# HERITAGE IMPACT ASSESSMENT: FOR THE PROPOSED CONSTRUCTION OF THE 2 KM LONG HOLSDAM BARKLEY RIVER FARMERS 11KV POWERLINE


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# HERITAGE IMPACT ASSESSMENT

**(REQUIRED UNDER SECTION 38(1) OF THE NHRA (No. 25 OF 1999)**

## FOR THE PROPOSED CONSTRUCTION OF THE 2 KM LONG HOLSDAM BARKLEY RIVER FARMERS 11KV POWERLINE MOVE.

**Type of development:**

Powerline

**Developer**:

ESKOM SOC LTD

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Report Author:
Mr. J. van der Walt
Project Reference:
Project number 2284
Report date:
June 2022

## APPROVAL PAGE

| | |
|---|---|
| **Project Name** | Holsdam Barkley 11 kV Powerline, Northern Cape Province |
| **Report Title** | Heritage Impact Assessment for the Holsdam Barkley 11 kV Powerline, Northern Cape Province |
| **Authority Reference Number** | TBC |
| **Report Status** | Final Report |
| **Applicant Name** | Eskom SOC LTD |

| Responsibility | Name | Qualifications and Certifications | Date |
|---|---|---|---|
| **Fieldwork and reporting** | Jaco van der Walt - Archaeologist | MA Archaeology<br>ASAPA #159<br>APHP #114 | June 2022 |

## DOCUMENT PROGRESS

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### Amendments on Document

| Date | Report Reference Number | Description of Amendment |
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| 8 June 2022 | 2284 | Technical amendment |
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## REPORT OUTLINE

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

**Table 1. Specialist Report Requirements.**

| Requirement from Appendix 6 of GN 326 EIA Regulation 2017 | Chapter |
|---|---|
| (a) Details of -<br>(i) the specialist who prepared the report; and<br>(ii) the expertise of that specialist to compile a specialist report including a curriculum vitae | Section a |
| (b) Declaration that the specialist is independent in a form as may be specified by the competent authority | *Declaration of Independence* |
| (c) Indication of the scope of, and the purpose for which, the report was prepared | Section 1 |
| (cA)an indication of the quality and age of base data used for the specialist report | Section 3.4 |
| (cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change; | 9 |
| (d) Duration, Date and season of the site investigation and the relevance of the season to the outcome of the assessment | Section 3.4 |
| (e) Description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used | Section 3 |
| (f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of site plan identifying site alternatives; | Section 8 and 9 |
| (g) Identification of any areas to be avoided, including buffers | Section 8 and 9 |
| (h) Map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers | Section 8 |
| (I) Description of any assumptions made and any uncertainties or gaps in knowledge | Section 3.7 |
| (j) a description of the findings and potential implications of such findings on the impact of the proposed activity including identified alternatives on the environment or activities; | Section 1.3 |
| (k) Mitigation measures for inclusion in the EMPr | Section 10.1 |
| (I) Conditions for inclusion in the environmental authorisation | Section 10. 1. |
| (m) Monitoring requirements for inclusion in the EMPr or environmental authorisation | Section 10. 5. |
| (n) Reasoned opinion -<br>(i) as to whether the proposed activity, activities or portions thereof should be authorised;<br>(iA) regarding the acceptability of the proposed activity or activities; and<br>(ii) if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan | Section 10.3 |
| (o) Description of any consultation process that was undertaken during the course of preparing the specialist report | NA |
| (p) A summary and copies of any comments received during any consultation process and where applicable all responses thereto; and | NA |
| (q) Any other information requested by the competent authority | NA |

**Executive Summary**

1World Consultants was appointed by Eskom to facilitate the required heritage studies for the proposed construction of the 2 km long, Holsdam Barkley River Farmers 11 kV powerline move, near Kimberley, in the Northern Cape Province. Beyond Heritage was appointed to conduct a Heritage Impact Assessment (HIA) for the project and the study area was assessed on desktop level and by a non-intrusive pedestrian field survey. Key findings of the assessment include:

- The project entails a 2km line deviation for an existing 11kV powerline;
- The proposed powerline is located at its closest point, approximately 500 m from the graded Wildebeeskuil Rock Art site. The project is in line with the existing powerline infrastructure in the area and will not alter the associated cultural landscape;
- Heritage finds were limited to low-density Stone Age scatters of low significance;
- According to the South African Heritage Resource Information System (SAHRIS) the study area is of low to very high moderate palaeontological sensitivity. This aspect is addressed by the EAP.

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

**Recommendations:**

- Implementation of a Chance Find Procedure for the project.
- Monitoring of the project during construction.

**Declaration of Independence**

| | |
|---|---|
| **Specialist Name** | Jaco van der Walt |
| **Declaration of Independence** | I declare, as a specialist appointed in terms of the National Environmental Management Act (Act No 108 of 1998) and the associated 2014 Environmental Impact Assessment (EIA) Regulations, that I:<br>• I act as the independent specialist in this application;<br>• 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;<br>• I declare that there are no circumstances that may compromise my objectivity in performing such work;<br>• I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;<br>• I will comply with the Act, Regulations and all other applicable legislation;<br>• I have no, and will not engage in, conflicting interests in the undertaking of the activity;<br>• 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;<br>• All the particulars furnished by me in this form are true and correct; and<br>• I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act. |
| **Signature** |  |
| **Date** | 08 June 2022 |

**a) Expertise of the specialist**

Jaco van der Walt has been practising as a CRM archaeologist for 15 years. He obtained an MA degree in Archaeology from the University of the Witwatersrand focussing on the Iron Age in 2012 and is a PhD candidate at the University of Johannesburg focussing on Stone Age Archaeology with specific interest in the Middle Stone Age (MSA) and Later Stone Age (LSA). Jaco is an accredited member of ASAPA (#159) and have conducted more than 500 impact assessments in Limpopo, Mpumalanga, North West, Free State, Gauteng, KZN as well as the Northern and Eastern Cape Provinces in South Africa. Jaco has worked on various international projects in Zimbabwe, Botswana, Mozambique, Lesotho, DRC Zambia, Guinea and Tanzania. Through this, he has a sound understanding of the IFC Performance Standard requirements, with specific reference to Performance Standard 8 – Cultural Heritage.

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## ABBREVIATIONS

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

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

## GLOSSARY

Archaeological site (remains of human activity over 100 years old)
Early Stone Age (~ 2.6 million to 250 000 years ago)
Middle Stone Age (~ 250 000 to 40-25 000 years ago)
Later Stone Age (~ 40-25 000, to recently, 100 years ago)
The Iron Age (~ AD 400 to 1840)
Historic (~ AD 1840 to 1950)
Historic building (over 60 years old)

# 1 Introduction and Terms of Reference

Beyond Heritage was appointed to conduct a HIA for the 2km line deviation for an existing 11kV powerline project known as the Holsdam Barkley River Farmers 11kV powerline (Figure 1 to 3). The aim of the study is to survey the proposed development footprint to identify cultural heritage sites, document, and assess their importance within local, provincial and national context. It serves to assess the impact of the proposed project on non-renewable heritage resources, and to submit appropriate recommendations with regard to the responsible cultural resources management measures that might be required to assist the developer in managing the discovered heritage resources in a responsible manner. It is also conducted to protect, preserve and develop such resources within the framework provided by the National Heritage Resources Act of 1999 (Act No 25 of 1999). The report outlines the approach and methodology utilized before and during the survey, which includes Phase 1, review of relevant literature; Phase 2, the physical surveying of the area on foot and by vehicle; Phase 3, reporting the outcome of the study.

During the survey, low-density Stone Age scatters were recorded. General site conditions and features on sites were recorded by means of photographs, GPS locations and site descriptions. Possible impacts were identified and mitigation measures are proposed in the following report. SAHRA as a commenting authority under section 38(8) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) require all environmental documents to be submitted to SAHRA for commenting. Upon submission to SAHRA the project will be automatically given a case number as reference.

## 1.1 Terms of Reference

**Field study**
Conduct a field study to: (a) locate, identify, record, photograph and describe sites of archaeological, historical or cultural interest; b) record GPS points of sites/areas identified as significant areas; c) determine the levels of significance of the various types of heritage resources affected by the proposed development.

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

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

### 1.2 Project Description

Eskom has applied for a proposed 11kv powerline to be constructed close to Kimberley in the Northern Cape Province. Project components and the location is outlined under Table 2 and 3.

**Table 2: Project Description**

| | |
|---|---|
| **Property Details** | TBC |
| **Magisterial District** | Sol Plaatje Local Municipality |
| **Central co-ordinate of the development** | 28°39'21.21"S and 24°38'55.73"E |
| **Topographic Map Number** | 2824DA |

**Table 3: Infrastructure and project activities**

| | |
|---|---|
| **Type of development** | Powerline |
| **Size of development** | 2 km |
| **Project Components** | The project comprises a 11 kV powerline |

### 1.3 Alternatives

The proposed powerline is situated in an area that does not allow for alternatives due to the large amounts of water that have accumulated in the area. The selected route was chosen because it was the most feasible as it is on high ground, away from potential submerging. It was also important to select a route that will not traverse further into greenfield areas minimising potential impacts by the project. Due to environmental constraints no feasible alternatives are available, the extent of the area assessed however allows for micro siting of pylons to minimise impacts to heritage resources.

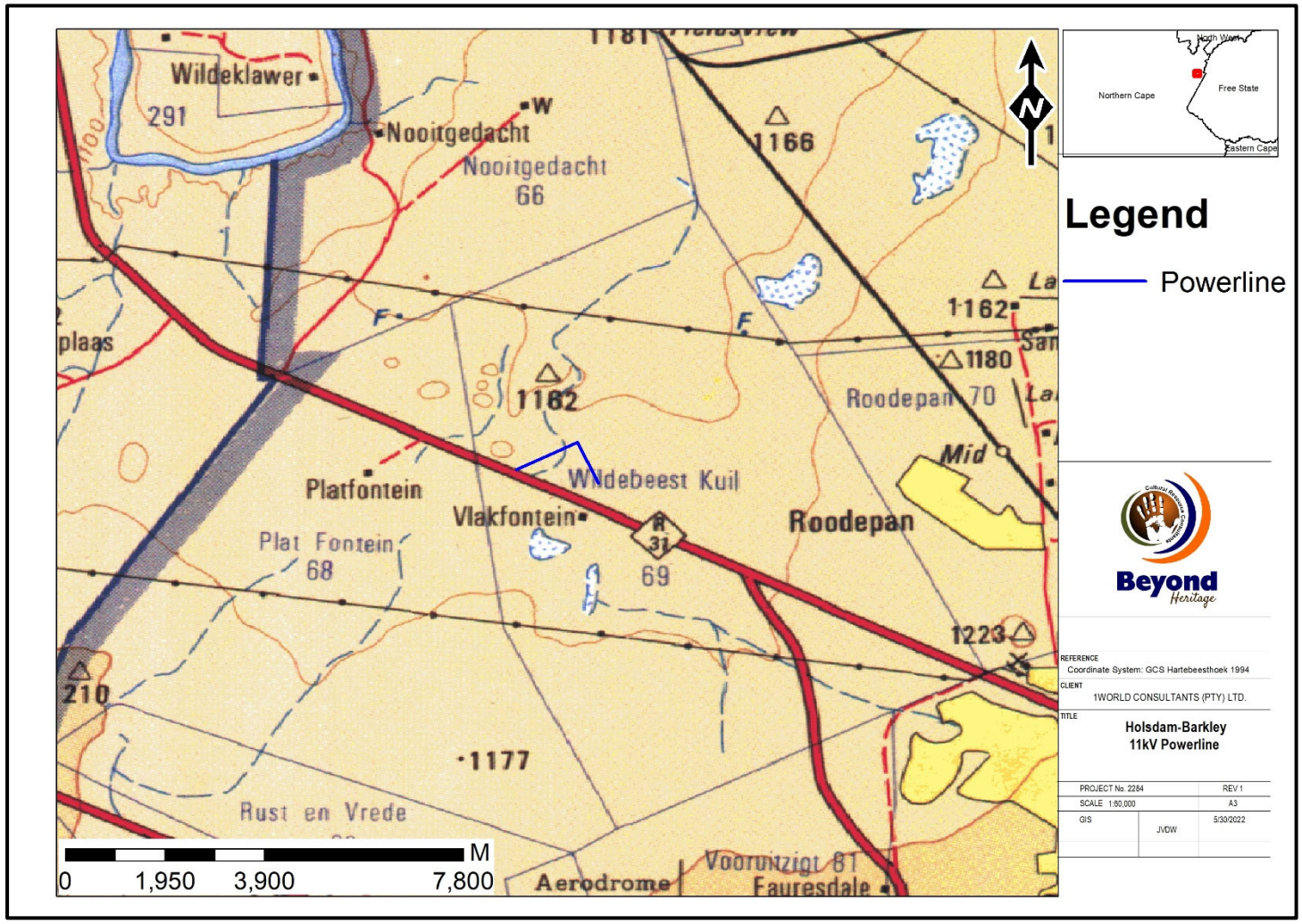



**Figure 1: Regional setting (1: 250 000 topographical map) of the project.**

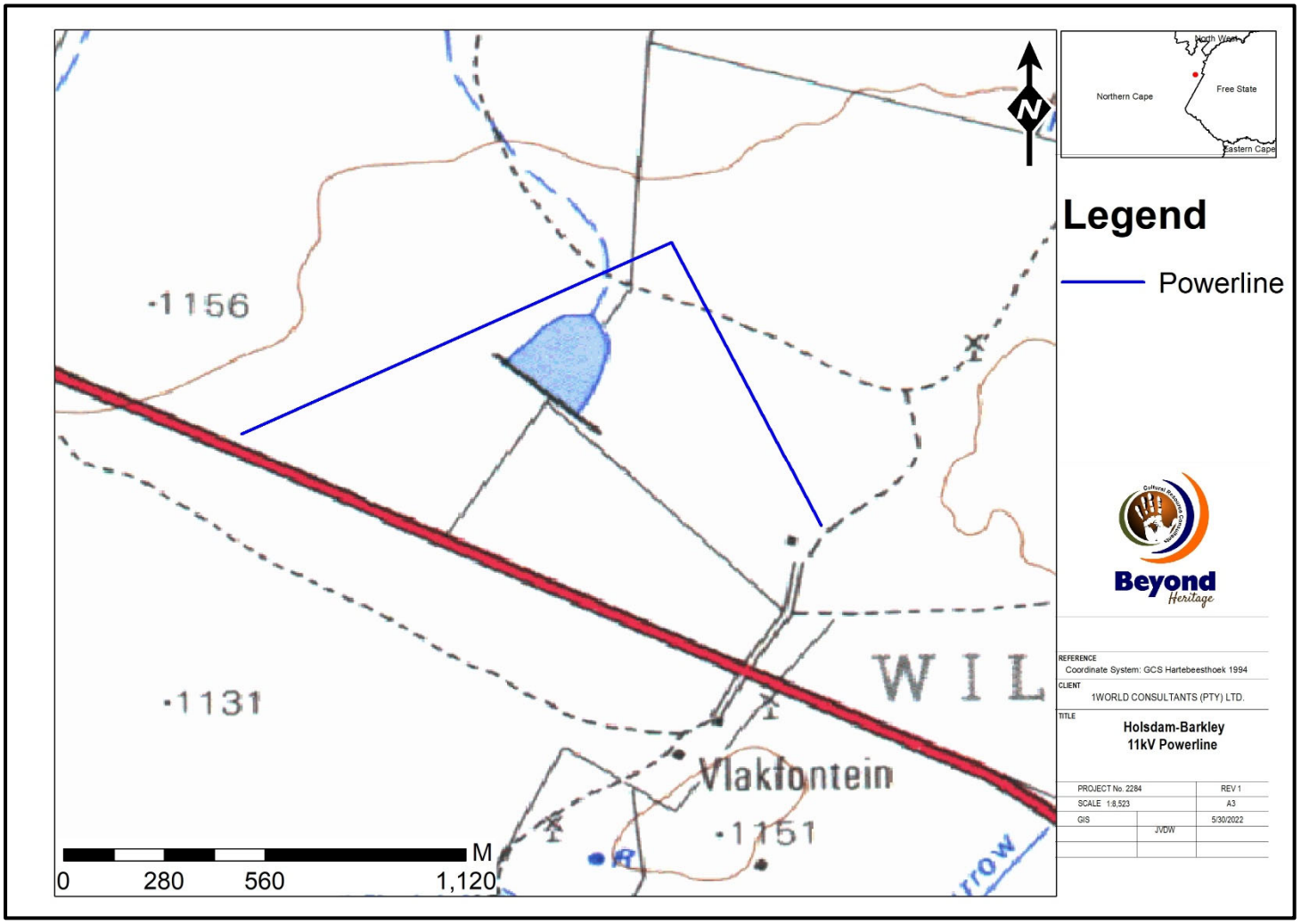



**Figure 2: Local Setting (1: 50 000 topographical map) of the project.**

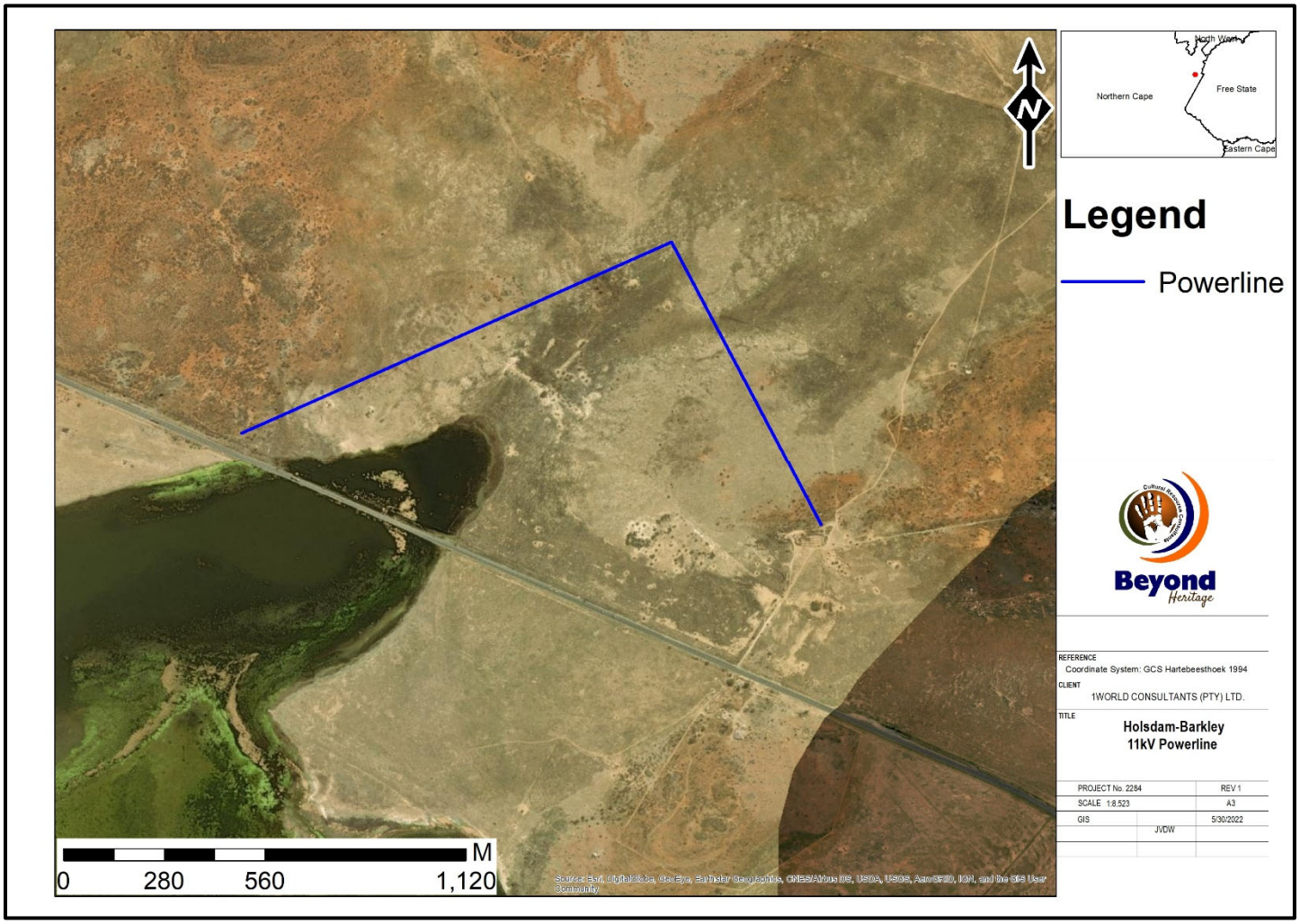



**Figure 3: Aerial image of the development footprint.**

## 2 Legislative Requirements

The HIA, as a specialist sub-section of the EIA, is required under the following legislation:

- National Heritage Resources Act (NHRA), Act No. 25 of 1999)
- National Environmental Management Act (NEMA), Act No. 107 of 1998 - Section 23(2)(b)
- Mineral and Petroleum Resources Development Act (MPRDA), Act No. 28 of 2002 - Section 39(3)(b)(iii)

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

- Identify any heritage resources, which may be affected;
- Assess the nature and degree of significance of such resources;
- Establish heritage informants/constraints to guide the development process through establishing thresholds of impact significance;
- Assess the negative and positive impact of the development on these resources; and
- Make recommendations for the appropriate heritage management of these impacts.

The HIA should be submitted to the PHRA if established in the province or to SAHRA. SAHRA will ultimately be responsible for the evaluation of Phase 1 HIA reports upon which review comments will be issued. 'Best practice' requires Phase 1 HIA reports and additional development information to be submitted in duplicate to SAHRA after completion of the study. SAHRA accepts Phase 1 HIA reports authored by professional archaeologists, accredited with ASAPA or with a proven ability to do archaeological work.

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

Phase 1 HIA's are primarily concerned with the location and identification of heritage sites situated within a proposed development area. Identified sites should be assessed according to their significance. Relevant conservation or Phase 2 mitigation recommendations should be made. Recommendations are subject to evaluation by SAHRA.

Conservation or Phase 2 mitigation recommendations, as approved by SAHRA, are to be used as guidelines in the developer's decision-making process.

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

In the event of a site conservation option being preferred by the developer, a site management plan, prepared by a professional archaeologist and approved by SAHRA, will suffice as minimum requirement.

After mitigation of a site, a destruction permit must be applied for with SAHRA by the applicant before development may proceed.

Human remains older than 60 years are protected by the National Heritage Resources Act, with reference to Section 36. Graves older than 60 years, but younger than 100 years fall under Section 36 of Act 25 of 1999 (National Heritage Resources Act), as well as the Human Tissues Act (Act 65 of 1983) and are the jurisdiction of SAHRA. The procedure for Consultation Regarding Burial Grounds and Graves (Section 36[5]) of Act 25 of 1999) is applicable to graves older than 60 years that are situated outside a formal cemetery administrated by a local authority. Graves in this age category, located inside a formal cemetery administrated by a local authority, require the same authorisation as set out for graves younger than 60 years, in addition to SAHRA authorisation. If the grave is not situated inside a formal cemetery, but is to be relocated to one, permission from the local authority is required and all regulations, laws and by-laws, set by the cemetery authority, must be adhered to.

Human remains that are less than 60 years old are protected under Section 2(1) of the Removal of Graves and Dead Bodies Ordinance (Ordinance No. 7 of 1925), as well as the Human Tissues Act (Act 65 of 1983) and are the jurisdiction of the National Department of Health and the relevant Provincial Department of Health and must be submitted for final approval to the office of the relevant Provincial Premier. This function is usually delegated to the Provincial MEC for Local Government and Planning; or in some cases, the MEC for Housing and Welfare. Authorisation for exhumation and reinternment must also be obtained from the relevant local or regional council where the grave is situated, as well as the relevant local or regional council to where the grave is being relocated. All local and regional provisions, laws and by-laws must also be adhered to. To handle and transport human remains, the institution conducting the relocation should be authorised under Section 24 of Act 65 of 1983 (Human Tissues Act).

# 3 METHODOLOGY

## 3.1 Literature Review

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

## 3.2 Genealogical Society and Google Earth Monuments

Google Earth and 1:50 000 maps of the area were utilised to identify possible places where sites of heritage significance might be located; these locations were marked and visited during the fieldwork phase. The database of the Genealogical Society was consulted to collect data on any known graves in the area.

## 3.3 Public Consultation and Stakeholder Engagement:

No public consultation was conducted by the author of this report.

## 3.4 Site Investigation

The aim of the site visit was to:

a) survey the proposed project area to locate, identify, record, photograph and describe sites of archaeological, historical or cultural interest;

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

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

**Table 4: Site Investigation Details**

| | Site Investigation |
|---|---|
| Date | 12 May 2022 |
| Season | Autumn – The land is fallow, and the grass cover is dense and slightly hindered archaeological visibility. The project area was however sufficiently covered to understand the heritage character of the area. (Figure 4). |

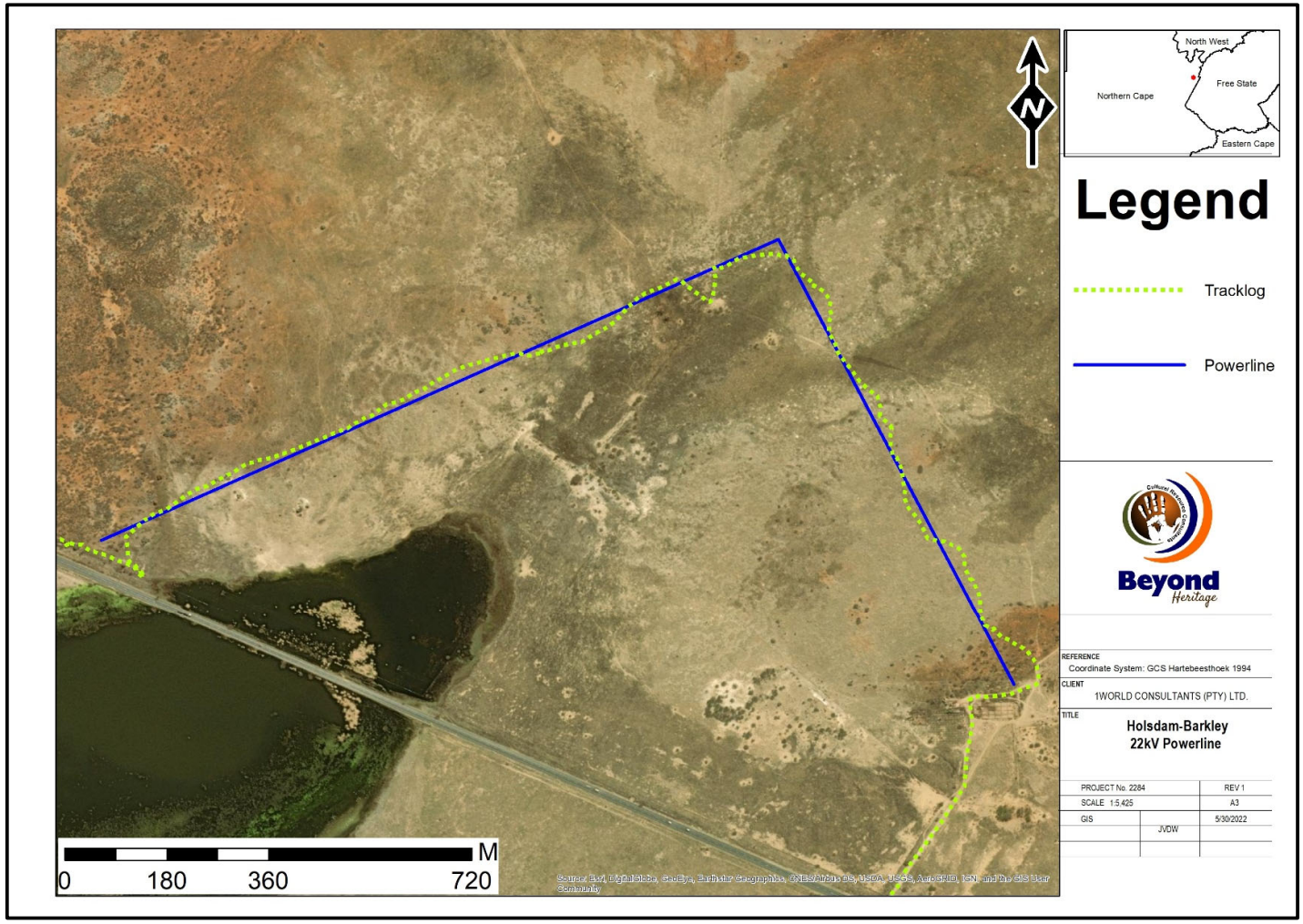



**Figure 4: Tracklog of the survey path in green.**

### 3.5 Impact Assessment Methodology

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

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

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

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

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

### 3.6 Site Significance and Field Rating

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

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

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

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

In addition to this criteria field ratings prescribed by SAHRA (2006), and acknowledged by ASAPA for the SADC region, were used for the purpose of this report (Table 5). The recommendations for each site should be read in conjunction with section 10 of this report.

Table 5. Heritage significance and field ratings

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

### 3.7 Limitations and Constraints of the study

The authors acknowledge that the brief literature review is not exhaustive on the literature of the area. Due to the nature of heritage resources and pedestrian surveys, the possibility exists that some features or artefacts may not have been discovered/recorded and the possible occurrence of graves and other cultural material cannot be excluded. Similarly, the depth of cultural deposits and the extent of heritage sites cannot be accurately determined due its subsurface nature. This report only deals with the footprint area of the proposed development and consisted of non-intrusive surface surveys. This study did not assess the impact on medicinal plants and intangible heritage as it is assumed that these components would have been highlighted through the public consultation process if relevant. It is possible that new information could come to light in future, which might change the results of this Impact Assessment.

## 4 Description of Socio-Economic Environment

According to Census 2011, Sol Plaatje Local Municipality has the largest population (248 041) in the municipal district. The black African population constitutes 151 919, followed by the coloured population with 67 293. The people are diverse and speak an array of languages, including Afrikaans (110 535), English (19 636), Setswana (81 156) and Xhosa (13 574). There are 94 males for every 100 females in the municipality, and 66,2% of the population is aged between 15 and 64 years. In 2011, 28,8% of the population had matric, while 7% of the population had no schooling.

The economic activities consist of retailers and industries, as well as mining and farming. Agricultural land is mostly used for game, sheep and cattle farming, and cash crops such as lucerne, grapes, cotton and soybeans. Mining is still an integral part of the economy. The municipality has an employable population of 63 049 people and a total of 64 250 people that are not economically active in the local municipality. The unemployment rate stands at 31,9% with the youth unemployment rate standing at 41,7%.

# 5 Results of Public Consultation and Stakeholder Engagement:

### 5.1.1 Stakeholder Identification

No stakeholder engagement was conducted as part of this HIA. The author consulted with Dr David Morris Head of Archaeology at McGregor Museum and Extraordinary Professor at Sol Plaatje University, Kimberley on 7 June 2022 (personal communication) on whether the proposed powerline will have an impact on the Wildebeeskuil site and surrounding heritage sites. Dr Morris confirmed that another heritage sensitive area (koppie with engravings) is located approximately 1,4 km to the northeast of the proposed project and the project will not affect these resources.

# 6 Literature / Background Study:

## 6.1 Literature Review (SAHRIS)

The area under investigation was not previously covered by heritage surveys and few HIA's was conducted in the immediate area. Studies conducted in the general area that were consulted is listed in Table 6.

**Table 6. Studies conducted in the greater area.**

| Author | Year | Project | Findings |
|---|---|---|---|
| Rossouw, L | 2006 | A Preliminary Evaluation of Archaeological and Palaeontological Impact regarding the Application for Prospecting Rights on the Farms Doornfontein 12, Grasbult 5, Schoolplaats 3, Schoolplaats Annex 4 and Pontdrift 2 in Warrenton, Northern Cape | The study indicated that the area is archaeologically rich and paleontologically sensitive, but no sites were recorded. |
| Dreyer, C. | 2008 | First Phase Archaeological and Cultural Heritage Investigation of The Proposed Hlangana Groot Rivier Estate, Boshof, Free State | No sites |
| Morris, D. | 2010 | Archaeological Impact Assessment on Windsorton Erf 1, Northern Cape (Mahatalle) | A cemetery outside of the study area. |
| Fourie, W. | 2012 | Mainstream Renewable Power South Africa Concentrated Solar Power EIA – Droogfontein 3 Heritage Impact Assessment | Stone Age findspots. |
| Van der Walt, J. | 2012 | Archaeological Impact Assessment<br>For the proposed Murgenzon PV 2 Solar Solar Energy Facility on the farm Morgenzon No 35, Northern Cape Province | No Sites |
| Van Vollenhoven, A. C. | 2014 | A report on a heritage impact assessment for the proposed Eskom Kimberley strengthening phase 4 project between the boundary and Ulco substations in the Northern Cape Province | Historical mining site |
| Tomose, N.G. | 2016 | Heritage Impact Assessment for Proposed Construction of a 15,5km single-circuit BPBH and KDLO Interconnector 22kV powerline near Boshof | Isolated MSA sites |
| Van Vollenhoven, A.C. | 2018 | A Report on An Archaeological Impact Assessment for Two Proposed 22 Kv Power Lines Close to Christiana, North West Province | No sites |
| Van der Walt, J. | 2022 | Heritage Impact Assessment for the development of a new piggery on the Remainder of farm De Hoop 65, east of Barkley West, Frances Baard District, Northern Cape. | No sites |

## 6.2 Genealogical Society and Google Earth Monuments

No known grave sites are indicated in the study area.

### 6.3 Background to the general area

Southern African archaeology is broadly divided into the Early, Middle and Later Stone Ages; Early, Middle and Later Iron Ages; and Historical or Colonial Periods.

#### 6.3.1 Stone Age

South Africa has a long and complex Stone Age sequence of more than 2 million years. The broad sequence includes the Later Stone Age, the Middle Stone Age and the Earlier Stone Age. Each of these phases contain sub-phases or industrial complexes, and within these we can expect regional variation regarding characteristics and time ranges. The three main phases can be divided as follows;

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

Since there are no caves in the study area, no LSA or MSA sites of high significance is expected, although isolated finds or background scatter (Orton 2016) can occur anywhere on the landscape. Of importance to the Project area is the occurrence of significant ESA sites located in the Vaal River gravel terraces to the west of the Project area, including Canteen Kopje, Pniel 1 and 6, Power's Site, Riverview Estate and Rietputs 15 (Chazan et al (2013) and Beaumont and Morris (1990)). The study area is located in close proximity to the rock engraving site of Wildebeeskuil, containing more than 200 images and many further pecked or rubbed markings are spread over a small hill

#### 6.3.2 The Iron Age

The Iron Age as a whole represents the spread of Bantu speaking people and includes both the pre-Historic and Historic periods. It can be divided into three distinct periods:

- The Early Iron Age: Most of the first millennium AD.
- The Middle Iron Age: 10th to 13th centuries AD
- The Late Iron Age: 14th century to colonial period.

No Sites dating to the Early or Middle Iron Age have been recorded or is expected for the study area. The same goes for the Later Iron Age period where the study area is situated outside the southern periphery of distribution of Late Iron Age stone walled settlements in the greater area.

#### 6.3.3 Anglo-Boer War

The Anglo-Boer War, which took place between 1899 and 1902 in South Africa, was one of the most turbulent times in South Africa's history. Even before the outbreak of war in October 1899 British politicians, including Sir Alfred Milner and Mr. Chamberlain, had declared that should Britain's differences with the Z.A.R. result in violence, it would mean the end of republican independence. This decision was not immediately publicized, and subsequently republican leaders based their assessment of British intentions on the more moderate public utterances of British leaders. Consequently, in March 1900, they asked Lord Salisbury to agree to peace on the basis of the status quo ante bellum. Salisbury's reply was; however, a clear statement of British war aims. (Du Preez 1977)

### 6.4 Cultural Landscape

Historical land use and the cultural landscape are linked since the cultural landscape is shaped to some extent by the history of the area. The general area is associated with agriculture and mining developments with widespread Stone Age occurrences.

## 7 Description of the Physical Environment

The farm is situated within the Kimberley Thornveld vegetation type, with a conservation status of "Least Threatened" (Mucina & Rutherford, 2006). The project area is currently fallow but was used for grazing in the past, with fences, water reservoirs and a few dirt tracks that bisect the area. An existing powerline is found to the south and the east of the project area and the site is marked by shallow soils with a calcrete substrata. General site conditions are indicated in Figures 5 to 8.

**Figure 5: Existing powerline in the southern section of the study area.**

**Figure 6: Shallow soils with a calcrete substrata that is regularly visible characterizes the study area**

**Figure 7: Existing powerline infrastructure in the study area.**

**Figure 8: Existing powerlines, dirt tracks and fences are the only infrastructure in the study area.**

## 8 Findings of the Survey

It is important to note that only the proposed alignment was surveyed over one day by a professional archaeologist. The environment in which the proposed powerline is located is fallow and was used for grazing in the past. A very sparse distribution of Stone Age artefacts, referred to as background scatter (Orton 2016) were recorded as observations. Raw material is mostly on quartzite comprising Middle Stone Age or Fauresmith artefacts. No densities were observed, and all artefacts occur as isolated finds. One artefact that is typologically characteristic (small hand axe) of the Fauresmith were recorded at 24.652183 -28.661318. The artefacts are scattered too sparsely to be of significance apart from mentioning them in this report and no further mitigation is required. The observation has a heritage field rating of GP C. The proposed powerline is located at its closest point, approximately 500 m (from the closest point of the powerline) from the graded Wildebeeskuil Rock Art site. The site distribution and finds are illustrated in Figure 9 and 10.

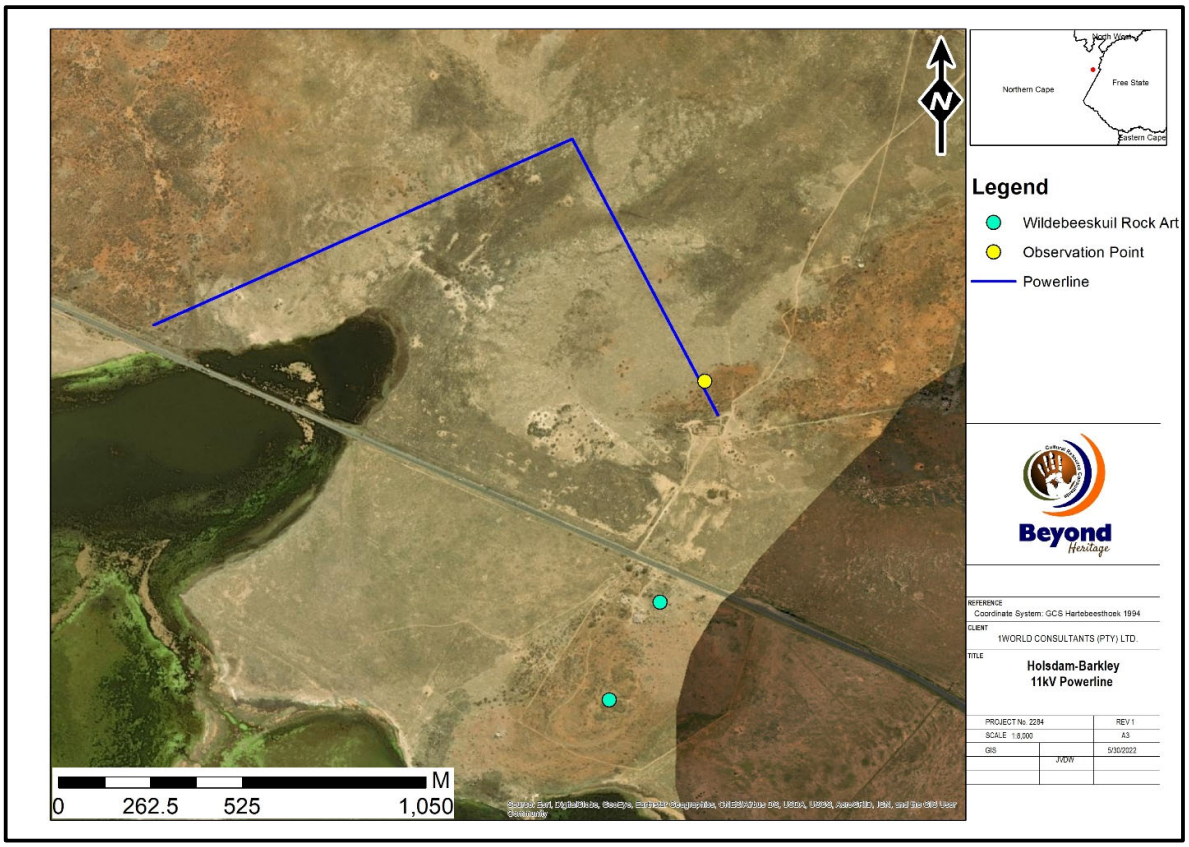
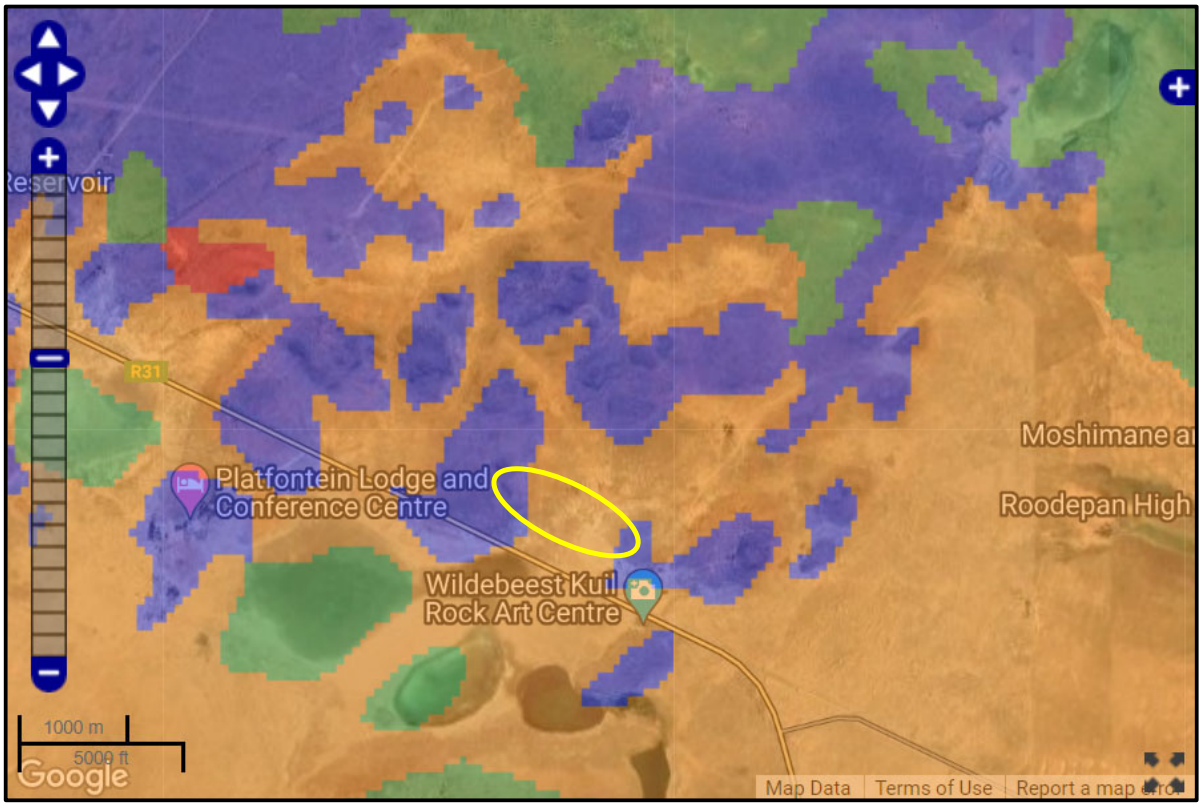



Figure 9: Recorded features in relation to the project.

Figure 10: Fauresmith hand axe.

### 8.1 Paleontological Heritage

Based on the SAHRA Paleontological map the study area is of low to high sensitivity (Figure 11). This aspect is addressed by the EAP.




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

Figure 11: Paleontological sensitivity of the approximate study area as indicated on the SAHRA Palaeontological sensitivity map.

## 9 Visual Impact

A Visual Impact Assessment (VIA) was conducted in October 2022. The study shows that the modelled visual impact is predominantly very low and ranges from very low to moderate. A viewshed analysis was completed, as part of the VIA, wherein it was found that at a distance of more than 2 000m the poles will not likely be visible. The results are shown in Figure 12 below.

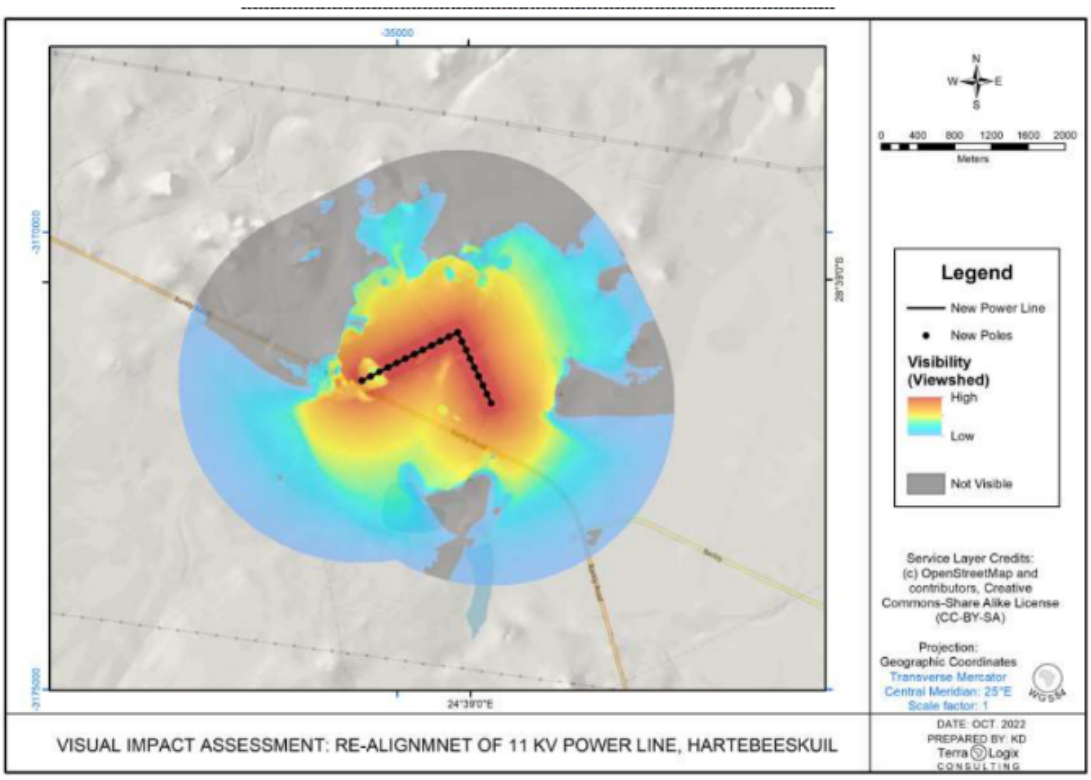



Figure 12: Visibility (Viewshed)

The VIA assessed two options:

Option 01: Construct new poles, leaving old poles standing, and/or

Option 02: Construct new poles, removing the old poles

A visual comparison was completed and the results for the abovementioned options are summarised in the table below.

Table 7: Visual comparison of options

| Option | Not visible / Compensated by removal of old poles | Visual Impact Score (ha) | | | | |
|---|---|---|---|---|---|---|
| | | Very Low | Low | Moderate | High | Very High |
| 1 | 550.63 | 972.88 | 397.85 | 65.69 | 0 | 0 |
| 2 | 1016.66 | 761.76 | 207.42 | 1.21 | 0 | 0 |

The results proved that in terms of a visual impact, it would be advisable to remove the old poles as opposed to leaving them standing. This would be beneficial in terms of the heritage site.

## 10 Potential Impact

The isolated Stone Age artefacts are of low significance and powerlines have a relatively small impact on heritage features due to the small footprint of the pylons as shown by Sampson (1985). Therefore, the project is expected to have a low impact on heritage resources.

Any additional impacts to subsurface heritage resources can be successfully mitigated by implementing a chance find procedure. Mitigation measures as recommended in this report should be implemented during all phases of the project. Impacts of the project on heritage resources is expected to be low with the implementation of the mitigation measures in this report during all phases of the development (Table 7).

### 10.1.1 Pre-Construction phase

It is assumed that the pre-construction phase involves the removal of topsoil and vegetation as well as the establishment of infrastructure. These activities can have a negative and irreversible impact on heritage features if any occur. Impacts include destruction or partial destruction of non-renewable heritage resources.

### 10.1.2 Construction Phase

During this phase, the impacts and effects are similar in nature but more extensive than the pre-construction phase. Potential impacts include destruction or partial destruction of non-renewable heritage resources.

### 10.1.3 Operation Phase

No impacts are expected during this phase.

### 10.1.4 Impact Assessment for the Project

Table 8. Impact assessment of the proposed project on heritage resources.

| ***Nature:*** During the construction phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological and paleontological material or objects. | | |
|---|---|---|
| | **Without mitigation** | **With mitigation (Preservation/ excavation of site)** |
| ***Extent*** | Local (2) | Local (2) |
| ***Duration*** | Permanent (5) | Permanent (5) |
| ***Magnitude*** | Minor (2) | Minor (2) |
| ***Probability*** | Probable (3) | Improbable (2) |
| ***Significance*** | **27 (Low)** | **18 (Low)** |
| ***Status (positive or negative)*** | Negative | Negative |
| ***Reversibility*** | Not reversible | Not reversible |
| ***Irreplaceable loss of resources?*** | Yes | Yes |
| ***Can impacts be mitigated?*** | NA | NA |
| ***Mitigation:***<br>• Implementation of a chance find procedure for the project.<br>• Monitoring of the project during construction. | | |
| ***Cumulative impacts:***<br>The proposed project will have a low cumulative impact since these sites will not be directly impacted and due to the disturbed nature of the surrounding area the impact area is considered to be of low heritage potential. | | |
| ***Residual Impacts:***<br>Although surface sites can be avoided or mitigated, there is a chance that completely buried sites would still be impacted on, but this cannot be quantified. | | |

## 11 Conclusion and recommendations

Important Early Stone Age sites are located in the Vaal River gravel terraces to the north of the Project area, including Canteen Kopje, Pniel 1 and 6 but no gravels were noted in the study area and no ESA artefacts recorded. A very sparse distribution of Stone Age artefacts, referred to as background scatter (Orton 2016) were recorded as observations. Raw material is mostly on quartzite comprising Middle Stone Age or Fauresmith artefacts. No densities were observed, and all artefacts occur as isolated finds. The artefacts are scattered too sparsely to be of significance apart from mentioning them in this report and no further mitigation is required. The study area is in proximity (about 500m from the closest point of the powerline) to the Wildebeeskuil Rock Art site but is separated from the site by a provincial road and two existing powerlines. The project is in line with existing powerline infrastructure in the area and will not alter the associated cultural landscape.

According to the SAHRA Paleontological sensitivity map the study area is of moderate paleontological significance, and this aspect is addressed by the EAP.

The impact of the proposed project on heritage resources is low and it is recommended that the proposed project can commence on the condition that the following recommendations (Section 10.1) are implemented and based on approval from SAHRA:

### 11.1 Recommendations for condition of authorisation

The following recommendations apply, and the project may only proceed based on approval from SAHRA:

**Recommendations:**

- Implementation of a Chance Find Procedure for the project.
- Monitoring of the project during construction.

### 11.2 Chance Find Procedures

#### 11.2.1 Heritage Resources

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

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

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

### 11.3 Reasoned Opinion

The overall impact of the project with the correct implementation of the mitigation measures in this report is considered to be low and the project can commence with the implementation of the recommendations made in this report. The socio-economic benefits also outweigh the possible impacts of the development if the correct mitigation measures are implemented for the project.

### 11.4 Potential risk

Potential risks to the proposed project are the occurrence of intangible features and unrecorded cultural resources (of which graves are the highest risk). This can cause delays during construction, as well as additional costs involved in mitigation and possible layout changes.

### 11.5 Monitoring Requirements

Ideally, site monitoring should be conducted by an experienced archaeologist or heritage specialist. Monitoring can be conducted by the Environmental Control Officers (ECO). The EO or other responsible persons should be trained along the following lines:

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

Monitoring requirements for the project is outlined in Table 8.

Table 9. Heritage monitoring required for the project.

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

### 11.6 Management Measures for the project.

Table 10. Heritage Management Plan for the project

| Area | Mitigation measures | Phase | Timeframe | Responsible party for implementation | Target | Performance indicators (monitoring tool) |
|---|---|---|---|---|---|---|
| **General project area** | Implement chance find procedures in case possible heritage finds are uncovered | Pre-Construction and construction | Throughout the project | Applicant<br>ECO | Ensure compliance with relevant legislation and recommendations from SAHRA under Section 35, 36 and 38 of NHRA | EO Checklist/Report |

### 11.7 Knowledge Gaps

Due to the often ephemeral nature of heritage resources and the limitations of a pedestrian survey, the possibility of discovery of heritage resources during the construction phase cannot be excluded. This limitation is successfully mitigated with the implementation of a chance find procedure.

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