

HERITAGE BASELINE REPORT

For the Houthaalbomen North PV Cluster (Euphorbia PV, Hillardia PV and Verbena PV) , Lichtenburg, North-West Province

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Executive Summary

Beyond Heritage was appointed to conduct a Heritage Baseline Study for the Houthaalbomen North PV Cluster consisting of the following PV Facilities and associated infrastructure:

- Euphorbia PV Facility;
- Hillardia PV Facility; and
- Verbena PV Facility.


The aim of the assessment was to determine the heritage potential of the facilities through a desktop study and a physical survey of the project. Key findings of the assessment include:

- The study area is characterised by agricultural activities including cultivation from the 1970's and grazing;
- Heritage finds were limited to Stone Age scatters located exposed in gravel roads and on rocky outcrops and the ephemeral remains of the foundations of a rectangular structure;
- An assessment of the paleontological significance of the area (Bamford 2022) concluded that the impact on palaeontological resources is low and the project should be authorised from a paleontological point of view.

No fatal flaws were recorded although potential risks to the project is the occurrence of unrecorded cultural resources (of which graves and subsurface archaeological deposits are the highest risk). This can cause delays during construction, as well as additional costs involved in mitigation, and possible layout changes.

The following report outline the methodology, heritage background to the area and lastly management guidelines for further work required.

Declaration of Independence

Specialist Name	Jaco van der Walt
Declaration of Independence	<p>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:</p> <ul style="list-style-type: none"> • I act as the independent specialist in this application; • I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant; • I declare that there are no circumstances that may compromise my objectivity in performing such work; • I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity; • I will comply with the Act, Regulations and all other applicable legislation; • I have no, and will not engage in, conflicting interests in the undertaking of the activity; • I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority; • All the particulars furnished by me in this form are true and correct; and • I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.
Signature	
Date	03/02/2022

a) Expertise of the specialist

Jaco van der Walt has been practising as a CRM archaeologist for 20 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 he Northern and Eastern Cape Provinces in South Africa.

Jaco has worked on various international projects in Zimbabwe, Botswana, Mozambique, Lesotho, DRC Zambia, Guinea, Afghanistan 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

AIA: Archaeological Impact Assessment
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
EMP: 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
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

Beyond Heritage was appointed to conduct a Heritage Baseline Study for the Houthaalbomen North PV Cluster Facility. The aim of the study is 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 25 of 1999).

The report outlines the approach and methodology utilized before and during the survey, which includes Phase 1, a desktop study; Phase 2, the physical surveying of the study area on foot and by vehicle; Phase 3, reporting the outcome of the study.

General site conditions were recorded by means of photographs, GPS locations, and site descriptions. Possible impacts were identified, and mitigation measures are proposed in the following report.

1.1. Project Description

The proposed PV cluster is anticipated to comprise **three facilities** (up to 100 MW each) and will also include a self-build grid connection component to facilitate the connection of the facilities to Watershed MTS. The solar PV facilities will comprise several arrays of PV panels and associated infrastructure and will have a contracted capacity of up to 100 MW.

Assessment areas of respectively 207 ha for Euphorbia PV, 220 ha for Verbena PV and 230 ha for Hillardia are assessed and the infrastructure associated with the 100 MW facility includes:

- » PV modules and mounting structures;
- » Inverters and transformers;
- » Battery Energy Storage System (BESS);
- » Site and internal access roads (up to 8m wide);
- » Auxiliary buildings (22kV or 33kV switch room, gate-house and security, control centre, office, warehouse, canteen & visitors centre, staff lockers etc.);
- » Temporary and permanent laydown area;
- » Cabling between the panels, to be laid underground where practical; and
- » Grid connection solution, including:
 - Medium-voltage cabling between the project components and the facility substation of 2,5 ha for Hillardia PV (within a 100 m wide and 1.5 km in length corridor for both Hillardia PV and Verbena PV); and
 - A 132kV facility substation

As included above, each facility will include grid connection infrastructure (MV cabling and facility substation) that will facilitate the connection of the project components to the Houthaalbomen North collector switching station which will be located adjacent to the Euphorbia PV facility.

The Houthaalbomen North collector switching station intends to connect to the National Grid via the Watershed Main Transmission Substation (MTS) (approximately 5 km southeast of the facility), however, the connection infrastructure associated with this grid solution (i.e. between the facility

substations and the MTS) is being assessed as part of a separate Environmental Application. Please note that the grid connection will be considered as part of a separate assessment and is included in the mapping for reference only.

1.1.1 Location

The study area is located Portion 2, 3 and 4 of Farm Houthaalboomen 32, close to Lichtenburg in the Northwest Province (Figure 1.1 to 1.3). The development area is situated within the Ditsobotla Local Municipality within the Ngaka Modiri Molema District Municipality and is accessible via the R505, located east of the study area.

1.1.2. Environmental Setting

The study area falls within a Grassland Bioregion as described by Mucina *et al* (2006) with the vegetation described as Carltonville dolomite Grassland. Land use in the general area is characterized by agriculture, dominated by crops and cattle farming. The study area is characterised by deep sandy to loamy soils.

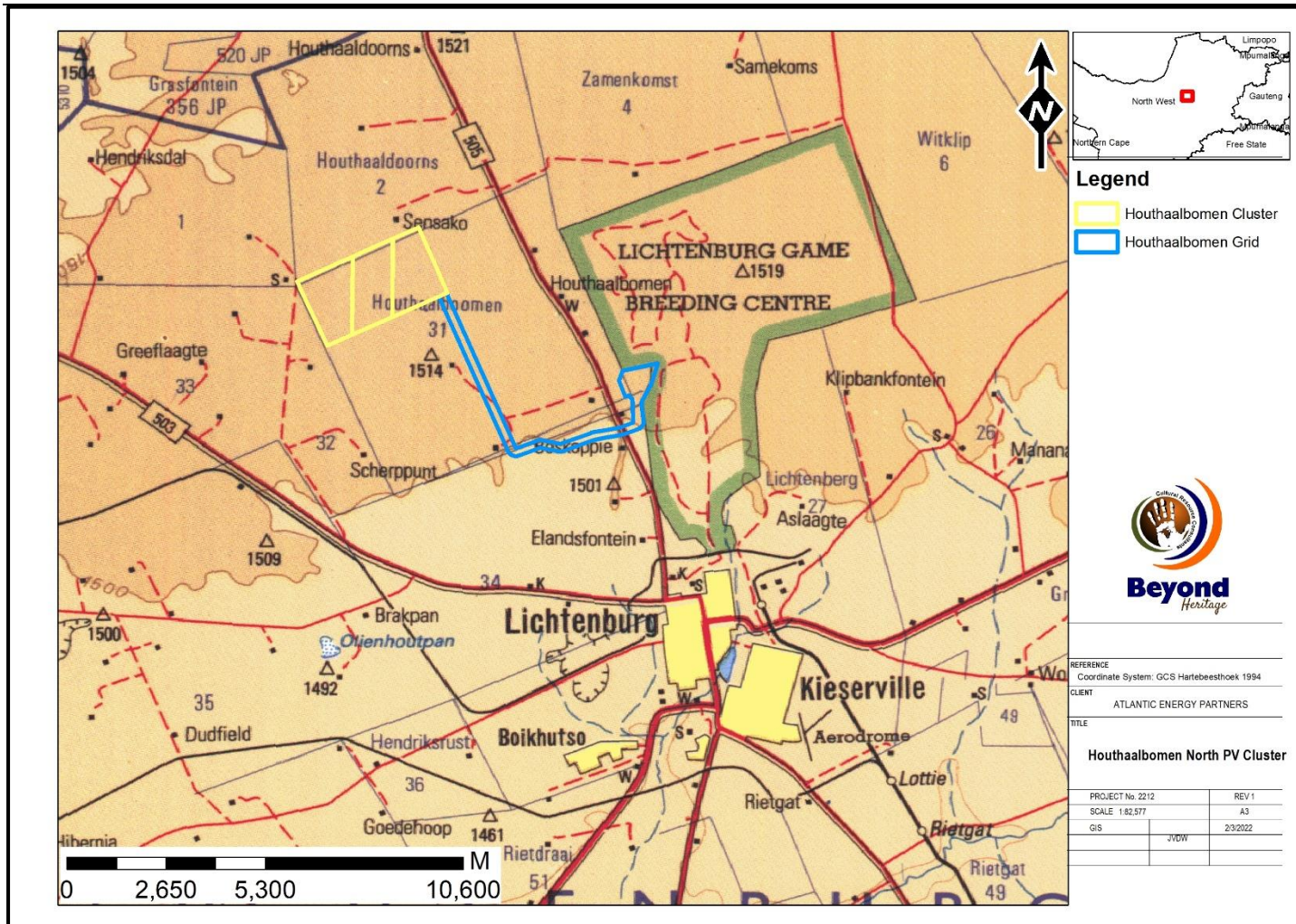


Figure 1.1: Regional setting of the project (1: 250 000 topographical map). Please note that the grid connection will be considered as part of a separate assessment and is included in the mapping for reference only.

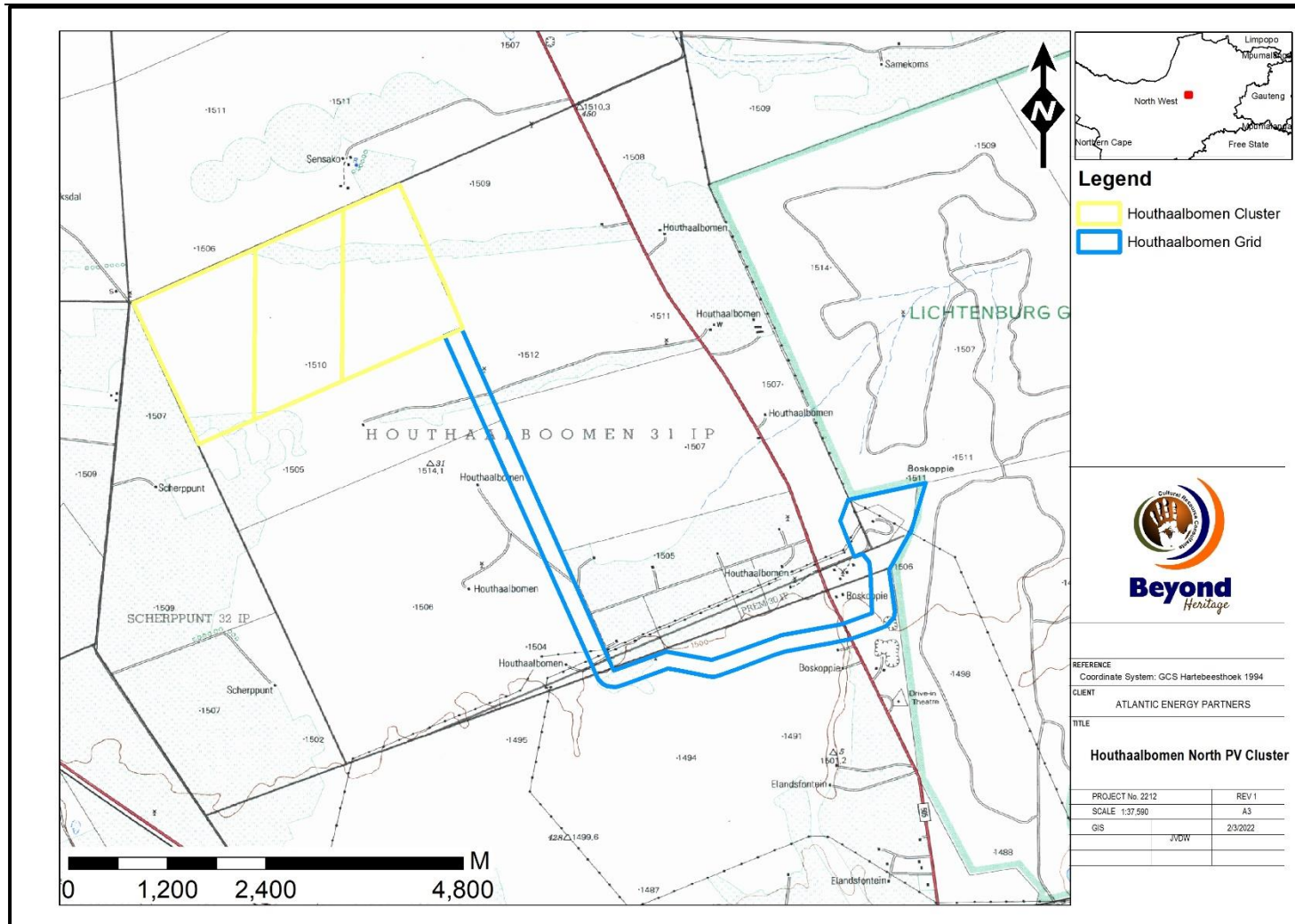


Figure 1.2. Local setting of the project (1:50 000 topographical map).

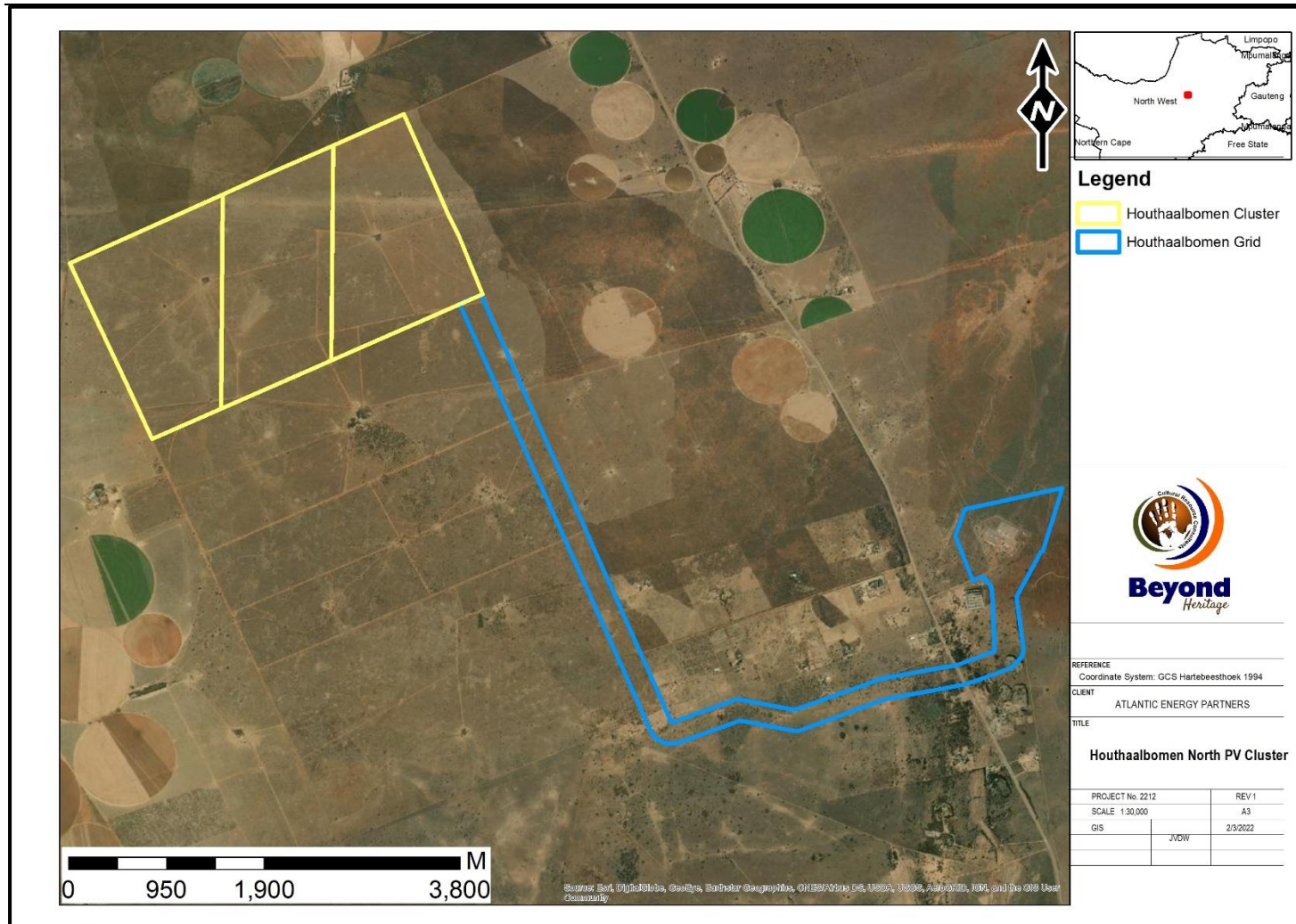


Figure 1.3. Aerial image of the study area.

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)

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, as part of the impact assessment report or EMPr, 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, as per the impact assessment report and/or EMPr, to be submitted in duplicate to SAHRA after completion of the study. SAHRA accepts Phase 1 HIA reports authored by professional archaeologists, accredited with ASAPA or with a proven ability to do archaeological work.

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:

Stakeholder engagement is a key component of any EIA process and will be conducted by the EAP for this project. Stakeholders are provided with an opportunity to raise issues of concern. The aim of the public consultation process was to capture and address any issues raised by community members and other stakeholders during key stakeholder and public meetings conducted by the EAP. The process involved:

- Placement of advertisements and site notices
- Stakeholder notification (through the dissemination of information and meeting invitations);
- Stakeholder meetings undertaken with I&As where necessary;
- Authority Consultation
- The compilation of a Scoping Report and an Environmental Impact Assessment Report (EIAR).

3.4 Site Investigation

The aim of the site survey 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.

3.5 Data Interpretation: Assessment of Significance and Impacts

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 farms earmarked for development was 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:

- 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.

Furthermore, 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; and
- Sites of significance relating to the history of slavery in South Africa.

3.5.1 Field Rating of Sites

Site significance classification standards prescribed by SAHRA (2006), and acknowledged by ASAPA for the SADC region, were used for the purpose of this report.

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

Although Beyond Heritage surveyed the area as thoroughly as possible, it is incumbent upon the developer to stop operations and inform the relevant heritage agency should further cultural remains, such as graves, stone tool scatters, artefacts, bones or fossils, be exposed during the process of development (refer to the Chance Find Procedure that will be included in the Heritage Impact Assessment report).

4 BACKGROUND INFORMATION

4.1 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).

Table 1. Studies consulted for this report.

Author	Year	Project	Findings
Küsel, U.S.	2008	Cultural Heritage Resources Impact Assessment of Portion 151 Of Lichtenburg Town And Townlands 27 Ip (Lichtenburg Extension 10) North West Province	None
van Schalkwyk, J.A.	2008	Proposed 88kv Power Line from Watershed Substation, Lichtenburg, to the Mmabatho Substation, North West Gauteng Province	Features dating to the historic period were identified in the study area as well as cemeteries.
van der Walt, J.	2013	Archaeological Impact Assessment Report, Watershed Solar facility	Low densities of MSA and LSA scatters. Single unmarked stone grave
van der Walt, J. & Almond, J.E.	2013	Archaeological Impact Assessment for the Proposed Hibernia Solar Project near the town of Lichtenburg in the North West Province of South Africa	MSA scatter and an informal cemetery
Levin, J.	2018	Heritage Impact Assessment for the development of the Lichtenburg 1PV Solar Energy Facility and Associated Infrastructure on a site near Lichtenburg, North West Province	Historic farmhouse
Miller, S.	2021	Phase I Heritage Impact Assessment of a 35 ha study area on portion 18 of the farm Dufield 35 IR, Lichtenburg district, North-western Province	None
van Schalkwyk, J.A.	2021	Phase 1 Cultural Heritage Impact Assessment: The Proposed Lerato Solar Power Plant Near Lichtenburg, North West Province.	Two informal burial sites, with 80 stone cairn graves in total.

4.2 Archaeological Background to the study area.

A brief summary of archaeological and historical events in South Africa is included in Figure 4.1 and the background to the study area is discussed below.

Published Stone Age and Iron Age archaeological sites are absent from the immediate study area. Stone Age lithic scatters occur near watercourses and some were exposed due to diamond mining in the wider area, suggesting that the landscape was used since the ESA. However, currently, published references only include Later Stone Age sites such as Jubilee and Holkrans rock shelters, which are ~ 200 km south-east of Lichtenburg, as well as rock art occurring at Driekuil and Gestoptefontein (e.g., Wadley 1989, 1996; Bradfield & Sadr 2011; Hollmann 2013).

Early Iron Age farmers settled at Broederstroom ca. 500 CE (Mason 1981), the oldest Iron Age site in the North-West Province. Agropastoral communities preferred open woodland areas with readily available access to water and cultivatable soils. Due to their particular homestead economy, farmers did not occupy the central highveld area of Lichtenburg. During the Late Iron Age when climatic conditions became more favourable people started to occupy areas previously considered unsuitable (Maggs 1994; Huffman 2007). The earliest Iron Age farmers who moved into the North-West Province were Tswana-speakers such as the BaRolong probably from the 18th century onwards. According to traditional history BaRolong king Tau died in 1760 CE, he was succeeded by his son Nôtô. During the reign of Nôtô it is said that they settled in the region of Molopo, while others say it was only during the time of Morara's kingship, son of Nôtô. However, during the early 1820s Methodist missionaries had contact with BaRolong communities as they fled from the chaos caused by the ongoing Mfecane, settling near Maquassi hills in modern-day Potchefstroom. Peace was short-lived and communities decided in 1833 to move towards Thaba Nchu under the protection of king Moshosho. The region was also a focal point for *Voortrekkers* such as Hendrik Potgieter and Sarel Cilliers, as they moved further towards the interior violent battles took place between local Sotho-Tswana, Ndebele and Zulu chiefdoms (Matthews 1945; Breutz 1957; Giliomee & Mbenga 2007).

The surrounding area of Lichtenburg was only occupied from the 1850s as resources were few and the town was established in 1873. During the South African War 1899-1902, a number of skirmishes took place in the larger region. The area included concentration camps and the famous battle of Mafikeng took place close-by. Lichtenburg is also home to the infamous General Koos de la Rey. The town was the seat of the local Senator, and he died in 1914 on his way home from a meeting in parliament about South Africa's participation in World War I. During the 1920s the town experienced a diamond rush that lasted 10 years. Today Lichtenburg is known for cattle and crop farming (e.g., Bergh 1998; Scholtz & Theron 2000; van der Walt 2013; Coetzee 2017). The project area Houthaalbomen nearby Lichtenburg was utilised for grazing or agricultural fields since the 1900s (van Schalkwyk 2021).

South Africa: A short chronology

Early Stone Age: 2 million - 250 000 BP. Hominins producing core and pebble tools, later stages includes handaxes and blades.

Middle Stone Age: 250 000 - 40 000 / 25 000 BP. *Homo Sapiens*. Prepared core techniques, formal tools, points, scrapers and backed artefacts. Occasionally includes bone points and ostrich eggshell fragments and grindstones.

Later Stone Age: 40 000 - 100 BP. Wide range of formal microlithic tools. Ostrich eggshell fragments, beads, rock art.

Ceramic Final Later Stone Age: 2000 BP. Wide range of formal microlithic tools, with thin-walled pottery, with some sites having faunal remains of ovicaprids.

Early Iron Age: 200 - 900 CE. Arrival of Bantu-speaking farmers who lived in sedentary settlements often located next to rivers. They kept livestock, cultivated sorghum, beans and cowpeas. Introduced metallurgy to the region and manufactured thick-walled pottery.

Middle Iron Age: 900 - 1300 CE. Confined to the modern-day Limpopo Province, and associated with early state formation, such as Mapungubwe and associated sites.

Late Iron Age: 1300 - 1840 CE. Marks the arrival of ancestral Eastern Bantu-speaking Nguni and Sotho-Tswana communities. Settlements are often located on or near hilltops for defensive purposes. The Iron Age as an archaeological period ends with the Mfecane, 1820s to 1840s CE. An event that caused major socio-political upheaval.

Historic events

1652: Dutch East India Company establishes refreshment station at modern-day Cape Town.

1658: First slave ships arrive at Table Bay.

1660 - 1793: Various armed conflicts between Khoisan and Europeans, several frontier wars between Europeans, Khoisan and Xhosa communities.

1795 - 1807: First British occupation of the Cape, the Dutch East India Company collapses, and slave trade is abolished.

1808 - 1820: Several frontier wars and first British Settlers arrive.

1820 - 1840: Onset of the Mfecane, abolishment of slavery and slaves are freed at the Cape. Dutch farmers started to migrate towards the interior of South Africa, what will become known as the 'Great Trek'.

1860 - 1880: Discovery of mineral wealth, diamonds and gold. Establishment of the Zuid-Afrikaansche Republiek (ZAR).

1899 - 1902: The South African War.

1910 - 1945: Unification of South Africa, formation of the ANC, World War I and World War II.

BP - Before Present
CE - Common Era

Figure 4.1. Summary of archaeological and historical events in South Africa.

4.3 Historical overview of the ownership and development of the farm Houthaalboomen 31 IP

On 16 February 1886 a Crown Grant was awarded to Abraham Jaco Nel of the farm Houthaalboomen No.208. (NASA TAB, SS: 1174 R799/86). In July 1965 Mr. F. J. Greeff, a Land Surveyor and Town Planner in Lichtenburg, wrote a letter to the Surveyor-General in Pretoria. He attached a plan for the proposed subdivision of Portion 18 (a Portion of portion 12) of the farm Houthaalboomen 31 IP. He explained that the land would be split into two equal sections of 27 morgen each. The access route to the main road was indicated, and Greeff noted that there was no “Bantu” area in the vicinity of the farm. One residence was located on this portion of the farm, but no further improvements had been made on the land. It was noted that the land would be used for residential and agricultural purposes. (NASA SAB, CDB: 3/722 TAD9/21/61)



Figure 4.2: Map of the proposed subdivision of Portion 18 of Houthaalbomen 31 IP. (NASA SAB, CDB: 3/722 TAD9/21/61)

In a subsequent letter from the Surveyor-General it was explained that the portion referred to by Greeff would be known as Portion 19, as this was the new number. In November 1965 J. Van Veijeren, the Director of Local Management wrote to Greeff, indicating that his application for the subdivision of Portion 19 of

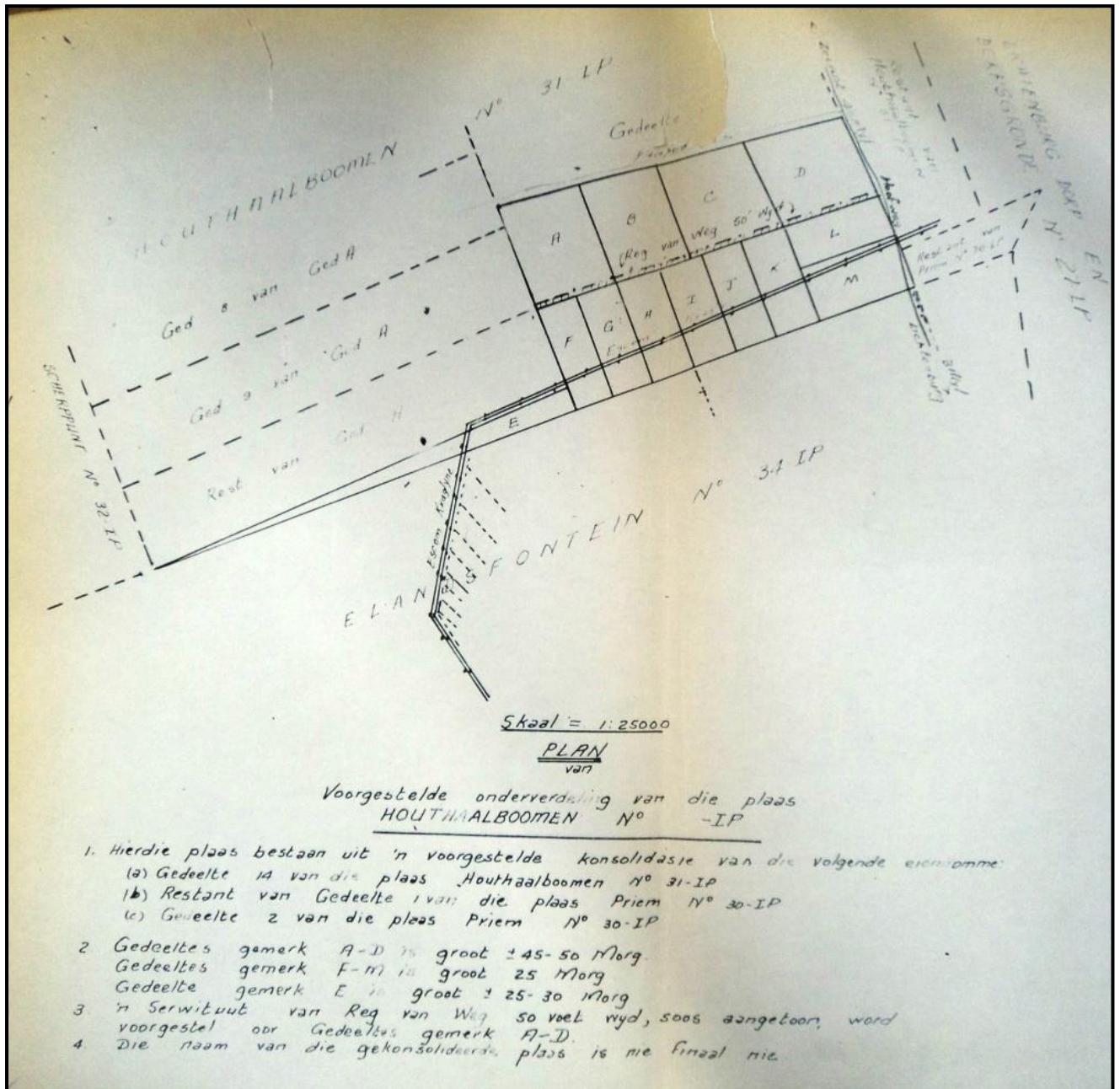


Figure 4.4: Sketch of the proposed subdivision of Houthaalbomen 25 IP (made up of Portion 14 of Houthaalbomen 31 IP and the Remaining Extent of Portion 1 of the farm Priem 30 IP). (NASA SAB, CDB: 3/722 TAD9/21/61)

On 1 October 1981 a representative of EVKOM (the Electricity Supply Commission) applied to the Department of Cooperation and Development for permission to construct single living quarters at the Watershed Distribution Station in the Lichtenburg area. This would serve as the residence for 14 black male workers that were employed by EVKOM. The communal living quarters would consist of a single-room building with a floor surface measuring 48,31 square meters. This building would be plastered and painted and have a roof of cement tiles. A kitchen, washing facilities (with warm water) and latrines would also be provided. This development would take place about 800 meters of the then Provincial Road. Up until that time these workers had resided in temporary huts, and it was deemed that the new permanent residential quarters would be an improvement on the huts. The development was recommended by the Commissioner

of Lichtenburg In October 1981. Building would commence within three months from that time. (NASA SAB, BAO: 3/4189 A12/2/6/L24/20)

4.4 Genealogical Society and Google Earth Monuments

No graves are indicated for the proposed development area.

4.5 Results of Stakeholder engagements

Stakeholder engagement is facilitated by the EAP, and relevant results will be reported on in the Scoping Report and EIAr and if any heritage concerns are raised these will included and adressed in the HIA.

4.6 Site investigation

Site investigation details are provided in Table 2 and tracklogs of survey paths are included in Figure 4.5.

Table 2: Site Investigation Details

Site Investigation	
Date	The week of 2 Feb 2022
Season	Summer. The study area was previously cultivated and is currently used for grazing with knee high grass that limited archaeological visibility. The area was however sufficiently covered to understand the heritage character of the area (Figure 4.8).

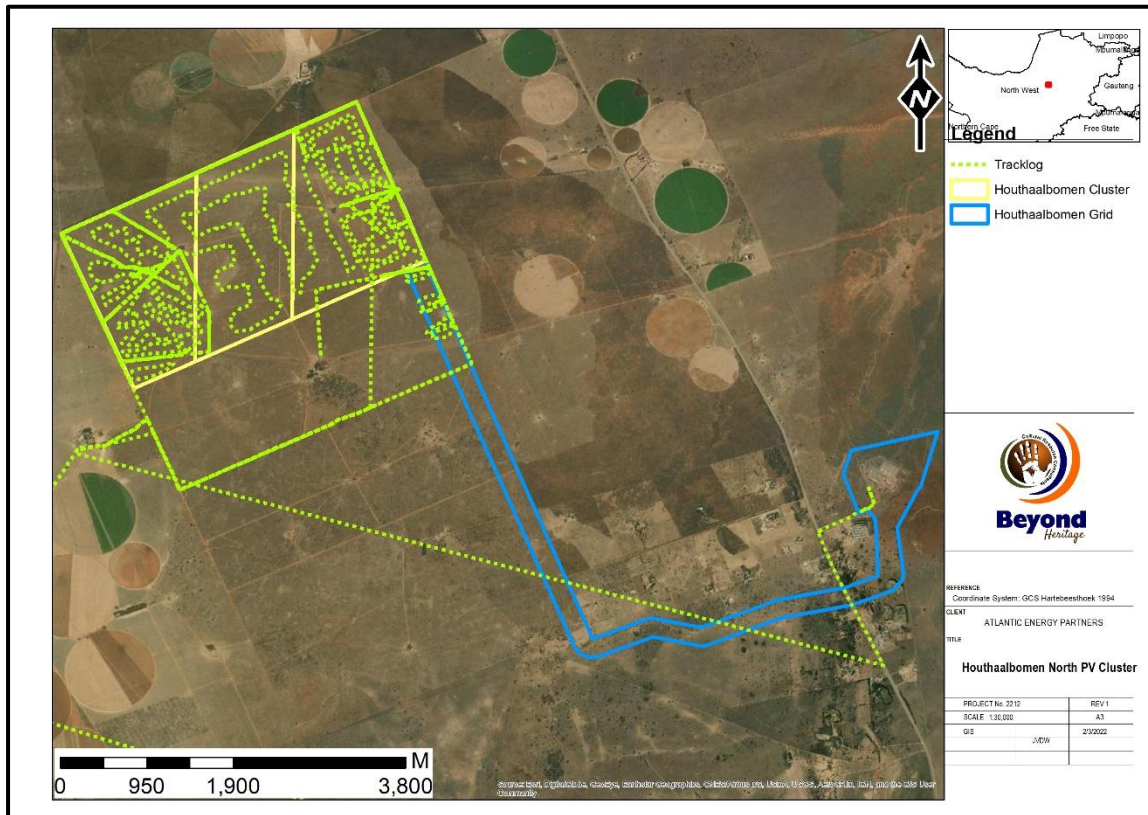


Figure 4.5. Tracklog of survey path.

5 BASELINE DESCRIPTION

The assessment area is situated about 12km north of Lichtenburg. The landscape is primarily used for cattle grazing and measures approximately 600ha. Archaeological visibility is low due to thick grass cover while bushes and tall trees are sparse but scattered throughout the landscape. Dolomite outcrops are regularly encountered. Recent rainfall has left large portions of the project area waterlogged and difficult to access. Large stockpiles of stones are scattered across the project area as a result of clearing agricultural fields for cultivation. Testament to this is the broken pieces of agricultural implements that are found in the area. An existing powerline traverses across the project area in a north – western direction. General site conditions are illustrated in Figure 5.1 to 5.4.

Heritage resources were limited to background scatters (Orton 2016) of MSA lithic material that was found throughout the entire project area. The occurrences were primarily visible in areas where the topsoil has been cleared for small gravel roads that divide the project area into smaller grazing camps. The general artefact density increases towards the eastern boundary of the project area and seems to coincide heavily with the underlying geological formations across the landscape. Recorded heritage features were labelled numerically with the Prefix HB for Houthaalbomen and are briefly discussed below.



Figure 5.1. General site conditions.



Figure 5.2. General site conditions and vegetation cover.



Figure 5.3. General site conditions.



Figure 5.4. General site conditions.

5.1 Heritage Resources

At the start of the survey Stone Age material was noticed scattered in varying densities throughout the study area. Therefore low-density scatters (between 3 - 5 artefacts per m²) was recorded as occurrences of low significance. A Scatter with a density higher than 5 artefacts per m² were demarcated and is of medium significance and warrants mitigation that could include surface sampling and test excavations prior to construction. Scatters with densities less than 2 artefacts per m² were not recorded as they occur throughout the area. Individual occurrences were not point plotted within the recorded scatters however an attempt was made at determining site extent. GPS readings were taken roughly in the middle of each identified scatter. Based on the Department of Environmental Affairs (DEA) screening tool (Figure 5.5) the heritage sensitivity of the study area is mostly low, with a small area indicated as high. However, no additional data is available on the type of resource. Mapping of the sensitive area based on the coordinates in the screening tool plots out in a different location to that indicated on the screening tool map. It is assumed that this area relates to the Stone Age occupation of the study area that was adequately recorded during the field survey.

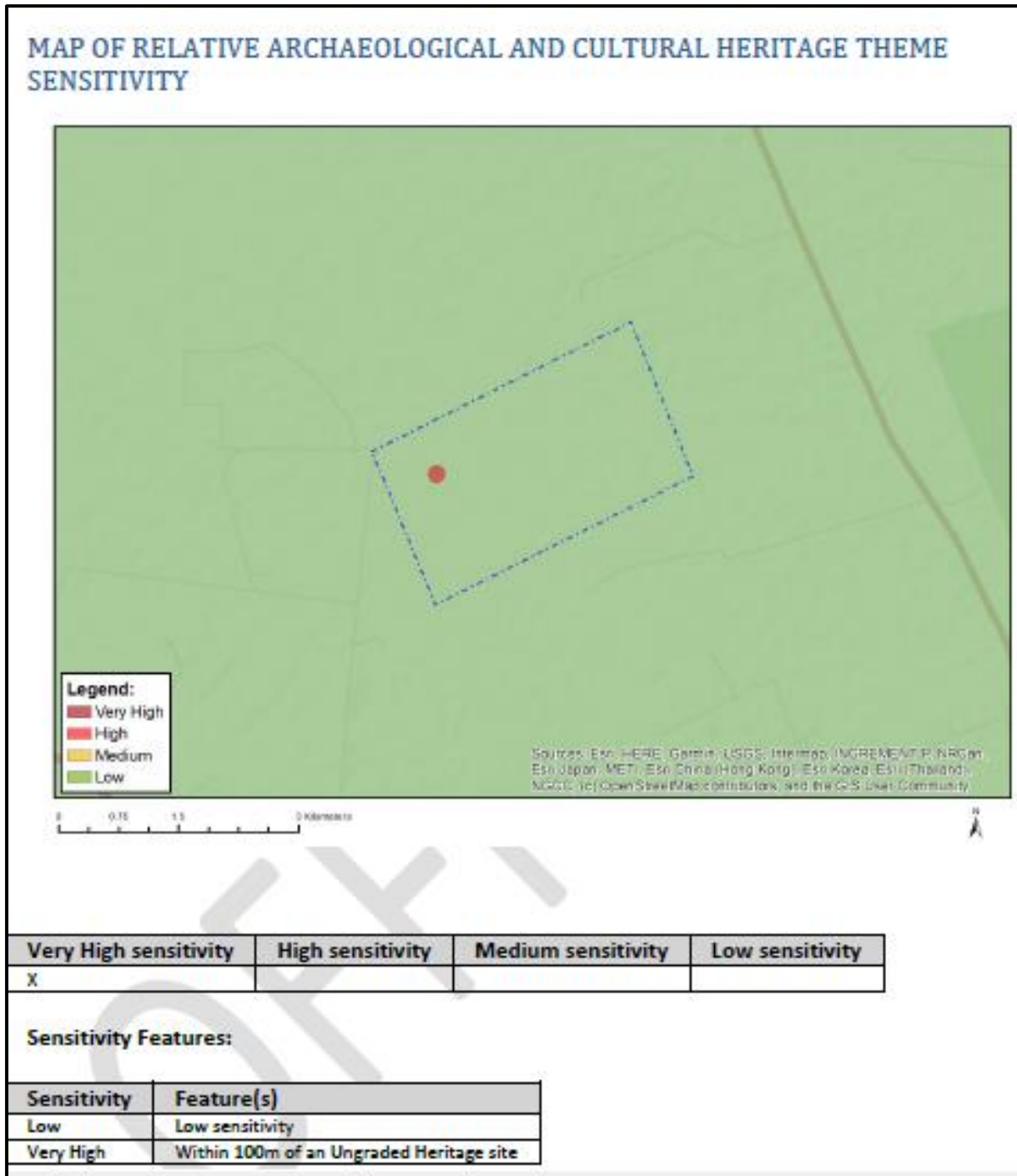


Figure 5.5. DEA screening tool map indicating heritage sensitivity in the study area.

The Stone Age artefacts date to the MSA and LSA and are made from fine grained material like chert and cryptocrystalline silica (CCS) and is exposed on rocky outcrops and cleared areas (Figure 5.5). No formal tools that can be attributed to an industry level were noted and artefacts consist of flakes without retouch, MSA blades and radial cores. One location with the remains of presumably farm labour dwellings were noted and consist of the ephemeral stone packed foundations of a rectangular structure. Site locations are included in Table 3 and selected artefacts are illustrated in Figures 5.6 to 5.9.

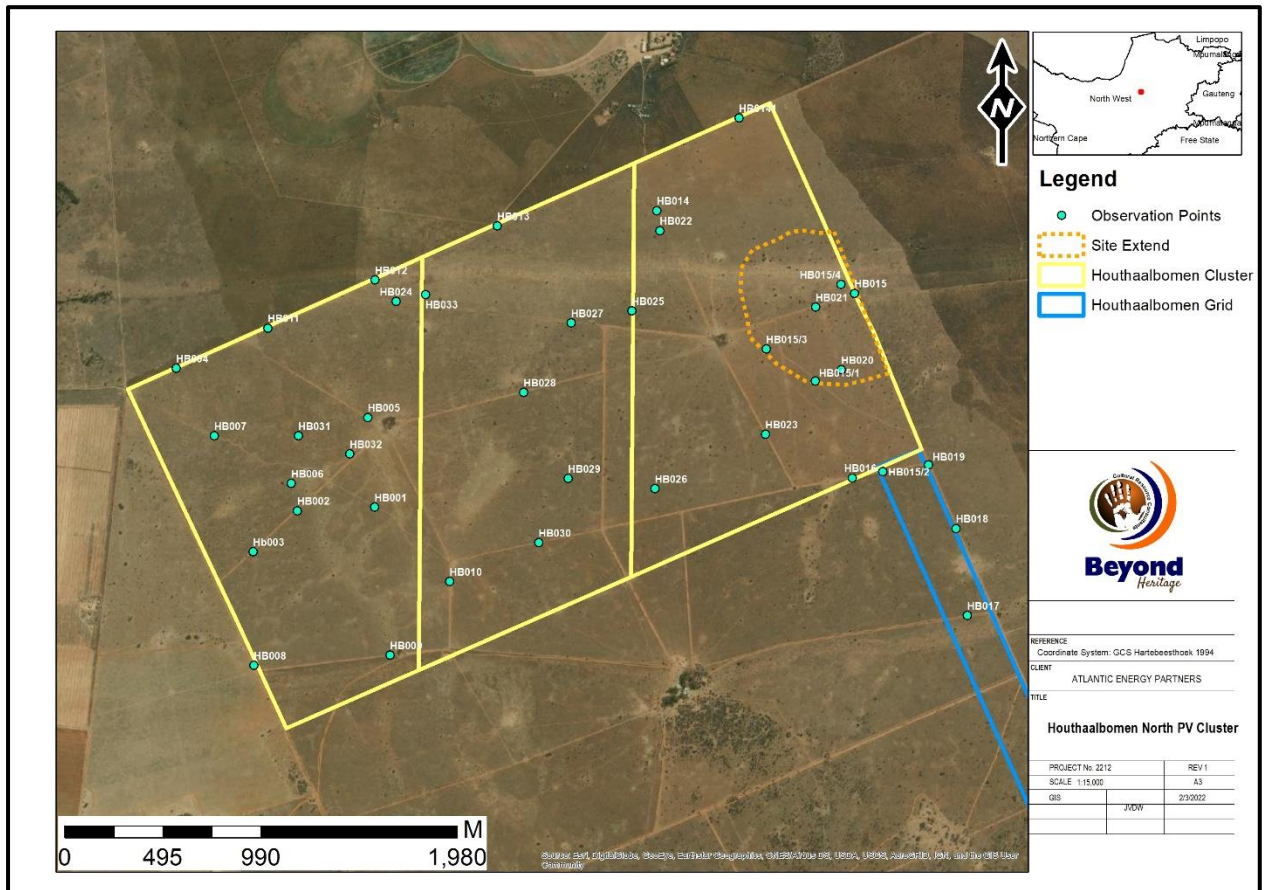


Figure 5.6. Recorded features in relation to the proposed PV Facility.



Figure 5.7. Artefacts at HB001.



Figure 5.8. Artefact at HB002



Figure 5.9. Artefacts noted at HB 004



Figure 5.10. General site conditions – HB006 – ephemeral remains of a structure.

Table 3. Recorded observations in the study area.

LABEL	LONGITUDE	LATITUDE	TYPE SITE	SIGNIFICANCE/ FIELD RATING
HB001	26° 04' 24.3623" E	26° 04' 20.1756" S	Stone Age Scatter	Low – GP C
HB002	26° 04' 11.7121" E	26° 04' 20.7661" S		Low – GP C
HB003	26° 04' 04.4904" E	26° 04' 27.4477" S		Low – GP C
HB004	26° 03' 51.8869" E	26° 03' 57.4919" S		Low – GP C
HB005	26° 04' 23.2356" E	26° 04' 05.5272" S		Low – GP C
HB006	26° 04' 10.7327" E	26° 04' 16.2839" S	Rectangular stone wall foundation.	Low – GP C
HB007	26° 03' 58.1687" E	26° 04' 08.5151" S	Stone Age Scatter	Low – GP C
HB008	26° 04' 04.6416" E	26° 04' 46.0415" S		Low – GP C
HB009	26° 04' 26.9257" E	26° 04' 44.3640" S		Low – GP C
HB010	26° 04' 36.6743" E	26° 04' 32.3291" S		Low – GP C
HB011	26° 04' 06.8845" E	26° 03' 50.9005" S		Low – GP C
HB012	26° 04' 24.4019" E	26° 03' 43.0560" S		Low – GP C
HB013	26° 04' 44.4180" E	26° 03' 34.2181" S		Low – GP C
HB014	26° 05' 10.5181" E	26° 03' 31.7268" S		Low – GP C
HB141	26° 05' 23.9568" E	26° 03' 16.5923" S		Low – GP C
HB015	26° 05' 42.8604" E	26° 03' 45.2268" S		Medium – GP B
HB015/1	26° 05' 36.4057" E	26° 03' 59.5369" S		Medium – GP B
HB015/2	26° 05' 47.4467" E	26° 04' 14.3941" S		Medium – GP B
HB015/4	26° 05' 40.6211" E	26° 03' 43.7615" S		Medium – GP B
HB015/3	26° 05' 28.4389" E	26° 03' 54.3097" S		Medium – GP B
HB016	26° 05' 42.4500" E	26° 04' 15.3947" S		Low – GP C
HB017	26° 06' 01.3033" E	26° 04' 37.8912" S		Low – GP C
HB018	26° 05' 59.4529" E	26° 04' 23.6713" S		Low – GP C
HB019	26° 05' 54.9527" E	26° 04' 13.2815" S		Low – GP C
HB020	26° 05' 40.6715" E	26° 03' 57.7044" S		Low – GP C
HB021	26° 05' 36.5065" E	26° 03' 47.4875" S		Low – GP C
HB022	26° 05' 11.0003" E	26° 03' 34.9848" S	Isolated MSA core	Low – GP C
HB023	26° 05' 28.3056" E	26° 04' 08.2631" S	Stone Age Scatter	Low – GP C
HB024	26° 04' 27.8795" E	26° 03' 46.5587" S		Low – GP C
HB025	26° 05' 06.4608" E	26° 03' 48.0816" S		Low – GP C
HB026	26° 05' 10.1795" E	26° 04' 17.1732" S		Low – GP C
HB027	26° 04' 56.4853" E	26° 03' 50.0544" S		Low – GP C
HB028	26° 04' 48.7201" E	26° 04' 01.4089" S		Low – GP C
HB029	26° 04' 56.0136" E	26° 04' 15.4740" S		Low – GP C
HB030	26° 04' 51.2219" E	26° 04' 25.9969" S		Low – GP C
HB031	26° 04' 11.9243" E	26° 04' 08.5223" S		Low – GP C
HB032	26° 04' 20.2908" E	26° 04' 11.4925" S		Low – GP C
HB033	26° 04' 32.6927" E	26° 03' 45.4645" S		Low – GP C

5.2 Cultural Landscape

The study area is located in a rural setting used for cultivation and grazing and remains largely undeveloped (Figure 5.10 to 5.12). The area is traversed by a road and tracks are visible from before the 1970's.

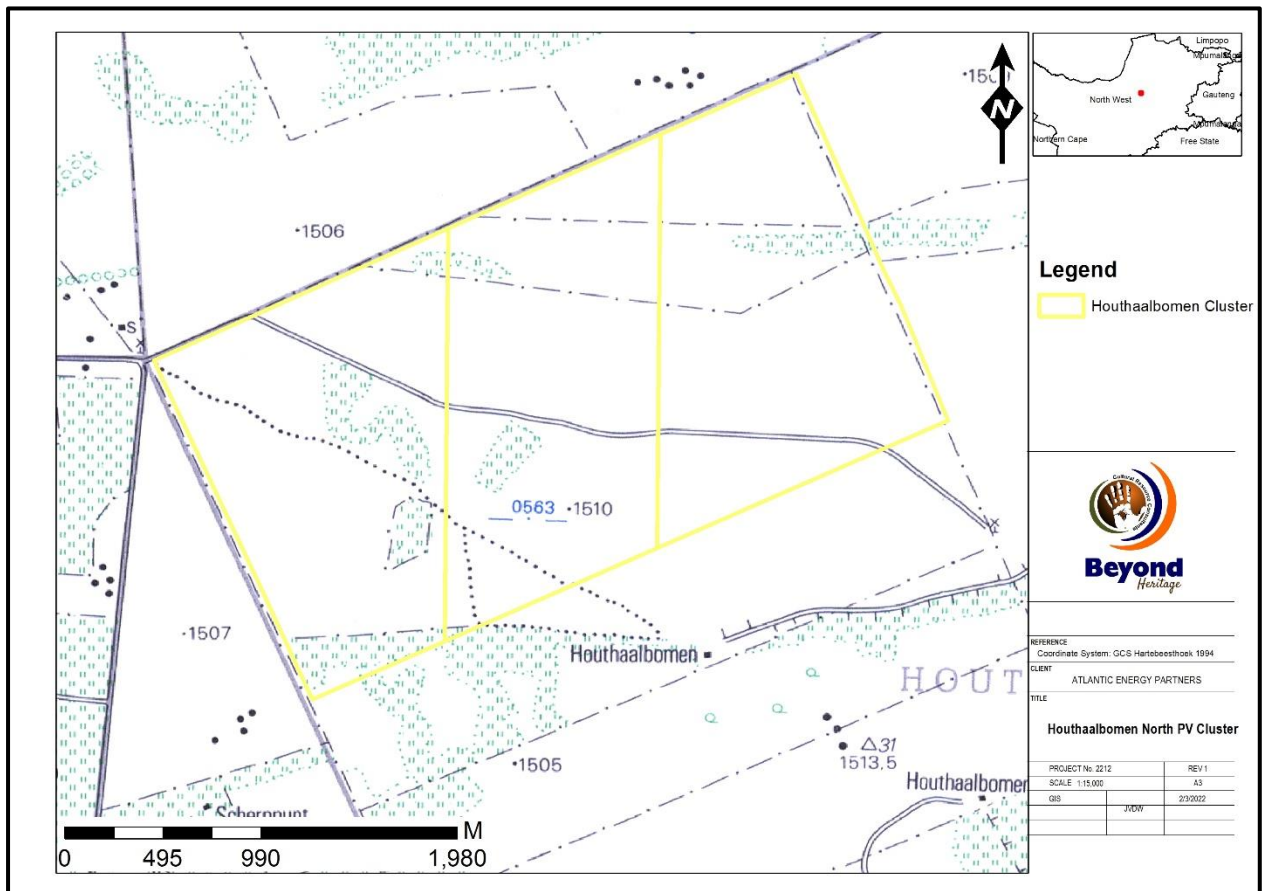


Figure 5.11. 1972 Topographic map of the impact area. Parts of the study area are cultivated and a road, fences and some tracks are visible. Structures are visible in the surrounding area.

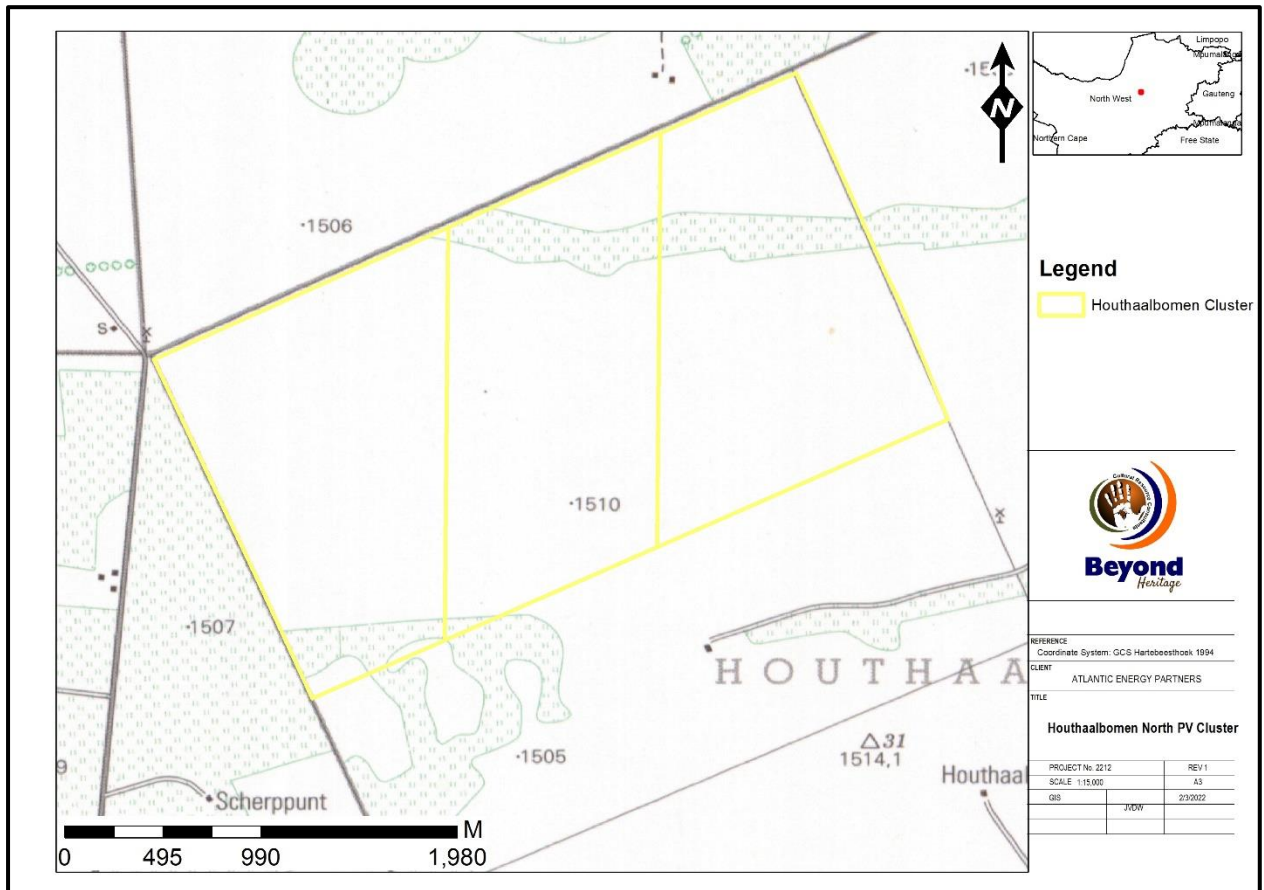


Figure 5.12. 1992 Topographic map of the study area. Some cultivated areas are still visible.

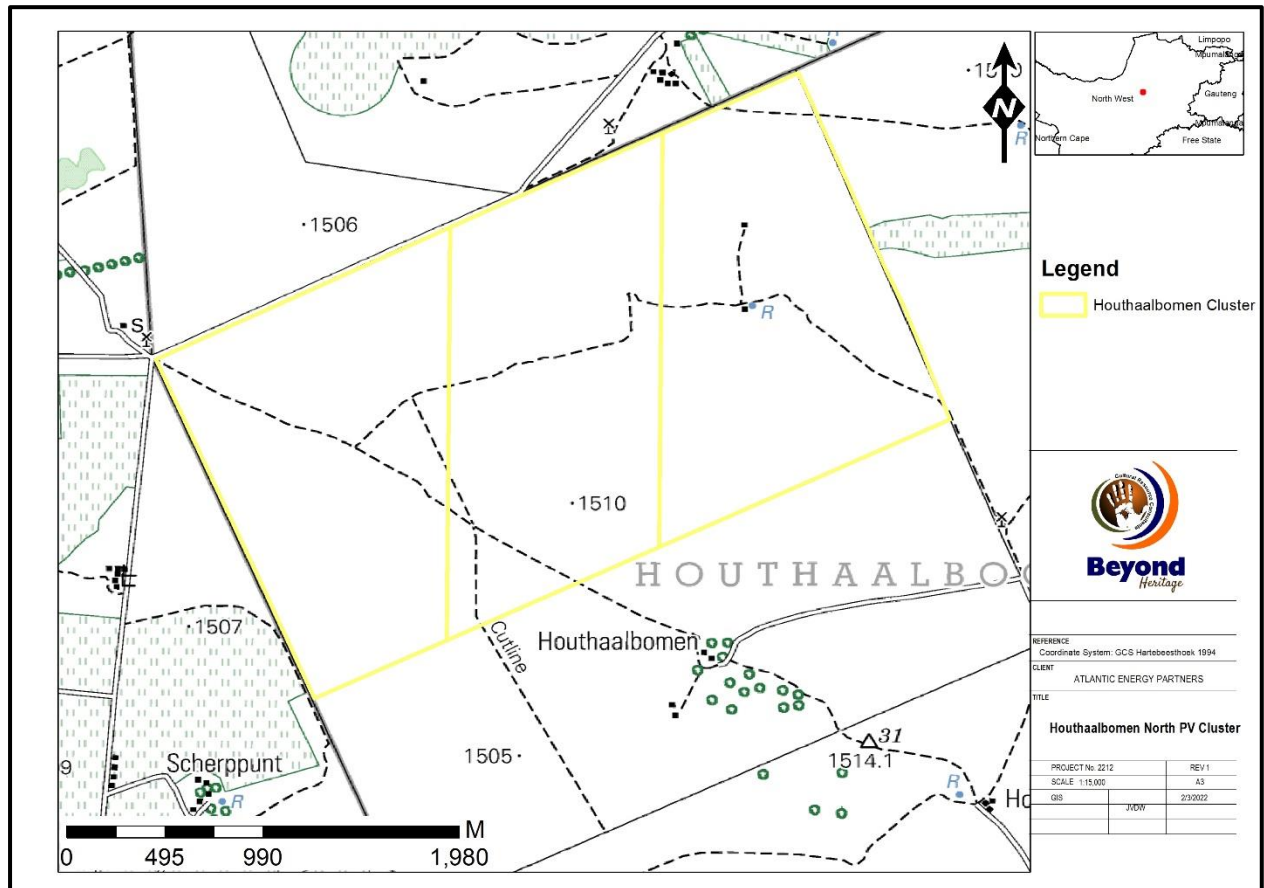
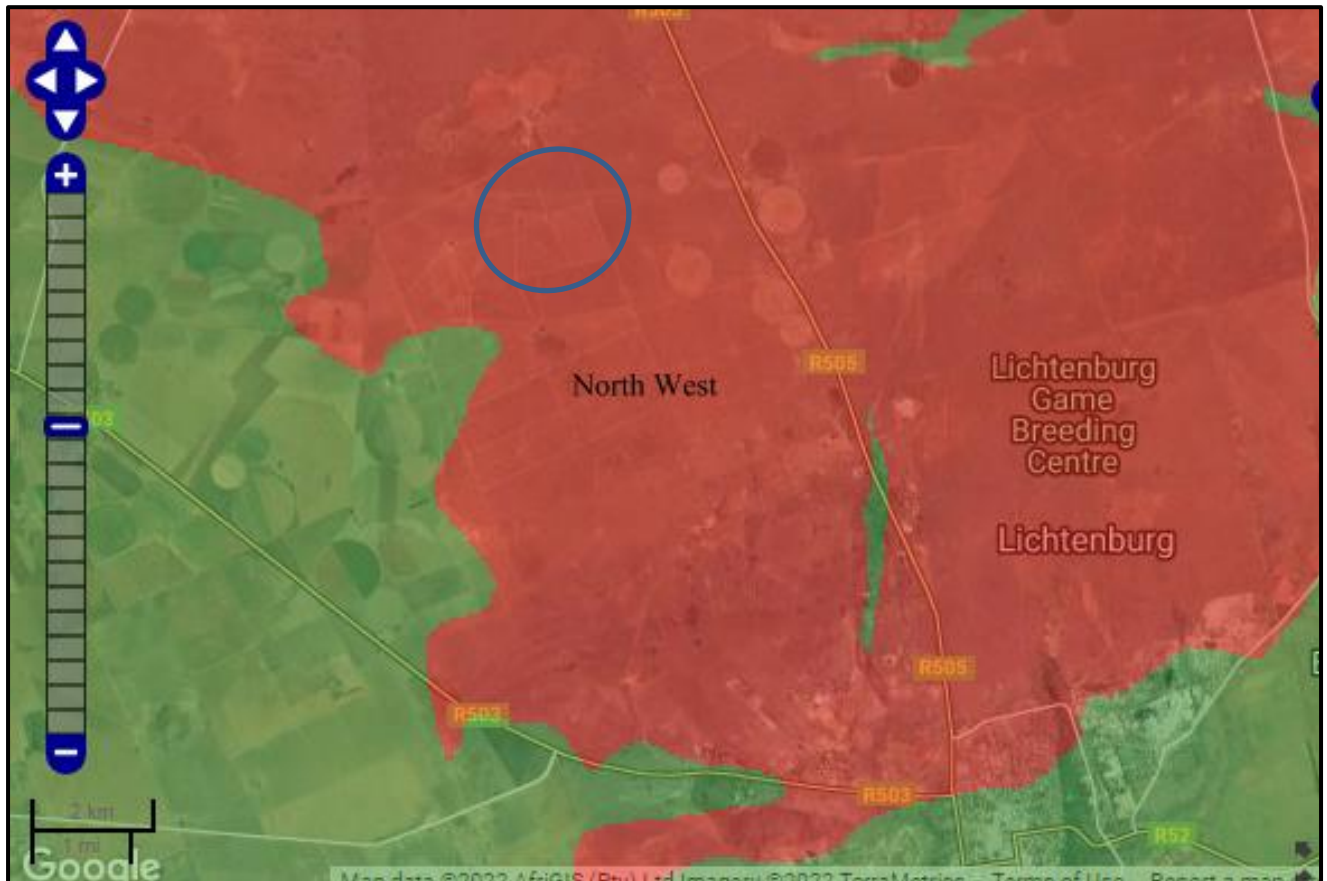


Figure 5.13. 2001 Topographic map indicating no developments in the study area, but some tracks a reservoir and dwellings are visible.

5.3 Paleontological Resources

Based on the SAHRA sensitivity map the area is of high sensitivity, concurring with the DEA Screening Tool as the Monte Christo and Oaktree Formations of the Malmani Subgroup are indicated as very highly sensitive (red) because of the potential of finding trace fossils, in particular stromatolites and this aspect was addressed in an independent study by Prof Marion Bamford (2022) included as Appendix A. In terms of the palaeontological component, the proposed site lies on the potentially very highly fossiliferous rocks of the Malmani Subgroup, (Chuniespoort Group, Transvaal Supergroup), particularly the Oaktree Formation. The site visit for this project found that there were good exposures of dolomite but no stromatolites were present. Nonetheless, a Fossil Chance Find Protocol should be added to the EMP. Based on this information it is recommended that no further palaeontological impact assessment is required unless fossils are found by the developer/ environmental officer/ other designated responsible person once excavations/drilling activities have commenced. As far as the palaeontology is concerned, the project should be authorised.



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 5.14. Paleontological sensitivity for the approximate study area as indicated by SAHRA.

6 KNOWLEDGE GAPS

The authors acknowledge that the brief literature review is not exhaustive on the literature of the area. Due to the subsurface nature of archaeological artefacts the possibility exists that some features or artefacts may not have been discovered/recorded during the survey. The possible occurrence of graves can also not be excluded. 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. Sand and vegetation cover in the study area limited archaeological visibility.

7 CONCLUSIONS

The study area was assessed both on desktop level and by a non-intrusive pedestrian field survey. No significant heritage sites were recorded within the PV footprint, although Stone Age scatters were noted alluding to Stone Age occupation of the area. *In-situ* deposits could occur below the surface and the significance of higher density clusters will have to be further investigated during the EIA phase.

The study area is of very high palaeontological significance based on the SAHRA paleontological map and this was addressed by Bamfond (2022). In terms of the palaeontological component, the proposed site lies on the potentially very highly fossiliferous rocks of the Malmani Subgroup, (Chuniespoort Group, Transvaal Supergroup), particularly the Oaktree Formation. The site visit and walkthrough by the archaeologists for this project found that there were good exposures of dolomite but no stromatolites were present. Nonetheless, a Fossil Chance Find Protocol should be added to the EMP. Based on this information it is recommended that no further palaeontological impact assessment is required unless fossils are found by the developer/ environmental officer/ other designated responsible person once excavations/drilling activities have commenced. As far as the palaeontology is concerned, the project should be authorised.

No fatal flaws were recorded, and the project can proceed but in order to comply with the National Heritage Resources Act (Act 25 of 1999) it is recommended that a Phase 1 Heritage Impact Assessment must be undertaken for the study area. During the HIA the potential impact on heritage resources will be determined as well as levels of significance of recorded heritage resources. The HIA will also provide management and mitigation measures should any significant sites be impacted upon, ensuring that all the requirements of the SAHRA are met.

Based on the DEA screening tool the heritage sensitivity of the study area is mostly low, with a small area indicated as high. However, no additional data is available on the type of resource. Mapping of the sensitive area based on the coordinates in the screening tool plots out in a different location to that indicated on the screening tool map. It is assumed that this area relates to the Stone Age occupation of the study area that was adequately recorded during the field survey.

The DEA Screening Tool indicated the area to be of very high palaeontological sensitivity as the Monte Christo and Oaktree Formations of the Malmani Subgroup are indicated as very highly sensitive (red) because of the potential of finding trace fossils, in particular stromatolites and this aspect was addressed in an independent study by Prof Marion Bamford (2022).

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Appendix A – Palaeontological study