

**HERITAGE IMPACT ASSESSMENT:
PROPOSED POWERLINE ON FARMS 460/1 AND 461,
SOUTH OF KATHU, POSTMASBURG MAGISTERIAL
DISTRICT, NORTHERN CAPE**

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

SAHRA Case ID: tbc

Report for:

Cape EAPrac

P.O. Box 2070, George, 6530
Email: dale@cape-eaprac.co.za

On behalf of:

Mogobe EGI (Pty) Ltd



Dr Jayson Orton

ASHA Consulting (Pty) Ltd

40 Brassie Street, Lakeside, 7945
Tel: (021) 788 1025 | 083 272 3225
Email: jayson@asha-consulting.co.za

1st draft: 03 June 2024

Final report: 10 June 2024

SUMMARY

ASHA Consulting (Pty) Ltd was appointed by Mogobe EGI (Pty) Ltd to conduct an assessment of the potential impacts to heritage resources that might occur through the proposed construction of the c. 9.0 km long Mogobe electricity grid infrastructure (EGI) on Farms 460/1 and 461, south of Kathu, which is intended to connect the proposed Mogobe Battery Energy Storage System (BESS) to the national electricity grid at the existing Eskom Ferrum Substation. The end points of the project are at:

- S27° 46' 42" E23° 05' 25" in the southeast at the Mogobe BESS; and
- S27° 43' 58" E23° 03' 33" in the northwest at the Ferrum Substation.

The study area is flat and generally sandy but calcrete is exposed at the surface in many places. Patches of bush occur with grass in between them. The corridor crosses the N14 and lies a short distance to the east of a large iron ore mine. An existing substation stands at the north end of the corridor and several powerlines connect to it.

With the exception of a small number of background scatter stone artefacts, no heritage resources were located. The artefacts were all in the central part of the corridor. The cultural landscape is heavily compromised by existing developments, especially the adjacent iron ore mine.

No significant heritage impacts are anticipated. The chances of significant subsurface archaeology being present are considered extremely small.

It is recommended that the proposed powerline be authorised, but subject to the following recommendation which should be included as a condition of authorisation:

- If any archaeological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.

Glossary

Acheulean: An archaeological name for the period comprising the later part of the Early Stone Age. This period started about 1.7-1.5 million years ago and ended about 250-200 thousand years ago.

Background scatter: Artefacts whose spatial position is conditioned more by natural forces than by human agency.

Core: a stone from which other pieces (flakes and blades) have been intentionally removed.

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

Flake: a piece of stone intentionally removed from a core. Flakes are identifiable by certain features related to the point at which the core was struck.

Handaxe: A bifacially flaked, pointed stone tool type typical of the Early Stone Age Acheulian Industry. It is also referred to as a large cutting tool.

Holocene: The geological period spanning the last approximately 10-12 000 years.

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

Iron Age: Period post-dating about AD 200 and occurring in Eastern South Africa and featuring farming communities who practised iron smelting. It is split into the Early Iron Age (AD 200 to AD 900), the Middle Iron Age (AD 900 to AD 1300) and the Late Iron Age (AD 1300 to AD 1840).

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

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

Patina: The weathered surface of an artefact which has changed colour and/or texture (patinated, patination).

Pleistocene: The geological period beginning approximately 2.5 million years ago and preceding the Holocene.

Abbreviations

APHP: Association of Professional Heritage Practitioners

ASAPA: Association of Southern African Professional Archaeologists

BA: Basic Assessment

BIF: Banded Iron Formation

CRM: Cultural Resources Management

DFFE: Department of Forestry, Fisheries and the Environment

EA: Environmental Authorisation

EAP: Environmental Assessment Practitioner

ECO: Environmental Control Officer

EGI: Electricity Grid Infrastructure

EMPr: Environmental Management Program

ESA: Early Stone Age

GP: General Protection

GPS: global positioning system

HIA: Heritage Impact Assessment

LSA: Later Stone Age

MSA: Middle Stone Age

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

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

PPP: Public Participation Process

SAHRA: South African Heritage Resources Agency

SAHRIS: South African Heritage Resources Information System

Contents

Glossary.....	iii
Abbreviations	iv
1. INTRODUCTION	1
1.1. The proposed project	2
1.1.1. Project description	2
1.1.2. Identification of alternatives.....	2
1.1.3. Aspects of the project relevant to the heritage study.....	2
1.2. Terms of reference	3
1.3. Scope and purpose of the report	3
1.4. The author	4
1.5. Declaration of independence	4
2. LEGISLATIVE CONTEXT	4
2.1. National Heritage Resources Act (NHRA) No. 25 of 1999	4
2.2. Approvals and permits.....	5
2.2.1. Assessment Phase	5
2.2.2. Construction Phase	6
2.3. Guidelines	6
3. METHODS.....	6
3.1. Literature survey and information sources	6
3.2. Field survey.....	7
3.3. Specialist studies.....	8
3.4. Impact assessment	8
3.5. Grading	8
3.6. Consultation.....	9
3.7. Assumptions and limitations	9
4. PHYSICAL ENVIRONMENTAL CONTEXT	9
4.1. Site context	9
4.2. Site description	10
5. FINDINGS OF THE HERITAGE STUDY	14
5.1. Palaeontology	15
5.2. Archaeology	15
5.2.1. Desktop study.....	15
5.2.2. Site visit	20
5.3. Graves.....	21
5.4. Historical aspects and the Built environment	21
5.4.1. Desktop study.....	21
5.4.2. Site visit	23
5.5. Cultural landscapes and scenic routes	23
5.6. Statement of significance and provisional grading	23
6. ASSESSMENT OF IMPACTS	24
6.1. Construction Phase.....	24

6.1.1. Impacts to archaeological resources	24
6.1.2. Impacts to the cultural landscape	25
6.2. Operation Phase	25
6.2.1. Impacts to the cultural landscape	25
6.3. Decommissioning Phase	26
6.4. Existing impacts to heritage resources	27
6.5. Cumulative impacts	27
6.6. Evaluation of impacts relative to sustainable social and economic benefits.....	27
6.7. The No-Go alternative	28
6.8. Levels of acceptable change	28
7. INPUT TO THE ENVIRONMENTAL MANAGEMENT PROGRAMME	28
8. CONCLUSIONS	30
8.1. Reasoned opinion of the specialist.....	30
9. RECOMMENDATIONS	30
10. REFERENCES	30
APPENDIX 1 – Curriculum Vitae	35
APPENDIX 4 – Site Sensitivity Verification.....	37

1. INTRODUCTION

ASHA Consulting (Pty) Ltd was appointed by Mogobe EGI (Pty) Ltd to conduct an assessment of the potential impacts to heritage resources that might occur through the proposed construction of the Mogobe electricity grid infrastructure (EGI) on Farms 460/1 and 461, south of Kathu, which is intended to connect the proposed Mogobe Battery Energy Storage System (BESS) to the national electricity grid at the existing Eskom Ferrum Substation (Figures 1 & 2). The end points of the project are at:

- S27° 46' 42" E23° 05' 25" in the southeast at the Mogobe BESS; and
- S27° 43' 58" E23° 03' 33" in the northwest at the Ferrum Substation.

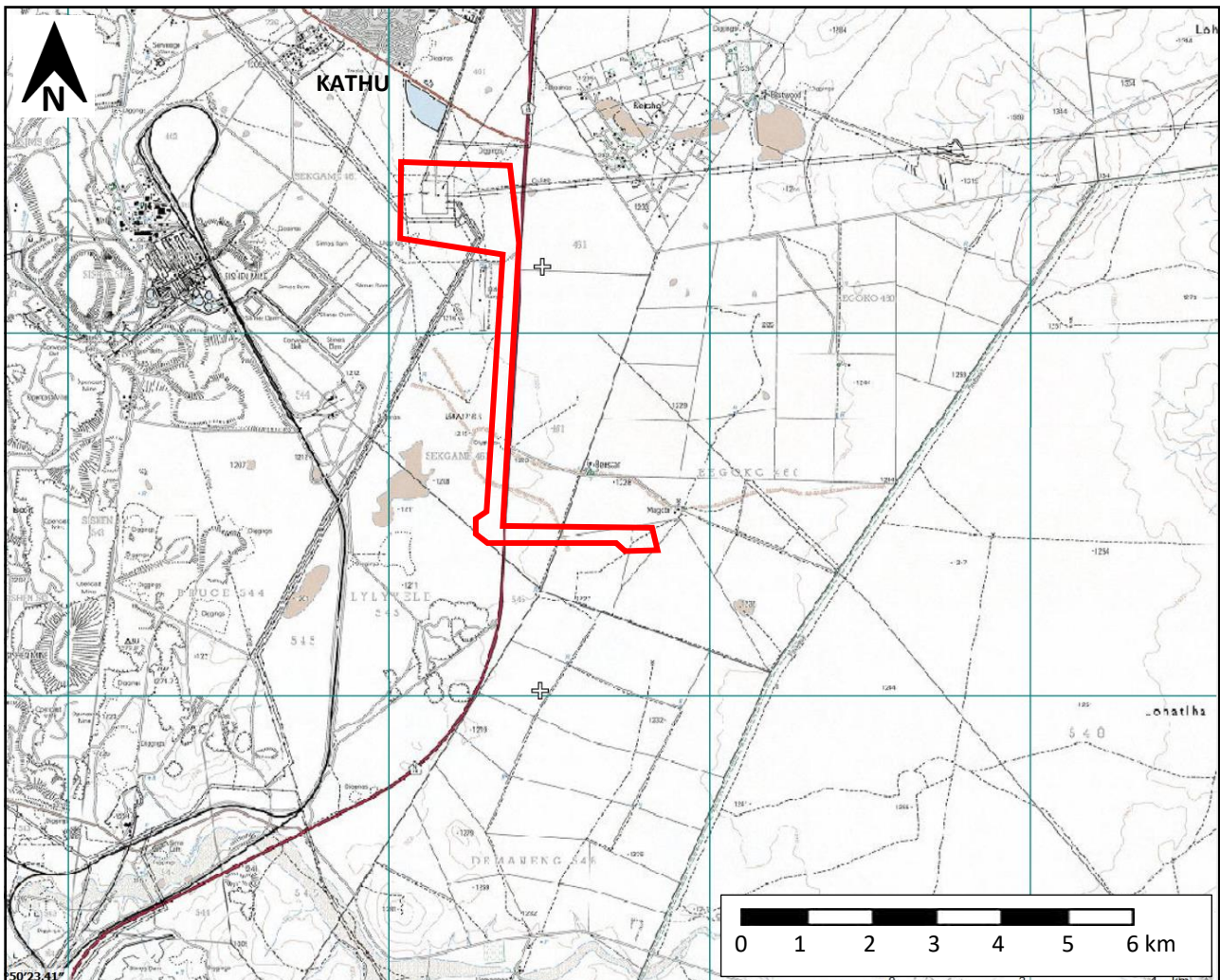


Figure 1: Extract from 1:50 000 topographic maps 2722DB, 2723CA, 2722DD & 2723CC showing the location of the site. Source of basemap: Chief Directorate: National Geo-Spatial Information. Website: www.ngi.gov.za.

1.1. The proposed project

1.1.1. Project description

Mogobe EGI (Pty) Ltd ('the Applicant') is proposing the construction of up to 132 kV Electrical Grid Infrastructure (EGI) to support the Mogobe BESS project located on Portion 1 of the Farm Legoko 460, southeast of the town of Kathu within the Gamagara Local Municipality in the Northern Cape Province. The EGI will traverse Portion 1 of the Farm Legoko 460 and Farm Sekgame 461. The site is accessible via the existing farm access from the N14.

The Mogobe EGI will comprise of the following:

- A 132 kV double circuit monopole and/or lattice tower overhead power line, approximately 9.0 km in length and 30 m in height to connect to the Existing Eskom Ferrum Substation located within an approved corridor of approximately 200 m wide. The power line will be constructed within an approximately 31 m wide servitude.
- A service road of approximately 4 m wide below the power line.
- An on-site switching station, with an estimated footprint of 1.0 ha and up to 5 m in height, at the Mogobe BESS facility. This refers specifically to Eskom's section of the on-site substation, planned to be at 132 kV, which will be transferred from the IPP to Eskom. Lightning masts of up to 21 m will be installed within the substation yard, and
- Associated electrical infrastructure at the Eskom Ferrum Substation. This will include but not limited to a new feeder bay which comprises of the extension to the existing platform and busbars of the 132 kV yard inside Eskom Ferrum Substation.

1.1.2. Identification of alternatives

No alternatives have been investigated because the end points of the project are fixed. However, a corridor has been assessed to allow for flexibility in the routing of the powerline to avoid potential impacts.

1.1.3. Aspects of the project relevant to the heritage study

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



Figure 2: Aerial view of the study area (blue shaded polygon) showing its surrounding context.

1.2. Terms of reference

ASHA Consulting was asked to:

- Describe regional and local features of the receiving environment;
- Conduct desktop research;
- Conduct a field survey to search for sensitive areas and sites of heritage significance;
- Map sensitive features and provide spatial data to inform the final project layout;
- Assess the potential impacts on identified heritage resources within a Heritage Impact Assessment (HIA) report that complied with the requirements of both the NHRA and Appendix 6 of the NEMA EIA regulations;
- Identify relevant legislation and legal requirements; and
- Provide recommendations on possible mitigation measures and management guidelines.

1.3. Scope and purpose of the report

An HIA is a means of identifying any significant heritage resources before development begins so that these can be managed in such a way as to allow the development to proceed (if appropriate) without undue negative impacts to the fragile heritage of South Africa. This HIA report aims to fulfil the requirements of the heritage authorities such that a comment can be issued by them for

consideration by the National Department of Forestry, Fisheries and the Environment (DFFE) who will review the Basic Assessment (BA) and grant or refuse authorisation. The HIA report will outline any management and/or mitigation requirements that will need to be complied with from a heritage point of view and that should be included in the conditions of authorisation should this be granted.

1.4. The author

Dr Jayson Orton has an MA (UCT, 2004) and a D.Phil (Oxford, UK, 2013), both in archaeology, and has been conducting Heritage Impact Assessments and archaeological specialist studies in South Africa (primarily in the Western Cape and Northern Cape provinces) since 2004 (please see curriculum vitae included as Appendix 1). He has also conducted research on aspects of the Later Stone Age in these provinces and published widely on the topic. He is an accredited heritage practitioner with the Association of Professional Heritage Practitioners (APHP; Member #43) and also holds archaeological accreditation with the Association of Southern African Professional Archaeologists (ASAPA) CRM section (Member #233) as follows:

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

1.5. Declaration of independence

ASHA Consulting (Pty) Ltd and its consultants have no financial or other interest in the proposed development and will derive no benefits other than fair remuneration for consulting services provided.

2. LEGISLATIVE CONTEXT

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

The NHRA protects a variety of heritage resources as follows:

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

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

- Structures: “any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith”;
- Palaeontological material: “any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace”;
- Archaeological material: a) “material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures”; b) “rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose

rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation”; c) “wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the Republic, as defined respectively in sections 3, 4 and 6 of the Maritime Zones Act, 1994 (Act No. 15 of 1994), and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation”; and d) “features, structures and artefacts associated with military history which are older than 75 years and the sites on which they are found”;

- Grave: “means a place of interment and includes the contents, headstone or other marker of such a place and any other structure on or associated with such place”; and
- Public monuments and memorials: “all monuments and memorials a) “erected on land belonging to any branch of central, provincial or local government, or on land belonging to any organisation funded by or established in terms of the legislation of such a branch of government”; or b) “which were paid for by public subscription, government funds, or a public-spirited or military organisation, and are on land belonging to any private individual.”

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

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

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

2.2. Approvals and permits

2.2.1. Assessment Phase

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

2.2.2. Construction Phase

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

2.3. Guidelines

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

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

3. METHODS

3.1. Literature survey and information sources

A survey of available literature was carried out to assess the general heritage context into which the development would be set. The information sources used in this report are presented in Table 1 with relevant dates of each source referenced in the text as needed. Data were also collected via a field survey. The data quality is suitable for the purpose of informing this report.

Table 1: Information sources used in this assessment.

Data / Information	Source	Date	Type	Description
Maps	Chief Directorate: National Geo-Spatial Information	Various	Spatial	Historical and current 1:50 000 topographic maps of the

				study area and immediate surrounds
Aerial photographs	Chief Directorate: National Geo-Spatial Information	Various	Spatial	Historical aerial photography of the study area and immediate surrounds
Aerial photographs	Google Earth	Various	Spatial	Recent and historical aerial photography of the study area and immediate surrounds
Cadastral data	Chief Directorate: National Geo-Spatial Information	Various	Survey diagrams	Historical and current survey diagrams, property survey and registration dates
Background data	South African Heritage Resources Information System (SAHRIS)	Various	Reports	Previous impact assessments for any developments in the vicinity of the study area
Palaeontological sensitivity	South African Heritage Resources Information System (SAHRIS)	Current	Spatial	Map showing palaeontological sensitivity and required actions based on the sensitivity.
Background data	Books, journals, websites	Various	Books, journals, websites	Historical and current literature describing the study area and any relevant aspects of cultural heritage.
Screening Tool maps	DFFE	Current	Spatial	Potential sensitivity of the study area

3.2. Field survey

The site was subjected to a detailed foot survey on 8th and 9th May 2024. This was during autumn but, in this very dry area, the season makes no meaningful difference to vegetation covering and hence the ground visibility for the archaeological survey. Other heritage resources are not affected by seasonality. During the survey the positions of finds and survey tracks were recorded on a hand-held Garmin Global Positioning System (GPS) receiver set to the WGS84 datum (Figure 3). Photographs were taken at times in order to capture representative samples of both the affected heritage and the landscape setting of the proposed development.

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



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

3.3. Specialist studies

Due to the medium and high sensitivity of the study area for palaeontology, a separate palaeontological specialist study was commissioned. It was carried out by Elize Butler. Because the area is known to be covered almost entirely by sand and patches of unconsolidated gravel, no field study was conducted.

3.4. Impact assessment

For consistency among specialist studies, the impact assessment was conducted through application of a methodology supplied by Cape EAPrac.

3.5. Grading

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

It is intended under S.7(2) that the various provincial authorities formulate a system for the further detailed grading of heritage resources of local significance but this is generally yet to happen. SAHRA (2007) has formulated its own system¹ for use in provinces where it has commenting authority. In this system sites of high local significance are given Grade IIIA (with the implication that the site should be preserved in its entirety) and Grade IIIB (with the implication that part of the site could be mitigated and part preserved as appropriate) while sites of lesser significance are referred to as having 'General Protection' (GP) and rated as GP A (high/medium significance, requires mitigation), GP B (medium significance, requires recording) or GP C (low significance, requires no further action).

3.6. Consultation

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

3.7. Assumptions and limitations

The field study was carried out at the surface only and hence any completely buried archaeological sites would not be readily located. This is a known concern in Kathu because of the buried artefacts that occur. Similarly, it is not always possible to determine the depth of archaeological material visible at the surface. The site was large, but the survey attempted to (1) identify all obvious heritage resources, (2) cover transects in various areas so as to enable a good understanding of the types and density of heritage resources present, and (3) determine the relationship between heritage resources and landscape features. It is assumed that the findings would be indicative of the overall pattern on the landscape. Dense vegetation in places precluded survey, but there were more than enough gaps to make a confident prediction. It is assumed that the information provided for the assessment is an accurate reflection of the development proposal.

Cumulative impacts are difficult to assess due to the variable site conditions that would have been experienced in different areas and in different seasons. Survey quality is thus likely to be variable. As such, some assumptions need to be made in terms of what and how much heritage might be impacted by other developments in the broader area.

4. PHYSICAL ENVIRONMENTAL CONTEXT

4.1. Site context

Kathu is a mining area with related infrastructure which includes mine dumps, roads, railways, substations and powerlines. A small section of the mine is visible in Figure 2. Away from the mine and town the area is rural with grazing land dominating. The study area corridor falls entirely within the northern Electricity Grid Infrastructure (EGI) corridor. It crosses the N14 national road. An existing substation stands at the north end of the corridor and several powerlines connect to it.

¹ The system is intended for use on archaeological and palaeontological sites only.

4.2. Site description

The landscape on the corridor is flat. The surface tends to be sandy, but patches of calcrete are exposed at the surface. Vegetation occurs in clumps but with grass in between. Figures 4 to 13 show views of the corridor starting in the southeast and working towards the northwest.



Figure 4: Looking west from the south-eastern end of the proposed corridor.



Figure 5: Looking west in the southern part of the corridor.



Figure 6: Looking east in the southern part of the corridor towards the N14 (truck visible on the road).



Figure 7: Looking north along the corridor parallel to the N14.



Figure 8: Looking south along the corridor parallel to the N14.



Figure 9: Looking south along the corridor parallel to the N14.



Figure 10: Looking south along the corridor parallel to the N14 (visible at left) and from very close to the north end of the corridor.



Figure 11: Looking southwest towards the Ferrum Substation.



Figure 12: Looking west towards the Ferrum Substation.



Figure 13: Looking north towards the Ferrum Substation.

5. FINDINGS OF THE HERITAGE STUDY

This section describes the heritage resources recorded in the study area during the course of the project.

5.1. Palaeontology

The SAHRIS Palaeosensitivity Map shows the site to be of largely moderate palaeontological sensitivity but with an area of high sensitivity in the north at the Ferrum Substation (Figure 14). Because of the expected nature of the substrate, a desktop palaeontological assessment was compiled and submitted alongside this HIA.

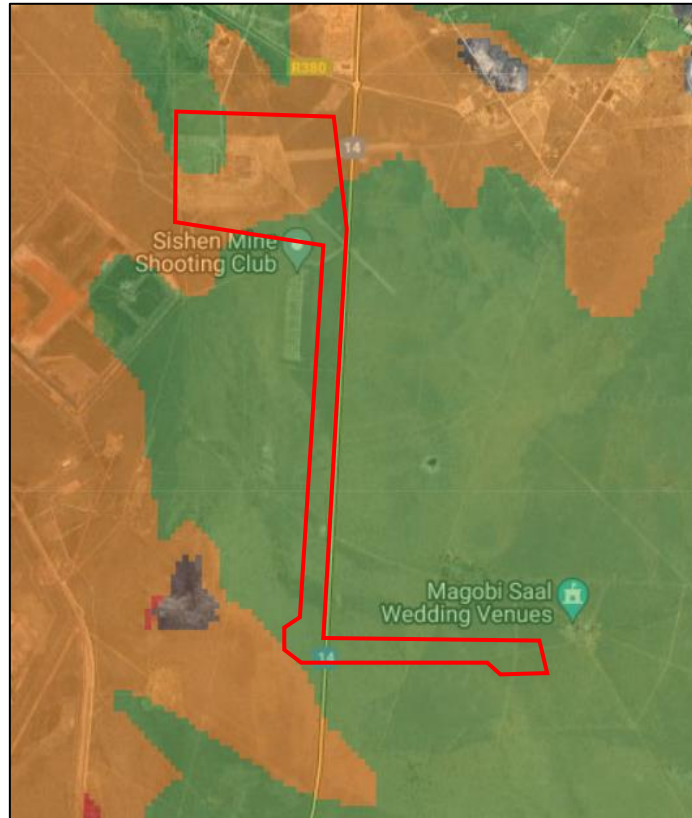


Figure 14: Extract from the SAHRIS Palaeosensitivity Map showing the site to be of medium (green shading) and high (orange shading) sensitivity.

5.2. Archaeology

5.2.1. Desktop study

The vicinity of Kathu has long been known to have highly significant archaeological resources and much literature related to the archaeology of the area exists. The region is perhaps best-known for the extensive deposits of Early Stone Age (ESA) material that have been described. Most research has been centred on the site of Kathu Pan (which also hosts younger archaeology), but Kathu Townlands (at the north-eastern edge of Kathu) has also seen considerable attention. Due to the amount of literature associated with the Kathu area, only certain relevant papers and reports were consulted in compiling the summary below. Several Kathu sites, together known as the Kathu Complex, have been formally graded as a Grade 1 heritage resource indicating that the collection of sites has been accorded national significance. The archaeological resources within and beyond the declaration area² are under continued threat from development in the vicinity (see for example the

² Note that no map of the declared area could be located.

Kalahari Solar development which, to the present author's knowledge, commenced without archaeological mitigation).

Several archaeological localities are reviewed, whereafter some general comments are provided. Figure 15 locates the sites relative to Kathu and the powerline corridor under study. Archaeology tends to be physically associated with banded iron formation (BIF) gravel deposits but these are mostly obscured by surface sands. The lack of known archaeological sites near the current project site does not indicate a lack of archaeological deposits south of Kathu, but in the author's experience there tends to be less archaeology where there is more calcrete and calcrete is more widespread to the south of the town.

Kathu Pan

Kathu Pan (KP1) is the most studied and best-known site in the area and has the longest history of research. It was discovered in 1974 (Beaumont 1990) and reported in popular literature the following year (Anonymous 1975; see also Hocking 1983). The site is a natural sinkhole located within a large pan that, under natural conditions, would have filled with water in summer (owing to the rising water table during the summer rainy season) and become a valuable water supply for prehistoric populations (Van Zinderen Bakker 1995). It has produced a sequence of ESA deposits including some Fauresmith material and evidence for the onset of the Middle Stone Age (MSA) some 500 000 years ago (Wilkins 2013). Wilkins *et al.* (2012) have studied fracture patterns on points from the site and determined that they were used in a hafted manner as spear tips. The site has also yielded very early evidence for blade production (Wilkins & Chazan 2012). A special feature of KP1 is the fact that faunal remains have been preserved. Such preservation is unusual for Kathu. These remains include species such as hippopotamus that point to a far wetter environment than exists in the region today (Klein 1988).

The sequence described by Klein (1988:11), from top to bottom, is as follows:

- » Approximately 1.5 m of organic silty sands containing Holocene-aged Iron Age and Later Stone Age (LSA) material;
- » Between 0.9 m and 1.7 m of less organic silty sand containing rare LSA artefacts;
- » Approximately 0.8 m of poorly sorted gravelly sand with many Pleistocene-aged MSA artefacts and associated faunal remains; and
- » About 3.5 m to 4 m of medium to fine-grained sand containing fossil spring deposits that in turn contain abundant, Pleistocene-aged ESA artefacts and associated fauna.

This sequence makes the site one of only a handful in the country to preserve deposits pertaining to all three Stone Ages. Dreyer (2013) notes a circle of standing stones whose function he could not determine. However, his description and illustrations are clearly of a *trapvloer* (threshing floor) which serves to add a historical layer to the site. Porat *et al.* (2010: table 4) obtained optically stimulated luminescence and electron spin resonance/U-series dates on the deposits. The Fauresmith ESA was dated to about half a million years ago, while an age of 330 000 to 250 000 years was obtained for the MSA. Ages of 17 500 to 15 500 years and 10 500 to 9500 years were obtained for the LSA levels. Artefactual material supports quite recent occupation near the surface (Porat *et al.* 2010). On the basis of the presence of the teeth of the extinct elephant *Elephas recki*, Klein (2000) reports that the lowest archaeological layer, containing Acheulean artefacts, is likely to

be between 1 million and 500 000 years old. Importantly, the ESA stone artefacts are reported to be fresh and unabraded (Porat *et al.* 2010).



Figure 15: Aerial view of the Kathu area showing the locations of previously recorded archaeological occurrences (labelled white circles). Key as per Figures 1 and 2.

Kathu Townlands

The Kathu Townlands site lies across the surface of a low rise within the bounds of the town of Kathu. It was first reported in 1980 and had initial excavations carried out by Beaumont in 1982 and 1990 (Beaumont 1990). Due to proposed development on the site, mitigation work was carried out to enable a better understanding of the deposits (Walker *et al.* 2013). The archaeological material was found to occur within a dense accumulation of banded iron formation (BIF) rubble with a sandy matrix directly over bedrock. The artefacts from both the Beaumont and Walker excavations lack evidence of water transport, but damage to the artefacts does indicate mechanical damage through redeposition subsequent to the ESA occupation (Walker *et al.* 2014).

Bestwood

Archaeological sites were first reported at Bestwood by Dreyer (2008). Further research has been undertaken there by Chazan *et al.* (2012). They described two sites, designated Bestwood 1 and Bestwood 2. These are both windows into a larger landscape of artefacts that have been exposed by sand quarrying activity within a sandy valley. A third site, Bestwood 3, is located on the hilltop along the east side of this valley (not to be confused with Uitkoms 1 which is located on the hilltop to the west of the valley). Their initial investigation at Bestwood 1 revealed a lithic industry characterized by well-made hand-axes, well-retouched scrapers, occasional blades and a great diversity of core types (Chazan *et al.* 2012:331). They conclude that the site represents an ESA living surface. Again, the artefacts are fresh which militates against extensive transport and long-term exposure.

Walker *et al.* (2013) note that excavations at Bestwood 1 demonstrated that this material is present *in situ* in a single horizon beneath the covering sands. This horizon is artefactually similar to the surface exposures at Bestwood 3 and Uitkoms 1. Given these observations (as well as other currently unpublished work done at Bestwood), it seems that the archaeological deposit extends beyond the limits of the quarries, across the landscape and connects the two hilltop exposures as a continuous horizon. They also note the presence of ESA material in another quarry to the south (indicated in Figure 15 above as Bestwood ESA).

Uitkoms

The farm Uitkoms to the northeast of Kathu has also yielded various archaeological occurrences. Beaumont has named these occurrences as Uitkoms 1, 2, 3 and 4. Uitkoms 1 appears to be similar to Kathu Townlands 1 in terms of artefact density and debitage frequency, but occurs on a hilltop. Indeed, in his first published description of Uitkoms 1, he considered these sites to be connected as one continuous landscape of artefacts (Beaumont 2004). Uitkoms 4 is largely buried beneath surface sands in a manner similar to Bestwood 1 and 2, “where bifaces are very similar to those from the quarries, but with a formal tool incidence about a thousand times higher, and like that at a typical occupation site” (Beaumont 2008b:3). The Uitkoms 2 & 3 localities appear to be first described by Beaumont (2007). He describes these sites as follows: “In mid-2006, two road cuttings along the N14 further towards Kuruman were also seen to contain ESA artefacts in a thin rubble of jaspilite and below red sand. One of these, Uitkoms 3, suggests that the Uitkoms 1 site also extends over the north-western side of the Kathu hill. The other, Uitkoms 2, could represent the extreme western limit of a site that may range over two upslope hills on Hartnolls” (Beaumont 2007: 1-2).

General comments

A large number of impact assessments have been carried out in the Kathu area. Although some have discovered significant archaeological heritage sites, others reported little or nothing. It is currently unclear if these differences are due to varying methodologies employed by different observers (for example the methods employed in distinguishing between a ‘site’ and ‘background scatter’), variations in surface geomorphology, or actual differences in the nature of the archaeological deposits as manifested on the surface. Some 15 km north of Kathu, Orton (2019a, b, c, d) noted stone artefacts to be present beneath the cover sands and visible along the margins of the Vlermuisleegte. A small hill in the study area was found to be an outcropping area of ironstone gravel with many associated artefacts. Nearby a trigonometric beacon was built on a small gravel patch and it is likely that at least some of the gravel was brought to the surface during construction

of the tower on which the beacon stands. Several artefacts were seen in this gravel as well. These observations prove that archaeological materials do occur beneath the aeolian sand there. Near the Kalbas Substation Orton (2015) noted MSA artefacts scattered around two small pans. To the southwest of the Kalbas Substation, 9 km north of Kathu, Orton and Walker (2015) found calcrete exposed at the surface with artefacts virtually absent. On the northwester outskirts of Kathu Pelser (2018) recorded stone artefacts in road gravel. Although transported from elsewhere, he recommended sampling of these artefacts. This work revealed that the artefacts were mostly from the MSA and LSA with minimal ESA included (Pelser 2019). Moving eastwards, the calcrete gave way to BIF gravel and the number of artefacts increased dramatically. In a survey further south again, Dreyer (2010) found nothing. The archaeological survey for the Mogobe solar plant at the south-eastern end of the present corridor yielded only low density background scatters (Nilssen 2015). Most of the artefacts in this study were attributed to the LSA rather than the expected MSA.

The above sites show that archaeological materials are fairly widespread around Kathu and the area is best regarded as an archaeological landscape rather than a collection of individual sites. Indeed, in his discussion of precolonial cultural landscapes, Orton (2016:124) cited the Kathu area as an example of a Type 4 landscape which was described as a large area “containing multitudes of artefacts or occurrences not separable into individual sites”.

Further afield, to the east of Kathu, Morris (2014) examined already disturbed areas finding nothing except some artefacts and banded ironstone fragments that were in obvious secondary context related to the on-going construction activities in the area. Gaigher (2013) examined an area northwest of Kathu and reported very little archaeological material. By contrast, surveys on Hartnolls to the northeast of Kathu have revealed extensive archaeological deposits said to be similar to those of Kathu Townlands and those found at Bestwood (Beaumont 2007; Dreyer 2006), while also in the northwest, Pelser (2018) located light scatters of Stone Age materials in a number of places.

De Jong (2008) reports that rock engravings are also known from the Kathu area. He does not provide locations for these engravings, nor citations for their publication. The present literature review has revealed no primary archaeological sources to substantiate this statement.

Humphreys (1976) has considered the evidence for the southern limit of Late Iron Age occupation in the area and concluded that there was likely some occupation of the Kathu area from at least about AD 1700 onwards. However, reliable documentary evidence from the 19th century points to Iron Age people not being present much further southwest than Kuruman (Figure 16). Nevertheless, that they did live in the present study area at some point is testified to by the reporting of an Iron Age site close to Kathu (Reserve 1). This site is reported by Beaumont (2006: 3) who describes it as: “an Iron Age (Tswana?) ceramic surface scatter” and states that it was excavated in 1989. Unfortunately, he provides no description or further reference. Enquiries at McGregor Museum have not been able to produce any further documentation on this site. Dreyer (2012) surveyed the same property again and, although he marks the site on a map, he provides no commentary at all – as such no further description of this site can be provided here.

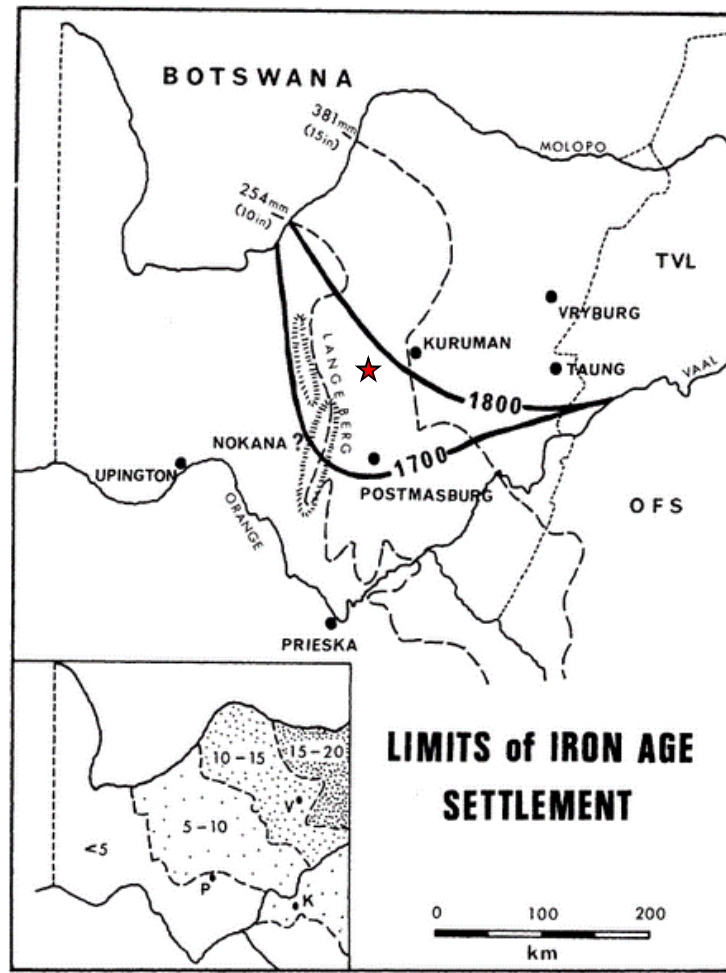


Figure 16: Map showing the approximate south-western limits of Iron Age settlement in the Northern Cape. Source: Humphreys (1976: fig. 1). The red star indicates the position of Kathu.

5.2.2. Site visit

No archaeological sites were found in the study corridor. However, very ephemeral background scatters of stone artefacts were seen in the central part of the corridor. Although they have no cultural significance, they are illustrated in Figure 17. These artefacts are likely all from the MSA with some of them having a patina that betrays their great age. There is still a possibility that more stone artefacts may be present beneath the surface than on it. However, observations from an adjacent project (Orton, in prep.) where many historical gravel borrow pits occur, indicate that artefacts appear to be equally rare beneath the surface in this area.



Figure 17: Stone artefacts found in the central section of the powerline corridor. Scales in 1 and 5 cm intervals.

5.3. Graves

Historical and recent graves have been reported from a few places around Kathu (Orton 2019a, b, c, d; Pelser 2018) while one cluster of stones on the sandy bank of the Vlermuisleegte to the north of Kathu was suspected by Orton (2019a, b, c, d) to potentially be a grave. It is possible that Stone Age or even Iron Age graves could be found in the area but the chances are small.

No graves or possible graves were seen in the study area.

5.4. Historical aspects and the Built environment

5.4.1. Desktop study

Although a town named Kathu (or variations thereof) can be found on maps going back to the 1890s, the modern town of Kathu only dates back to the 1970s when iron ore mining commenced. Aerial photographs from 1957 show no mining and no development of any sort in the current town area. The historical maps in Figure 18 show the massive development related to mining activities between the early 1970s and 2001. A significant change in that time as regards the present study is the realignment of the N14. This was necessitated due to the development of the mine. The Ferrum Substation was already present in 2001.

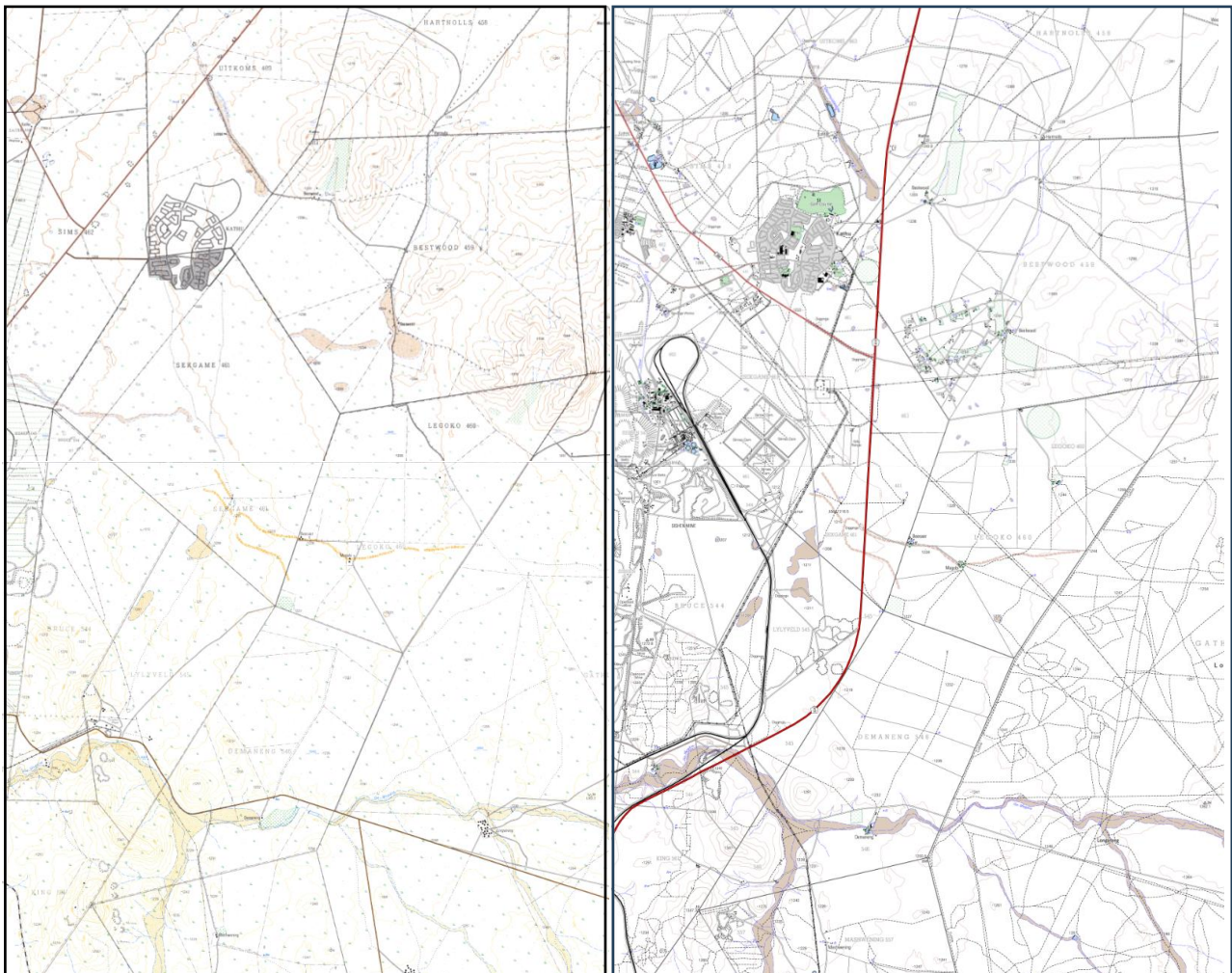


Figure 18: Comparative 1972/4 and 2001 topographic maps showing the massive amount of modern development in the area.

The Langeberg Rebellion was an important historical event to have occurred in the area. The following description is based on Saker and Aldridge (1971). The former Crown Colony of British Bechuanaland was annexed by the Cape Colony on 16th November 1895. Just over a year later, in December 1896 and January 1897, revolts – collectively known as the Langeberg Rebellion – broke out in the area. Over the following months they took root in the Langeberg Mountains, west of modern-day Kathu, and were only suppressed by the Government in August 1897. The discontent among the Tlhaping and Tlharo people had arisen some years earlier when, in 1884, about 75% of their land was taken away from them. Two years later the Land Commission met to settle land claims after the demise of the Boer Republics of Stellaland and Goshen, but little was done to help the Tlhaping and Tlharo. Although ten Native Reserves were proclaimed, 1400 square miles of crown

land was made available for white settlement – this created further friction and unhappiness. In addition to the loss of their land, the Tswana chiefs were losing their authority. Eventually, on 27 November 1896, seventeen head of cattle strayed out of the Taungs Reserve and were shot. This appears to have been the critical moment when the rebellion began.

5.4.2. Site visit

No historical resources of any sort were found along the corridor.

5.5. Cultural landscapes and scenic routes

Cultural landscapes are the product of the interactions between humans and nature in a particular area. Sauer (1925) defined them thus: “The cultural landscape is fashioned from a natural landscape by a cultural group. Culture is the agent, the natural area is the medium, the cultural landscape the result”. Cultural landscapes are thus areas containing multiple ‘sites’ and which have been shaped by the interaction of natural processes and anthropogenic activities such as construction and agriculture. Scenic routes are well-travelled roads that pass through natural or cultural landscapes with aesthetic value and that often have iconic or visually attractive views.

The agricultural landscape in and around the study corridor is very poorly developed in terms of human interventions. It is focused on livestock farming but this leaves a negligible cultural imprint on the landscape (essentially just fences, sand tracks and the occasional wind pump). Electrical developments and mining dominate the broader landscape around Kathu, including a large photovoltaic (PV) solar development just south of the Kalbas Substation. Two other PV plants have been constructed some 9-10 km west of the Kalbas Substation. Overall, the cultural landscape is strongly dominated by these modern landscape uses which are of no heritage concern. Because of this, none of the roads in the area can be considered scenic routes.

5.6. Statement of significance and provisional grading

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

The archaeological resources are deemed to have very low cultural significance at the local level for their scientific value and can be graded GPC.

The cultural landscape is a combination of a natural landscape (largely to the east of the N14) and a mining/industrial landscape (largely to the west of the N14). The natural components of the landscape have aesthetic value but, due to the modern industrial development in the area, the overall landscape is rated as being of low cultural significance.

6. ASSESSMENT OF IMPACTS

The impacts identified for this project are:

- *Construction phase:*
 - Impacts to palaeontology
 - Impacts to archaeology
 - Impacts to the cultural landscape
- *Operation phase:*
 - Impacts to the cultural landscape
- *Decommissioning phase:*
 - Impacts to the cultural landscape

While palaeontological heritage is assessed in the separate specialist study, all the other impacts are considered here.

6.1. Construction Phase

6.1.1. Impacts to archaeological resources

Direct impacts to archaeological resources would occur during the construction phase when machinery enters the site and excavations begin. However, because of the very low cultural significance of the archaeology known to occur, the impact significance is likely to be **low negative** (Table 2). It is highly unlikely that dense concentrations of buried artefacts would be found in this area but, nonetheless, mitigation would involve reporting any finds made while excavating the pylon foundations. This would enable inspection and further archaeological work as may be required. The rating after mitigation remains **low negative**.

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

Table 2: Assessment of construction phase archaeological impacts.

Nature: Construction Phase Archaeological Impacts associated with:		
<ul style="list-style-type: none"> • Damage to or destruction of archaeological sites. 		
	Without Mitigation	With Mitigation
Extent / Spatial Scope	Local	Local
Duration	Permanent	Permanent
Magnitude / Severity	Low	Low
Probability	Definite	Definite
Significance	Low	Low
Status	Negative	Negative

Irreplaceable loss of resources / Sensitivity of receiving environment	Yes – archaeological resources cannot be replaced or recreated	None – archaeological data will have been rescued and preserved for further study
Can impact be mitigated	Yes	
Mitigation:	Report any chance finds of dense accumulations of stone artefacts.	

6.1.2. Impacts to the cultural landscape

Direct impacts to the cultural landscape would occur during the construction phase when construction equipment arrives and construction activity commences. This is due to the visual disruption of the landscape. However, in what is already a heavily industrialised landscape, this aspect is of little concern and the impact significance would be rated as **low negative** (Table 3). The only mitigation requirement is to ensure that any cleared areas not needed during operation are suitably rehabilitated. After mitigation the impact significance remains **low negative**.

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

Table 3: Assessment of construction phase impacts to the cultural landscape.

Nature: Construction Phase Archaeological Impacts associated with:		
<ul style="list-style-type: none"> Alteration of and intrusion into the cultural landscape. 		
	Without Mitigation	With Mitigation
Extent / Spatial Scope	Local	Local
Duration	Short term	Short term
Magnitude / Severity	Low	Low
Probability	Definite	Definite
Significance	Low	Low
Status	Negative	Negative
Irreplaceable loss of resources / Sensitivity of receiving environment	No	No
Can impact be mitigated	Only very slightly.	
Mitigation:	Ensure rehabilitation of areas not needed during operation.	

6.2. Operation Phase

6.2.1. Impacts to the cultural landscape

Direct impacts to the cultural landscape would occur during the operation phase due to the existence of the proposed powerline in the landscape. Again, because of the highly industrialised

surroundings of the study area, the impacts significance is expected to be **low negative** (Table 5). The only suggested mitigation measure is to ensure that maintenance activities remain within the authorised footprint so as to avoid damaging further areas of land.

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

Table 4: Assessment of operation phase impacts to the cultural landscape.

Nature: Construction Phase Archaeological Impacts associated with:		
<ul style="list-style-type: none"> Alteration of and intrusion into the cultural landscape. 		
	Without Mitigation	With Mitigation
Extent / Spatial Scope	Local	Local
Duration	Permanent	Permanent
Magnitude / Severity	Low	Low
Probability	Definite	Definite
Significance	Low	Low
Status	Negative	Negative
Irreplaceable loss of resources / Sensitivity of receiving environment	No	No
Can impact be mitigated	Only minimally	
Mitigation:	Ensure that maintenance activities remain within the authorised footprint.	

6.3. Decommissioning Phase

Decommissioning phase impacts are the same as those for the construction phase, except that the equipment would be on site removing the powerline rather than installing it. Impact significance before mitigation is again **low negative** (Table 5). In this case mitigation entails ensuring that the entire corridor is suitable rehabilitated after decommissioning. After mitigation the significance remains **low negative**.

Table 5: Assessment of operation phase impacts to the cultural landscape.

Nature: Construction Phase Archaeological Impacts associated with:		
<ul style="list-style-type: none"> Alteration of and intrusion into the cultural landscape. 		
	Without Mitigation	With Mitigation
Extent / Spatial Scope	Local	Local
Duration	Permanent	Permanent

Magnitude / Severity	Low	Low
Probability	Definite	Definite
Significance	Low	Low
Status	Negative	Negative
Irreplaceable loss of resources / Sensitivity of receiving environment	No	No
Can impact be mitigated	No	
Mitigation:	None recommended	

6.4. Existing impacts to heritage resources

There are currently no obvious threats to heritage resources on the site. The cultural landscape has obviously been massively changed by the development of mining in the area over the last several decades. The significance of the impacts of the mining are considered to be **high negative**.

6.5. Cumulative impacts

In relation to an activity, cumulative impact “means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may be significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities” (NEMA EIA Reg GN R982 of 2014).

The proposed project is very minor in comparison to the existing developments in the area. As such, it is expected that the significance of cumulative impacts on both archaeology and the cultural landscape would be **low negative**. Mitigation measures would be the same as those stated for the individual impacts above.

6.6. Evaluation of impacts relative to sustainable social and economic benefits

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

The proposed project is intended to connected a BESS (and later a solar energy facility) to the national electricity grid. This will help stabilise electricity supply. Considering the historical problems associated with electricity supply in South Africa, this is seen as delivering clear economic and social benefits because not only would construction phase jobs be provided but, most significantly, improved electricity supply will benefit economic development in South Africa. If mitigation is applied as suggested above, then the socio-economic benefits outweigh the residual impacts.

6.7. The No-Go alternative

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

6.8. Levels of acceptable change

Any impact to an archaeological or palaeontological resource or a grave is deemed unacceptable until such time as the resource has been inspected and studied further if necessary. Impacts to the landscape are difficult to quantify but, in this instance, where the landscape is so heavily industrialised, the addition of the powerline would be well below the limit of acceptable change.

7. INPUT TO THE ENVIRONMENTAL MANAGEMENT PROGRAMME

The actions recorded in Table 6 should be included in the environmental management programme (EMPr) for the project.

Table 6: Heritage considerations for inclusion in the EMPr.

Impact	Mitigation / management objectives & outcomes	Mitigation / management actions	Monitoring		
			Methodology	Frequency	Responsibility
Impacts to archaeology and graves					
Damage or destruction of archaeological sites or graves	Rescue information, artefacts or burials before extensive damage occurs	<u>Construction Phase</u> : Reporting chance finds as early as possible to SAHRA (https://www.sahra.org.za/contact/) or an archaeologist, protect in situ and stop work in immediate area	Inform staff to be vigilant and carry out inspections of new excavations	Ongoing basis	Construction Manager or Contractor
				Whenever on site (at least weekly during construction period only)	ECO
Impacts to the cultural landscape					
Visible landscape scarring	Minimise landscape scarring	<u>Construction Phase</u> : Ensure disturbance is kept to a minimum and does not exceed project requirements. Rehabilitate areas not needed during operation.	Monitoring of surface clearance relative to approved layout	Ongoing basis	Construction Manager or Contractor
				As required	ECO
Intrusion into cultural landscape	Minimise visual intrusion	<u>Operation Phase</u> : Ensure that all maintenance vehicles and operational activities stay within designated areas.	Undertake visual inspections and report non-compliance	As required	Environmental Manager
Visible landscape scarring	Minimise landscape scarring	<u>Decommissioning Phase</u> : Ensure all areas are rehabilitated following specialist rehabilitation plan.	Monitor compliance and success of rehabilitation	As required	ECO

8. CONCLUSIONS

No significant heritage impacts are expected from this project. The development is in keeping with the surrounding land uses which already include many powerlines. There are no areas requiring avoidance for heritage reasons.

8.1. Reasoned opinion of the specialist

Given the lack of expected heritage impacts, it is the opinion of the heritage specialist that the proposed powerline should be authorised.

9. RECOMMENDATIONS

It is recommended that the proposed powerline be authorised, but subject to the following recommendation which should be included as a condition of authorisation:

- If any archaeological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.

10. REFERENCES

Anonymous. (1975). 1-million-year find at Sishen. *Diamond Fields Advertiser*, 13 Aug 1975

Beaumont, P.B. (1990). Kathu Townlands 1. In: Beaumont, P.B. & Morris, D. (eds) *Guide to archaeological sites in the Northern Cape*. Kimberley: McGregor Museum. 96–97.

Beaumont, P.B. (2004). Kathu Pan and Kathu Townlands / Uitkoms. In: Morris, D. & Beaumont, P.B. (eds) *Archaeology in the Northern Cape: Some Key Sites*. Kimberley: McGregor Museum. 50-53.

Beaumont, P. (2006). Phase 1 heritage impact assessment report on erf 1439, remainder of erf 2974, remainder of portion 1 of farm Uitkoms 463, and farms Kathu 465 and Sims 462 at and near Kathu in the Northern Cape Province. Unpublished report prepared for MEG Environmental Impact Studies. Kimberley: McGregor Museum.

Beaumont, P. (2007). Supplementary archaeological impact assessment report on sites near or on the farm Hartnolls 458, Kgalagadi District Municipality, Northern Cape Province. Unpublished report prepared for MEG Environmental Impact Studies. Kimberley: McGregor Museum.

Beaumont, P.B. (2008a). Phase 1 Archaeological Impact Assessment Report on Portion 459/49 of the Farm Bestwood 459 at Kathu, Kgalagadi District Municipality, Northern Cape Province.

Unpublished report prepared for MEG Environmental Impact Studies. Kimberley: McGregor Museum.

Beaumont, P.B. (2008b). Phase 1 heritage impact assessment report on portion 463/8 of the farm Uitkoms 463, near Kathu, Kgalagadi District Municipality, Northern Cape Province. Unpublished report prepared for MEG Environmental Impact Studies. Kimberley: McGregor Museum.

Chazan, M., Wilkins, J., Morris, D. & Berna, F. (2012). Bestwood 1: a newly discovered Earlier Stone Age living surface near Kathu, Northern Cape Province, South Africa. *Antiquity* 86: 331.

De Jong, R.C. (2008). Heritage impact assessment report: proposed residential development and associated infrastructure on a 200 ha portion of the farm Bestwood 429 RD at Kathu, Northern Cape Province. Unpublished report prepared for Rock Environmental Consulting (Pty) Ltd. Queenswood, Pretoria: Cultmatrix.

Dreyer, C. (2006). First phase archaeological and cultural heritage impact assessment of the proposed residential developments at the farm Hartnolls 458, Kathu, Northern Cape. Unpublished report prepared for MDA Environmental Consultants. Brandhof: Cobus Dreyer.

Dreyer, C. (2008). First phase archaeological and cultural heritage assessment of the proposed residential developments at a portion of the remainder of the Farm Bestwood 459RD, Kathu, Northern Cape. Unpublished report prepared for Rock Environmental Consulting (Pty) Ltd. Brandhof: Cobus Dreyer.

Dreyer, C. (2010). First phase archaeological & cultural heritage assessment of the proposed iron ore mining developments on Portion 2 of the farm Demaneng 546, Kuruman, Northern Cape. Unpublished report. Brandhof: Cobus Dreyer.

Dreyer, C. (2013). First phase archaeological & heritage assessment of the Vaal-Gamagara Water Pipeline Project, Northern Cape Revisit to the Kathu Pan archaeological site. Unpublished report prepared for MDA Environmental and Development Consultants. Brandhof: Cobus Dreyer.

Gaigher, S. (2013). Heritage impact assessment report environmental impact assessment phase proposed establishment of the San Solar Energy Facility located north of Kathu on a Portion of the Farm Wincanton 472, Northern Cape Province. Unpublished report prepared for Savannah Environmental (Pty) Ltd. Louis Trichardt: G&A Heritage.

Hocking, A. 1983. *Kaias & Cocopans: the story of mining in South Africa's Northern Cape*. Johannesburg: Hollards Publishers.

Humphreys, A.J.B. (1976). Note on the Southern Limits of Iron Age Settlement in the Northern Cape. *South African Archaeological Bulletin* 31: 54-57.

International Finance Corporation. 2012. IFC Performance Standards on Environmental and Social Sustainability. Accessed online on 29th September 2020 at:

https://www.ifc.org/wps/wcm/connect/c02c2e86-e6cd-4b55-95a2-b3395d204279/IFC_Performance_Standards.pdf?MOD=AJPERES&CVID=kTjHBzk

- Klein, R.G. (1988). The Archaeological Significance of Animal Bones from Acheulean Sites in Southern Africa. *The African Archaeological Review* 6: 3-25.
- Klein, R.G. (2000). The Earlier Stone Age of southern Africa. *South African Archaeological Bulletin* 55: 107-122.
- Lombard, M., Wadley, L. Deacon, J., Wurz, S., Parsons, I., Mohapi, M., Swart, J. & Mitchell, P. 2012. South African and Lesotho Stone Age sequence updated (i). *South African Archaeological Bulletin* 195: 123-144.
- Morris, D. (2014). Rectification and/or regularisation of activities relating to the Bestwood Township development near Kathu, Northern Cape: Phase 1 archaeological impact assessment. Unpublished report prepared for Jeffares & Green (Pty) Ltd. Kimberley: McGregor Museum.
- Nilssen, P. 2015. Scoping Archaeological Impact Assessment Proposed development of the AEP Mogobe Solar Facility on Portion 1 of the Farm 460 Legoko, Kathu, Northern Cape Province. Report prepared for Perception Planning. Mossel Bay: Peter Nilssen.
- Orton, J. (2015). Kathu Solar Project power line: pre-construction inspection of pans. Unpublished letter to Savannah Environmental (Pty) Ltd. Muizenberg: ASHA Consulting (Pty) Ltd.
- Orton, J. (2019a). Heritage Impact Assessment: proposed Hyperion Solar Development 1, Lyndoch 432/Rem, Kuruman Magisterial District, Northern Cape. Unpublished report prepared for Savannah Environmental (Pty) Ltd. Lakeside: ASHA Consulting (Pty) Ltd.
- Orton, J. (2019b). Heritage Impact Assessment: proposed Hyperion Solar Development 2, Lyndoch 432/Rem, Kuruman Magisterial District, Northern Cape. Unpublished report prepared for Savannah Environmental (Pty) Ltd. Lakeside: ASHA Consulting (Pty) Ltd.
- Orton, J. (2019c). Heritage Impact Assessment: proposed Hyperion Solar Development 3, Lyndoch 432/Rem, Kuruman Magisterial District, Northern Cape. Unpublished report prepared for Savannah Environmental (Pty) Ltd. Lakeside: ASHA Consulting (Pty) Ltd.
- Orton, J. (2019d). Heritage Impact Assessment: proposed Hyperion Solar Development 4, Lyndoch 432/Rem, Kuruman Magisterial District, Northern Cape. Unpublished report prepared for Savannah Environmental (Pty) Ltd. Lakeside: ASHA Consulting (Pty) Ltd.
- Orton, J. & Walker, S. (2015). Archaeological survey for the proposed Kalahari Solar Project, Kuruman Magisterial District, Northern Cape. Unpublished report prepared for Savannah Environmental (Pty) Ltd. Muizenberg: ASHA Consulting (Pty) Ltd.
- Orton, J. & Walker, S. 2015b. Heritage impact assessment for a proposed 132 kV power line, Kuruman Magisterial District, Northern Cape. Unpublished report prepared for Savannah Environmental (Pty) Ltd. Muizenberg: ASHA Consulting (Pty) Ltd.

- Partridge, T.C., Botha, G.A. & Haddon, I.G. 2006. Cenozoic deposits of the interior. In: Johnson, M.R., Anhaeusser, C.R. & Thomas, R.J. (Eds) *The geology of South Africa*: 585-604. Marshalltown: Geological Society of South Africa.
- Pelser, A.J. 2018. Report on a Phase 1 Heritage Assessment for the proposed township establishment on Portions 1 & 2 of the farm Kalahari Gholf & Jag Landgoed 775, Gamagara Local Municipality (Kathu), Northern Cape Province. Unpublished report prepared for Maxim Planning Solutions. Lynnwood Ridge: APAC.
- Pelser, A.J. 2019. Report on a Phase 2 Archaeological Mitigation work on Stone Age sites located at the Kathu Extensions 6-10 township establishment on Portions 1 & 2 of the farm Kalahari Gholf & Jag Landgoed 775, Gamagara Local Municipality (Kathu), Northern Cape Province. Unpublished report prepared for Maxim Planning Solutions. Lynnwood Ridge: APAC.
- Porat, N., Chazan, M., Grün, R., Aubert, M., Eisenmann, V., Horwitz, L.K. (2010). New radiometric ages for the Fauresmith industry from Kathu Pan, southern Africa: implications for the Earlier to Middle Stone Age transition. *Journal of Archaeological Science* 37: 269–283.
- Rossouw, L. n.d. Palaeontological Desktop Assessment of the proposed new 40478 Vaal-Gamagara water pipe line between Sishen and Black Rock Mine near Hotazel, NC Province. Unpublished report prepared for MDA Environmental Consultants. Bloemfontein: Paleo Field Services.
- Saker, H. & Aldridge, J. (1971). The origins of the Langeberg Rebellion. *Journal of African History* 12: 299-317.
- Van Schalkwyk, J. (2010). Archaeological impact survey report for the proposed Kalahari Solar Park Development ON THE farm Kathu 465, Northern Cape Province. Unpublished report prepared for Cultmatrix. Monument Park: J. van Schalkwyk.
- Van Schalkwyk, J. (2012). Heritage impact assessment for the proposed estate development on the farm Kalahari Golf and Jag Landgoed 775, Kathu, Northern Cape Province. Unpublished report prepared for MEG Omgewingsimpakstudies. Monument Park: J. van Schalkwyk.
- Van Zinderen Bakker, E.M. (1995). Archaeology and Palynology, *South African Archaeological Bulletin* 50: 98-105.
- Walker, S., Chazan, M., Lukich, V. & Morris, D. (2013). A second Phase 2 archaeological data recovery at the site of Kathu Townlands for Erf 5116: Kathu, Northern Cape Province. Unpublished report prepared for PZK Beleggings 3000 CC. Kimberley: McGregor Museum.
- Walker, S.J.H., Lukich, V., Chazan, M. (2014). Kathu Townlands: a high density Earlier Stone Age locality in the interior of South Africa. *PLoS ONE* 9(7): e103436. doi:10.1371/journal.pone.0103436.
- Winter, S. & Baumann, N. 2005. Guideline for involving heritage specialists in EIA processes: Edition 1. CSIR Report No ENV-S-C 2005 053 E. Republic of South Africa, Provincial Government of

the Western Cape, Department of Environmental Affairs & Development Planning, Cape Town.

Winter, S. & Oberholzer, B. 2013. Heritage and Scenic Resources: Inventory and Policy Framework for the Western Cape. Report prepared for the Provincial Government of the Western Cape Department of Environmental Affairs and Development Planning. Sarah Winter Heritage Planner, and Bernard Oberholzer Landscape Architect / Environmental Planner, in association with Setplan.

APPENDIX 1 – Curriculum Vitae



Curriculum Vitae

Jayson David John Orton

ARCHAEOLOGIST AND HERITAGE CONSULTANT

Contact Details and personal information:

Address: 40 Brassie Street, Lakeside, 7945
Telephone: (021) 788 1025
Cell Phone: 083 272 3225
Email: jayson@asha-consulting.co.za

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

Education:

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

Employment History:

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

Professional Accreditation:

- Association of Southern African Professional Archaeologists (ASAPA) membership number: 233
- ASAPA CRM Section member with the following accreditation:
 - Principal Investigator: Coastal shell middens (awarded 2007)
Stone Age archaeology (awarded 2007)
Grave relocation (awarded 2014)
 - Field Director: Rock art (awarded 2007)
Colonial period archaeology (awarded 2007)
- Association of Professional Heritage Practitioners (APHP) membership number: 43
 - Accredited Professional Heritage Practitioner

Memberships and affiliations:

- South African Archaeological Society Council member 2004 – 2016
- Assoc. Southern African Professional Archaeologists (ASAPA) member 2006 –
- UCT Department of Archaeology Research Associate 2013 – 2017
- Heritage Western Cape APM Committee member 2013 – 2023
- UNISA Department of Archaeology and Anthropology Research Fellow 2014 –
- Fish Hoek Valley Historical Association 2014 –
- Kalk Bay Historical Association 2016 –
- Association of Professional Heritage Practitioners member (CRM Section) 2016 –
- Southern African Field Archaeology section editor 2021 –

Fieldwork and project experience:

I have extensive experience as Field Director and Principal Investigator throughout Western and Northern Cape, and the western Free State and Eastern Cape. I also work in the eastern part of South Africa through partnership with an Iron Age accredited colleague.

Feasibility studies:

Heritage feasibility studies examining all aspects of heritage from the desktop

Phase 1 surveys and impact assessments:

- Project types
 - Notification of Intent to Develop applications
 - Heritage Impact Assessments
 - Self-standing assessments under Section 38(1) of the NHRA
 - Assessments under NEMA and Section 38(8) of the NHRA
 - Archaeological specialist studies
 - Strategic assessments
 - Phase 1 archaeological test excavations in historical and prehistoric sites
 - Archaeological research projects
- Development types
 - Mining and borrow pits
 - Roads (new and upgrades)
 - Residential, commercial and industrial development
 - Agricultural developments
 - Dams and pipe lines
 - Power lines and substations
 - Renewable energy facilities (wind, solar and hydro-electric)

Phase 2 mitigation and research excavations:

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

Awards:

1998: Frank Schweitzer memorial book prize for an outstanding student.

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

APPENDIX 2 – Site Sensitivity Verification

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

Date of Site Visit	8 th and 9 th May 2024
Specialist Name	Dr Jayson Orton
Professional Registration Number	ASAPA: 233; APHP: 043
Specialist Affiliation / Company	ASHA Consulting (Pty) Ltd

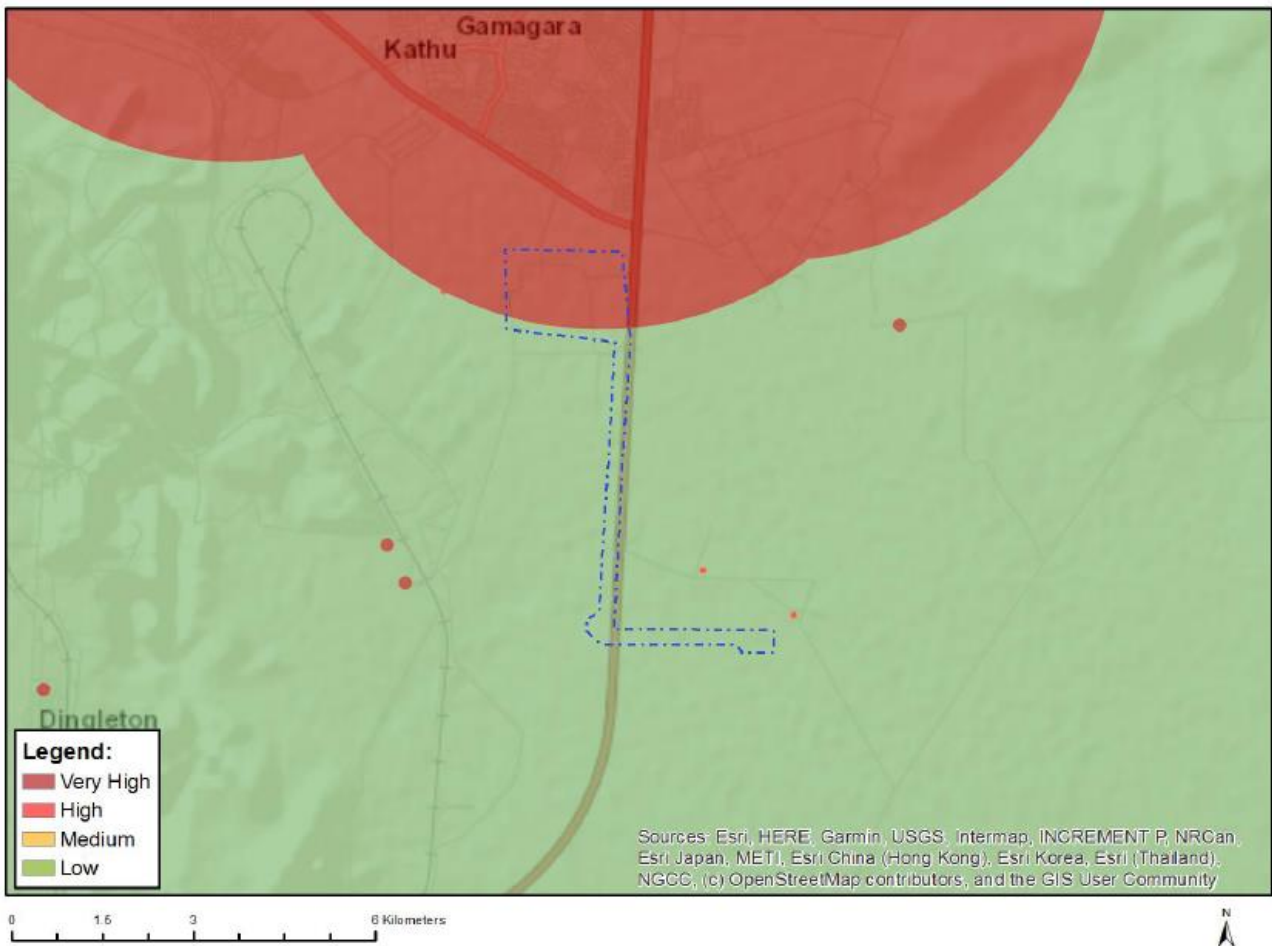
Method of the Site Sensitivity Verification

Initial work was carried out using satellite aerial photography in combination with the author's accumulated knowledge of the local landscape. This was used to provide sensitivity data. Subsequent fieldwork served to ground truth the site, including areas identified as potentially sensitive. Desktop research using maps, historical aerial photography, published literature and commercial reports was also conducted to inform on the heritage context of the area. This information is presented in the report (Sections 5.2.1 and 5.4.1).

Outcome

The first map below is extracted from the screening tool report and shows the archaeological and heritage sensitivity to be low throughout the study area with the exception of the northernmost section which is within 5 km of the Kathu Complex Cultural Landscape. The site visit showed that the entire corridor is of low sensitivity because no significant heritage resources were located. The Grade 1 resource is below ground and thus contextual (visual) impacts are of no concern and the section of the study area shown as very high sensitivity in the screening tool map is better considered as low sensitivity. The only finds made were isolated background scatter artefacts. Photographs of these sites are included in the impact assessment report.

The heritage specialist therefore **disputes** the Screening Tool map.



Screening tool map showing the study area to be largely low sensitivity but with an area regarded as very high due to its proximity to a Grade 1 heritage resource.