HERITAGE WALK-DOWN REPORT

(REQUIRED AS A CONDITION OF AUTHORISATION)

FOR THE APPROVED DOORNHOEK 1 PV FACILITY AND ASSOCIATED INFRASTRUCTURE, KLERKSDORP, NORTH WEST PROVINCE.

Type of development:

Renewable Energy

Applicant:

Doornhoek PV (Pty) Ltd

Report Prepared by:



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Project Reference:

Project number 2252

SAHRA Case ID: 19211

Report date:

March 2023

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APPROVAL PAGE

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Project Name	Doornhoek 1 PV Heritage walk-down		
Report Title	Heritage walk-down for the approved Doornhoek 1 PV Facility and Associated Infrastructure, Klerksdorp, North West Province		
Authority Reference Number	SAHRA Case ID Case ID: 19211		
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Applicant Name	Doornhoek PV (Pty) Ltd		

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4 April 2023	2251	Lay out change and technical revision

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Executive Summary

Doornhoek PV (Pty) Ltd appointed Beyond Heritage to conduct a Heritage walk-down for the authorised photovoltaic (PV) solar energy facility (known as the Doornhoek 1 PV facility). The Project is located on Portion 18 of the Farm Doornhoek No. 372-IP, approximately 11km north of Klerksdorp in the North West Province. The solar PV facility will comprise several arrays of PV panels and associated infrastructure and will have a contracted capacity of up to 115MW and will cover approximately 200ha. This walk-down was commissioned by Doornhoek PV (Pty) Ltd in fulfilment of the requirements of the Environmental Authorisation conditions and recommendations from the EIA process. From the walk-down the following key findings were made:

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- During the Heritage Impact Assessment (van der Walt 2022c) for the Project, heritage
 observations were limited to archaeological findspots dating to the Stone Age and structures
 dating to the recent past/historical period. These features are avoided by the final Project footprint
 but necessitated a small change in layout from the area assessed during the HIA;
- The final Project footprint was covered during the walk down, and no sites of significance were
 identified within the facility footprint although additional sites (a burial site and structures) were
 recorded outside of the areas affected by the Project;
- Within the facility footprint an isolated MSA core was documented but does not represent a
 distinct archaeological site and is considered a findspot and is of low heritage significance and
 does not warrant further mitigation;
- Also within the facility footprint is an informal church built by community members located on the north western corner of the Project area;

The Heritage Walk–Down confirmed that the impacts on heritage resources are low and the Project can continue with adherence to the recommendations made in this report and the official SAHRA comments (Case ID: 19211). The following recommendations apply and should be implemented together with the site-specific recommendations and Chance Find procedure in Section 7 (Table 8):

Recommendations:

• It is recommended that through social consultation, relevant stakeholders at Site DH101 are informed of the development and given a reasonable timeframe to relocate the church;

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- Project activities must be limited to the authorised footprint that will be fenced ensuring that recorded sites outside of the footprint is not impacted on inadvertently;
- The study area should be monitored by the ECO during construction to implementation the Chance Find Procedure for the Project (Section 7.2).

Declaration of Independence

Specialist Name	Jaco van der Walt		
Declaration of Independence	colare, as a specialist appointed in terms of the National Environmental nagement Act (Act No 107 of 1998) and the associated 2014 irronmental Impact Assessment (EIA) Regulations (as amended), that I: I act as an independent specialist in this application; I will perform the work relating to the application in an objective manner, even if this results in views and findings that are no 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 mysel for submission to the competent authority; All the particulars furnished by me in this form are true and correct and I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 49 A of the Act.		
Signature	Walt.		
Date	08/03/2023		

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a) Expertise of the specialist

Jaco van der Walt has been practising as a Cultural Resource Management (CRM) archaeologist for 15 years. He obtained an MA degree in Archaeology from the University of the Witwatersrand focussing on the Iron Age in 2012. Jaco is an accredited member of the Association of South African Professional Archaeologists (ASAPA) (#159) and have conducted more than 500 impact assessments in Limpopo, Mpumalanga, North West, Free State, Gauteng, Kwa Zulu Natal (KZN) as well as the Northern and Eastern Cape Provinces in South Africa.

Jaco has worked on various international projects in Zimbabwe, Botswana, Mozambique, Lesotho, Democratic Republic of the Congo (DRC) Zambia, Guinea, Afghanistan, Nigeria and Tanzania. Through this, he has a sound understanding of the International Finance Corporations (IFC) Performance Standard requirements, with specific reference to Performance Standard 8 – Cultural Heritage



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ABBREVIATIONS

ASAPA: Association of South African Professional Archaeologists
BGG Burial Ground and Graves
CFPs: Chance Find Procedures
CMP: Conservation Management Plan
CRR: Comments and Response Report
CRM: Cultural Resource Management
DFFE: Department of Fisheries, Forestry and Environment,
EA: Environmental Authorisation
EAP: Environmental Assessment Practitioner
ECO: Environmental Control Officer
EIA: Environmental Impact Assessment*
EIA: Early Iron Age*
EAP Environmental Assessment Practitioner
EMPr: Environmental Management Programme
ESA: Early Stone Age
ESIA: Environmental and Social Impact Assessment
GIS Geographical Information System
GPS: Global Positioning System
GRP Grave Relocation Plan
HIA: Heritage Impact Assessment
LIA: Late Iron Age
LSA: Late Stone Age
MEC: Member of the Executive Council
MIA: Middle Iron Age
MPRDA: Mineral and Petroleum Resources Development Act, 2002 (Act No. 28
of 2002)
MSA: Middle Stone Age
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 E

^{*}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.

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GLOSSARY

Archaeological site (remains of human activity over 100 years old)

Earlier Stone Age (~ 2.6 million to 250 000 years ago)

Middle Stone Age (~ 250 000 to 40-25 000 years ago)

Later Stone Age (~ 40-25 000, to the historic period)

The Iron Age (~ AD 400 to 1840)

Historic (~ AD 1840 to 1950)

Historic building (over 60 years old)



1 Introduction and Terms of Reference:

Beyond Heritage was appointed to conduct a Heritage walk-down for the authorised photovoltaic (PV) solar energy facility (known as the Doornhoek 1 PV facility) located on a site approximately 11km north of Klerksdorp in the North West Province. The solar PV facility will comprise several arrays of PV panels and associated infrastructure and will have a contracted capacity of up to 115MW. The development area is situated within the City of Matlosana Local Municipality within the Dr Kenneth Kaunda District Municipality (Figure 1.1 to 1.3). The walk down is conducted in fulfilment of the requirements of the Environmental Authorisation conditions and recommendations from the EIA process.

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The report outlines the approach and methodology utilized before and during the survey, which includes: Phase 1, review of the Heritage Impact Assessment (HIA) for the Project; Phase 2, the physical surveying of the area on foot and by vehicle; Phase 3, reporting the outcome of the study.

General site conditions and features on sites were recorded by means of photographs, GPS locations, and site descriptions.

1.1 Terms of Reference

This Heritage Walk Down report was compiled by Beyond Heritage for the proposed construction of the PV facility in fulfilment with the conditions of authorisation for the Project.

The process consisted of three phases:

- Phase 1, review of the existing HIA for the Project;
- Phase 2, the physical surveying of the area on foot and by vehicle;
- Phase 3, reporting the outcome of the study.

1.2 Scope and purpose of the report

The report is intended to report on any heritage resources that might occur within the final footprint of the PV facility and make recommendations for any mitigation measures that may need to be implemented prior to construction.

1.3 Project Description

The solar PV facility will comprise several arrays of PV panels and associated infrastructure and will have a contracted capacity of up to 115MW. The facility will cover approximately 200ha.



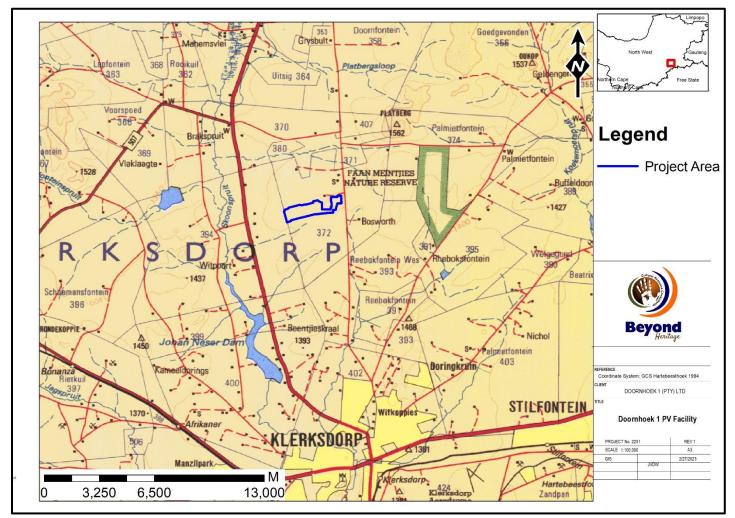


Figure 1.1. Regional setting of the Project (1: 250 000 topographical map).



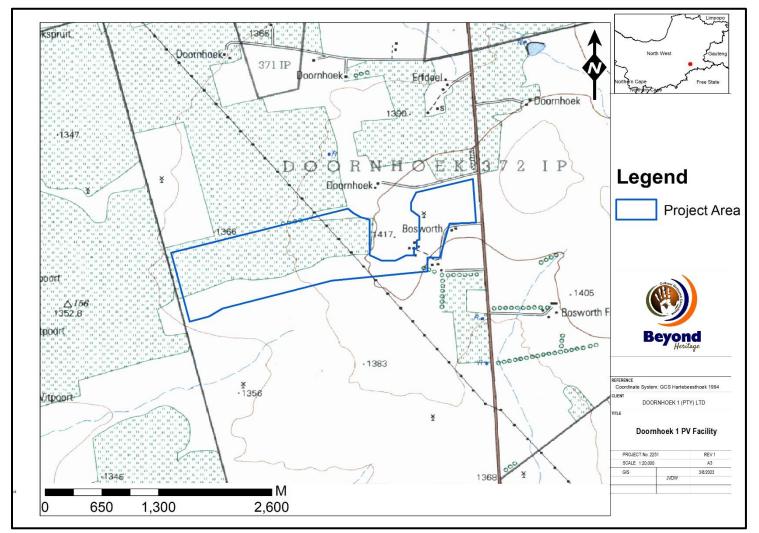


Figure 1.2. Local setting of the Project (1: 50 000 topographical map).



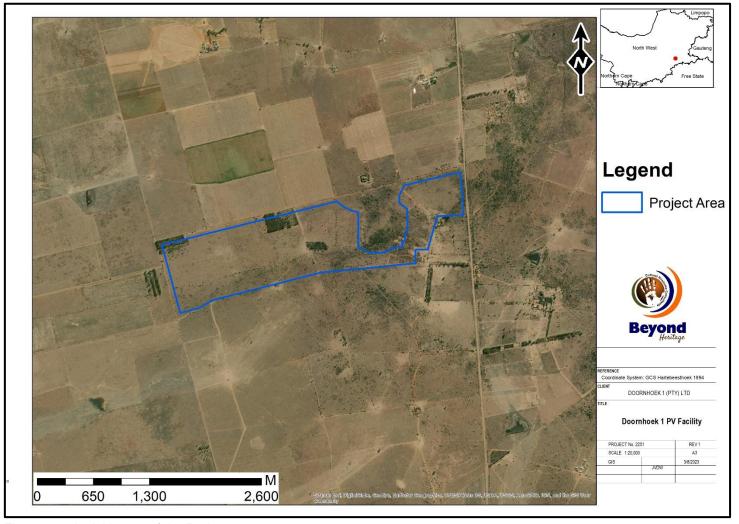


Figure 1.3. Aerial image of the Project area.



2 Heritage Legislation

The identification, evaluation and assessment of any cultural heritage site, artefact or find in the South African context is required and governed by the following legislation:

- National Environmental Management Act (NEMA), Act 107 of 1998
- ii. National Heritage Resources Act (NHRA), Act 25 of 1999
- Mineral and Petroleum Resources Development Act (MPRDA), Act 28 of 2002

The following sections in each Act refer directly to the identification, evaluation and assessment of cultural heritage resources.

- i. National Environmental Management Act (NEMA) Act 107 of 1998:
 - a. Basic Environmental Assessment (BEA) Section (23) (2)(d)
 - b. Environmental Scoping Report (ESR) Section (29) (1)(d)
 - c. Environmental Impact Assessment (EIA) Section (32) (2)(d)
 - d. Environmental Management Plan (EMP) Section (34) (b)
- ii. National Heritage Resources Act (NHRA) Act 25 of 1999:
 - a. Protection of Heritage Resources Sections 34 to 36; and
 - b. Heritage Resources Management Section 38
- iii. Mineral and Petroleum Resources Development Act (MPRDA) Act 28 of 2002:

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

Before the physical walk-down Beyond Heritage staff compared the proposed power line route with data from previous projects undertaken in the wider region (SAHRIS) to contextualize the study area. A HIA was conducted for the PV facility by Jaco van der Walt in 2022.

3.2 Site Investigation

The aim of the site visit was to:

- a) survey the proposed Project area to understand the heritage character of the area and to record, photograph and describe sites of archaeological, historical or cultural interest;
- b) record GPS points of sites/areas identified as significant areas;
- c) determine the levels of significance of the various types of heritage resources recorded in the Project area.

Table 1: Site Investigation Details

	Site Investigation
Date	The week of 25 January 2023
Season	Summer – The site is characterised by dense vegetation cover limiting archaeological visibility. The Project area was sufficiently covered to understand the heritage character of the area (Figure 3.1).



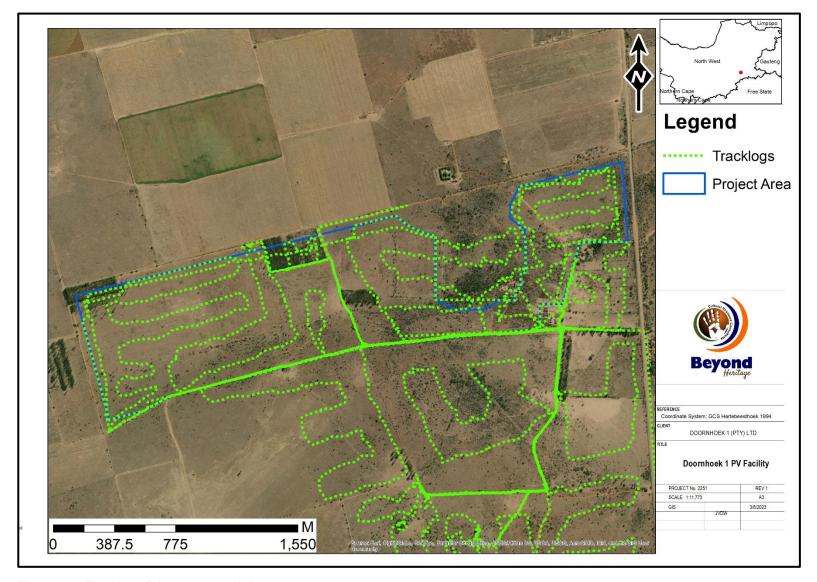


Figure 3.1. Tracklog of the survey path in green.



3.3 Site Significance and Field Rating

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

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

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

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

In addition to this criteria field ratings prescribed by SAHRA (2007), and acknowledged by ASAPA for the SADC region, were used for the purpose of this report. The recommendations for each site should be read in conjunction with section 10 of this report.

Table 2: Heritage significance and field ratings

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

3.4 Impact Assessment Methodology

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

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

The **significance** is calculated by combining the criteria in the following formula:

S = (E+D+M) P

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

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

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

3.5 Limitations and Constraints of the study

Due to the nature of heritage resources and pedestrian surveys, the possibility exists that some features or artefacts may not have been discovered/recorded and the possible occurrence of graves and other cultural material cannot be excluded. This limitation is successfully mitigated with the implementation of a Chance Find Procedure and monitoring of the study area by the Environmental Control Officer (ECO). This report only deals with the footprint area of the proposed development and consisted of non-intrusive surface surveys. This study did not assess the impact on medicinal plants and intangible heritage as it is assumed that these components will be highlighted through the public consultation process conducted during the EIA if relevant. It is possible that new information could come to light in future, which might change the results of this Impact Assessment.

4 Description of the Physical Environment

Most of the farm is being used as grazing fields for cattle as well as a variety of game animals towards the southern sections of the area. The natural vegetation consists of tall grasses, thickets of small shrubs and scattered trees with a few large thickets of eucalyptus trees. A few rocky outcrops are also situated within the Project area.

Existing infrastructure on the farm includes various small gravel roads that were used to access certain parts of the Project area and large powerlines traversing the landscape. The study area falls within the Dry Highveld Grassland Bioregion as described by Mucina et al (2006) with the vegetation described as Klerksdorp Thornveld. Land use in the general area is characterized by agriculture, dominated by cattle farming as well as mining activities. General site conditions are illustrated in Figures 4.1 to 4.4.



Figure 4.1. Dense vegetation cover in the study area limiting heritage visibility.

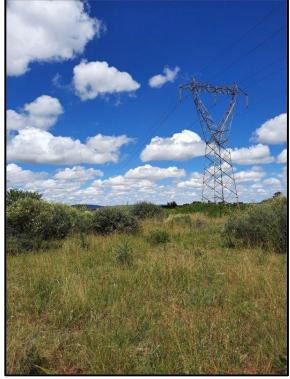


Figure 4.3. An existing powerline traverses the area.



Figure 4.2. Thickets of Eucalyptus Trees are found throughout the study area.



Figure 4.4. Existing gravel roads in the study area.

5 Findings of the walk-down

5.1 Heritage Resources

Different types of heritage resources were recorded during the walk-down of the facility footprint that focussed on tangible heritage resources and the types of resources are categorised and discussed below. The distribution map (Figure 5.1) illustrates the recorded observations in relation to the Project area. Most of the sites are situated **outside** of the Project area and will not be impacted on. Field notes that include brief site descriptions and photographs are provided in Annexure A. Recorded observations were given waypoint numbers in the field and is retained for reporting purposes.

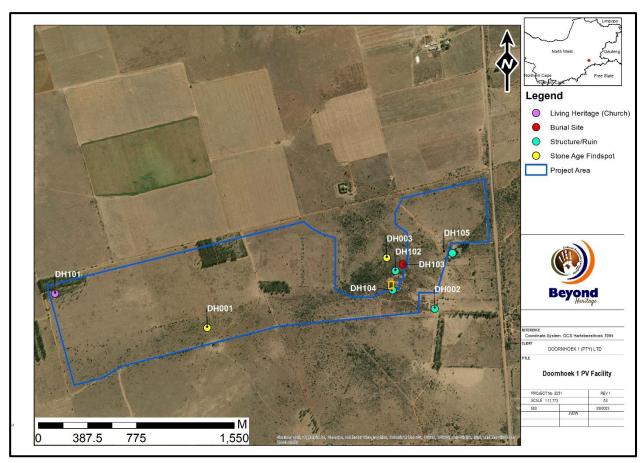


Figure 5.1. Distribution map of recorded observations. Site DH104 is located outside the project footprint and the site extent is indicated by an orange polygon.

Category 1: Stone Age

Isolated Middle Stone Age lithics were found at two waypoints, DH001 and DH003. These low-density occurrences does not represent a distinct archaeological site and is considered a findspot and is of low heritage significance. Similar Stone Age scatters were also documented in varying densities in surveys in the area (see van der Walt 2022a; 2022b). The findspot at DH001 is an isolated MSA core and will be directly impacted on as it lies within the Project footprint, it is considered to be of low heritage significance with a Generally Protected C Field Rating and does not represent a distinct archaeological site. DH003 is located outside of the Project footprint and not further discussed here.

Category 2. Remains from the recent past/historical

Occupation dating to the historical period/recent past is marked by the remnants of various degraded ruins and old farmsteads surrounding the facility footprint. None of the recorded sites will be directly impacted on

and the visual impact was assessed during the EIA in the Visual Impact Assessment Report by Stead (2022). Visual recommendations should be adhered to (Stead 2022).

The study area is in a rural setting and characterised by cultivation and agricultural activities with a historical layering consisting of Stone Age sites as discussed above and dwellings dating from prior to 1968. The identified structures are therefore assumed to be older than 60 years and therefore the features are protected by the NHRA.

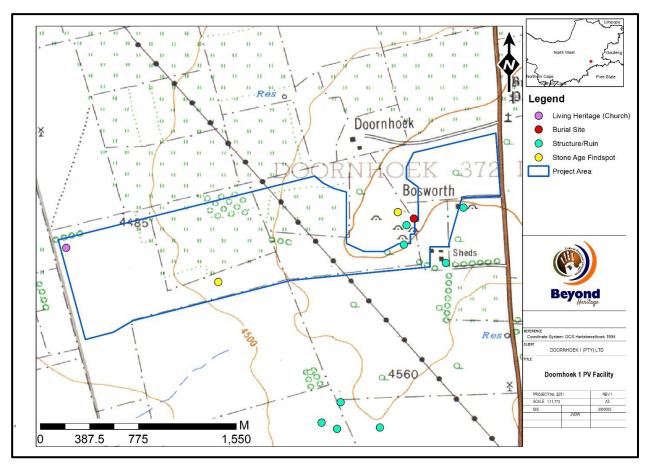


Figure 5.2. 1968 Topographic map of the study area indicating numerous dwellings in the study area as well as cultivation.

Category 3. Living Heritage

A small, informal church at DH101 is situated on the north-western corner of the Project area and will likely be impacted on. The church was built fairly recently by local community members and consists of a few informal wooden structures that are used to demarcate a small ritual or religious area. This site is classified as living heritage following the NHRA and as the site is recent it is of Low heritage significance with a Generally Protected C Field Rating.

Category 4. Burial Sites

Burial sites and graves are always of high social significance with a Field Rating of 3A. A single informal burial site was documented directly **outside** the facility footprint and will not be directly impacted on. The burial site at DH103 includes various graves built from packed stone, granite headstones and metal grave markers. The burial site must be preserved in-situ and avoided with a 30m buffer zone.

6 Potential Impact

Impacts to heritage resources without mitigation within the Project footprint will be permanent and negative and occur during the pre-construction and construction activities. It is assumed that the pre-construction

and construction phase involves the removal of topsoil and vegetation as well as the establishment of infrastructure. These activities can impact on heritage features and impacts include destruction or partial destruction of non-renewable heritage resources. Impacts during the operation phase is considered to affect the cultural landscape and sense of place.

The main cause of impacts to archaeological resources is physical disturbance of the material itself and its context during removal of topsoil and vegetation as well as the excavations associated with the establishment of infrastructure. In terms of this Project the main source of impacts will happen during the following activities.

- Establishment of new roads and upgrade of existing roads;
- Earthworks for temporary infrastructure including laydown areas;
- Visual impact of the PV Facility on the landscape and sense of place;
- Excavation and levelling of the PV facility footprint;
- Trenches for cables and erection of powerlines;
- Influx of people into the area that could desecrate the burial sites;
- Excavations during construction of the sub stations.

A single Stone Age findspot at DH001 consisting of an MSA core was documented within the Project area will be directly impacted on, but the isolated find is more likely part of background scatter and does not represent a distinct archaeological site and do not warrant further mitigation. Impact to the findspot is low and mitigation will therefore be unnecessary.

The small, informal church situated along the north-western corner of the Project area at DH101 will also likely be impacted on during construction.

Graves are always of high social significance and the recorded burial sites and potential graves should be avoided by the development. Graves (and potential graves until confirmed otherwise) at DH103 must be preserved *in situ* with a 30-meter buffer as mitigation measure (prescribed by SAHRA). The burial site lies directly outside the Project area and will not be directly impacted on and access for family members will also not be an issue.

All the other recorded observations are located outside of the facility footprint and will not be impacted on.

Impacts to heritage resources without mitigation within the Project footprint will be permanent and negative and occur during the pre-construction and construction activities. Any additional effects to subsurface heritage resources can be successfully mitigated by implementing a chance find procedure. Mitigation measures as recommended in this report should be implemented during all phases of the Project. Impacts of the Project on heritage resources can be managed to an acceptable level. Table 3 indicates the potential impact on the recorded sites and Table 4, 5, and 6 indicates the potential impact of the Project on the recorded resources. The proposed Project in relation to recorded sites is illustrated in Figure 6.1 to 6.2.

Table 3. Impact and proposed mitigation measures.

Area	Waypoint	Description	Significance	Mitigation
Within Project area	DH001	Isolated MSA core find spot	Low Significance GP C	No Mitigation required
North- western corner of				Relevant stakeholders at Site DH101 should be informed of the development
Project		Living heritage site – small		and given a reasonable timeframe to
area	DH101	informal church	Low Significance GP C	relocate the church
Directly outside		Burial site – small informal		
Project		burial site consisting of	Local Significance 3A	The burial site must be preserved and
area	DH103	multiple graves	High Significance	avoided with a 30m buffer zone
		Mud Brick Ruins - These structures are partially		
Directly		broken down or degraded.		
outside		These structures include		
project		mudbrick ruins as well as		The area should be avoided during
area	DH104	stone-built foundations.	Low Significance GP C	construction.

6.1.1 Pre-Construction phase

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

6.1.2 Construction Phase

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

6.1.3 Operation Phase

No impacts are expected during the operation phase.

6.1.4 Impact Assessment tables.

Table 4. Impact assessment for the proposed Project on Stone Age spot find DH001

Nature: During the construction phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological material or objects.

	Without mitigation	With mitigation (Preservation/
		recording)
Extent	Local (1)	Local (1)
Duration	Permanent (5)	Permanent (5)
Magnitude	Minor (2)	Minor (2)
Probability	Probable (3)	Probable (3)
Significance	24 (Low)	24 (Low)
Status (positive or negative)	Negative	Negative
Reversibility	Not reversible	Not reversible
Irreplaceable loss of	Yes	Yes
resources?		
Can impacts be mitigated?	Yes	Yes

Mitigation:

The Stone Age artefacts are scattered too sparsely to be of significance apart from mentioning them in this report. No additional preconstruction mitigation will be required.

A Chance Find Procedure should be implemented for the project.

Residual Impacts:

If sites are destroyed this results in the depletion of archaeological record of the area and even though surface features can be avoided or mitigated, there is a chance that completely buried sites would still be impacted but this cannot be quantified. However, if sites are recorded and preserved or mitigated this adds to the record of the area.

Table 5. Impact assessment of the project on Living heritage site (informal church) at DH101

Nature: During the construction phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological material or objects.

	Without mitigation	With mitigation (Preservation/	
		recording)	
Extent	Local (1)	Local (1)	
Duration	Permanent (5)	Permanent (5)	
Magnitude	Minor (2)	Minor (1)	
Probability	Probable (3)	Probable (3)	
Significance	24 (Low)	21 (Low)	
Status (positive or negative)	Negative	Negative	
Reversibility	Not reversible	Not reversible	
Irreplaceable loss of	No	No	
resources?			
Can impacts be mitigated?	Yes	Yes	
		·	

Mitigation:

- It is recommended that through social consultation, relevant stakeholders at Site DH101 are informed of the development and given a reasonable timeframe to relocate the church;
- A Chance Find Procedure should be implemented for the project.

Residual Impacts:

This cannot be quantified. However, if sites are recorded and preserved or mitigated this adds to the record of the area.

Table 6. Impacts of the project on Burial site at DH103

Nature: During the construction phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological material or objects.

	Without mitigation	With mitigation (Preservation/ recording)	
Extent	Local (2)	Local (2)	
Duration	Permanent (5)	Permanent (5)	
Magnitude	High (8)	Minor (3)	
Probability	Improbable (2)	Improbable (2)	
Significance	30 (Medium)	20 (Low)	
Status (positive or negative)	Negative	Negative	
Reversibility	Not reversible	Not reversible	
Irreplaceable loss of resources?	Yes	Yes	
Can impacts be mitigated?	Yes	Yes	

Mitigation:

 Burial sites should be avoided with a minimum of a 30 m buffer zone and should be indicated on development plans to avoid these features.

Residual Impacts:

If sites are destroyed this results in the depletion of archaeological record of the area and even though surface features can be avoided or mitigated, there is a chance that completely buried sites would still be impacted but this cannot be quantified. However, if sites are recorded and preserved or mitigated this adds to the record of the area.

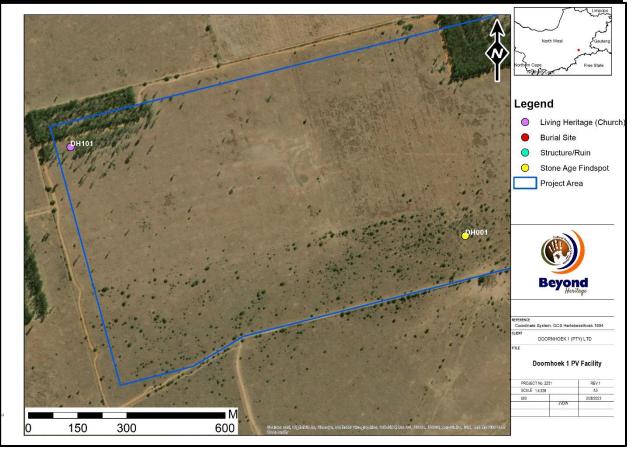


Figure 6.1. DH001 and DH101 in relation to the project area.

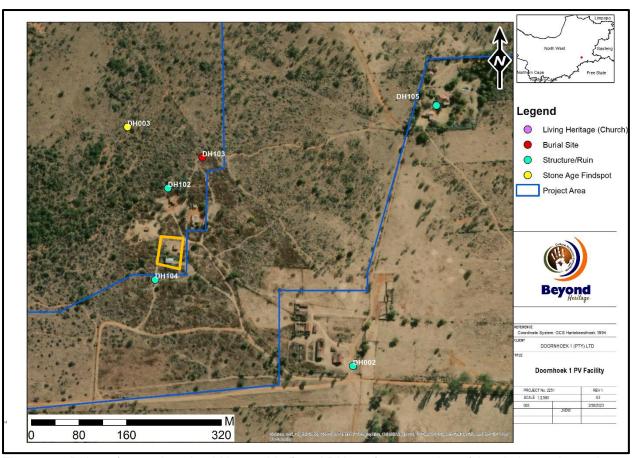


Figure 6.2. DH103 (grave that should be avoided) and DH104 (orange polygon) in relation to the project area.

7 Conclusion and recommendations

During the Heritage Impact Assessment for the project (van der Walt 2022c), heritage observations were limited to archaeological findspots dating to the Stone Age and structures dating to the recent past/historical period. These features are all avoided by the final project footprint but necessitated a small change in layout from the area assessed during the HIA. The final project footprint was covered during the heritage walk-down and no sites of significance were identified within the facility footprint although additional sites (a burial site and structures) were recorded **outside** of the areas affected by the project. Since the facility will be fenced these sites will not be affected during the pre-construction and construction phases of the Project and not further discussed here.

Only two observations are located within the project footprint consisting of a single Stone Age findspot at DH001 marked by an MSA core and will be directly impacted on. This an isolated find and does not represent a distinct archaeological site and do not warrant further mitigation. The only other observation within the study area is an informal church that can be classified as intangible heritage. It is recommended that through social consultation relevant stakeholders are informed of the development and given a reasonable timeframe to relocate the church.

The Heritage Walk–Down confirmed that the impacts on heritage resources are low and the Project can continue with adherence to the recommendations made in this report and the official SAHRA comments (Case ID: 19211).

7.1 Recommendations for condition of authorisation

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

Recommendations:

- It is recommended that through social consultation, relevant stakeholders at Site DH101 are informed of the development and given a reasonable timeframe to relocate the church;
- Project activities must be limited to the authorised footprint that will be fenced ensuring that recorded sites outside of the footprint is not impacted on inadvertently;
- The study area should be monitored by the ECO during construction to implementation the Chance Find Procedure for the project (Section 7.2).

7.2 Chance Find Procedures

7.2.1 Heritage Resources

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

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

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

8 References

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9 Annexure A

Table 9 includes descriptions of recorded heritage features and photographs of each site are included below.

Table 7. Recorded Heritage features relating to PV1.

Area	Label	Longitude	Latitude	Description	Significance	Mitigation
Within Project area	DH001	26,630776	-26,72968897	Isolated MSA irregular core on quartzite brought to the surface by an animal burrow.	Low Significance GP C	No Mitigation required
Not impacted on by this PV facility	DH002	26,646987	-26,72833102	Large historical farmstead with associated out buildings covering an area of approximately 100 x 100m. Structures includes an old farmhouse, storage areas and various other buildings. The farmstead was indicated to be more than 100 years old by the owner who stated that he had grown up at the site. Most of the structures are fairly intact although degraded and were built from quarried stone blocks and mortar. Certain portions are still in use for various farming activities.	Medium Significance GP	No Mitigation required
Not impacted on by this PV facility	DH003	26,643571	-26,72471297	Small scatter (less than 1 artefact per 3m²) of MSA pointed flakes, chunks and miscellaneous pieces with prepared striking platforms.	Low Significance GP C	No Mitigation required

				Cmall historical formates des		
Not impacted on by this PV				Small historical farmstead or small settlement situated on the western edge of the larger study area. The site contains various rectangular packed stone features such as stone packed foundations, possible graves and a stone kraal. DH004 - Small stone packed kraal with prominent walls. The kraal is about 10 x 5m in size and is situated on a small rocky hill. The stone were	GP B and if graves are confirmed GP A Medium to High	If graves confirmed- site must be avoided with a
facility	DH004	26,638133	-26,73970803	sources at this location.	Significance	30m buffer zone
Not impacted on by this PV facility	DH004/1	26,639243	-26,74015604	DH004/1 - Remnants of a packed stone foundation that is mostly buried under the thick grass cover. Only a small section of the packed stone foundation is still visible.	GP B and if graves are confirmed GP A Medium to High Significance	If graves confirmed- site must be avoided with a 30m buffer zone
Not impacted on by this PV facility	DH004/2	26,639491	-26,73825201	DH004/3 - Remnants of a packed stone foundation or structure situated on the corner of a fence line. Some features at this location may be the remnants of packed stone graves.	GP B and if graves are confirmed GP A Medium to High Significance	If graves confirmed- site must be avoided with a 30m buffer zone
Not impacted on by this PV facility	DH005	26,642035	-26,74750504	Large collection of MSA artefacts (<20 Artifacts p.m²) were identified on a fairly open area (50 x 50 m) marked by gravel. The section seems to have been cleared of vegetation either by the cattle or through farming activities.	Medium Significance GP	No Mitigation required

Not impacted on by this PV facility	DH006	26,642286	-26,74005001	Remnants of a packed stone foundation or structure situated within an extremely overgrown thicket of large eucalyptus trees. Only a 10m section of packed stone foundation is visible. The site is extremely overgrown and the layout and extend difficult to define	Low Significance GP C	No Mitigation required
North- western corner of Project area	DH101	26,61994	-26,72725503	Small informal church built by the local community members. The site consists of a few informal wooden structures that are used to demarcate a small ritual or religious area. The site was built fairly recently.	Low Significance GP C	It is recommended that through social consultation, relevant stakeholders at Site DH101 are informed of the development and given a reasonable timeframe to relocate the church
Not impacted on by this PV facility	DH102	26,644186	-26,725638	Large informal homestead containing multiple mudbrick structures built by the local farm workers. These structures include mudbrick structures, cement and metal as well as wooden features. The homestead is situated west of the large degraded farmstead at DH002	Medium significance GP B	Recording before destruction
Directly outside Project area	DH103	26,644704	-26,72517498	Small informal burial site situated north of the informal homestead situated at DH102. The burial site is extremely overgrown and difficult to define. The burial site includes various graves built from packed stone, Granite	Local Significance 3A High significance	The burial site must be preserved and avoided with a 30m buffer zone

				headstones and metal grave markers.		
Not impacted on by this PV facility	DH104	26,643992	-26,72702403	Various degraded mudbrick ruins situated south of the existing informal homestead at DH102. These structures are partially broken down or degraded. These structures include mudbrick ruins as well as stone built foundations and the remnants of stone built structures. The site is extremely overgrown with tall grass and shrubs.	Low Significance GP C	No Mitigation required
Not impacted on by this PV facility	DH105	26,647644	-26,72430804	Large original farmhouse situated north east of the informal homestead. The house is mostly intact with some farm workers currently living in the house. The general area is fairly overgrown with tall grass and shrubs.	Medium Significance GP B	Recording before destruction

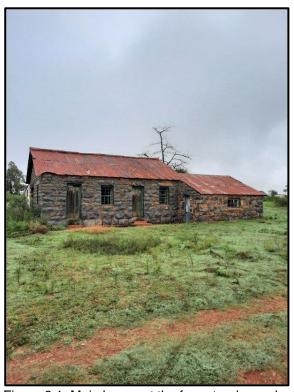


Figure 9.1. Main house at the farmstead complex DH 002.

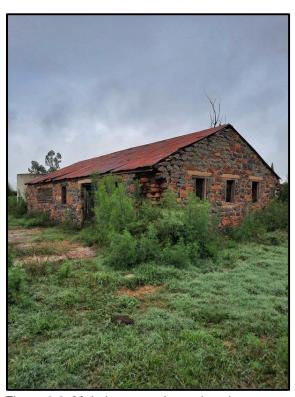


Figure 9.2. Main house – alternative view.

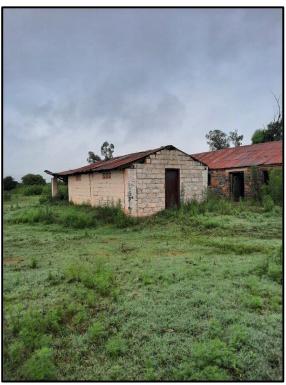


Figure 9.3 Recent additions at the farmstead complex DH 002.

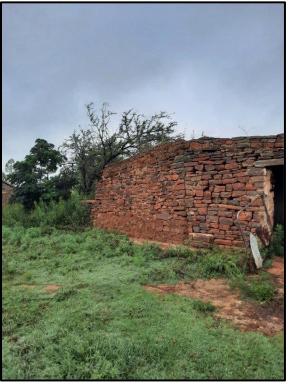


Figure 9.4. Kraal structure in the farmstead complex.



Figure 9.5. Dorsal view of artefacts and raw material types found at DH 003



Figure 9.6. Overgrown conditions at DH003.

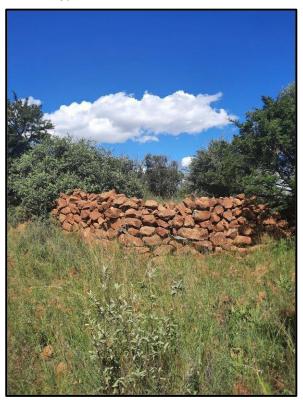


Figure 9.7. Stone packed kraal at DH004.



Figure 9.8. Stone Packed feature at DH004.



Figure 9.9. Possible grave at DH004/2

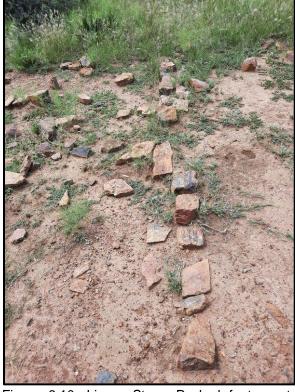


Figure 9.10. Linear Stone Packed feature at DH004/2.



Figure 9.11. MSA Lithic artefacts scattered across a small area around an area of gravel soils.

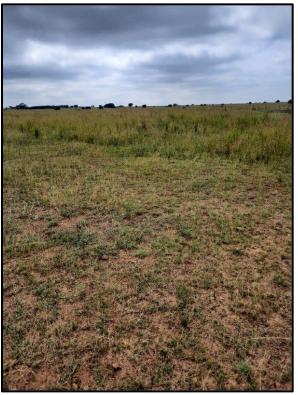


Figure 9.12. General site conditions around DH005.

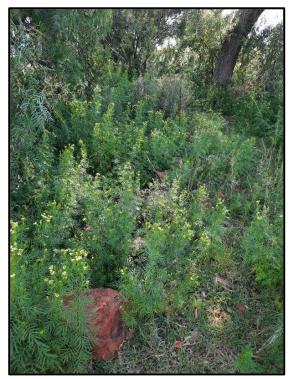


Figure 9.13. Section of packed stone foundation at DH005.



Figure 9.14. General site conditions at DH006.



Figure 9.15. Small wooden structures at DH101 situated near the northern edge of the Project area – Image facing north.



Figure 9.16. Secondary religious feature built from informally cut wooden poles at DH101 - Image taken facing north.

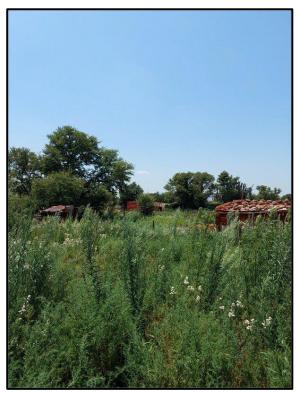


Figure 9.17. General view of the large informal homestead at DH102 as seen from the western edge of the homestead.



Figure 9.19. Graves in the cemetery at DH103. The site is overgrown.



Figure 9.18. General view of the large informal homestead at DH102 as seen from the western edge of the homestead.



Figure 9.20. Grave marker at DH103.

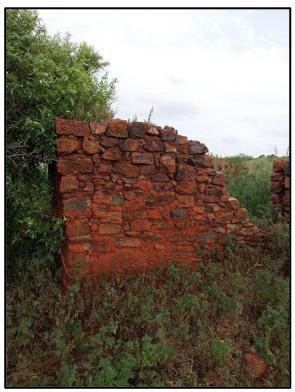


Figure 9.21. Section of intact walling at DH104 - Image taken of the east facing wall of one of the small ruins.



Figure 9.22. General view of the remnants of a mudbrick structure at *DH104* situated in the tall grass.



Figure 9.23. West facing wall of the original farmhouse.



Figure 9.24. General view of the surrounding environment.