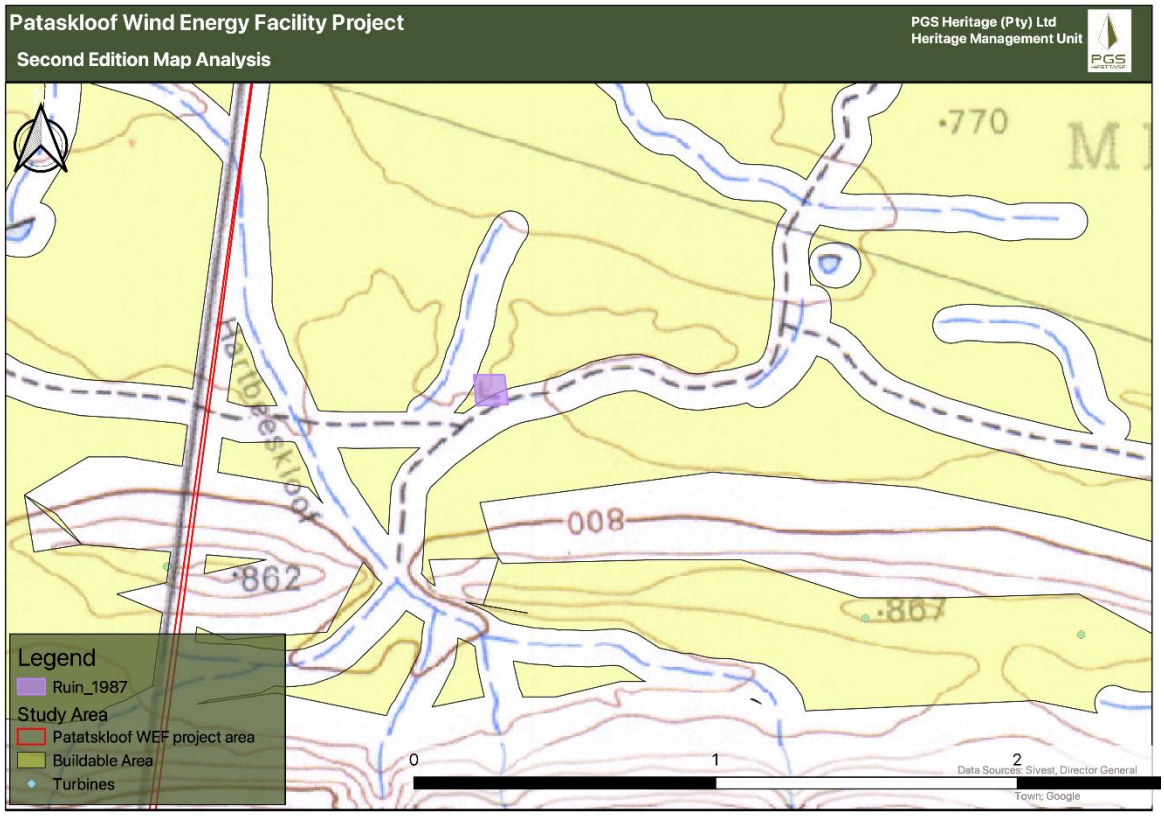


Figure 19: Second Edition of 3320AA Topographic Map 1: 50 000 dating to 1987, showing the proposed Patatskloof WEF, with one possible heritage feature (ruin: purple polygon) located within the study area.

7.1.3. 1: 50 000 Topographical Map 3320AA – Third Edition 2007

A section of the Third Edition of the 3320AA (BREWELSFONTEIN) Topographical Sheet is depicted in **Figure 20.** This map sheet was published by the Chief Director of Surveys and Mapping in 2007.

Two sites containing structures are depicted in the vicinity of the study area.

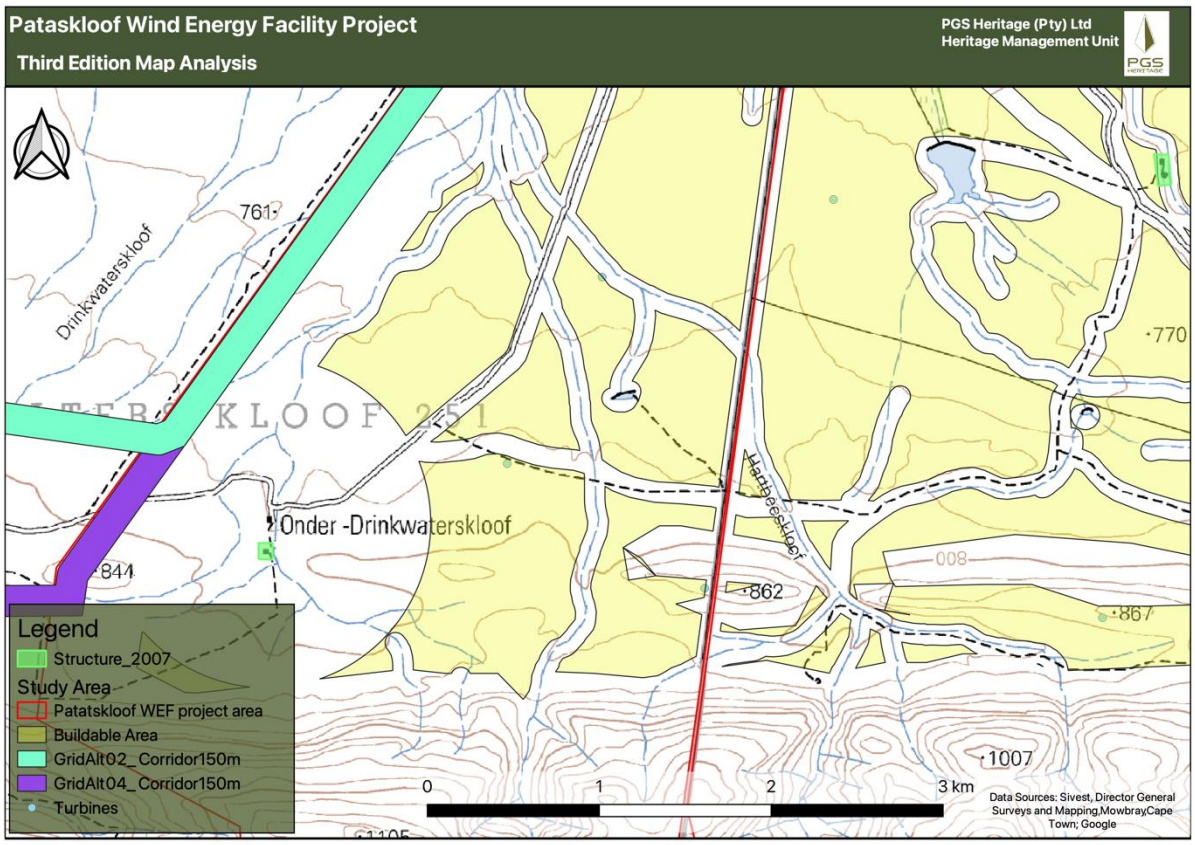


Figure 20: Third Edition of 3320AA Topographic Map 1: 50 000 dating to 2007, showing the proposed Patatskloof WEF, with several possible heritage features (structure: green polygon) located within the study area.

7.2. Historical Overview of the Study Area

Until recently, this region was poorly understood from an archaeological perspective. This, however, is no longer strictly true, given the creation of the Komsberg REDZ, and the ensuing applications for WEFs in this area (Fourie et al 2015). Several HIAs, all of them with archaeological components have, as a result, been conducted within the area. Little research work, which is generally more thorough and comprehensive, has been done, however, so that while we have a broad understanding of the heritage character of the region, more specific conclusions cannot be derived.

Over 10 HIAs have been compiled around the study area, all with respect to wind farms and their associated infrastructure, and the findings of these reports are largely congruent. The reports identified surprisingly little pre-colonial or stone-age archaeology (Booth 2012, 2015a and 2015b; Hart and Webley 2013; Hart and Kendrick 2014; Hart 2015; van der Walt 2016), with the little that has been identified in the form of scatters located on the flat floodplains up to the foothills of the mountains, and within river valleys along watercourses (Booth 2016a and 2016b). The dry, fairly desolate ridges, which are subject to high winds and, therefore the proposed locations for the turbines, are generally entirely devoid of Stone Age archaeological remains (Webley and Halkett 2017). These findings were also

supported by the Heritage Scoping Assessment Report (Fourie et al 2015) compiled as part of the Department of Environmental Affair's (2015) Strategic Environmental Assessment wind and solar energy developments. A mitigation phase excavation (Evans et al. 1985) has been undertaken at two small rock shelters in the grounds of the South African Astronomical Observatory near Sutherland in the early 1980s. More recently, changing farming methods as represented by the distribution and variety of stone-built features (walls and kraals) was assessed as part of a Master's thesis (Regensberg 2016).

DATE	DESCRIPTION
2.5 million to 250 000 years ago	The Earlier Stone Age (ESA) is the first and oldest phase identified in South Africa's archaeological history and comprises two technological phases. The earliest of these is known as Oldowan and is associated with more robust flaked tools. It dates to approximately <2 million years ago. The second technological phase is the Acheulian and comprises more refined stone artefacts such as the cleaver and bifacial hand axe. The Acheulian dates back to approximately 1.5 million years ago. The area is known to have been inhabited since the Early Stone Age (ESA), with some surface scatters identified on a survey west of Matjiesfontein (Hart and Miller 2011) and a well-preserved ESA site with complete and well-formed bifaces south of Sutherland (Hart et al. 2010). Other ESA sites include the Montagu Cave in the Western Cape, near the small town of Montagu (Mitchell 2007).
250 000 to 40 000 years ago	The Middle Stone Age (MSA) is associated with flakes, points and blades manufactured by means of the prepared core technique. This phase is furthermore associated with modern humans and complex cognition (Wadley 2013). Middle Stone Age (MSA) material is also present, and most often found in the form of occasional flakes and rare open sites (Hart et al. 2010). Later Stone Age (LSA) scatters have also been documented throughout the region, although at remarkably low density (Booth 2012, 2016a and 2016b; Hart and Webley 2013; Hart and Kendrick 2014; Hart 2015; van der Walt 2015).
40 000 years ago, to the historic past	The Later Stone Age (LSA) is the third archaeological phase identified and is associated with an abundance of very small stone tools known as microliths Rescue excavations conducted at two shelters near Sutherland, however, yielded significant LSA cultural material including various stone artefacts such as cores, utilized flakes, blades and chunks, and formal tools such as scrapers, adzes, backed blades, points and miscellaneous retouched pieces. Fragments of ostrich eggshell (OES) and ostrich eggshell beads, faunal remains and freshwater molluscs were also recorded (Evan et al. 1985). This archaeological signature represents the earliest inhabitants of this region, and, by the time of the LSA, these people constitute the antecedents of the San hunter-gatherers who occupied the landscape in the last 10 000 years. Most tools are made on hornfels, quartzite and chert, while quartz and Karoo shale were also utilised (Hart et al. 2010).
800 AD – 1600 AD	Within the last 2 000 years, pastoralists, the Khoekhoen, arrived in the area, bringing with them livestock, thin-walled ceramics and new social and economic systems. In this area, there is extensive evidence for the presence of these groups in the landscape. This evidence comes in the form of circular, stone-built enclosures constructed of piled stone up to half a metre high and from 3m to 4m to 9 m in diameter (Hart et al. 2010). These enclosures represent living spaces, which contained grass huts or Matjieshuise (mat covered houses) and kraals. The kraals are generally situated on the leeward slopes of low ridges and likely date to between 300 and 1 000 years ago (Hart et al. 2010). The kraals sometimes form complexes of as many as 13 interlocking enclosures, often with adjoining 'lammerkraals' (lamb pens). These sites can be found with fine, red burnished pottery and OES fragments. Other evidence for herders in this area has been identified in the form of open camps situated along dry riverbeds in valley bottoms. These sites are large, measuring 80m x 80m, and are associated with fine, thin-walled Cape Coastal pottery, frequent informal stone tools, stone features, grinding surfaces, ash middens, animal bone and several graves with broken grindstones atop them; colonial period artefacts have also been found in association with these sites (Ibid.).
Rock art	Rock art, which can be attributed to the San hunter-gatherers or the pastoralists, is known within the region, although it's not commonly identified, and more concentrated in the Cape Fold Mountains to the south of the project area (Booth 2016a and 2016b; van der Walt 2015). These paintings tend to be of the fine line tradition, attributed to hunter-gatherers, or finger painting, which is attributed to the herders.

DATE	DESCRIPTION
1700-1900 AD	Early Trekboere entered the region in the late 1700s, moving their livestock down into the valleys and plains of the Karoo from the better-watered escarpment to escape the harsh winters there. As a result of this pattern of seasonal movement of flocks the Trekboere usually had a loan farm on the plateau, and a stockpot (legplaats) in the Karoo. The itinerant trekboere initially lived much like the pre-colonial herders, travelling with grass huts or Matjieshuise that could be easily erected where necessary (Hart and Kendrick 2014). The early arrival of these trekboere was initially met with resistance from the San, initially with the result that settlement of the area was impeded (Schoeman 1986). In retaliation against their stock losses, and the killing of Khoisan herders and slaves, the settlers established the Kommando system, which resulted in officially sanctioned hunting of the San by the late 1770s (Hart and Webley 2011). These massacres are recorded archivally and in place names in the area, such as the farm Oorlogskloof near Sutherland where more than 30 stone cairn burials are to be found. Further mass graves might be found on Gunstfontein Farm, while there is purportedly also a cave where the San made a last stand against the kommandos (Ibid.). Increasingly, as the exploitation of the area became better established, and particularly after the Great Trek of the 1830s, their structures and imprint on the landscape became more permanent. The evidence for this early inhabitation of the region is to be found in historic farmhouses and associated buildings, stone cairns, stonewalling, farm infrastructure such as reservoirs and, more recent wind pumps. Artefactual material from this period includes European ceramics, glass and iron fragments. The stonewalling and kraals of this period are distinguished from the pre-colonial kraals as they are usually rectilinear and are faced on two sides with infill between the faces and are often mortared using local materials.
1899-1903	The area was witness to a further period of military action during the South African War, with some skirmishes near Skietfontein in the Komsberg Mountains (Hart and Webley 2011). The threat of Boer guerrilla activities also prompted the British to build several defensive structures in the region, including redoubts, gun platforms and blockhouses (van der Walt 2015; Hart and Webley 2011; Orton and Halkett 2011).

7.3. Historical Background of surrounding Towns

7.3.1. Touws River

The first farmers settled in the region during the 18th century (Earsmus, 2014). The farms on which the town was established was allocated in 1748 (Earsmus, 2014). As a station, names Montagu Road was opened on 7 November 1877(Earsmus, 2014), but was renamed to Touw river on 1 January 1883 (Earsmus, 2014). The residential area of Touws River was laid out in 1921, on property owned by J.D. Logan, who was the Laird of Matjiesfontein (Earsmus, 2014).

7.3.2. Matjiesfontein

James Douglas Logan established Matjiesfontein as a health resort in 1883 (Earsmus, 2014). Matjiesfontein was the first town in South Africa to have electricity and sewage system (Earsmus, 2014). The Matjiesfontein Waterworks opened in 1889 (Earsmus, 2014). During the Anglo-Boer War, the headquarters of the Cape Command was located at Matjiesfontein (Earsmus, 2014).

7.4. South African Heritage Resources Information System (SAHRIS)

A scan of SAHRIS and project databases has revealed numerous studies conducted in and around the study area of this report:

- ALMOND, J, & ORTON, J. 2017. Heritage Impact Assessment: Proposed Construction of a Substation and 132 kV Distribution Line to support the Proposed Sutherland 2 WEF, Sutherland and Laingsburg Magisterial Districts, Northern and Western Cape. – **Historical and Stone Age heritage remains as well as several burial grounds and fossil sites were uncovered in this assessment. It was recommended that development may continue under the condition that 30m & 20m buffers are implemented around certain 'no-go' sites and that the relevant contingencies are implemented should heritage remains be affected by the development process.**
- BANDAMA, F. & MOHAPI, M. 2014. An Archaeological Scoping and Assessment Report for The Proposed Gamma (Victoria West, Northern Cape) - Kappa (Ceres – Western Cape) 765Kv (2) Eskom Power Transmission Line. - **This scoping report identified a range of heritage resources in and around the local area including stonewalling (kraals and possible windbreaks), ESA-LSA artefact scatters, buildings and farm complexes (with associated artefacts like glass, metal and ceramic), rock art and engravings, pottery and graves (both formal and informal).**
- BOOTH, C. 2011. An archaeological desktop study for the proposed establishment of the Hidden Valley wind energy facility and associated infrastructure on a site south of Sutherland, Northern Cape Province. – **Desktop level assessment based on previous fieldwork done in the study area. A full Phase 1 AIA was recommended.**
- BOOTH, C. 2012. A Phase 1 AIA for the proposed Hidden Valley Wind Energy Facility, near Sutherland, Northern Cape Province. – **Historical heritage resources were uncovered in this assessment. It was recommended that an archaeologist be present during all construction-related activities in two of the study areas.**
- BOOTH, C. 2015. A Phase 1 Archaeological Impact Assessment for the Proposed Karusa Facility Substation and Ancillaries, near Sutherland, Karoo Hoogland Local Municipality, Namakwa District Municipality, NC Province. - **No significant heritage resources were uncovered in this assessment. It was recommended that the development may continue and that the relevant contingencies are implemented should heritage remains be uncovered during the development process.**
- BOOTH, C. 2015. A Phase 1 Archaeological Impact Assessment for the Proposed Eskom Karusa Switching Station, Ancillaries and a 132kV Double Circuit Overhead Power Line, Near Sutherland, Karoo Hoogland Local Municipality, Namakwa District Municipality, Northern Cape Province. – **Some low significance Historical heritage remains were uncovered in this assessment. It was recommended that a 30m buffer around discovered sites be adhered to and that the relevant contingencies are implemented should heritage remains be uncovered during the development process.**
- BOOTH, C. 2015. A Phase 1 Archaeological Impact Assessment for the Proposed Soetwater Substation, 132kvV Overhead Powerline and Ancillaries Soetwater Wind Energy Facility, Near Sutherland, Karoo Hoogland Local Municipality, Namakwa District Municipality, Northern Cape Province. - **No significant heritage resources were uncovered in this assessment. It was recommended that the development may continue and that the relevant contingencies are implemented should heritage remains be uncovered during the development process.**
- BOOTH, C. 2015. An Archaeological Walk-Through For The Proposed Karusa Wind Energy Facility Situated On The Farms: De Hoop 202, Standvastigheid 210, Portion 1 Of The Farm Rheebokke Fontein 209, Portion 2 Of The Farm Rheebokke Fontein 209, Portion 3 Of The

Farm Rheebokke Fontein 209 And The Remainder Of The Farm Rheebokke Fontein 209, Near Sutherland, Karoo Hoogland Local Municipality, Namakwa District Municipality, Northern Cape Province. – **Historical heritage resources were uncovered in this assessment. It was recommended that the historical remains be recorded, and a destruction permit is applied for if they are not able to be avoided.**

- BOOTH, C. 2015. An Archaeological Walk-Through For The Proposed Soetwater Wind Energy Facility Situated On The Farms: The Remainder Of And Portion 1, 2 And 4 Of Farm Orange Fontein 203 And Annex Orange Fontein 185, Farm Leeuwe Hoek 183 And Farm Zwanepoelshoek 184, Near Sutherland, Karoo Hoogland Local Municipality, Namakwa District Municipality, Northern Cape Province. – **No significant heritage resources were uncovered in this assessment. It was recommended that the development may continue and that the relevant contingencies are implemented should heritage remains be uncovered during the development process.**
- BOOTH, C. 2015. Phase 1 Archaeological Impact Assessment for the proposed extension of the existing Komsberg Substation (two alternative areas) and widening of the access road, near Sutherland, NC Province. – **No heritage remains were uncovered in this assessment. It was recommended that the development may continue.**
- BOOTH, C. 2016. A Phase 1 Archaeological Impact Assessment (Aia) for the proposed Brandvalley Wind Energy Facility (WEF) situated in the Karoo Hoogland Local Municipality (Namakwa District Municipality), the Witzenburg Local Municipality (Cape Winelands District Municipality) And Laingsburg Local Municipality (Central Karoo District Municipality). **Middle and Later Stone Age stone artefacts, as well as several historical features (stonewalling kraals and cottages) with associated historical artefacts, were found.**
- BOOTH, C. 2016. A Phase 1 Archaeological Impact Assessment (Aia) for the proposed power line alternatives and substation options for the Rietkloof Wind Energy Facility (Wef) situated in the Witzenburg Local Municipality and Laingsburg Local Municipality, Cape Winelands and Central Karoo District Municipalities. **Middle and Later Stone Age stone artefacts, as well as several historical features (stonewalling kraals, cottages and graves) with associated historical artefacts, were found.**
- BOOTH, C. 2017. An Archaeological Assessment for the Amendment to Turbine Specifications and the Revised Layout of the Karusa Wind Energy Facility Situated on the Farms De Hoop 202, Standvastigheid 210, Portion 1 of the Farm Rheebokke Fontein 209, Portion 2 of the Farm Rheebokke Fontein 209, Portion 3 of the Farm Rheebokke Fontein 209 and the Remainder of the farm Rheebokke Fontein 209, Near Sutherland, Karoo Hoggland Local Municipality, Namakwa District Municipality, Northern Cape Province. - **No significant heritage resources were uncovered in this assessment. It was recommended that the development may continue and that the relevant contingencies are implemented should heritage remains be uncovered during the development process.**
- FOURIE, W. 2010. Archaeological Walk Down Report: Gamma-Omega Transmission Section 1: Gamma-Kappa. - **This study identified a range of heritage resources, the majority of which comprise Stone Age artefact scatters of varying densities. These are primarily ESA and MSA scatters, although LSA artefacts were also located. In addition, rock engravings were also found, along with stone-walled structures of varied construction (kraals, walls, possible windbreaks); infrequent non-decorated potsherds were sporadic. Later historical structures were also found (with glass, metal and ceramic fragments),**

along with associated graves/burial areas. The earliest graves place regional occupation pre-1892.

- FOURIE, W., ALMOND, J. & ORTON J. 2014. National Wind and Solar PV SEA Specialist Assessment Report – Heritage Evaluation. This report provides on overview of potential heritage impacts in the REDZ Komsberg focus area 2. - **The following types of heritage are listed for this area: Middle and Later Stone Age artefact scatters (frequently associated with water sources), rock art (confined to the mountainous areas), colonial farmsteads (18-19th Century – farmhouses, kraals and earth dams), provincial heritage sites (i.e., Matjiesfontein, Karoopoort), South African War period fortifications and cemeteries (dating back to the early 1800s).**
- FOURIE, W. 2020. Proposed development of the 800MW Oya solar photovoltaic (PV) facility and associated infrastructure near Matjiesfontein, Western Cape. **A total of six archaeological sites, three burial ground and graves, two farmsteads and four stone kraals were identified.**
- HALKETT, D, & ORTON, J. 2011. Heritage Impact Assessment for the Proposed Photovoltaic Solar Energy Facility on the Remainder of Farm Jakhalsvalley 99, Sutherland Magisterial District, Western Cape. – **Historical heritage resources were uncovered in this assessment. It was recommended that the development may continue however, the remains should be avoided, and that the ECO must make sure of this.**
- HALKETT, D. 2011. Heritage Impact Assessment Proposed Renewable Energy Facility at the Sutherland Site, Western and Northern Cape Provinces. – **Some historical and Stone Age heritage remains as well as a burial ground that was uncovered in this assessment. It was recommended that development may continue and that the relevant contingencies are implemented should heritage remains be affected by the development process.**
- HALKETT, D. 2012. Heritage Impact Assessment of the impacts resulting from the raising of the existing Keerom Dam, situated between Montagu and Touws River, Western Cape. **Isolated ESA and MSA artefacts and a single farm complex were found.**
- HALKETT, D. 2017. Heritage Impact Assessment: Proposed Construction of the 132Kv Powerline for the Maralla Wind Energy Facility near Sutherland Northern Cape. – **Historical, Iron Age and Stone Age heritage remains were uncovered in this desktop assessment. A targeted walk-down was recommended and that the relevant contingencies are implemented should heritage remains be uncovered during the development process.**
- HART, T. 2015. Heritage impact assessment for the proposed Komsberg East and West Wind Energy Facilities and Grid Connections to be situated in the Western Cape Province, Escarpment Area, Moordenaars Karoo. **Evidence of 19th century historic Trekboer farming includes numerous stone kraals, stock posts and occasional historic farmsteads were found.**
- KAPLAN, J. 2009. Phase 1 Archaeological Impact Assessment of the Proposed Driefontein Resort (Driefontein Farm No. 127) Sutherland, Northern Cape Province. **Historical heritage remains were uncovered in this assessment. It was recommended that the historical remains be avoided and that a Conservation Management Plan be drafted to protect the remains.**
- KAPLAN, J. 2015. Proposed borrow pit (Karusa East) on the Farm Rheebokke Fontein 209/2 & 209/3 near Sutherland, Northern Cape. – **Low significance historical heritage resources were uncovered in this assessment. It was recommended that the development may**

continue and that the relevant heritage authorities should be contacted if any human remains are uncovered during the development process.

- KAPLAN, J. 2015. Proposed borrow pit (Karusa North) on the Farm Rheebokke Fontein 209 Remainder near Sutherland, Northern Cape Assessment conducted under Section 38 (3) of the National Heritage Resource Act (No. 25 of 1999). – **Historical, Iron Age and Stone Age heritage remains were uncovered in this assessment. Relevant sites should be protected, 20m buffers implemented where necessary and that the relevant contingencies are implemented should heritage remains be uncovered during the development process.**
- KAPLAN, J. 2015. Proposed quarry on the farm Jakhals Valley 99 Portion 3 near Sutherland, Northern Cape. - **No significant heritage resources were uncovered in this assessment. It was recommended that the development may continue and that the relevant contingencies are implemented should heritage remains be uncovered during the development process.**
- MURIMBIKA, M. 2014. Executive Summary For Phase 1 Heritage Impact Assessment Study Report: Proposed Gamma-Kappa 2nd 765kV Eskom Transmission Powerline and Substations Upgrade Development in Western Cape. - **This report summarises a range of heritage resources in and around the local area including stonewalling (kraals and possible windbreaks), ESA-LSA artefact scatters, buildings and farm complexes (with associated artefacts like glass, metal and ceramic), rock art and engravings, pottery and graves (both formal and informal).**
- NILSEN, P. 2012. Proposed Upgrade of the Laingsburg Water Supply Pipeline, Laingsburg, Western Cape Province. **No material remains of historic or prehistoric origin were observed.**
- ROUSSOUW, L. 2007. Phase 1 Archaeological Impact Assessment and Palaeontological Impact Assessment of 30 Gravel Quarries in the R354 Between Calvinia and Sutherland, Northern Cape Province – **No heritage remains were uncovered.**
- SMEYATSKY, I & FOURIE, W. 2018. Archaeological Impact Assessment for the Proposed Development of the 325MW Rondekop Wind Energy Facility and associated infrastructure, between Matjiesfontein and Sutherland in the Northern Cape Province – **This report documented numerous archaeological and historical features such as MSA scatters, graves, farmsteads and graves.**
- SMITH, A.B. 2008. Eskom Gamma-Omega 765kV Transmission Line: Archaeological Desktop Survey. - **This study, focusing on an area defined as the Karoo, identified five farms near to the current study area that contains Stone Age (ESA, MSA and LSA) artefacts, pottery and rock paintings.**
- SMUTS, K. 2018. Archaeological Impact Assessment for the Proposed Development of the 325MW Kudusberg Wind Energy Facility and associated infrastructure, between Matjiesfontein and Sutherland in the Western and Northern Cape Provinces – **This report documented numerous archaeological and historical features such as rock art sites, MSA scatters, graves, farmsteads and graves.**
- TUSENIUS, M. 2012. Archaeological Impact Assessment of the proposed extension of a borrow pit on Koeëlfontein 59, Laingsburg District, Central Karoo, Western Cape. **MSA artefacts were identified.**
- TUSENIUS, M. 2012. Archaeological Impact Assessment of proposed borrow pits at Springfontein 60 And Skoppelmanskraal 54 and the Extension Of An Existing Borrow Pit at

Dikboom 53, Laingsburg District, Western Cape. **Several dispersed sandstone and Matjiesfontein chert artefacts were found.**

- VAN DER RYST, M. & FOURIE, W. 2014. Phase 2 Specialist Study of Affected Stone Age Locality on The Gamma Kappa Transmission Line – Tower GKB-T846 (Site GK062), Tankwa Karoo, Touwsrivier. - **This report documents medium density scatters of ESA, MSA and LSA artefacts at a single deflated, secondary context, locality, with the assemblage comprising a very low quantity of formal tools.**
- VAN DER WALT, J. 2015. Archaeological Impact Assessment Report for the Proposed Gunstfontein Wind Energy Facility, Northern Cape. - **Historical remains as well as Rock Art was uncovered in this assessment. It was recommended that the development footprint be updated in order to accommodate the heritage findings and that the ECO must make sure the heritage resources are protected.**
- VAN DER WALT, J. 2016. Archaeological impact assessment report for the proposed Gunstfontein 132 kV power line, switching station and ancillaries for the proposed Gunstfontein wind energy facility near Sutherland, Northern Cape. – **Desktop level assessment based of previous fieldwork done in the study area. Historical remains, as well as Rock Art, was uncovered in this assessment. It is recommended that a full heritage walk down of the of study area must be conducted.**
- VAN SCHALKWYK, J. 2018. Phase 1 Cultural Heritage Impact Assessment: the expansion of an existing borrow pit on the Farm Tweedside 151 in the Laingsburg Local Municipality of Western Cape Province. **No sites, features or objects of cultural heritage significance were found.**
- WEBLEY, L. 2017. Heritage Impact Assessment: Proposed Construction of the Maralla West Wind Energy Facility near Sutherland in the Northern Cape. – **Historical and Stone Age heritage remains were uncovered in this assessment. It was recommended that highly sensitive No-Go area should be avoided, that a walk-down be conducted should the development layout change and that the relevant contingencies are implement should heritage remains be uncovered during the development process.**
- WEBLEY, L. & HALKET, D. 2017. Heritage Impact Assessment: proposed construction of the Esizayo Wind Energy Facility Near Laingsburg in the Western Cape Province. **A few large scatters of LSA stone artefacts, several "pastoralist settlements, the Nuwerus cemetery, a spread of early 20th century historical material on the lower slopes of two koppies,and numerous roughly-packed, circular enclosures of dry stone walling were identified.**
- WURZ, S. 2006**.** Phase 1 Archaeological Impact Assessment For Slandnedo, Boschluyskloof, Laingsburg District, Western Cape. **A historic core of a farmhouse and a graveyard was identified.**

7.5. Findings of the historical desktop study

The findings can be compiled as follows and have been combined to produce a heritage sensitivity map for the project based on the desktop assessment (**Figure 21**).

7.5.1. Heritage Screening

A Heritage Screening Report was compiled using the DFFE National Web-based Environmental Screening Tool as required by Regulation 16(1)(v) of the Environmental Impact Assessment Regulations 2014, as amended. According to the Heritage screening report, the directly affected area has a **low** sensitivity rating (**Figure 13**). The field work in the study area demonstrates that historical structures, archaeological sites and grave and burial grounds of heritage significance warrant conservation. The low rating as provided by the Environmental Screening Tool possibly reflects scarcity of heritage reports conducted in the region.

7.5.2. Heritage Sensitivity

The sensitivity maps were produced by overlying:

- Satellite Imagery;
- Current Topographical Maps;
- First edition Topographical Maps dating from the 1960's

This enabled the identification of possible heritage sensitive areas around the proposed development area that included:

- Structures/Buildings
- Archaeological Heritage sites

By superimposition and analysis, it was possible to rate these structure/areas according to age and thus their level of protection under the NHRA. Note that these structures refer to possible tangible heritage sites as listed in **Table 4.**

Table 4: Tangible heritage sites in the study area

Name	Description	Legislative protection
Architectural Structures/Dwellings	Possibly older than 60 years	NHRA Sect 3 and 34
Archaeological sites	Artefacts and/or structures/sites	NHRA Sect 3 and 35 and Sect 27

Observation of the previous heritage reports has shown that archaeological sites are in abundance in the surrounding areas and especially near certain landscape features. This factor needs to be held in consideration.

7.5.3. Possible Heritage Finds

The evaluation of satellite imagery and the analysis of the studies previously undertaken in the area has indicated that certain areas may be sensitive from a heritage perspective. The heritage reports

identified little pre-colonial or Stone Age archaeology (Booth 2012, 2015a and 2015b; Hart and Webley 2013; Hart and Kendrick 2014; Hart 2015; van der Walt 2016). In the cases where Stone Age archaeology was recorded, the scatters of stone artefacts were identified on the flat floodplains up to the foothills of the mountains, and within river valleys along watercourses (Booth 2016a and 2016b). The fairly desolate ridges in the region are subject to high winds and are generally devoid of archaeological remains (Webley and Halkett, 2017).

The analysis of the studies conducted in the area assisted in the development of the following landform to heritage find matrix in **Table 5**. Dry river courses have been referenced as having possible heritage sensitivity within the study area (**Figure 21**). It must be noted that the proposed development layout for the most part has excluded river courses from the footprint.

Table 5: Landform type to heritage find matrix

LANDFORM TYPE	HERITAGE TYPE
Crest and foot hill	MSA scatters
Pans/ dry river courses/flood plains	LSA/MSA scatters
Outcrops	Occupation sites dating to LSA
Farmsteads	Historical archaeological material

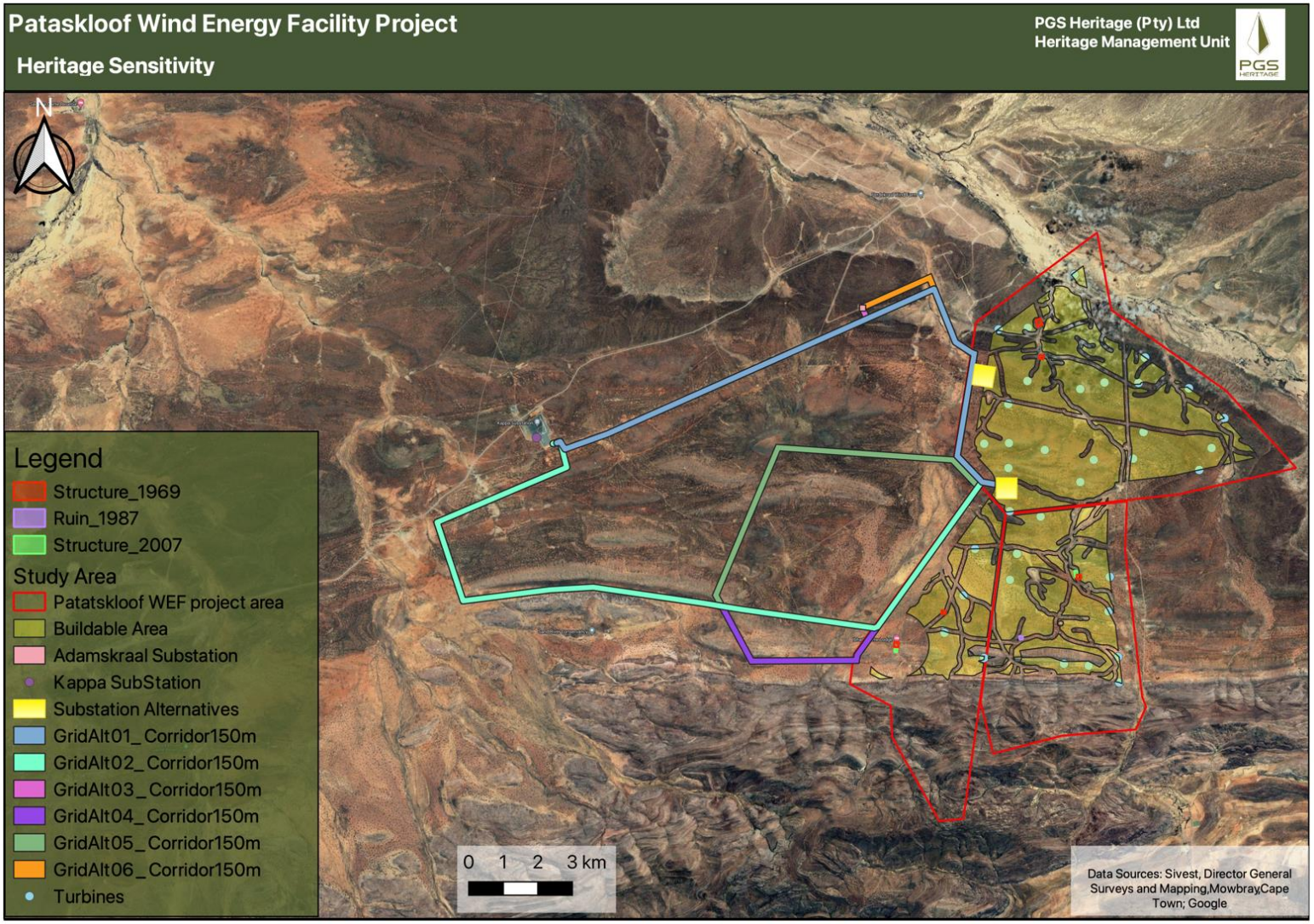


Figure 21: Possible heritage sensitivity areas; Structures (incl. farmsteads; yellow polygon and green polygons) and ruin (blue polygon) within the Patatskloof WEF study area.

8. FIELDWORK FINDINGS

To comply with the HWC requirements, a systematic controlled-exclusive surface survey was conducted on foot, over a period of four days by two archaeologists from PGS. The fieldwork was conducted from 2 to 6 November 2020. An additional survey of the grid connection was conducted from 11-13 April 2022. This fieldwork team consisted of consisting of three archaeologists (Cherene de Bruyn, Michelle Sachse and Nicolas Fletcher) and a field assistant (Xander Fourie). (**Figure 22**).

During the fieldwork, a total of 47 sites were identified, consisting of twenty-four (24) Historical Structures (kraals, houses, stonewalling and labourer houses), twenty-one (21) archaeological sites, and two (2) burial ground and graves, that may be affected by the proposed project (**Figure *23***). A background scatter of stone tools (flakes, cores and blades) was observed throughout the project area. As such only sites with a density of 5 or more tools were recorded as sites.

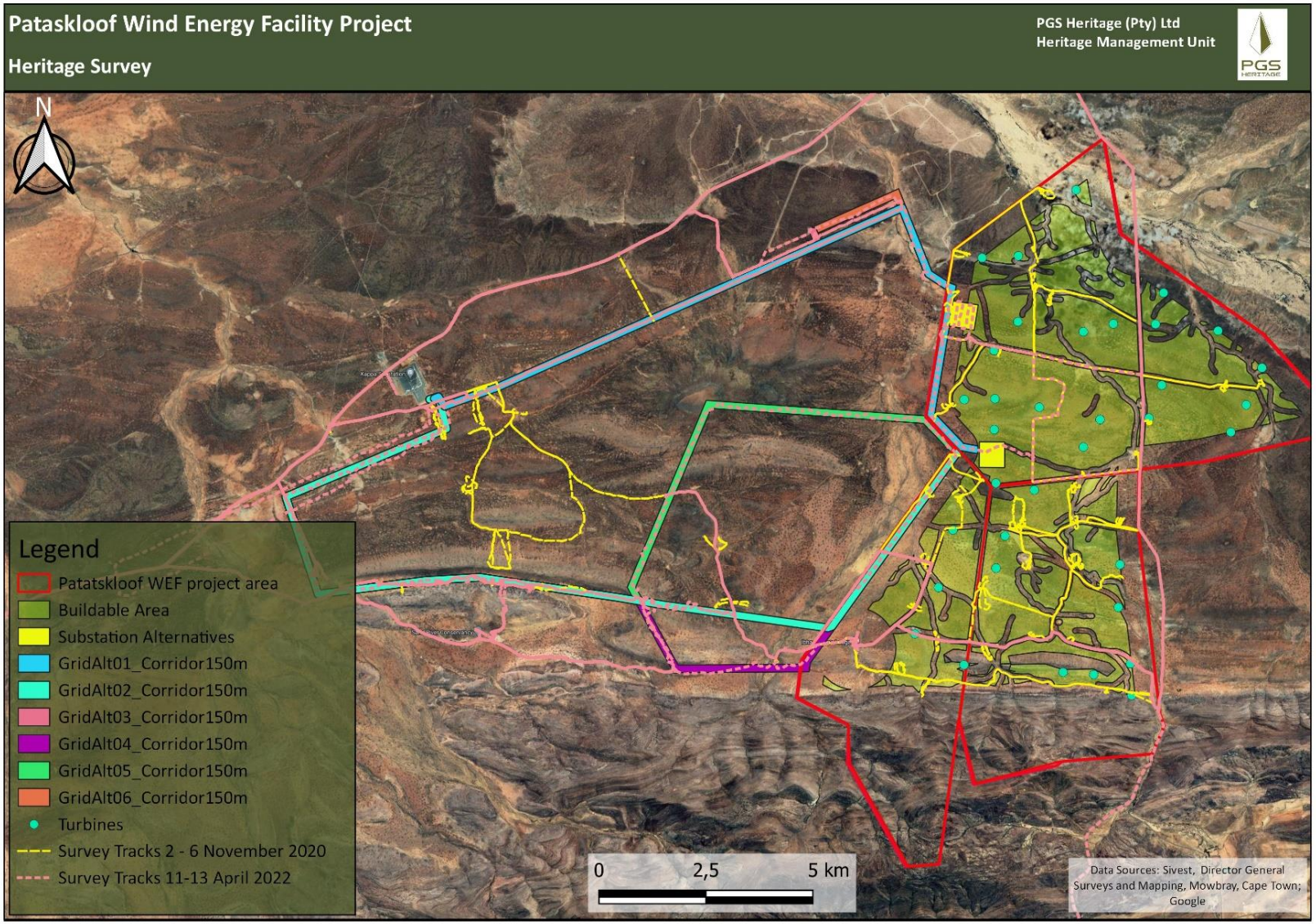


Figure 22: Tracklog recordings from site visits (2 to 6 November 2020 & 11 to 13 April 2022).

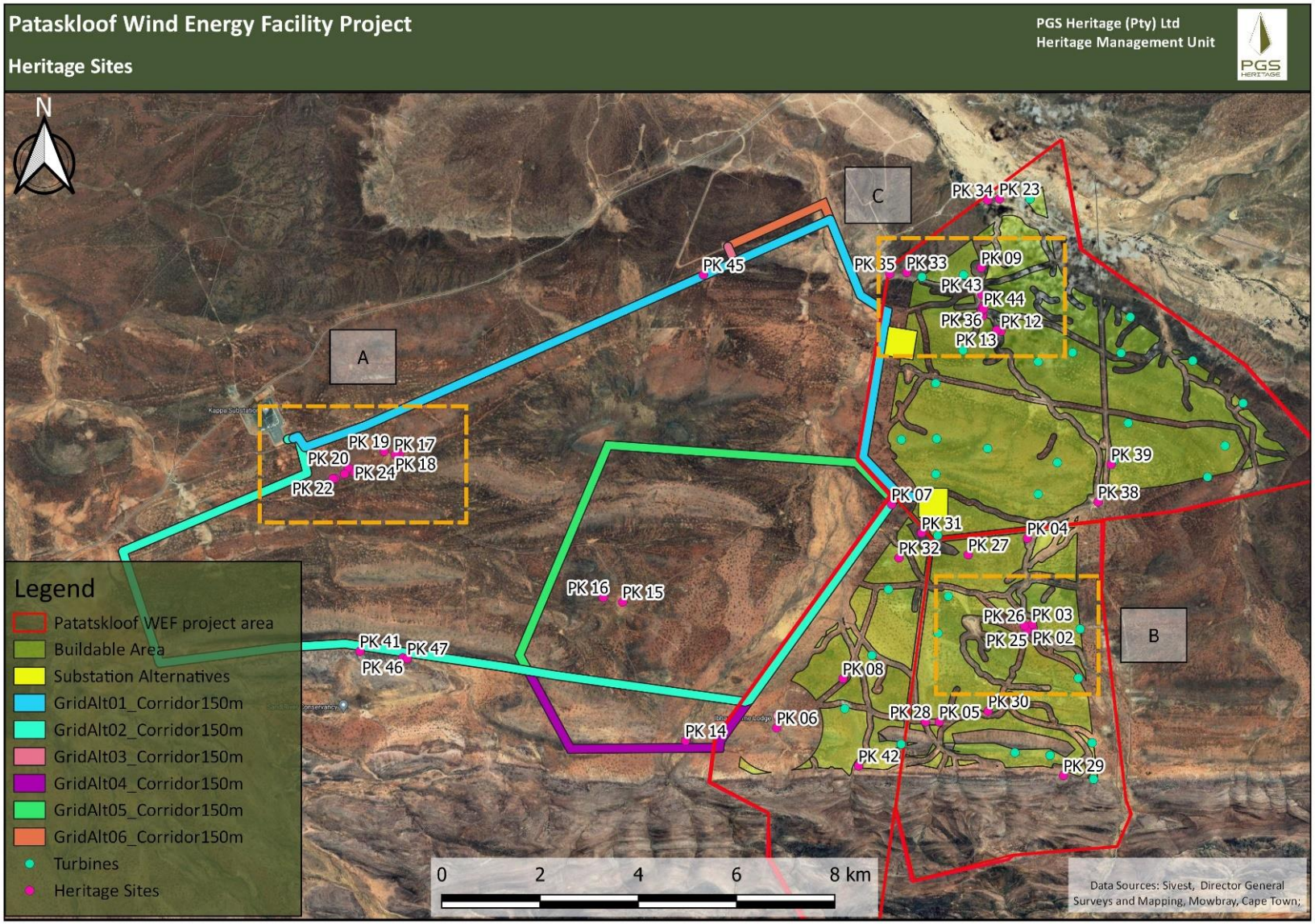


Figure 23: Archaeological and historical resources identified within the Pataskloof WEF Footprint. See insets below.

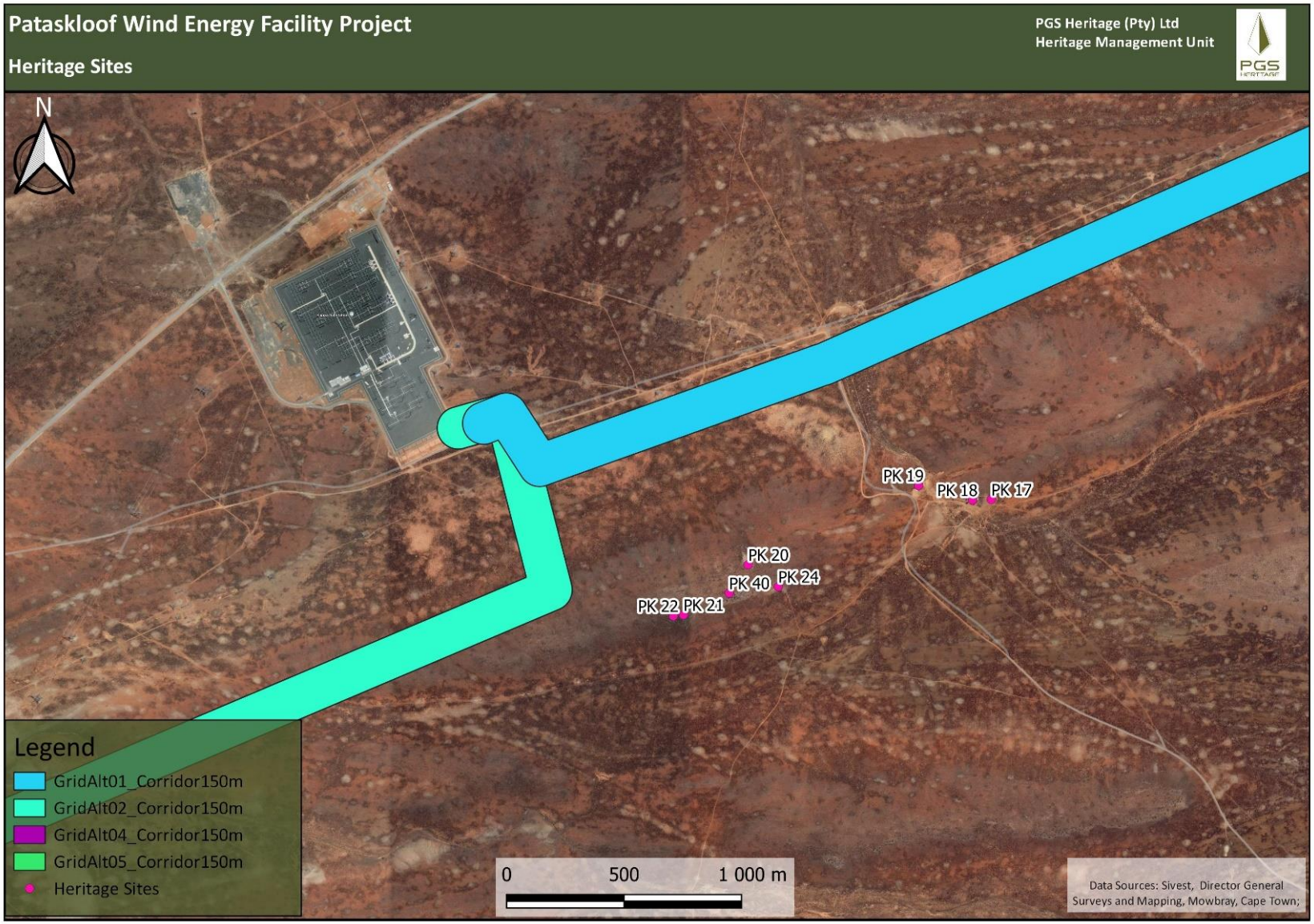


Figure 24: Inset A.

Figure 25: Inset B.

Figure 26: Inset C.

Table 6: Archaeological and historical resources

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 01 PK 02 PK 03	33.138565 33.138770 33.13820	20.149407 20.149501 20.149366	The site has the remains of one stone-built structure and the remains of a lower stone wall at the back of the main structure. The construction of the structures was done with stone and cement. The one intact and complete structure has a corrugated iron roof, wooden door and wooden window frames. The material is however of recent design. The low walling at the back of the main structure has indications that it's the older of the two with the remains of an old hearth opposite the entrance. The remains of a stone-built livestock enclosure (**PK 02**) and a newer two-room structures (**PK 03**) forms part of a farm accommodation that utilised an older settlement area along a dry river run. The structures have no archaeological research potential and has no conservation value.	Low	NCW

Figure 27: View of the stone house at PK 01. The photo was taken from the north. The scale is in 10cm increments.

Figure 28: View of the stone house, with a walled structure. The photo was taken from the south. The scale is in 10cm increments.

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

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 29: View of the stone kraal at PK 02. The scale is in 10cm increments.

Figure 30: View of the southern façade. The scale is in 10cm increments.

Figure 31: View of the northern façade. The scale is in 10cm increments.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 04	33.125023	20.148471	The site consists of a stone and cement wall. The wall is located near a non-perennial river, and most likely functioned as a wall to dam up water during the wet season. The wall has no archaeological significance	No research potential or other cultural significance	NCW

Figure 32: View of the stone wall at site PK 04.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 05	33.153134	20.132360	The site consists of the remains of a single rooms stone and mud build structure. According to the farm manager, the stone house used to contain a stone kraal. However, the kraal stones were used as building material elsewhere on the farm. The stone house is situated approximately 20m north of a small farm road. An ash midden containing a low-density surface scatter of stone tools as well as glass was also observed to the east of the house. The glass bottle fragments with “Brookes Lemos” embossing as well as a bottle with the “Talana” glass factory trademark indicates that the structures was utilised as a dwelling pre-1954 when Talana Glass ceased manufacturing. The presence of dateable cultural material in preserved midden with the structure do provide the opportunity for further research and as such the structure and finds are given a low heritage grading with a IIIC heritage significance. <u>It is recommended that:</u> ▪ A 50-meter buffer around the small farmstead must be kept if any development is to occur in its vicinity. ▪ If the site cannot be avoided, a work plan must be submitted to HWC for approval to conduct the necessary documentation of the structure and its cultural remains and will at a minimum include: ○ Recording of the buildings i.e. (a) map indicating the position and footprint of all the buildings and structures (b) photographic recording of all the buildings and structures (c) measured drawings of the floor plans of the three principal buildings. ○ A mitigation report must be compiled for the site within which the recorded drawings from the previous item as well as all existing information on the site can be included. ○ The completed mitigation report must be submitted to HWC with a permit application to allow for the destruction of the site.	Low	IIIC

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
 **Figure 33: View of the stone house. The photo was taken from the south. The scale is in 10cm increments.**			 **Figure 34: View of the stone house with the ash midden located to the east of the house. The scale is in 10cm increments.**		
 **Figure 35: View of pieces of glass and porcelain found in the ash midden. The scale is in 1cm increments**			 **Figure 36: Surface scatter of stone tools found. The scale is in 1cm increments**		

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 06	33.154040	33.154040	The site consists of several buildings that form part of the Ibhadi Game Lodge. Several additional rooms were added to the main house. The rooms function as guest accommodation for the Lodge. A second house was built between 2015/2016. The second house is located approximately 115m south-east of the main house. A kraal and structure were identified near the location of PK 06 on the 3320AA Brewelsfontein topographic map dating to 1969. Surveyor General farm maps indicate a structure on the 1950 map. Analysis of the structures on the farm indicates that older stone-built structures were incorporated with additions to extent the original structures as part of the lodge development (**Figure 39** and **Figure 44**). <u>It is recommended that:</u> ▪ It is recommended that a no-go-buffer-zone of at least 500m from the outer permitter (which is currently occupied) of the farmstead is kept to the closest WEF infrastructure (including turbines, substation facilities and roads). ▪ If development occurs within 500m of **PK 06** the main homesteads need to be satisfactorily studied and recorded before impact occurs.	Medium	IIIB

Figure 37: View of the main house. The scale is in 10cm increments

Figure 38: View of additional guest rooms, located ot the south of the main house. The scale is in 10cm increments

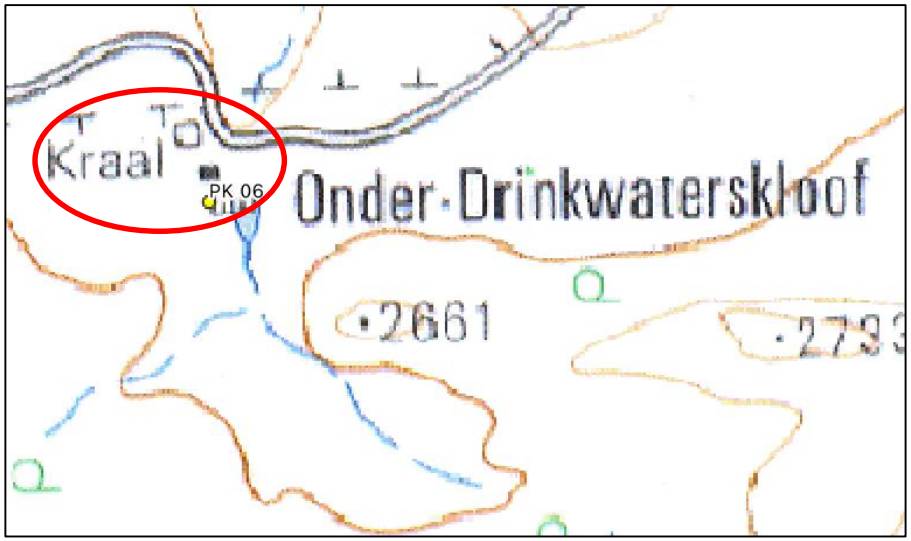
Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 39: View of rooms added to the original structure of the house. The scale is in 10cm increments

Figure 40: View of a stone shed. The scale is in 10cm increments

Figure 41: View of the western side of the main house. The scale is in 10cm increments.

Figure 42: Second house built around 2015/2016.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
 **Figure 43: View of the kraal and structure (red circle) identified on 3320AA Brewelsfontein 1969 topographic map near the location of PK 06.**			 **Figure 44: Older structure with additions and repairs such as stone and cement infill between the roof and older walling**		
PK 07	33.119833	20.123671	A small stone packed circle was observed on the farm Drinkwaterskloof 251. The stone packed shelter was located in the top of a small hill. It most likely functioned as a hunting shelter for the game hunters who visit the Ibhadi Game Lodge during the hunting season. Some cultural material including a bullet casing was observed in the middle of the stone packed shelter. As far has been determined, the site does not have any heritage significance. Thus, the site is provisionally rated as NCW as it has no research potential or is of other cultural significance. <u>It is recommended that:</u> ▪ No mitigation is required.	No research potential or other cultural significance	NCW

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
 **Figure 45: View of the stone packed hunting shelter. The scale is in 10cm increments.**			 **Figure 46: Bullet casing found in the shelter.**		
PK 08	33.146532	20.114762	The site consists of a small, fenced kraal that is located to the west of a small farm road. A low-density surface scatters of stone tools were observed. The LSA stone tools consist of flakes and were made from chert and hornfels. As far has been determined, the site does not have any heritage significance. Thus, the site is provisionally rated as NCW as it has no research potential or is of other cultural significance. <u>It is recommended that:</u> ▪ No mitigation is required.	No research potential or other cultural significance	NCW

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 47: View of the kraal from the west. The scale is in 10cm increments.

Figure 48: View of the kraal from the east. The scale is in 10cm increments

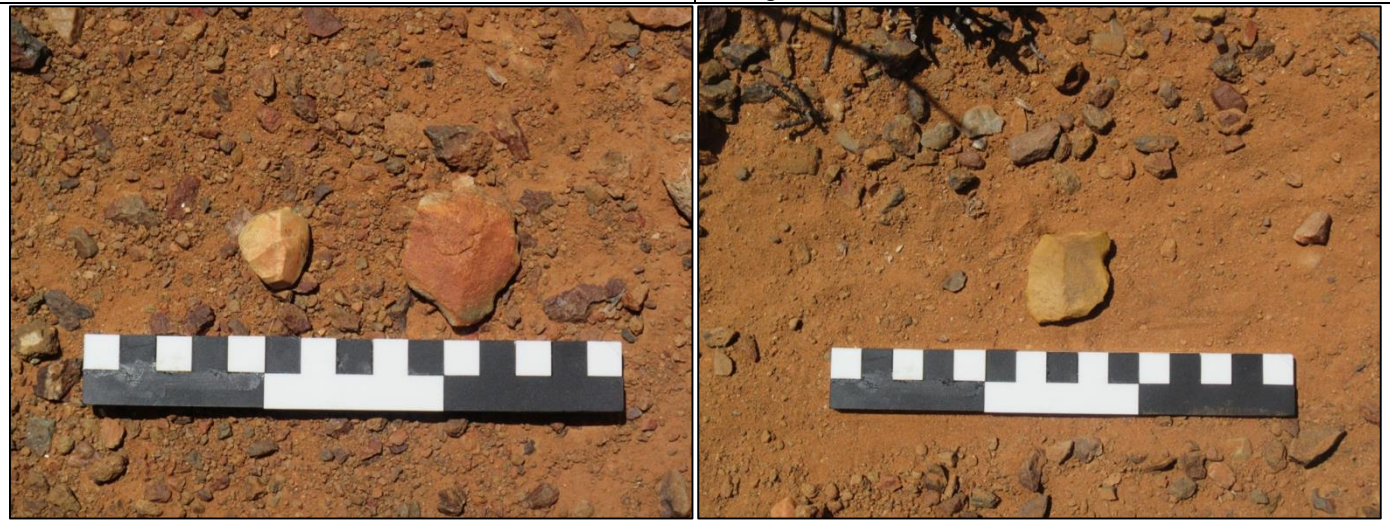


Figure 49: View of the flakes found at site PK 08. The scale is in 1cm increments.

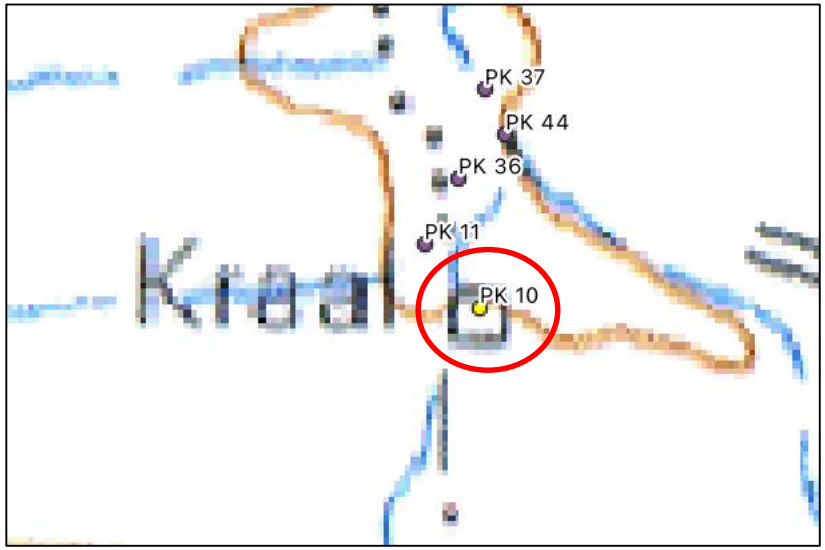
Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 09	33.083561	20.14005	The site consists of two collapsed houses. The first house consists of a grass/hay-built house. The walls and roof have collapsed. An ash midden containing broken fragments of glass and porcelain was also observed close to the house. A second stone-built house was observed a few meters away from the grass/hay house. Two structures were identified near the location of PK 09 on the 3320AA Brewelsfontein topographic map dating to 1969. The Cultural Landscape Assessment (CLA) has further identified that the presence of a farmstead on the 1870 maps. Considering the site's position in the larger landscape to natural springs and the older Imperial trunk road between the Karoopoort and Beaufort West that runs past the site, as well as the archaeological remains such as the buildings and middens, the site is graded as locally significant IIIA. <u>It is recommended that:</u> ▪ A 50-meter buffer around the small farmstead must be kept if any development is to occur in its vicinity. ▪ Al larger buffer of 600 meters inconsideration of the cultural landscape was recommended in the CLA.	Medium	IIIA

Figure 50: View of the hay/grass house. The scale is in 10cm increments

Figure 51: Closer view of the mud and grass bricks used. The scale is in 10cm increments

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
 **Figure 52: View of the Ash midden. The scale is in 10cm increments**			 **Figure 53: Glass and porcelain found in the ash midden. The scale is in 1cm increments**		
 **Figure 54: A Brooke's Lemos/Oros Bottle dating to the 1940s/1950s found on site. The scale is in 1cm increments.**			 **Figure 55: View of the second stone house. The scale is in 10cm increments.**		

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
 **Figure 56: Closer view of the south-eastern corner showing how the stones were laid out. The scale is in 10cm increments**			 **Figure 57: View of the two structures (red oval) identified on 3320AA Brewelsfontein 1969 topographic map near the location of PK 09.**		
PK 10	33.090935	20.140294	The site consists of a stone kraal. Sections of the kraal wall have collapsed. The kraal is being used as a storage space for old farm equipment by the landowner. A kraal identified near the location of PK 10 on the 3320AA Brewelsfontein topographic map dating to 1969. The site is provisionally rated as IIIC with low heritage significance. <u>It is recommended that:</u> ▪ If the development does not fall within 50m of **PK 10**, no mitigation is required. ▪ If development occurs within 50m of **PK 10**, the structure needs to be satisfactorily studied and recorded before impact occurs. ▪ The applicable HWC Heritage destruction permits will need to be applied for through an approved work program	No research potential or other cultural significance	NCW

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
 **Figure 58: View of the stone kraal identified ta PK 10. The scale is in 10cm increments**			 **Figure 59: View of the kraal (red circle) identified on 3320AA Brewelsfontein 1969 topographic map near the location of PK 09.**		
PK 11	33.090534	20.139875	The site consists of a farmhouse. The farmhouse was demolished. The original structure consisted of a mudbrick on stone foundation consistent with the construction of some of the older ruins in the study area. Although no definitive age can be given to the older section of the ruin, it is most probably associated with the grave at PK 44 that dates to 1891. The vicinity of this farmstead also correlates with the permanent soring as indicated on the 1987 survey map as contained in the CLA. The structures have unfortunately been destructed recently. As far has been determined, the site does not have any heritage significance. Thus, the site is provisionally rated as NCW as it has no research potential or is of other cultural significance. <u>It is recommended that:</u> ▪ No mitigation is required.	No research potential or other cultural significance	NCW

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
 **Figure 60: View of the house form the east. The scale is in 10cm increments.**			 **Figure 61: View of the house from the north. The scale is in 10cm increments.**		
PK 12	33.093284	20.143679	The site consists of a stone kraal. The walls of the kraal are approximately 0.8m high and 0.5m wide. The site is provisionally rated as NCW with low heritage significance. <u>It is recommended that:</u> ▪ If the development does not fall within 50m of **PK 12**, no mitigation is required. ▪ If development occurs within 50m of **PK 12**, the structure needs to be satisfactorily studied and recorded before impact occurs. ▪ The applicable HWC Heritage destruction permits will need to be applied for through an approved work program.	No research potential or other cultural	NCW

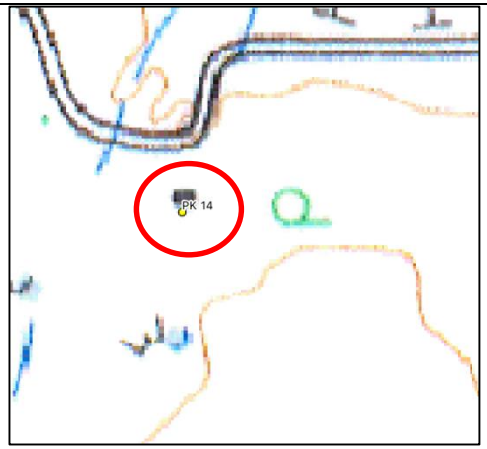
Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
 **Figure 62: General view of the kraal. The scale is in 10cm increments.**			 **Figure 63: General view of the walls of the kraal. The scale is in 10cm increments.**		
PK 13	33.093155	20.142854	A small stone packed circle was observed on the farm Upperstinkfontein 246. The stone packed shelter was located in the top of a small hill. It most likely functioned as a hunting shelter for the game. The shelter is approximately 1m high, and 2m wide. A single LSA stone tools flake was observed near the stone packed shelter. The flake is made from chert. As far has been determined, the site does not have any heritage significance. Thus, the site is provisionally rated as NCW as it has no research potential or is of other cultural significance. <u>It is recommended that:</u> ▪ No mitigation is required.	No research potential or other cultural	NCW

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
 **Figure 64: View of the stone packed shelter. The scale is in 10cm increments.**			 **Figure 65: View of single stone tool flake. The scale is in 1cm increments.**		
PK 14	33.156027	20.085975	The site consists of the ruins of a stone house and kraal. The roof and some sections of the walls of the house have collapsed. A stone packed kraal was located approximately 30 m east of the house. Several sections of the kraal wall have collapsed. A structure was identified near the location of PK 14 on the 3320AA Brewelsfontein topographic map dating to 1969. The construction material (stone, wood and mud) as well as the vernacular elements such as the hearth, chimney and wooden lintels, indicates an age of much older than 60 years. The original roofing was replaced with corrugated iron sheeting. The loss of the roof cover has resulted in a total degradation of the structure. The site has a low heritage significance and grade IIIC. <u>It is recommended that:</u> ▪ A 50-meter buffer around the small farmstead must be kept if any development is to occur in its vicinity.	Low	IIIC

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 66: View of the stone house from the north. The scale is in 1cm increments.

Figure 67: View of the house from the west. The scale is in 1cm increments.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
 **Figure 68: View of the stone kraal, with collapsed walls. The scale is in 10cm increments.**			 **Figure 69: The walls of the kraal are approximately 1m wide in sections. The scale is in 10cm increments.**		
 **Figure 70: View of the kraal (red circle) identified on 3320AA Brewelsfontein 1969 topographic map near the location of PK 14.**					

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 15	33.134793	20.074467	The site consists of a farmstead with several buildings, including the main farmhouse, several sheds as well as labourer houses. The original farmhouse and shed is now utilised as storerooms. Two structures were identified near the location of PK 06 on the 3320AA Brewelsfontein topographic map dating to 1969. From the topographic map and architecture, it is suggested that the stone shed as well as one of the labourer houses are older than 60 years old and of heritage significance. The structures are an example of the local vernacular architecture of the region and of heritage significance. The site is provisionally rated as IIIC with medium heritage significance. <u>It is recommended that:</u> ▪ It is recommended that a no-go-buffer-zone of at least 500m from the outer permitter of the farmstead is kept to the closest WEF infrastructure (including turbines, substation facilities and roads).	Medium	IIIB

Figure 71: View of the main house. Photo was taken from the north-west. The scale is in 10cm increments.

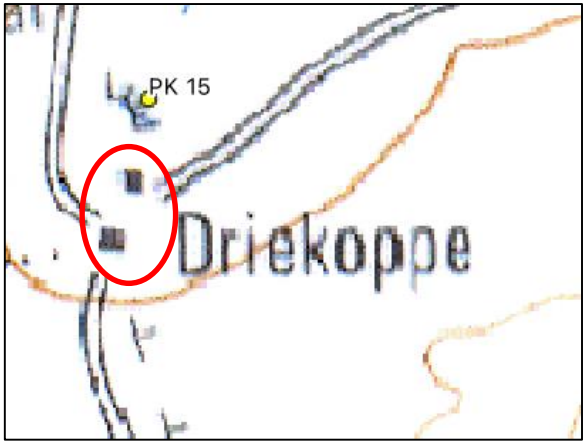
Figure 72: View of the main house. Photo was taken from the south-west. The scale is in 10cm increments.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 73: View of labourer houses. The scale is in 10cm increments.

Figure 74: View of a shed and kraal. Photo taken from the west. The scale is in 10cm increments.

Figure 75: View of a shed and kraal. Photo taken from the south. The scale is in 10cm increments.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
 **Figure 76: View of a goat shed. The scale is in 10cm increments.**			 **Figure 77: View of the two structures (red circle) identified on 3320AA Brewelsfontein 1969 topographic map near the location of PK 15.**		
PK 16	33.134086	20.070923	The site consists of a small stone structure and a stone kraal. The small stone structure is rectangular in shape and is located approximately 12m east of the kraal. The walls and the roof of the structure have collapsed. It was most likely a shelter used by livestock herders. A kraal identified near the location of PK 16 on the 3320AA Brewelsfontein topographic map dating to 1969. The site is provisionally rated as IIIC with low heritage significance. <u>It is recommended that:</u> ▪ If the development does not fall within 50m of **PK 16**, no mitigation is required.	Low	IIIC

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 78: View of the small rectangular stone structure. The scale is in 10cm increments.

Figure 79: View of the kraal. The scale is in 10cm increments.

Figure 80: Closer view of the stone packed wall of the kraal. With wooden posts placed at the entrance. The scale is in 10cm increments.

Figure 81: View of the kraal (red circle) identified on 3320AA Brewelsfontein 1969 topographic map near the location of PK 16.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 17	33.112168	20.033632	Two labourer houses were observed. The house consists of a stone and brick house that has been painted white. The second house consists of a zinc metal structure. A single structure was identified near the location of PK 17 on the 3320AA Brewelsfontein topographic map dating to 1969. From the topographic map and architecture, it is suggested that the stone and brick house could be older than 60 years old. The structures are an example of the local vernacular architecture of the region and of heritage significance. The site is provisionally rated as IIIC with low heritage significance. <u>It is recommended that:</u> ▪ If the development does not fall within 50m of **PK 17**, no mitigation is required.	Low	IIIC

Figure 82: View of the houses found ta PK 17. The scale is in 10cm increments.

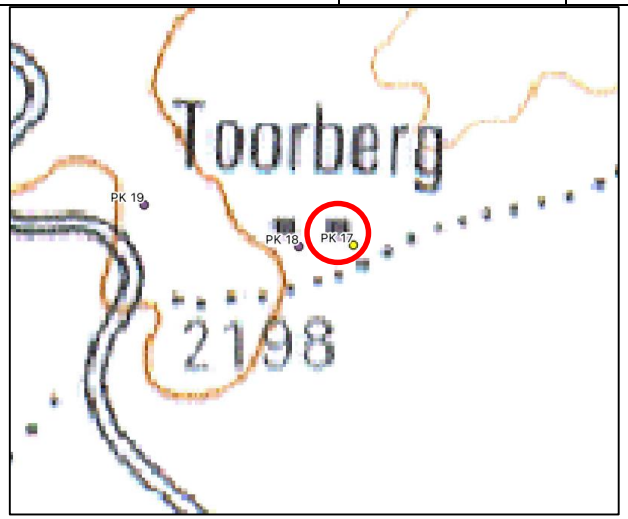


Figure 83: View of a structure (red circle) identified on 3320AA Brewelsfontein 1969 topographic map near the location of PK 17.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 18	33.112185	20.032906	The site consists of a house. The site is located approximately 50m east of PK 17. The original structure consists of a white stone and brick building. Several additions were added to the east of the original structure. A single structure was identified near the location of PK 17 on the 3320AA Brewelsfontein topographic map dating to 1969. From the topographic map and architecture, it is suggested that sections of the the stone and brick house could be older than 60 years old (**Figure 84**). The structures are an example of the local vernacular architecture of the region and of heritage significance. The site is provisionally rated as IIIC with low heritage significance. <u>It is recommended that:</u> ▪ If the development does not fall within 50m of **PK 18**, no mitigation is required.	Low	IIIC

Figure 84: View of the original structure (left on the image).

Figure 85: View of the other buildings added to the original structure.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating

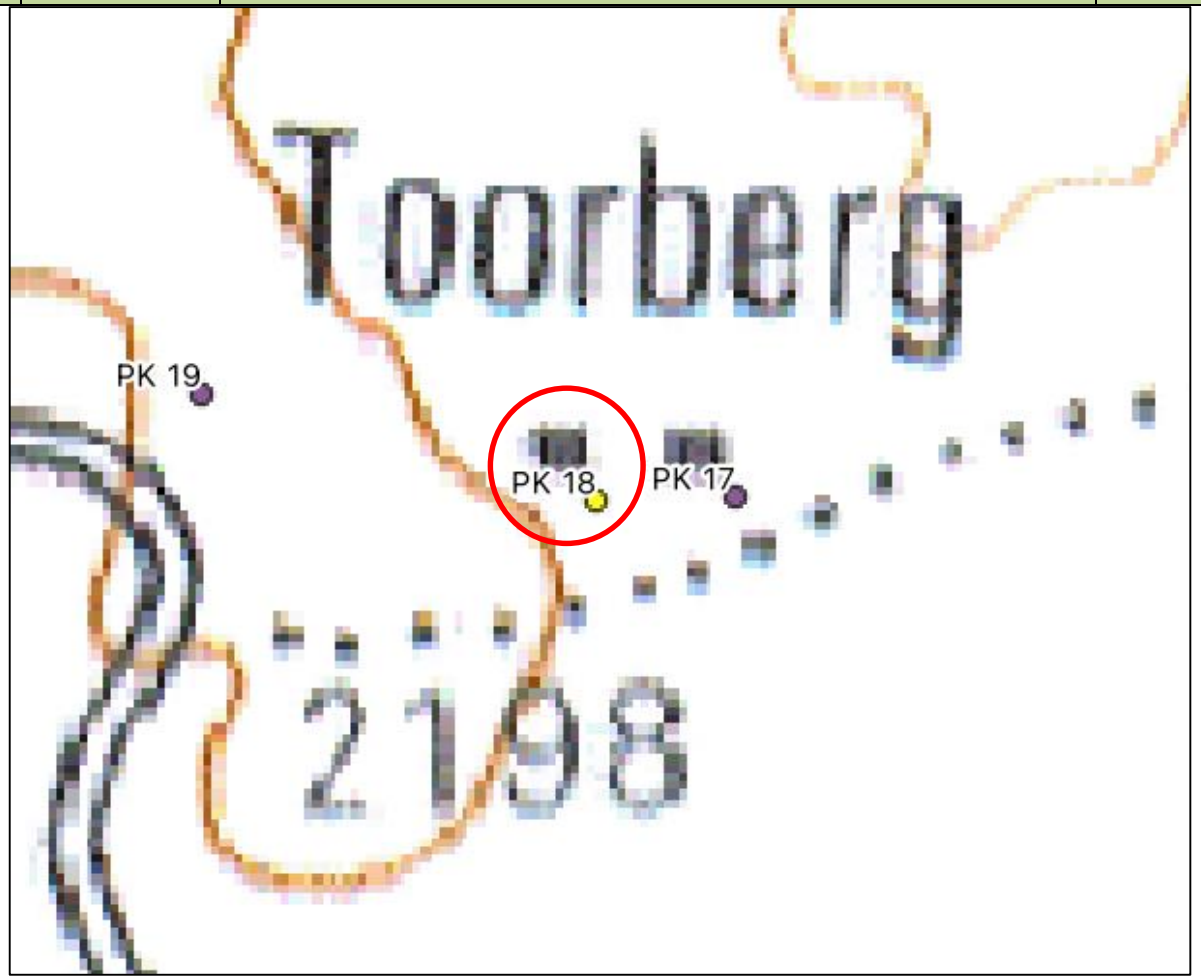


Figure 86: View of a structure (red circle) identified on 3320AA Brewelsfontein 1969 topographic map near the location of PK 18.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 19	33.111716	20.030846	The site consists of a stone packed dam wall. As far has been determined, the site does not have any heritage significance. Thus, the site is provisionally rated as NCW as it has no research potential or is of other cultural significance. It is recommended that: ▪ No mitigation is required.	No research potential or other cultural significance	NCW

Figure 87: View of the dam wall at site PK 19.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 20	33.114256	20.024326	The site consists of a stone kraal. The walls of the kraal are approximately 1.3m high and 0.5m wide. The kraal is approximately 30m x 30m in extent. A smaller kraal approximately 6m x6x in extent is located to the west of the bigger kraal. Two smaller round packed shelters were also observed to the east of the kraal. The stonework and dry stone walling present a unique example of drystone wall craftsmanship A low-density scatters of LSA stone tools were observed near the kraal and could be part of an earlier ephemeral occupation along the low ridge on which the walling occurs. The stone tools consist of flakes and blades and were made form chert and hornfels. The site is provisionally rated as IIIB with a moderate local heritage significance. <u>It is recommended that:</u> ▪ A 50m buffer around the structures of **PK 20** is required.	Moderate	IIIB

Figure 88: View of the kraal at PK 20. The scale is in 10cm increments.

Figure 89: Closer view of the stone packed wall.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 90: View of a smaller kraal located to the west of the bigger kraal. The scale is in 10cm increments.

Figure 91: Round packed shelter. The scale is in 10cm increments.

Figure 92: Second packed shelter. The scale is in 10cm increments.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
					
Figure 93: Several LSA flakes and blades found near PK 20. The scale is in 1cm increments.					
PK 21	33.115863	20.021852	A stone cairn was observed on top of a small hill on the farm Tooverberg 244. The cairn is approximately 1,7m high and 1m wide. The cairn could be marking the farm boundary or the highest point of the topography of the farm. As far has been determined, the site does not have any archaeological significance but as part of the cultural landscape it presents a layer to the grade IIIA landscape of the area as indicated in the CLA. <u>It is recommended that:</u> ▪ The structure is left in place.	Low	IIIC

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 94: View of the cairn. The scale is in 10cm increments.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 22	33.115896	20.021461	A second stone cairn was observed on top of a small hill on. It was located approximately 30m west of PK 21. The cairn is approximately 1,3m high and 1m wide. The cairn could be marking the farm boundary or the highest point of the topography of the farm. As far has been determined, the site does not have any archaeological significance but as part of the cultural landscape it presents a layer to the grade IIIA landscape of the area as indicated in the CLA. <u>It is recommended that:</u> ▪ The structure is left in place.	Low	IIIC

Figure 95: View of the second cairn. The scale is in 10cm increments.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 23	33.073015	20.143376	A reservoir was observed on the farm Upper Stinkfontein 246. The reservoir located next to a non-perennial river. The reservoir is not of heritage significance. A medium-density scatter of stone tools was observed around the reservoir. NO other archaeological deposits stratigraphy or cultural material was found in the deflated area around the pan. The site is provisionally rated as no heritage significance. <u>It is recommended that:</u> ▪ If the development does not fall within 50m of **PK 23**, no mitigation is required.	No research potential or other cultural significance	NCW

Figure 96: View of the reservoir. The scale is in 10cm increments.

Figure 97: View of the exposed riverbank as a result of erosion.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 98: Several LSA stone tools found on site. The scale is in 1cm increments.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 24	33.11496	20.025476	The site consists of a stone kraal. The walls of the kraal are approximately 1.3m high and 0.5m wide. The kraal is approximately 60m x 20m in extent. The stonework and dry stone walling present a unique example of drystone wall craftsmanship The site is provisionally rated as IIIB with a moderate local heritage significance <u>It is recommended that:</u> ▪ A 50m buffer around **PK 24** is required.	Moderate	IIIB

Figure 99: View of the kraal at PK 24. The scale is in 10cm increments.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 25	33.139190	20.148403	A medium-density scatter of stone tools was observed on a flat area on the top of a small hill near a non-perennial river. A low to medium density scatters of LSA stone tools were observed. The stone tools consist of flakes and blades and were made form chert and hornfels. The site is provisionally rated as IIIC with low heritage significance. <u>It is recommended that:</u> ▪ No further mitigation is required	Low	IIIC

Figure 100: General view of the site PK 25.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 101: View of the stone tools found. The scale is in 1cm increments.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 26	33.138384	20.147933	A low-density scatter of stone tools was observed on a flat area on the top of a small hill near a non-perennial river. The site is located approximately 100m north-west of PK 25. The stone tools consist of flakes, cores and blades and were made form chert and hornfels. The site is provisionally rated as IIIC with low heritage significance. <u>It is recommended that:</u> ▪ No further mitigation is required	Low	IIIC

Figure 102: General view of the site PK 26.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
 **Figure 103: View of the stone tools. The scale is in 1cm increments.**					
PK 27	33.127541	20.137676	A medium-density scatter of stone tools was observed. A medium-density scatters of LSA stone tools were observed. The stone tools consist of flakes, cores and blades and were made form chert and hornfels. The site is provisionally rated as IIIC with low heritage significance. <u>It is recommended that:</u> ▪ No further mitigation is required.	Low	IIIC

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 104: General view of site PK 26.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 105: Some of the stone tools observed at PK 26. The scale is in 1cm increments.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 28	33.153137	20.129854	A medium-density scatter of stone tools was observed near the bank of a non-perineal river on the farm Melkboschkraal 250. A medium-density scatters of LSA stone tools were observed. The stone tools consist of flakes, cores and blades and were made form chert and hornfels. The site is provisionally rated as IIIC with low heritage significance. <u>It is recommended that:</u> ▪ No further mitigation is required	Low	IIIC

Figure 106: General view of the site PK 28. Stone tools found scattered on the river sand.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 107: Stone tools found on site. The scale is in 1cm increments.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 29			A rock shelter was found on the farm Melkboschkraal 250. Several panels of rock art were found. The rock art typically includes animal figures mostly in red ochre. A high-density scatter of LSA stone tools were also observed around and within the rock shelter, especially occurring in the river sand type soil. The stone tools mostly consist of cores, flakes, blades and chunks, and formal tools such as scrapers. Several fragmented pieces of ostrich eggshell (OES) were also found. The site was most likely used by hunter-gatherers and herders during the LSA. The site is provisionally rated as IIIA with a high heritage significance. <u>It is recommended that:</u> ▪ The site should be demarcated with a 200-meter buffer and should be treated as a No-Go-Zone. ▪ If development occurs within 200m of **PK 29**, the rock shelter will need to be satisfactorily studied and recorded before impact occurs.	High	IIIA

Figure 108: General view of the rock shelter at PK 29.

Figure 109: View of the rock art found within the shelter. The scale is in 1cm increments.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating

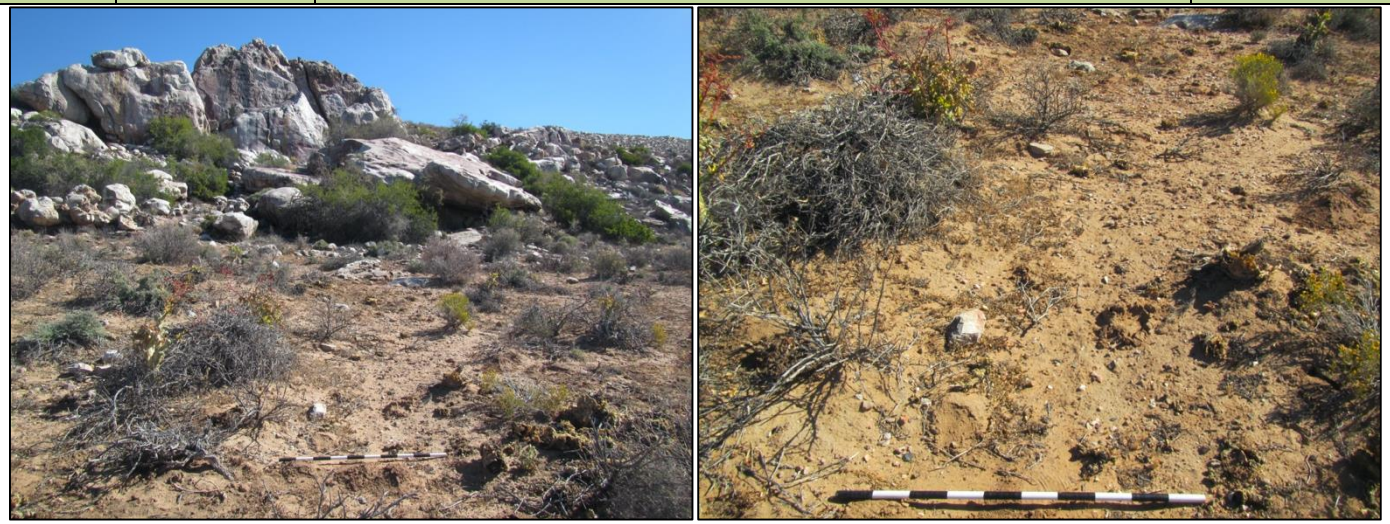


Figure 110: View of the river type sediment found around and within the rock shelter. The scale is in 10cm increments.

Figure 111: Several flakes, blades and cores found on site. The scale is in 1cm increments.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 112: Several pieces of OES found. The scale is in 1cm increments.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 30	33.151480	20.141323	A medium-density scatter of stone tools was observed near a small koppie/rock outcrop on the farm Melkboschkraal 250. A medium-density scatters of LSA stone tools were observed The stone tools consist of flakes, cores and blades and were made form chert and hornfels. The site is provisionally rated as IIIC with low heritage significance. <u>It is recommended that:</u> ▪ Non further mitigation required	Low	IIIC

Figure 113: General view of the site PK 30.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
 **Figure 114: Several stone tools found**. **The scale is in 1cm increments.**					
PK 31	33.124207	20.129146	A medium-density scatter of stone tools was observed on the foot of a small hill farm Drinkwaterskloof 251. The LSA stone tools were observed and appear to have washed down the side of the hill. The stone tools consist of flakes, cores and blades and were made form chert and hornfels. The site is provisionally rated as IIIC with low heritage significance. <u>It is recommended that:</u> ▪ No further mitigation	Low	IIIC

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 115: General view of the site PK 31.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 116: View of the stone tools found. The scale is in 1cm increments.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 32	33.128011	20.124999	A medium-density scatter of stone tools was observed on the farm Drinkwaterskloof 251. A medium-density scatters of LSA stone tools were observed. The stone tools consist of flakes, cores and blades and were made form chert and hornfels. The site is provisionally rated as IIIC with low heritage significance. <u>It is recommended that:</u> ▪ No further mitigation required.	Low	IIIC

Figure 117: General view of the site PK 32.

Figure 118: Stone tools found. The scale is in 1cm increments.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 33	33.084288	20.126405	A medium-density scatter of stone tools was observed on the farm Upper Stinkfontein 246. A medium-density scatters of LSA stone tools were observed. The stone tools consist of flakes, cores and blades and were made form chert and hornfels. The site is provisionally rated as IIIC with low heritage significance. <u>It is recommended that:</u> ▪ No further mitigation required	Low	IIIC

Figure 119: General view of the site PK33.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
			 9		

Figure 120: Several stone tools found. The scale is in 1cm increments.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 34	33.073203	20.141249	A medium-density scatter of stone tools was observed on the farm Upper Stinkfontein 246. A medium-density scatters of LSA stone tools were observed. The stone tools consist of flakes, cores and blades and were made form chert and hornfels. The site is provisionally rated as IIIC with low heritage significance. <u>It is recommended that:</u> ▪ No further mitigation required	Low	IIIC

Figure 121: General view of the site PK 34.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
 **Figure 122: Stone tools found on site. The scale is in 1cm increments.**					
PK 35	33.084506	20.123327	A medium-density scatter of stone tools was observed on the farm Upper Stinkfontein 246. A medium-density scatters of LSA stone tools were observed. The stone tools consist of flakes, cores and blades and were made form chert and hornfels. The site is provisionally rated as IIIC with low heritage significance. <u>It is recommended that:</u> ▪ No further mitigation required	Low	IIIC

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 123 – General view of the site PK 35.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 124: View of the stone tool scatter. The scale is in 1cm increments.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 36	33.090118	20.140132	A medium-density scatter of stone tools was observed on the farm Upper Stinkfontein 246. A medium-density scatters of LSA stone tools were observed in an area that has been disturbed by previous farming related activities. The stone tools consist of flakes, cores and blades and were made form chert and hornfels. The site is provisionally rated as IIIC with low heritage significance. <u>It is recommended that:</u> ▪ No further mitigation required	Low	IIIC

Figure 125: General view of the site PK 36.

Figure 126: Stone tools observed in the disturbed area. The scale is in 1cm increments.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 37	33.089550°	20.140333	A medium-density scatter of stone tools was observed on the farm Upper Stinkfontein 246. A medium-density scatters of LSA stone tools were observed in the middle of a non-perennial river. The stone tools consist of flakes, cores and blades and were made form chert and hornfels. Several fragments of OES, as well as three OES beads, were found. The site is provisionally rated as IIIB with medium heritage significance. <u>It is recommended that:</u> ▪ If the development does not fall within 50m of **PK 37**, no mitigation is required. ▪ If development occurs within 50m of **PK 37** a Phase 2 survey be conducted, that will include a representative sampling of the assemblages.	Medium	IIIB

Figure 127: General view of the site PK 37.

Figure 128: Several stone tools found on site. The scale is in 1cm increments.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 129: Fragments of OES and OES beads found. The scale is in 1cm increments.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 38	33.119445	20.161422	A medium-density scatter of stone tools was observed on the farm Upper Stinkfontein 246 in the middle of a dammed-up section of a non-perennial river. The stone tools consist of flakes, cores and blades and were made form chert and hornfels. The site is provisionally rated as IIIC with low heritage significance. <u>It is recommended that:</u> ▪ No further mitigation required.	Low	IIIC

Figure 130: General view of the site PK 38.

Figure 131: View of the stone tools found at PK 38. The scale is in 1cm increments.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 39	33.113691	20.163829	A medium-density scatter of stone tools was observed on the farm Upper Stinkfontein 246 located on a small rock outcrop. The stone tools consist of flakes, cores and blades and were made form chert and hornfels. The site is provisionally rated as IIIC with low heritage significance. <u>It is recommended that:</u> ▪ No mitigation further required	Low	IIIC

Figure 132: General view of the site PK 39.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating


Figure 133: View of stone tools found on site. The scale is in 1cm increments.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 40	33.115167	20.023598	A medium-density scatter of stone tools was observed on the farm Upper Stinkfontein 246 located on a small hill. The stone tools consist of flakes, cores and blades and were made form chert and hornfels. The site is provisionally rated as IIIC with low heritage significance. <u>It is recommended that:</u> ▪ No further mitigations	Low	IIIC

Figure 134: General view of site PK 40.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 135: Stone tools found on site. The scale is in 1cm increments.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 41	33.142333	20.026433	A medium-density scatter of stone tools was observed on the farm Upper Stinkfontein 246 located on a flat terrace on the side of a hill. The stone tools consist of flakes, cores and blades and were made form chert and hornfels. A scatter of fragmented OES was also found. The site is provisionally rated as IIIB with medium heritage significance. <u>It is recommended that:</u> ▪ If the development does not fall within 50m of **PK 41**, no mitigation is required. ▪ If development occurs within 50m of **PK 41** a Phase 2 survey be conducted, that will include a representative sampling of the assemblages.	Medium	IIIB

Figure 136: General view of the rock shelter at PK 41.

Figure 137: View of the flat terrace found on site.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 138: View of stone tools found. The scale is in 1cm increments.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 139: Several fragmented pieces of OES was observed. The scale is in 1cm increments.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 42	33.159881	20.117616	According to the farm manager, the site consists of a small rock shelter/overhang that contains rock art that has been weathered away by rainwater. During the survey, the exact location of the rock art could not be identified. A low-density surface scatter of LSA stone tools were observed along the ridge of the small hill. The site is provisionally rated as IIIA with a high heritage significance. <u>It is recommended that:</u> ▪ The site should be demarcated with a 200-meter buffer and should be treated as a No-Go-Zone. ▪ If development occurs within 200m of **PK 42**, the rock shelter will need to be satisfactorily studied and recorded before impact occurs.	High	IIIA

Figure 140: General view of the site location as pointed out by the farm manager.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
 **Figure 141: A low-density surface scatter of stone tools were observed. The scale is in 1cm increments.**					
PK 43	33.087692	20.140149	The site consists of a small burial ground with 2 graves. One of the graves has been fenced. The second grave consists of packed stones in a rectangular shape as well as an upright grave marker. The packed stone dressing appears to have been disturbed. Burial grounds and graves are protected under Section 36 of the NHRA 25 of 1999. Thus, the site is provisionally rated as having a high heritage significance with a heritage rating of IIIA. All graves have high levels of emotional, religious and in some cases historical significance. It is also important to understand that the identified graves could have significant heritage value to the relevant families. <u>It is recommended that:</u> ▪ The site should be demarcated with a 50-meter buffer and that the graves should be avoided and left in situ.	High	IIIA

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
			▪ A Grave Management Plan should be developed for the graves ▪ If the site is going to impact and the graves need to be removed a grave relocation process for site **PK 43** is recommended as a mitigation and management measure. This will involve the necessary social consultation and public participation process before grave relocation permits can be applied for with the HWC under the NHRA and National Health Act regulations.		

Figure 142: General view of the two graves.

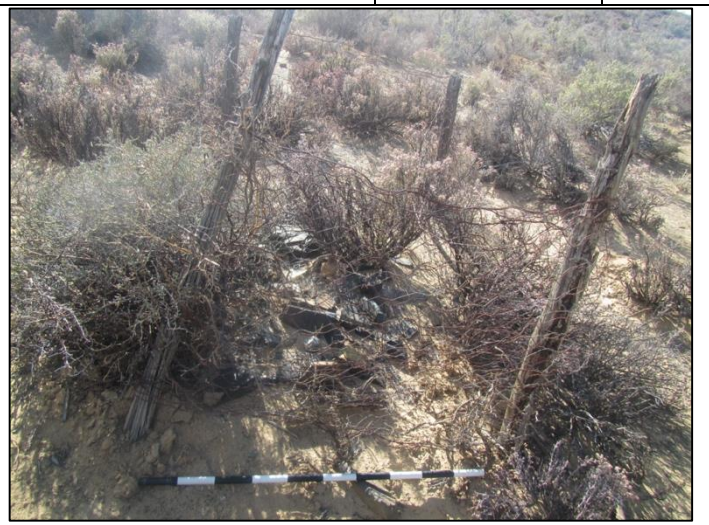


Figure 143: Historical grave that has been fenced. The scale is in 10cm increments.

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
			 **Figure 144: Stone packed grave. The scale is in 10cm increments.**		

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 44	33.089840	20.140488	The site consists of a small burial ground with 2 graves. One of the graves has contains a dressing consisting of stones packed in a rectangular shape. The name of the deceased has been engraved on a headstone placed on the grave. The inscription: "Hier Rust Het stiffen overschot.. P. A. v/ d. Merwe Geb. 7 Juli 1849 Gest. 6 Juli 1891 Het sterven was hem een gewin Fil. 1:21" The second grave consists of packed stones in a rectangular shape as well as an upright grave marker. The packed stone dressing appears to have been disturbed. Burial grounds and graves are protected under Section 36 of the NHRA 25 of 1999. Thus, the site is provisionally rated as having a high heritage significance with a heritage rating of IIIA. All graves have high levels of emotional, religious and in some cases historical significance. It is also important to understand that the identified graves could have significant heritage value to the relevant families. <u>It is recommended that:</u> ▪ The site should be demarcated with a 50-meter buffer and that the graves should be avoided and left in situ. ▪ A Grave Management Plan should be developed for the graves which also need to be approved by HWC, if graves are to be relocated. ▪ If the site is going to impact and the graves need to be removed a grave relocation process for site **PK 44** is recommended as a mitigation and management measure. This will involve the necessary social consultation and public participation process before grave relocation permits can be applied for with the HWC under the NHRA and National Health Act regulations.	High	IIIA

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating
 **Figure 145: General view of the two graves at PK 44.**			 **Figure 146: View of the first grave with packed stone dressing and a headstone. The scale is in 10cm increments.**		

Site[4] number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 147: Closer view of the headstone.

Figure 148: View of the second grave. The scale is in 10cm increments.

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 45	-33.084649° °	20.089231	A low-density scatter of stone tools was observed on a flat area on the top of a small hill near a non-perennial river. The stone tools consist of flakes, cores and blades and were made from chert and hornfels. The site is provisionally rated as IIIC with low heritage significance. It is recommended that: ▪ No further mitigation is required	Low	IIIC

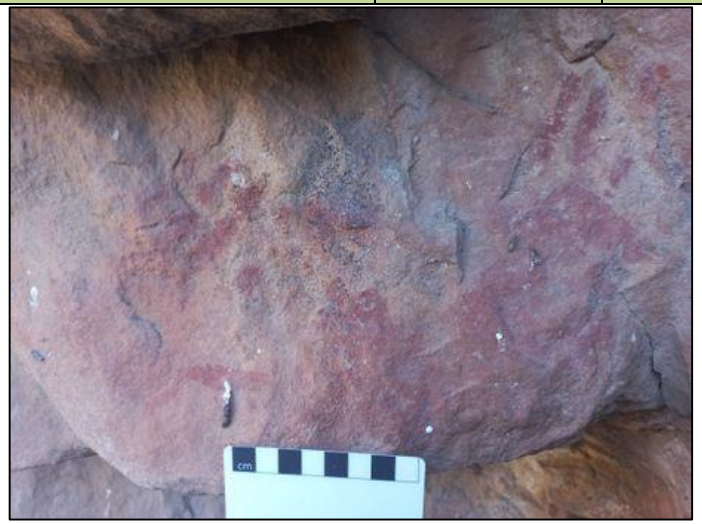
Figure 149: General view of the site.

Figure 150: View of the stone tools found at site PK45. The scale is in 1cm increments

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 46	-33.143339°	20.034257°	The site consists of a rock shelter with rock art. Approximately 10 handprints, in red ochre, are observed across the site. One hippo/cow-like animal as well as a horse, in red ochre, and six antelope, painted in white, are also visible. Several anthropomorphic figures are also visible on the panel. Fragments of thin undecorated ceramics as well as stone tools were observed on the surface of the rock shelter. The site most likely dates to the Later Stone Age and Early Historical Period. The site is provisionally rated as IIIA with high heritage significance. <u>It is recommended that:</u> ▪ The site should be demarcated with a 200-meter buffer and should be treated as a No-Go-Zone. ▪ If development occurs within 200m of **PK 46**, the rock shelter will need to be satisfactorily studied and recorded before impact occurs.	High	IIIA

Figure 151: View of the entrance of the north facing Rockshelter.

Figure 152: View of the wall panels in the shelter. The scale is in 10cm increments.

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating
 **Figure: 153 -A red handprint on one of the walls. The scale is in 1cm increments**			 **Figure 154: Several red hands and fingerprints. The scale is in 1cm increments**		
 **Figure 155: Red painted figure of a cow/hippo. The scale is in 1cm increments.**			 **Figure 156: Red painted figure of a horse. The scale is in 1cm increments**		

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 157: White painted antelope. The scale is in 1cm increments.

Figure 158: Three anthropomorphic figures are painted on the wall. *The scale is in 1cm increments.*

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating

Figure 159: Some fragmented undecorated thin pottery found in the shelter. *The scale is in 1cm increments.*

Figure 160: Stone tools are scattered across the entrance to the rock shelter. The scale is in 1cm increments

Site number	Lat	Lon	Description	Heritage Significance	Heritage Rating
PK 47	-33.143451	20.035085°	A low-density scatter of stone tools was observed on the foot of a small hill. The stone tools consist of flakes, cores and blades and were made from chert and hornfels. The site is located approximately 80m east of **PK46**. The site is provisionally rated as IIIC with low heritage significance. It is recommended that: ▪ No further mitigation is required	Low	IIIC

Figure 161: General view of the site.

Figure 162: Some of the Stone tools are scattered across the surface. The scale is in 1cm increments

9. IDENTIFICATION AND ASSESSMENT OF IMPACTS

The fieldwork findings have shown that the study area is characterised by find spots, several structures, graves, burial grounds, and possible graves. From the proposed location of the WEF and associated infrastructure, the cultural significance of some of the heritage resources and their context may be impacted by proximity to development area.

Archaeological remains are rare objects, often preserved due to unusual circumstances and are non-renewable resources. When a development is proposed, and specialist studies are undertaken as part of the wider evaluation of heritage resources, this provides an opportunity into a depository that would not otherwise exist. In this sense the impact is POSITIVE for archaeology if efforts are made to preserve or mitigate heritage resources in the study footprint, prior to and during the construction phase of the development. For this reason, four development scenarios, informed by EIA constraints are considered in this study, including the no-development / no-go option.

The general nature of impacts from the proposed development will be visual for landscape and built heritage, and physical regarding archaeological heritage resources. Mitigation measures for heritage resources will be recommended to mitigate impacts.

The impact on the identified archaeological and historical heritage resources are predicted to be confined to the areas around the sites as identified. Pre-mitigation impacts during the construction and operation phases are rated as HIGH negative, with a mitigated impact of MEDIUM to LOW negative. It is foreseen that the decommissioning of Patatskloof WEF will have a positive high impact which can be attributed to a reduction in the amount of human activity in the proposed development area that will lead to a reduction in the possibility of humans impacting such heritage resources (**Table 7**).

9.1. General Observations

In this section, an assessment will be made of the impact of the proposed development on the identified heritage sites. The assessment of the impact of the proposed WEF and the associated grid infrastructure will be addressed separately. An overlay of all the heritage sites identified during the fieldwork over the proposed development footprint areas was made to assess the impact of the proposed development on these identified heritage sites. This overlay resulted in the following observations:

The following general observations will apply for the impact assessment undertaken in this report: The impact assessment rating is based on the rating scale as contained in **Appendix B**.

Heritage sites assessed to have a low heritage significance are not included in these impact risk assessment calculations. The reason for this is that sites of low significance or not conservation worthy and will not require mitigation. There are 35 structures and archaeological sites (**PK 01 –**

05, PK 07, PK 08, PK 10-14, PK 16- PK 18, PK 21 – PK 28, PK 30 - PK 40, PK 45, PK 47) of low heritage significance or not conservation.

Two grave and burial grounds (**PK-43** and **PK-44**) and three archaeological sites (**PK-29, PK-42, PK 46**) of high heritage significance and four structures (**PK-06**, **PK-15, PK 20, PK 24**) and three archaeological site (**PK 09**, **PK 37**, **PK 41**) of medium heritage significance are located more than 100m away from the proposed development. As a result, no impact is expected from the proposed development on these sites.

It is necessary to realise that the heritage resources located during the fieldwork do not necessarily represent all the possible heritage resources present within the area. Various factors account for this, including the size of the study area and the subterranean nature of some heritage sites. The impact assessment conducted for heritage sites assumes the possibility of finding heritage resources during the project life and has been conducted as such.

Three project phases have been identified by SiVEST namely the Pre-Construction Phase, Construction Phase and Operational Phase. As site clearing activities of all the development footprint areas are grouped under the Pre-Construction Phase, the highest level of impact on the identified heritage sites is expected during this phase. No impacts are expected during the Construction and Operational Phases. All the identified heritage sites are expected to be destroyed in terms of the pre-mitigation impact assessments undertaken below, whereas only those sites not mitigated by amendments to the proposed development footprints will also be destroyed in terms of the post-mitigation impact assessment calculations undertaken below.

The following impact rating tables are based on the proposed WEF and associated grid infrastructure development layout within the region.

9.2. Pre-construction Phase

Table 7: Assessment of the Impact of Proposed WEF on Heritage Sites

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S
Pre-Construction Phase																				
Homesteads, structures (kraals, dam walls, stone structures and buildings)	Construction activities close to these identified structures can damage and cause irreparable damage or destroy the resource	1	2	4	3	4	4	56	-	High	1. Implement a 50-meter buffer around all structures with a rating of IIIC and higher. 2. Implement a 500-meter buffer around the farmstead site at (**PK 06** and **PK 15**) 3. Demarcate as no-go buffer areas 4. An archaeological walk down of the final approved layout will be required before construction commence.	1	2	3	3	4	1	14	-	Low impact

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S
Stone Age and Rock Art sites	Construction activities close to these resources can damage and cause irreparable damage or destroy the resource. Rock art sites are extremely sensitive to human actions and are easily damaged.	1	2	4	3	4	4	56	-	High	1. An archaeological walk down of the final approved layout will be required before construction commence. 2. Implement a 200-meter buffer around the rock art sites at (**PK 29, PK 42** and **PK 46**) 3. A management plan for the heritage resources needs then to be compiled and approved for implementation during construction and operations. 4. Chance finds protocol must be developed that includes the process of work stoppage, site protection, evaluation and informing HWC of such finds and a final process of mitigation implementation. 5. Demarcate as no-go areas	1	1	3	3	4	2	24	-	Medium impact
Burial Grounds	Construction activities close to these identified structures can damage and cause irreparable damage or destroy the resource	2	3	4	3	4	4	64	-	Very high impact	1. Implement a 50-meter buffer around all burial grounds and graves. 2. A management plan for the heritage resources needs then to be compiled and approved for implementation during operations. 3. Identify as no-go areas	1	1	4	3	4	1	12	-	Low impact

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S
Chance finds	Destruction or damage to previously unidentified archaeological or historical resources	1	2	4	3	4	4	56	-	High	1. A management plan for the heritage resources needs then to be compiled and approved for implementation during construction and operations.	1	1	3	3	4	1	12	-	Low impact

Table 8: Assessment of the Impact of Proposed Grid Infrastructure on Heritage Sites

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S
Pre-Construction Phase																				
Stone Age and Rock Art sites	Construction activities close to these resources can damage and cause irreparable damage or destroy the resource. Rock art sites are extremely sensitive to human actions and are easily damaged.	1	2	4	3	4	4	56	-	High	1. An archaeological walk down of the final approved layout will be required before construction commence. 2. Implement a 200-meter buffer around the rock art sites at (**PK 29, PK 42** and **PK 46**) 3. A management plan for the heritage resources needs then to be compiled and approved for implementation during construction and operations. 4. Chance finds protocol must be developed that includes the process of work stoppage, site protection, evaluation and informing HWC of such finds and a final process of mitigation implementation. 5. Demarcate as no-go areas	1	1	3	3	4	2	24	-	Medium impact

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S
Chance finds	Destruction or damage to previously unidentified archaeological or historical resources	1	2	4	3	4	4	56	-	High	1. A management plan for the heritage resources needs then to be compiled and approved for implementation during construction and operations.	1	1	3	3	4	1	12	-	Low impact

9.3. Cumulative Impacts

This section evaluates the possible cumulative impacts (IC) on heritage resources with the addition of the Patatskloof WEF and associated grid infrastructure. The IC on heritage resources evaluated a 35-kilometer radius (**Figure 163**).

The following must be considered in the analysis of the cumulative effect of development on heritage resources:

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

With regards to the historical resources, in most cases given a low-medium heritage significance on a local scale and in most of the cases were recommended as being easily mitigated or avoidable.

While the graves sites in all cases given a high heritage significance on a local scale and in most of the cases were recommended as being no-go areas or extensive mitigation required.

Table 10 provides an analysis of the projected cumulative impact this project will add to impact on heritage resources.

Table 9: Renewable energy developments proposed within a 35km radius of the Patatskloof WEF application site.

Applicant	Project	Technology	Capacity	Status of Application / Development
Oya Energy (Pty) Ltd	Oya Energy Facility	Hybrid (Solar / Fuel-Based)	305MW	EIA Process underway
Brandvalley Wind Farm (Pty) Ltd	Brandvalley WEF	Wind	140MW	Approved
Kudusberg Wind Farm (Pty) Ltd	Kudusberg WEF	Wind	325W	Approved
South Africa Mainstream	Perdekraal West WEF & Associated Grid	Wind	150M	Approved

Applicant	Project	Technology	Capacity	Status of Application / Development
Renewable Power Perdekraal West (Pty) Ltd	Connection Infrastructure			
South Africa Mainstream Renewable Power Perdekraal East (Pty) Ltd	Perdekraal East WEF & Associated Grid Connection Infrastructure	Wind	110MW	Operational
South Africa Mainstream Renewable Power Developments (Pty) Ltd	Karee WEF	Wind	140MW	EIA Process underway
Rietkloof Wind Farm (Pty) Ltd	Rietkloof WEF	Wind	186MW	Approved
ENERTRAG SA (Pty) Ltd	Tooverberg WEF & Associated Grid Connection Infrastructure	Wind	140MW	Approved
Witberg Wind Power (Pty) Ltd	Witberg WEF	Wind	120MW	Approved
Montgue Road Solar (Pty) Ltd	Montgue Road Solar	Solar PV	75MW	Approved
Touwsrivier Solar	Touwsrivier Solar	Solar PV	36MW	Approved

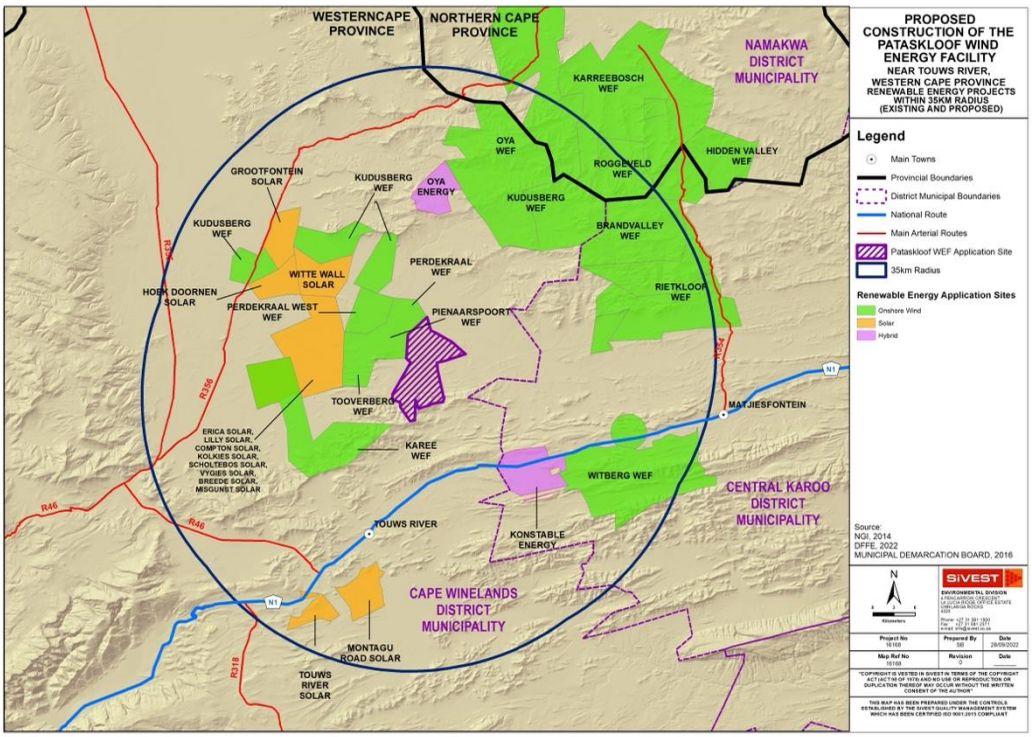


Figure 163: Renewable energy facilities proposed within a 35km radius of the proposed development (provided by SiVEST).

Table 10: Impact rating - Cumulative

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S
Cumulative																				
Homesteads, structures (kraals, dam walls, stone structures and buildings)	The Patats WEF facility will add to the cumulative impact on such structures as identified in the larger Komsberg Region. The impact will not be as obvious as that on the cultural landscape. However, a significant number of such resources was identified in the region and can be impacted by these projects.	2	2	4	3	4	2	30	-	Medium	1. A management plan for the heritage resources needs then to be compiled and approved for implementation during construction and operations. 2. Identify as no-go areas	1	2	4	2	4	1	13	-	Low
Stone Age and Rock Art sites	The Patats WEF facility will add to the cumulative impact on such structures as identified in the larger Komsberg Region. The impact will not be as obvious as that on the cultural landscape. However, a significant number of such resources was identified in the region and can be impacted by these projects.	2	2	4	3	4	2	30	-	Medium	1. A management plan for the heritage resources needs then to be compiled and approved for implementation during construction and operations. 2. Identify as no-go areas	1	2	4	2	4	1	13	-	Low
Burial Grounds	The Patats WEF facility will add to the cumulative impact on such structures as identified in the larger Komsberg Region. The impact will not be as obvious as that on the cultural landscape. However, a significant number of such resources was identified in the region and can be impacted by these projects.	2	2	4	3	4	2	30	-	Medium	1. A management plan for the heritage resources needs then to be compiled and approved for implementation during construction and operations. 2. Identify as no-go areas	1	2	4	2	4	1	13	-	Low

9.4. Overall Impact Rating

It is my considered opinion that this additional load on the overall impact on heritage resources will be **low**. With a detailed and comprehensive regional dataset this rating could possibly be adjusted and more accurate.

10. COMPARATIVE ASSESSMENT OF ALTERNATIVES

Six alternatives were provided for the grid corridors and two alternatives were provided for the substation.

An assessment of the options for the substation areas shows that there will not be an impact on heritage resources. Therefore, no preference for substation areas exists.

From a heritage perspective, it is preferred that the "grid corridor option 2" not be considered, as it may impact on heritage resources. However, all grid corridor alternatives are considered acceptable, subject to implementation of the recommended mitigation measures.

Key

PREFERRED	The alternative will result in a low impact/reduce the impact
FAVOURABLE	The impact will be relatively insignificant
NOT PREFERRED	The alternative will result in a high impact/increase the impact
NO PREFERENCE	The alternative will result in equal impacts

Alternative	Preference	Reasons
SUBSTATION		
Substation site Option 1	**NO PREFERENCE**	No impact on heritage resources
Substation site Option 2	**NO PREFERENCE**	No impact on heritage resources
GRID CORRIDOR		
Grid Corridor Option 1	**NO PREFERENCE**	No impact on heritage resources
Grid Corridor Option 2	**NOT PREFERRED**	There may be on impact on some of the identified heritage resources.
Grid Corridor Option 3	**NO PREFERENCE**	No impact on heritage resources
Grid Corridor Option 4	**NO PREFERENCE**	No impact on heritage resources
Grid Corridor Option 5	**NO PREFERENCE**	No impact on heritage resources
Grid Corridor Option 6	**NO PREFERENCE**	No impact on heritage resources

10.1. No-Go Alternative

Environmental and heritage legislation requires the consideration of the no-go option. There will be impacts as the project would not proceed. There would also be no socio-economic benefits or increase in energy generation of renewable energy sources (see **Section 5** of this report for a full description of the legal requirement).

Table 11: Impact rating – No-Go option

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S
No-Go option																				
Impact on archaeological and historical heritage resources	If the Patats WEF will not be implemented and operational	1	3	1	1	4	1	10	+	Low	1. None	1	3	1	1	4	1	10	+	Low

11. GENERAL RECOMMENDATIONS AND MITIGATION MEASURES

11.1. Construction phase

The project will encompass a range of activities during the construction phase, including vegetation clearance, excavations and infrastructure development associated with the project.

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

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

11.2. Chance find procedure

A heritage practitioner / archaeologist should be appointed to develop a heritage induction program and conduct training for the ECO as well as team leaders in the identification of heritage resources and artefacts.
An appropriately qualified heritage practitioner / archaeologist must be identified to be called upon if any possible heritage resources or artefacts are identified.

Should an archaeological site or cultural material be discovered during construction (or operation), the area should be demarcated, and construction activities halted.

The qualified heritage practitioner / archaeologist will then need to come out to the site and evaluate the extent and importance of the heritage resources and make the necessary recommendations for mitigating the find and the impact on the heritage resource.

The contractor therefore should have some sort of contingency plan so that operations could move elsewhere temporarily while the materials and data are recovered.

Construction can commence as soon as the site has been cleared and signed off by the heritage practitioner / archaeologist.

11.3. Possible finds during construction

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

- High density concentrations of stone artefact
- unmarked graves

11.4. Timeframes

It must be kept in mind that mitigation and monitoring of heritage resources discovered during construction activity will require permitting for collection or excavation of heritage resources and lead times must be worked into the construction time frames. **Table 12** gives guidelines for lead times on permitting.

Table 12: Lead times for permitting and mobilisation

Action	Responsibility	Timeframe
Preparation for field monitoring and finalisation of contracts	The contractor and service provider	1 month
Application for permits to do necessary mitigation work	Service provider – Archaeologist and SAHRA	3 months
Documentation, excavation and archaeological report on the relevant site	Service provider – Archaeologist	3 months

Handling of chance finds – Graves/Human Remains	Service provider – Archaeologist and SAHRA	2 weeks
Relocation of burial grounds or graves in the way of construction	Service provider – Archaeologist, SAHRA, local government and provincial government	6 months

11.5. Heritage Management Plan for EMPr implementation

Table 13: Heritage Management Plan for EMPr implementation

Area and site no.	Mitigation measures	Phase	Timeframe	The responsible party for implementation	Monitoring Party (frequency)	Target	Performance indicators (Monitoring tool)
General project area	Implement chance find procedures in case where possible heritage finds are uncovered.	Construction and operation	During construction and operation	Applicant ECO Heritage Specialist	ECO (monthly / as or when required)	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 34-36 and 38 of NHRA	ECO Monthly Checklist/Report
Graves and Burial grounds	• The sites should be demarcated with a 50-meter no-go-buffer-zone and the graves should be avoided and left in situ. • A Grave Management Plan should be developed for the graves, to be implemented during the construction and operation phases (which needs approval by HWC. • If the site is going to be impacted directly and the graves need to be removed a grave relocation process for these sites is recommended as a mitigation and management measure. This will involve the necessary social consultation and public participation process before grave relocation permits can be applied for with the HWC under the NHRA and National Health Act regulations.	Construction	Prior to and during construction	Applicant ECO	Applicant ECO	Ensure compliance with relevant legislation and recommendations from HWC under Section 36 and 38 of NHRA	ECO Monthly Checklist/Report
Archaeological sites that were rated as high	• The site should be demarcated with a 200-meter buffer and should be treated as a No-Go-Zone. • If development occurs within 200m of the site, the rock shelter will need to	Pre-construction	Pre-construction and during construction	Applicant ECO Archaeologist	None	Ensure compliance with relevant legislation and recommendations from HW under	ECO Monthly checklist/report

Area and site no.	Mitigation measures	Phase	Timeframe	The responsible party for implementation	Monitoring Party (frequency)	Target	Performance indicators (Monitoring tool)
	be satisfactorily studied and recorded before impact occurs.					Section 36 and 38 of NHRA	
Archaeological sites that were rated as IIIA and IIIB	• If the development does not fall within 50m of the site, no mitigation is required. • If development occurs within 50m of the site, then a Phase 2 survey will need to be conducted that will include a representative sampling of the assemblages.	Pre-construction	Pre-construction and during construction	Applicant ECO Archaeologist	None	Ensure compliance with relevant legislation and recommendations from HW under Section 36 and 38 of NHRA	ECO Monthly checklist/report
Historical Structures that were rated as NCW	• No mitigation required	Pre-construction	Pre-construction and during construction	Applicant ECO Archaeologist	None	Ensure compliance with relevant legislation and recommendations from HWC under Section 36 and 38 of NHRA	ECO Monthly checklist/report
Historical Structures that were rated as IIIC	• If the development does not fall within 50m of the site, no mitigation is required. • If development occurs within 50m of the site, the structure needs to be satisfactorily studied and recorded before impact occurs.	Pre-construction	Pre-construction and during construction	Applicant ECO Archaeologist	None	Ensure compliance with relevant legislation and recommendations from HW under Section 36 and 38 of NHRA	ECO Monthly checklist/report
Historical Structure that was rated as IIIB	• It is recommended that a no-go-buffer-zone of at least 500m from the outer permitter of the farmstead is kept to the closest WEF infrastructure (including turbines, substation facilities and roads).	Pre-construction	Pre-construction	Applicant ECO Archaeologist	None	Ensure compliance with relevant legislation and recommendations from HWC under Section 36 and 38 of NHRA	ECO Monthly checklist/report

12. CONCLUSION AND RECOMMENDATIONS

PGS has been appointed by SiVEST, on behalf of Mainstream, to undertake the assessment of the proposed construction of the Patatskloof WEF, BESS and associated grid connection infrastructure located approximately 18km and 25km north-east respectively of Touws River in the Western Cape Province and is within the Witzenberg Local Municipality, in the Cape Winelands District Municipality.

Heritage resources are unique and non-renewable and as such any impact on such resources must be seen as significant.

The fieldwork conducted for the evaluation of the possible impact of the new Patatskloof WEF, and associated grid connection infrastructure has revealed the presence of 47 heritage resources.

12.1. Burial Grounds and graves

A total of two (2) burial grounds were identified on the farm Upper Stinkfontein. The two burial grounds (**PK43, PK44**) were rated as having high heritage significance.

12.2. Historical structures

A total of twenty-four (24) structures were identified, including ten (10) houses (including farmsteads, labourer houses, and old stone houses with associated kraals) seven (7) kraals, two (2) dam walls, one (1) reservoir, two (2) stone packed cairns, and two (2) circular stone hunting shelters.

Four of these sites (**PK-06**, **PK-15, PK 20, PK 24**) where of medium heritage significance but located more than 100m away from the proposed development. As a result, no impact is expected from the proposed development on these sites.

12.3. Archaeological features

A total of twenty-three (23) archaeological resources/areas were identified, including seventeen (17) that can be classified as find spots with varying collections of LSA and some MSA material present. Three (3) areas that can be classified as archaeological sites due to the presence of stone tools and other cultural material such as OES beads, three (2) sites consisted of a rock shelter with rock art, and one (1) site containing a possible rock art as indicated by residents.

Three archaeological sites (**PK-29, PK-42, PK 46**) was rated as having a high heritage significance and three sites (**PK 09**, **PK 37**, **PK 41**) medium heritage significance. All of these are located more than 100m away from the proposed development. As a result, no impact is expected from the proposed development on these sites.

12.4. Recommendations

The calculated impact as summarised in **Section 9** of this report confirms the impact of the new Patatskloof WEF, BESS and associated grid connection infrastructure will be reduced with the implementation of the mitigation measures. This finding in addition to the implementation of a chance finds procedure, as part of the EMPr, will mitigate possible impacts on unidentified heritage resources. An assessment of the final footprint of the new Patatskloof WEF, BESS and associated grid connection infrastructure must be conducted with the final walkdown of the area during the implementation of the EMPr.

The following mitigation measures will be required:

- An archaeological walk down of the final approved layout will be required before construction commences;
- Implement a 50-meter buffer around all structures with a rating of IIIC and higher.
- Implement a 500-meter buffer around the farmstead site at **PK 06 and PK 15.**
- Implement a 200-meter buffer around the rock art sites at **PK 29, PK 42** and **PK 46**.
- Demarcate the resources rated as IIIB-IIIA no-go areas.
- A management plan for the heritage resources needs then to be compiled and approved for implementation during construction and operations.
- A chance finds protocol must be developed that includes the process of work stoppage, site protection, evaluation and informing HWC of such finds and a final process of mitigation implementation.

12.5. General

If heritage resources are discovered during site clearance, construction activities must stop in the vicinity, and a qualified archaeologist must be appointed to evaluate and make recommendations on mitigation measures.

12.6. Final Proposed Buildable Area

The final proposed buildable area took the specialist recommendations identified during the 2021 and 2022 field assessments into consideration (**Figure *164*** - **Figure *166***).

From an archaeological and historical structure perspective, the proposed footprint areas will not change the impact on the identified heritage resources in the AIA.

As such the recommended mitigation measures as described in the AIA report remain.

We have no objection to the proposed buildable area associated with the Patatskloof WEF project.

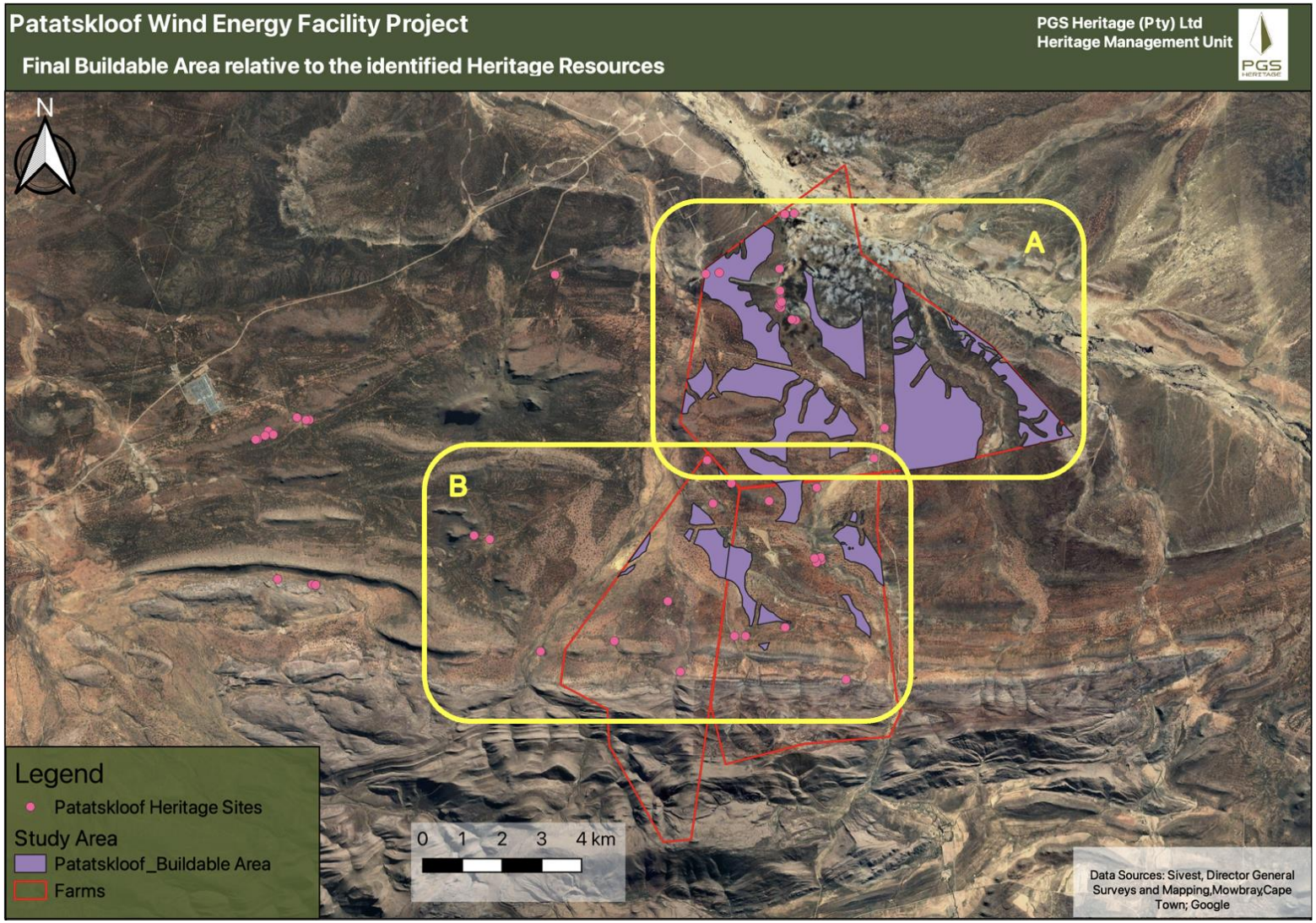


Figure 164: Final proposed buildable area relative to the locality of the heritage resources identified within the study area. See inset A and B below.

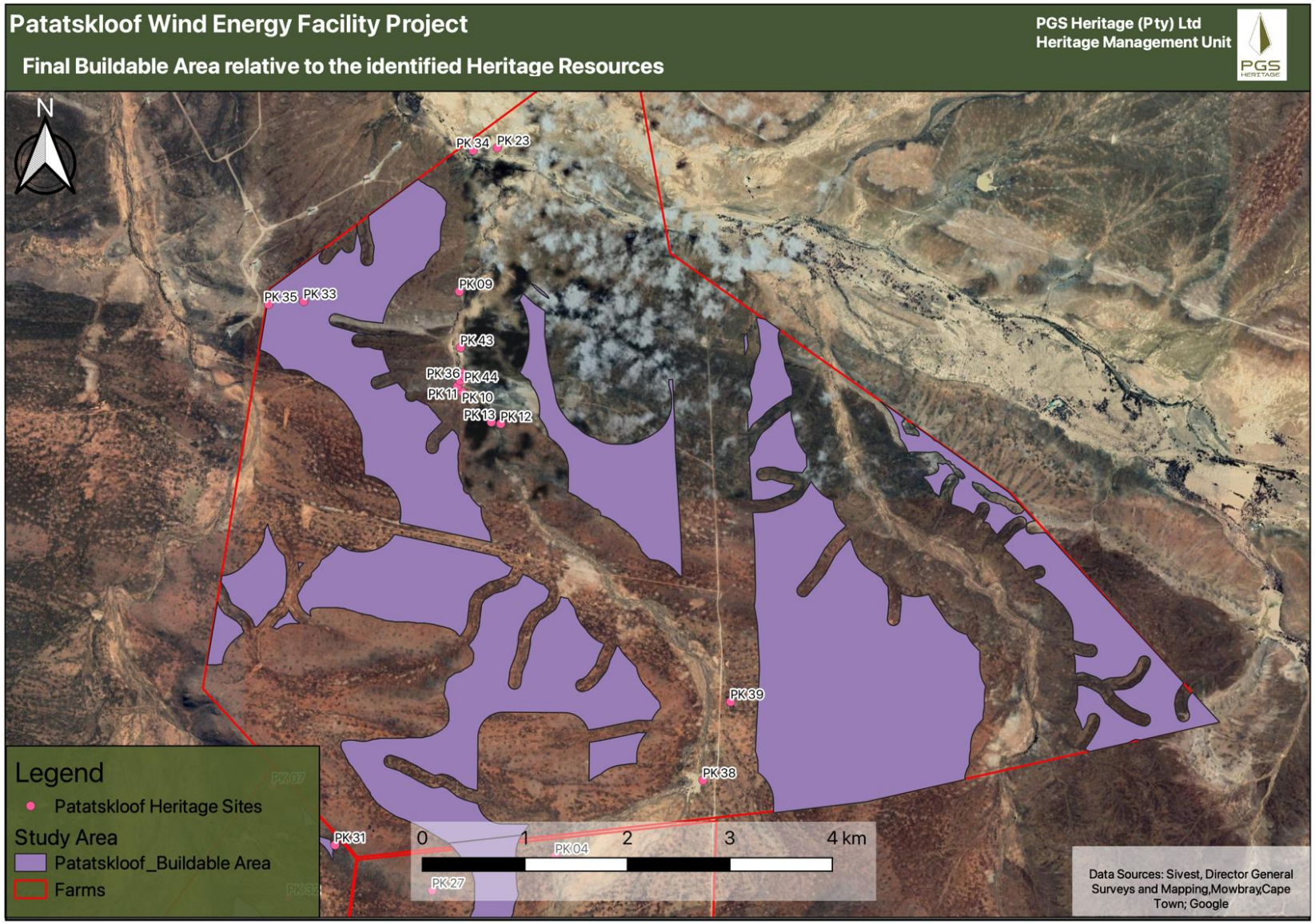


Figure 165: Inset A.

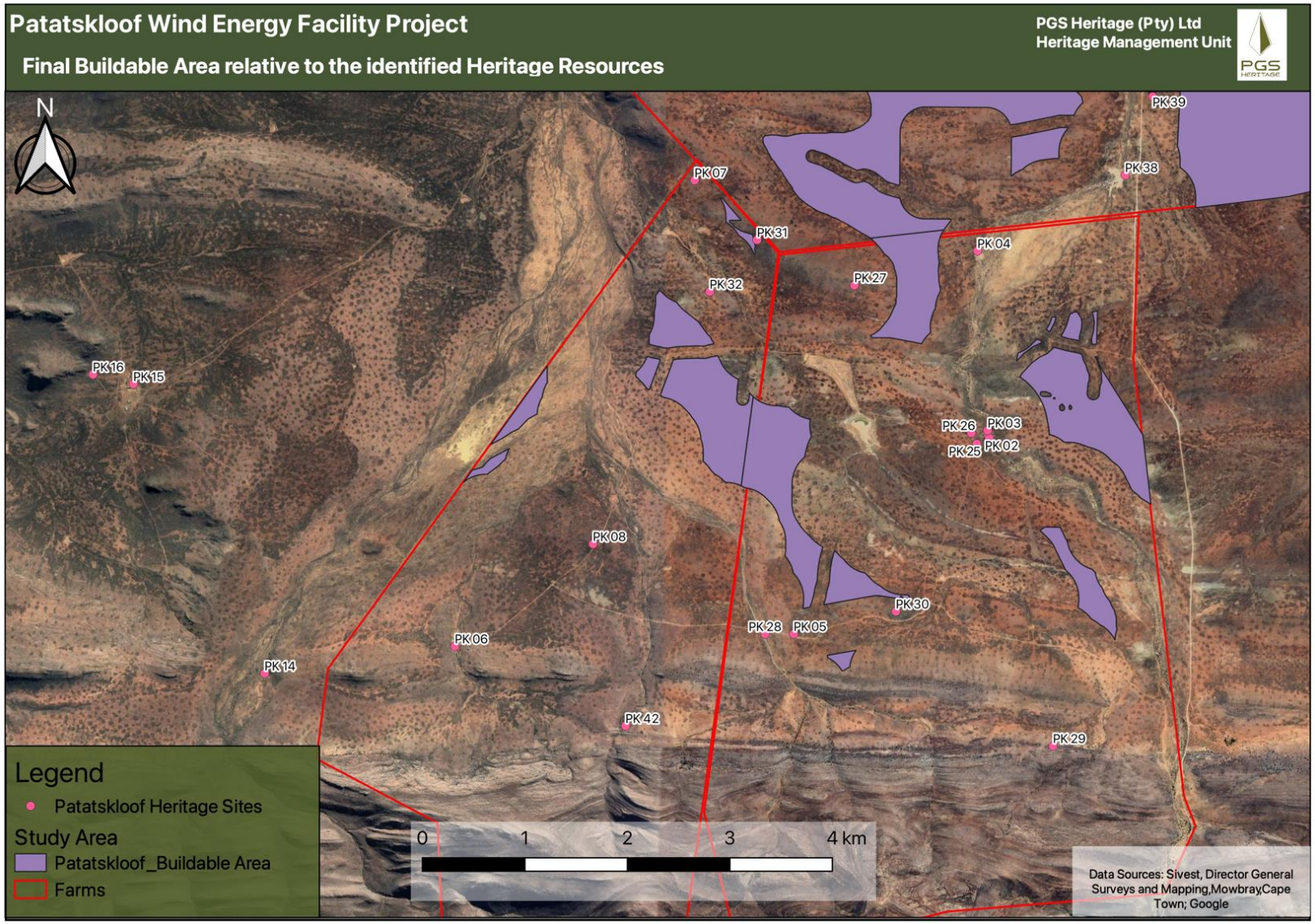


Figure 166: Inset B.

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APPENDIX A – CV

APPENDIX B
IMPACT ASSESSMENT METHODOLOGY

Environmental impact assessment (EIA) methodology

The Environmental Impact Assessment (EIA) Methodology assists in evaluating the overall effect of a proposed activity on the environment. Determining of the significance of an environmental impact on an environmental parameter is determined through a systematic analysis.
Determination of Significance of Impacts

Significance is determined through a synthesis of impact characteristics which include context and intensity of an impact. Context refers to the geographical scale (i.e., site, local, national or global), whereas intensity is defined by the severity of the impact e.g. the magnitude of deviation from background conditions, the size of the area affected, the duration of the impact and the overall probability of occurrence. Significance is calculated as shown in **Table 1**.

Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact.
Impact Rating System

The impact assessment must take account of the nature, scale and duration of effects on the environment and whether such effects are positive (beneficial) or negative (detrimental). Each issue / impact is also assessed according to the various project stages, as follows:

Planning;
Construction;
Operation; and
Decommissioning.

Where necessary, the proposal for mitigation or optimisation of an impact should be detailed. A brief discussion of the impact and the rationale behind the assessment of its significance has also been included.

Rating System Used to Classify Impacts

The rating system is applied to the potential impact on the receiving environment and includes an objective evaluation of the possible mitigation of the impact. Impacts have been consolidated into one (1) rating. In assessing the significance of each issue, the following criteria (including an allocated point system) is used:

Table 1: Rating of impacts criteria

ENVIRONMENTAL PARAMETER		
A brief description of the environmental aspect likely to be affected by the proposed activity (e.g. Surface Water).		
ISSUE / IMPACT / ENVIRONMENTAL EFFECT / NATURE		
Include a brief description of the impact of environmental parameter being assessed in the context of the project. This criterion includes a brief written statement of the environmental aspect being impacted upon by a particular action or activity (e.g. oil spill in surface water).		
EXTENT (E)		
This is defined as the area over which the impact will be expressed. Typically, the severity and significance of an impact have different scales and as such bracketing ranges are often required. This is often useful during the detailed assessment of a project in terms of further defining the determined.		
1	Site	The impact will only affect the site
2	Local/district	Will affect the local area or district
3	Province/region	Will affect the entire province or region
4	International and National	Will affect the entire country
PROBABILITY (P)		
This describes the chance of occurrence of an impact		
1	Unlikely	The chance of the impact occurring is extremely low (Less than a 25% chance of occurrence).
2	Possible	The impact may occur (Between a 25% to 50% chance of occurrence).
3	Probable	The impact will likely occur (Between a 50% to 75% chance of occurrence).
4	Definite	Impact will certainly occur (Greater than a 75% chance of occurrence).
REVERSIBILITY (R)		
This describes the degree to which an impact on an environmental parameter can be successfully reversed upon completion of the proposed activity.		
1	Completely reversible	The impact is reversible with implementation of minor mitigation measures
2	Partly reversible	The impact is partly reversible but more intense mitigation measures are required.
3	Barely reversible	The impact is unlikely to be reversed even with intense mitigation measures.
4	Irreversible	The impact is irreversible and no mitigation measures exist.
IRREPLACEABLE LOSS OF RESOURCES (L)		
This describes the degree to which resources will be irreplaceably lost as a result of a proposed activity.		
1	No loss of resource.	The impact will not result in the loss of any resources.
2	Marginal loss of resource	The impact will result in marginal loss of resources.
3	Significant loss of resources	The impact will result in significant loss of resources.
4	Complete loss of resources	The impact is result in a complete loss of all resources.
DURATION (D)		
This describes the duration of the impacts on the environmental parameter. Duration indicates the lifetime of the impact as a result of the proposed activity.		

1	Short term	The impact and its effects will either disappear with mitigation or will be mitigated through natural process in a span shorter than the construction phase (0 – 1 years), or the impact and its effects will last for the period of a relatively short construction period and a limited recovery time after construction, thereafter it will be entirely negated (0 – 2 years).
2	Medium term	The impact and its effects will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (2 – 10 years).
3	Long term	The impact and its effects will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter (10 – 50 years).
4	Permanent	The only class of impact that will be non-transitory. Mitigation either by man or natural process will not occur in such a way or such a time span that the impact can be considered transient (Indefinite).
INTENSITY / MAGNITUDE (I / M)		
Describes the severity of an impact (i.e. whether the impact has the ability to alter the functionality or quality of a system permanently or temporarily).		
1	Low	Impact affects the quality, use and integrity of the system/component in a way that is barely perceptible.
2	Medium	Impact alters the quality, use and integrity of the system/component but system/ component still continues to function in a moderately modified way and maintains general integrity (some impact on integrity).
3	High	Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component is severely impaired and may temporarily cease. High costs of rehabilitation and remediation.
4	Very high	Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component permanently ceases and is irreversibly impaired (system collapse). Rehabilitation and remediation often impossible. If possible rehabilitation and remediation often unfeasible due to extremely high costs of rehabilitation and remediation.
SIGNIFICANCE (S)		
Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. This describes the significance of the impact on the environmental parameter. The calculation of the significance of an impact uses the following formula: **Significance = (Extent + probability + reversibility + irreplaceability + duration) x magnitude/intensity.**		

The summation of the different criteria will produce a non-weighted value. By multiplying this value with the magnitude/intensity, the resultant value acquires a weighted characteristic which can be measured and assigned a significance rating.

Points	Impact Significance Rating	Description
5 to 23	Negative Low impact	The anticipated impact will have negligible negative effects and will require little to no mitigation.
5 to 23	Positive Low impact	The anticipated impact will have minor positive effects.
24 to 42	Negative Medium impact	The anticipated impact will have moderate negative effects and will require moderate mitigation measures.
24 to 42	Positive Medium impact	The anticipated impact will have moderate positive effects.
43 to 61	Negative High impact	The anticipated impact will have significant effects and will require significant mitigation measures to achieve an acceptable level of impact.
43 to 61	Positive High impact	The anticipated impact will have significant positive effects.
62 to 80	Negative Very high impact	The anticipated impact will have highly significant effects and are unlikely to be able to be mitigated adequately. These impacts could be considered "fatal flaws".
62 to 80	Positive Very high impact	The anticipated impact will have highly significant positive effects.

APPENDIX C

SITE SENSITIVITY VERIFICATION REPORT

(IN TERMS OF PART A OF THE ASSESSMENT PROTOCOLS PUBLISHED IN GN 320 ON 20 MARCH 2020)

Introduction

Mainstream is proposing to construct the Patatskloof WEF, comprising thirty-five wind turbines with a maximum total energy generation capacity of up to 250MW, with a 132kV overhead power line connection to the national grid. A Battery Energy Storage System (BESS) will be located next to the onsite 33/132kV substation. The WEF and grid project areas are located approximately 18km and 25km north-east respectively of Touws River in the Western Cape Province and is within the Witzenberg Local Municipality, in the Cape Winelands District Municipality

In accordance with Appendix 6 of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) Environmental Impact Assessment (EIA) Regulations of 2014, a site sensitivity verification has been 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 (Screening Tool).

Site sensitivity verification

The site sensitivity verification of the proposed Patatskloof WEF and associated grid connection is based on: A desktop review of (a) the relevant 1:50 000 scale topographic map 3320AA – Current and historical editions (1969, 1987, 2007), (b) Google Earth© satellite imagery, (c) published historical and archaeological literature, as well as (d) several previous HIA and AIA assessments undertaken in the general vicinity of the study area. A five-day field assessment of the Patatskloof WEF project area by the author and field assistant during the period 2 to 6 November 2020.

Outcome of site sensitivity verification

Until recently, this region was fairly poorly understood from an archaeological perspective. This, however, is no longer strictly true, given the creation of the Komsberg REDZ, and the ensuing applications for WEFs in this area (Fourie et al 2015). Several HIAs, all of them with archaeological components have, as a result, been conducted within the area. Little research work, which is generally more thorough and comprehensive, has been done, however, so that while we have a broad understanding of the heritage character of the region, more specific conclusions cannot be derived.

The evaluation of satellite imagery and the analysis of the studies previously undertaken in the area has indicated that certain areas may be sensitive from a heritage perspective.

Over 10 HIAs have been compiled around the study area, all with respect to wind farms and their associated infrastructure, and the findings of these reports are largely congruent. The reports identified surprisingly little pre-colonial or stone-age archaeology (Booth 2012, 2015a and 2015b; Hart and Webley 2013; Hart and Kendrick 2014; Hart 2015; van der Walt 2016), with the little that has been identified in the form of scatters located on the flat floodplains up to the foothills of the mountains, and within river valleys along watercourses (Booth 2016a and 2016b). The dry, fairly desolate ridges, which are subject to high winds and, therefore the

proposed locations for the turbines, are generally entirely devoid of Stone Age archaeological remains (Webley and Halkett 2017). These findings were also supported by the Heritage Scoping Assessment Report (Fourie et al 2015) compiled as part of the Department of Environmental Affair's (2015) Strategic Environmental Assessment wind and solar energy developments. A mitigation phase excavation (Evans et al. 1985) has been undertaken at two small rock shelters in the grounds of the South African Astronomical Observatory near Sutherland in the early 1980s. More recently, changing farming methods as represented by the distribution and variety of stone-built features (walls and kraals) was assessed as part of a Master's thesis (Regensberg 2016).

The field work in the study area demonstrates that burial grounds, archaeological rock art sites and historical structures of heritage significance warrant conservation.

National Environmental Screening Tool

The Archaeological and Cultural Heritage Sensitivity Map for the Patats WEF project area prepared using the DFFE screening tool indicates a **Low Sensitivity** rating for the study area (**Figure *13***). The low rating as provided by the Environmental Screening Tool possibly reflects scarcity of heritage reports conducted in the region. The field work that was conducted in the study area demonstrates that there are in fact burial grounds, archaeological sites and historical structures of heritage significance that warrant conservation.

Therefore, the DFFE screening tool sensitivity map in **Figure *13*** is not fully supported based on the findings of this fieldwork.

Conclusion

The Archaeological and Cultural Heritage sensitivity of the Patatskloof WEF and associated grid connection project areas has been evaluated, based on desktop studies and a 5-day site visit. It is concluded that the low rating as provided by the Environmental Screening Tool likely reflects the scarcity of heritage reports conducted in the region.