APPENDIX C (vi)

Heritage Impact Assessment

HERITAGE IMPACT ASSESSMENT

(REQUIRED UNDER SECTION 38(8) OF THE NHRA (No. 25 OF 1999)

FOR THE PROPOSED SUNSHINE VIEW TOWNSHIP, DR JS MOROKA LOCAL MUNICIPALITY IN NKANGALA DISTRICT MUNICIPALITY, MPUMALANGA PROVINCE.

Type of development:

Township Development

Client:

Setala Environmental

Developer:

Mr Lesiba Peter Sebothoma

Report prepared by:

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Project Reference:

Project number 23010

Report date:

January 2023

APPROVAL PAGE

Project Name	Sunshine View Township Development
Report Title	Heritage Impact Assessment for The proposed Sunshine View Township on Portions 42, 43 and 47 of the farm Valschfontein 33 JS, Dr JS Moroka Local Municipality in Nkangala District Municipality, Mpumalanga Province.
Authority Reference Number	TBC
Report Status	Draft Report
Applicant Name	Mr Lesiba Peter Sebothoma

Responsibility	Name	Qualifications and Certifications	Date
Fieldwork and reporting	Jaco van der Walt - Archaeologist	MA Archaeology ASAPA #159 APHP #114	January 2023
Fieldwork	Ruan van der Merwe - Archaeologist	BA Hons Archaeology	December 2022

DOCUMENT PROGRESS

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Amendments on Document

Date	Report Reference Number	Description of Amendment

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REPORT OUTLINE

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

Table 1. Specialist Report Requirements.

Requirement from Appendix 6 of GN 326 EIA Regulation 2017	Chapter
(a) Details of - (i) the specialist who prepared the report; and (ii) the expertise of that specialist to compile a specialist report including a curriculum vitae	Section a Section 12
(b) Declaration that the specialist is independent in a form as may be specified by the competent authority	*Declaration of Independence*
(c) Indication of the scope of, and the purpose for which, the report was prepared	Section 1
(cA)an indication of the quality and age of base data used for the specialist report	Section 3.4, 7and 8.
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	9
(d) Duration, Date and season of the site investigation and the relevance of the season to the outcome of the assessment	Section 3.4
(e) Description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used	Section 3
(f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of site plan identifying site alternatives;	Section 8 and 9
(g) Identification of any areas to be avoided, including buffers	Section 8 and 9
(h) Map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers	Section 8
(I) Description of any assumptions made and any uncertainties or gaps in knowledge	Section 3.7
(j) a description of the findings and potential implications of such findings on the impact of the proposed activity including identified alternatives on the environment or activities;	Section 1.3
(k) Mitigation measures for inclusion in the EMPr	Section 10.1
(l) Conditions for inclusion in the environmental authorisation	Section 10. 1.
(m) Monitoring requirements for inclusion in the EMPr or environmental authorisation	Section 10. 5.
(n) Reasoned opinion - (i) as to whether the proposed activity, activities or portions thereof should be authorised; (iA) regarding the acceptability of the proposed activity or activities; and (ii) if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan	Section 10.3
(o) Description of any consultation process that was undertaken during the course of preparing the specialist report	Section 5
(p) A summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Refer to EIA report
(q) Any other information requested by the competent authority	N.A

Executive Summary

Mr Lesiba Peter Sebothoma (the applicant) appointed Setala Environmental as the independent Environmental Assessment Practitioner (EAP) to undertake the Environmental Impact Assessment (EIA) for the proposed mixed use township development, Sunshine View. Beyond Heritage was appointed to conduct a Heritage Impact Assessment (HIA) for the project and the study area was assessed on a desktop level and by a non-intrusive pedestrian field survey. Key findings of the assessment include:

- The study area was fallow for a number of years and is overgrown with pioneer species attributed to overgrazing that limited accessibility and heritage visibility;
- The western portion of the study area could not be assessed as access was denied to this area by the occupants of informal stands in this area;
- The topography of the study area is undulating with no major topographic features (such as pans or shelters) that would have been focal points for human activity in antiquity and heritage finds were limited to isolated Middle Stone Age artefacts, ephemeral remains of a structure, a stone cairn that could be a survey beacon and a small cemetery;
- The palaeontological sensitivity of the study area is high, and an independent study was conducted for this aspect (Bamford 2023). The study concluded that no further palaeontological studies are required. Nonetheless, a Fossil Chance Find Protocol should be added to the EMPr.

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

Recommendations:

- Confirmation whether potential graves occur during the social consultation process, especially at the stone cairn at VF003 and the remains of the demolished structure at VF004;
- Regular monitoring of the development footprint by the ECO to implement the Chance Find Procedure for heritage and palaeontology resources (outlined in Section 10.2) in case heritage resources are uncovered during the course of construction;
- Burial sites (VF002) should be avoided with at least a 30m buffer zone. Access for the family members should be ensured and the development of a heritage site development plan that will ensure the ongoing protection of the cemetery;
- Recorded heritage features should be indicated on development plans and construction crews should be made aware of expected resources and applicable mitigation measures;
- The inaccessible western portion of the study area and any additional changes to the layout should be subjected to a heritage walkdown prior to development.

Declaration of Independence

Specialist Name	Jaco van der Walt
Declaration of Independence	I declare, as a specialist appointed in terms of the National Environmental Management Act (NEMA) (Act No 107 of 1998) and the associated 2014 Environmental 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 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 49 A of the Act.of regulation 48 and is punishable in terms of section 24F of the Act.
Signature	
Date	17/01/2023

a) Expertise of the specialist

Jaco van der Walt has been practising as a Cultural Resource Management (CRM) archaeologist for 23 years. Jaco is an accredited member of the Association of South African Professional Archaeologists (ASAPA) (#159) and APHP #114 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

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

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 Early Iron Age both are internationally accepted abbreviations and must be read and interpreted in the context it is used.*

GLOSSARY

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

1 Introduction and Terms of Reference:

Beyond Heritage was appointed to conduct a HIA for the proposed Sunshine View Township on Portions 42, 43 and 47 of the farm Valschfontein 33 JS, Dr JS Moroka Local Municipality in Nkangala District Municipality, Mpumalanga Province (Figure 1.1 to 1.3). The report forms part of the Environmental Impact Assessment (EIA) and Environmental Management Programme Report (EMPr) for the development.

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

During the survey, finds included lithic artefacts, ruins and a cemetery. General site conditions and features on sites were recorded by means of photographs, GPS locations and site descriptions. Possible impacts were identified and mitigation measures are proposed in the following report. SAHRA as a commenting authority under section 38(8) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) require all environmental documents, compiled in support of an Environmental Authorisation application as defined by NEMA EIA Regulations section 40 (1) and (2), to be submitted to SAHRA for commenting. Upon submission to SAHRA the project will be automatically given a case number as reference. As such the EIA report and its appendices must be submitted to the case as well as the EMPr, once it's completed by the Environmental Assessment Practitioner (EAP).

1.1 Terms of Reference

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

Reporting
Report on the identification of anticipated and cumulative impacts the operational units of the proposed project activity may have on the identified heritage resources for all 3 phases of the project; i.e., construction, operation and decommissioning phases. Consider alternatives, should any significant sites be impacted adversely by the proposed project. Ensure that all studies and results comply with the relevant legislation, SAHRA minimum standards and the code of ethics and guidelines of ASAPA.
To assist the developer in managing the discovered heritage resources in a responsible manner, and to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act of 1999 (Act No 25 of 1999).

1.2 Project Description

Project components and the location of the proposed project are outlined under Table 2 and 3.

Table 2: Project Description

Project area	The proposed project is located on Portions 42, 43 and 47 of the farm Valschfontein 33 JS, Dr JS Moroka Local Municipality in Nkangala District Municipality, Mpumalanga Province.
Magisterial District	Dr JS Moroka Local Municipality in Nkangala District Municipality
Central co-ordinate of the development	The Property Co-ordinates are 25.107074 South, 29.098872 East
Topographic Map Number	2529AA

Table 3: Infrastructure and project activities

Type of development	Township
Size of development	68.76 Hectares
Project Details	The proposed development is a mixed use development, consisting of the land uses of Residential 1 (1034 erven); Business 1 (2 erven); Institutional (3 erven) and Public Open Space (4 erven) on 68.76 Hectares. Access to the site will be obtained from the R573 situated south of the site.

1.3 Alternatives

No alternatives were provided, but the area assessed allows for siting of the development to avoid impacts to heritage resources. Viable alternatives (i.e. layout alternatives, design alternatives) will be investigated and the best options will be determined through the environmental and specialist studies, as well as public opinion.

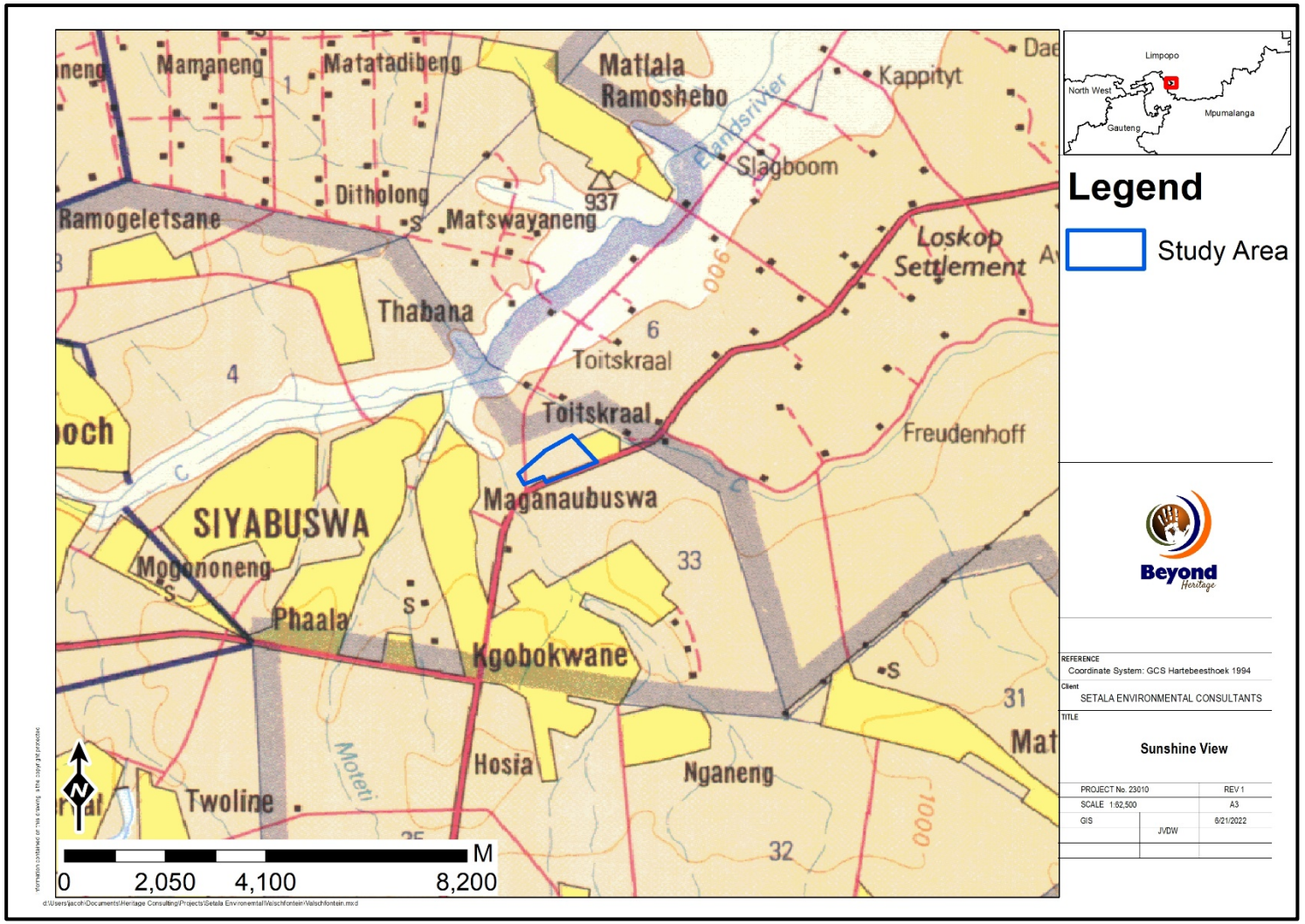

Figure 1.1. Regional setting of the project (1: 250 000 topographical map).

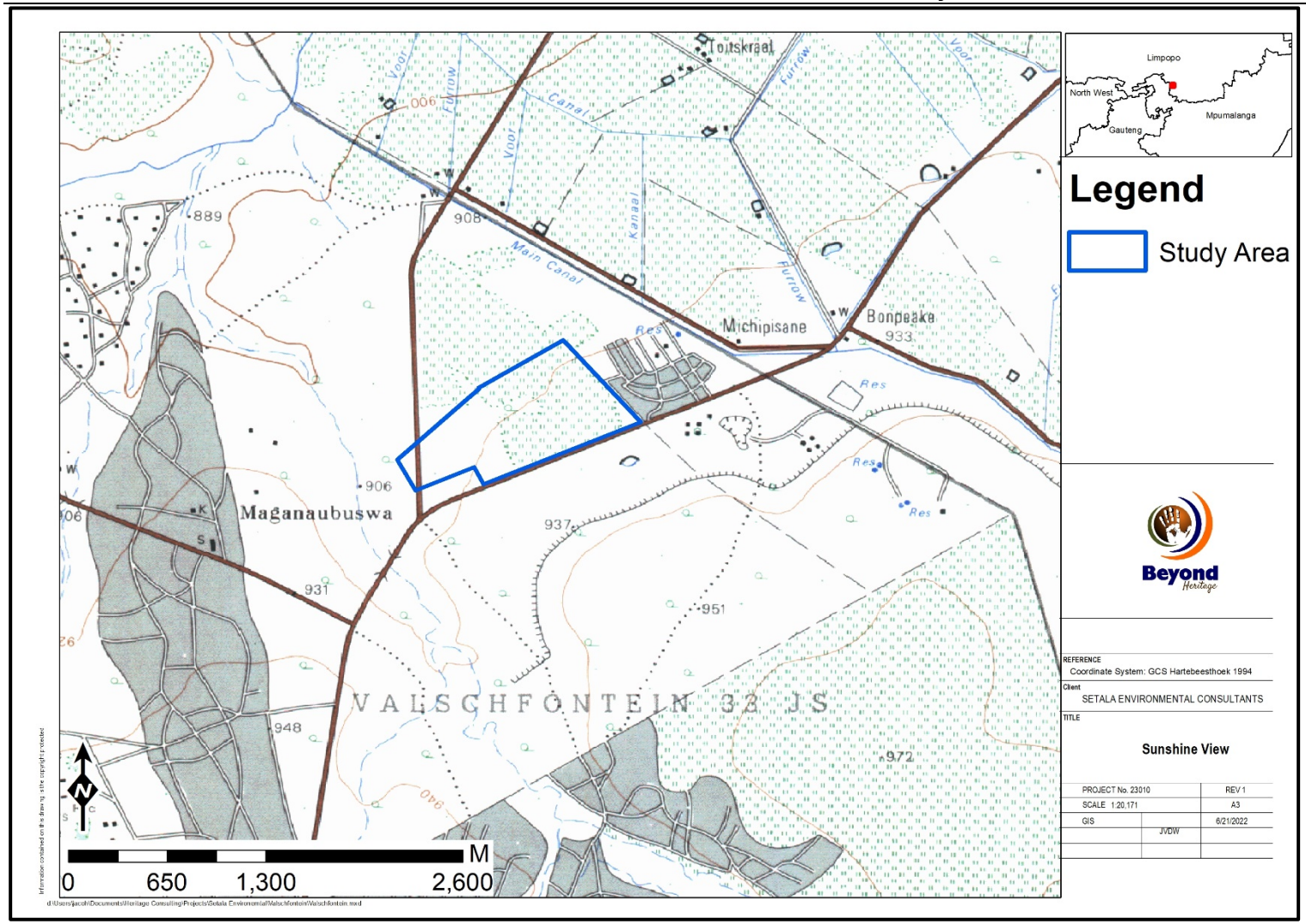

Figure 1.2. Local setting of the project (1: 50 000 topographical map).

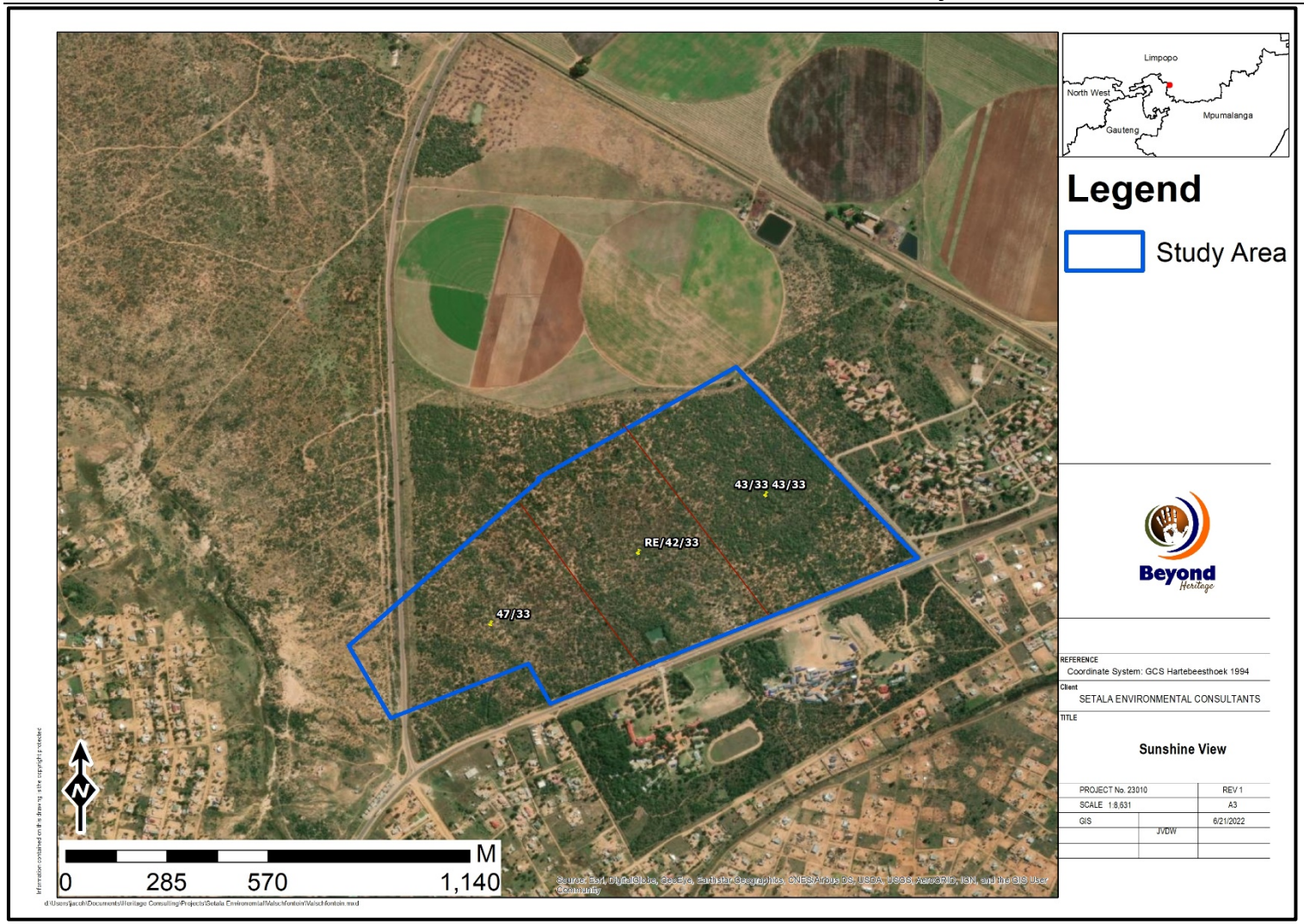

Figure 1.3. Aerial image of the study area.

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 (or avoidance) of these impacts.

The HIA should be submitted, as part of the impact assessment report or EMPr, to the Provincial Heritage Resource Agency (PHRA) 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 Southern African Development Community (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 include (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 and GNR 548 as well as the SAHRA BGG Policy 2020. Graves older than 60 years, but younger than 100 years fall under Section 36 of Act 25 of 1999 (NHRA), as well as the National Health Act of 2003 and are under 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) re-instituted by Proclamation 109 of 17 June 1994 and implemented by CoGHSTA as well as the National Health Act of 2003 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. . 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 the National Health Act of 2003.

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 EA process, it involves stakeholders interested in, or affected by the proposed development. Stakeholders are provided with an opportunity to raise issues of concern (for the purposes of this report only heritage related issues will be included). The aim of the public consultation (conducted by the EAP) process was to capture and address any issues raised by community members and other stakeholders during key stakeholder and public meetings.

3.4 Site Investigation

The aim of the site visit was to:

a) survey the proposed project area to understand the heritage character of the development footprint;

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

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

Table 4: Site Investigation Details

	Site Investigation
Date	25 August 2022
Season	Late winter – The time of year and season did not influence the survey. The overgrown vegetation within the project area did however hinder heritage visibility. Furthermore, the western section of the study area could not be accessed as community members claimed they have residential stands in that area and the survey team was denied access in that area. The development footprint was however sufficiently covered to understand the heritage character of the area (Figure 3.1).

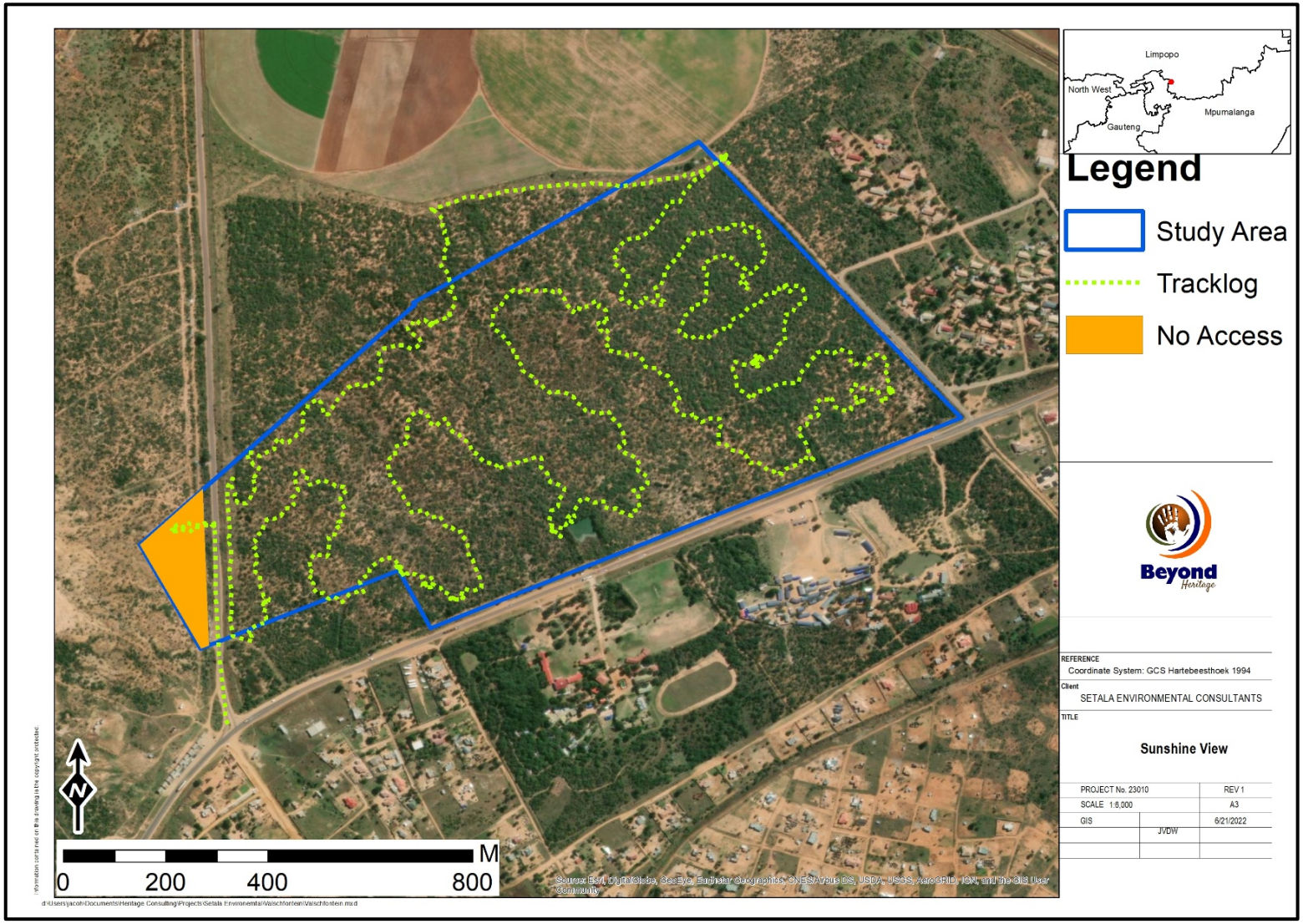

Figure 3.1. Tracklog of the survey path in green.

3.5 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 5: Heritage significance and field ratings

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

3.6 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).

3.7 Limitations and Constraints of the study

The authors acknowledge that the brief literature review is not exhaustive on the literature of the area. Due to the subsurface nature of heritage resources, the possibility of discovery of heritage resources during the construction phase cannot be excluded. Also, dense grass cover hampered ground visibility and although unlikely informal graves could have been undetected during the field survey. This limitation is successfully mitigated with the implementation of a chance find procedure and monitoring of the study area by the 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 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.

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4 Description of Socio-Economic Environment

The JS Moroka Local Municipality was named after the medical doctor and politician who was president of the African National Congress (ANC) from 1949-1952. According to Census 2011, the municipality has a total population of 249 705 individuals, 99,4% of whom are black African. Indian or Asians make up 0,3% of the population, and other race groups comprise the remaining 0,3%.

Of those aged 20 years and older, 4,7% have completed primary school, 31% have some secondary education, 25,2% have completed matric and 6,6% have some form of higher education. 17,5% of those aged 20 years and older have no form of schooling. There are 63 383 economically active (employed or unemployed but looking for work) individuals within the municipality, 46,6% of whom are unemployed. Of the 31 063 economically active youth aged 15–34 years in the area, 61,4% are unemployed.

5 Results of Public Consultation and Stakeholder Engagement:

5.1.1 Stakeholder Identification

Adjacent landowners and the public at large were informed of the proposed activity as part of the EIA process by the EAP. Site notices and advertisements notifying interested and affected parties were placed at strategic points and in local newspapers as part of the process. No heritage concerns have been raised thus far.

6 Literature / Background Study:

6.1 Literature Review (SAHRIS)

Few sites are known for the greater region and consist of scattered Stone Age finds, Later Iron Age stone-wall settlements, graves, and historic structures. The following Cultural Resource Management (CRM) assessments (Table 6) were conducted in the area and consulted for this report:

Table 6. CRM reports consulted for the study.

Author	Year	Project	Findings
Murimbika, M.	2005	Naganeng Road Upgrade, Marble Hall, Mpumalanga Province, Cultural and Archaeological Heritage Assessment, Specialist Study. An unpublished report by Nzumbululo Heritage Solutions	No significant heritage resources were recorded.
Van Schalkwyk, J.	2007	Heritage Impact Survey Report for the Proposed Siyabuswa Water Augmentation Scheme, Moutse Magisterial District, Mpumalanga Province	No features were identified
Van Schalkwyk, J.	2016	Cultural heritage impact assessment for The Proposed Township Establishment on a Portion of The Farm Valschfontein 33JS, Siyabuswa Region JS Moroka Local Municipality, Mpumalanga Province	No features were identified
Van der Walt, J.	2018	Heritage Impact Assessment for the proposed R573 Borrow Pit and Quarry, Limpopo Province	Two Ruins and a cemetery
Van der Walt, J.	2019	Heritage Impact Assessment for the Proposed Walkraal Filling Station, Limpopo Province.	No Heritage Sites

6.1.1 Google Earth and The Genealogical Society of South Africa (Graves and burial sites)

Google Earth and 1:50 000 maps of the area were utilised to identify possible places where archaeological and historical sites might be located. The database of the Genealogical Society of South Africa indicated no known grave sites within the study area

6.2 Archaeological Background

The archaeology of the area can be divided in three main periods namely the Stone Age, Iron Age and Historical period.

6.2.1 Stone Age

South Africa has a long and complex Stone Age sequence of more than 2 million years. The broad sequence includes the Later Stone Age, the Middle Stone Age and the Earlier Stone Age. Each of these phases contains sub-phases or industrial complexes, and within these we can expect regional variation regarding characteristics and time ranges. For (CRM) purposes it is often only expected/ possible to identify the presence of the three main phases. Yet sometimes the recognition of cultural groups, affinities or trends in technology and/or subsistence practices, as represented by the sub-phases or industrial complexes, is achievable. The three main phases can be divided as follows;

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

The greater region has not undergone extensive Stone Age research apart from CRM surveys. No major Stone Age sites are present in the vicinity of the greater study area (Bergh 1999: 4-5, 7).

6.2.2 Iron Age

Bantu-speaking people moved into Eastern and Southern Africa about 2,000 years ago (Mitchell, 2002). These people cultivated sorghum and millets, herded cattle and small stock and manufactured iron tools and copper ornaments. Because metalworking represents a new technology, archaeologists call this period the Iron Age. Characteristic ceramic styles help archaeologists to separate the sites into different groups and time periods. The Iron Age as a whole represents the spread of Bantu speaking people and includes both the Pre-Historic and Historic periods. It can be divided into three distinct periods:

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

No major tribes seem to have settled near the area where Marble Hall is located today by the start of the nineteenth century, but the Kôpa Tribe was prominent in the area to the south thereof. (Bergh 1999: 10) In a few decades, the sociographic nature of the then Transvaal province would change forever. The Difaqane (Sotho), or Mfekane (“the crushing” in Nguni) was a time of bloody upheavals in Natal and on the Highveld, which occurred around the early 1820’s until the late 1830’s. (Bergh 1999: 109-115) It came about in response to heightened competition for land and trade and caused population groups like gun-carrying Griquas and Shaka’s Zulus to attack other tribes. (Bergh 1999: 14; 116-119) Ndebele raiders moved through the area and displaced the Kôpa and various other tribes. (Bergh 1999: 110-111) It is not known if these events had a great influence on the area where the area under investigation is located today, but it is important to understand the social dynamics of this area.

6.2.3. Historical Period

During the time of the Difaqane, a northwards migration of white settlers from the Cape was also taking place. Some travellers, missionaries and adventurers had gone on expeditions to the northern areas in South Africa – some as early as in the 1720's. One such an adventurer was Robert Scoon, who formed part of a group of Scottish travellers and traders who had travelled the northern provinces of South Africa in the late 1820s and early 1830s. Scoon had gone on two long expeditions in the late 1820s and once again ventured eastward and northward of Pretoria in 1836. During this journey, he passed close by the area where Marble Hall is located today. (Bergh 1999: 13, 116-121)

The skirmish that took place closest to where Marble Hall is located today is the battle at Vrieskraal. The British Commander, W. Kitchener, attacked the Boer troops of Commandant Muller on 16 Augustus 1901. (Bergh 1999: 54)

7 Description of the Physical Environment

The vegetation type of the study area is defined as Central Sandy Bushveld at a national scale (Mucina and Rutherford, 2006). Central Sandy Bushveld is located within Limpopo, Mpumalanga, Gauteng and North-West occurring within a narrow irregular band along the western edge of the Springbokvlakte extending into a series of valleys and lower altitude areas in the vicinity of the Waterberg. The vegetation type generally comprises tall deciduous *Terminalia sericea* and *Burkea africana* woodland on deep sandy soils and low, broad-leaved *Combretum* sp. woodland on shallower sandy soils (Mucina and Rutherford, 2006). The project area is characterised by an expansive area dominated by small trees and tall grass. The area is highly overgrown due to the overgrazing of cattle. The study area is situated within a rural township and is surrounded by the built-up infrastructure of the growing community.

The surrounding environment consists mainly of activities associated with the rural communities as well as large scale agricultural activities towards the northern boundary of the project area. The agricultural activities consist of pivot irrigation systems extend from the northern boundary towards Marble Hall along the R573. General site conditions are illustrated in Figure 7.1 and 7.6.

Figure 7.1. General site conditions towards the Northern boundary of the project area -Vegetation here is not as overgrown as the central sections of the area.

Figure 7.2. General site conditions showing typical vegetation cover in the project area.

Figure 7.3. Dense vegetation limited accessibility in certain areas.

Figure 7.4. Section of the project area situated on the western side of the R573. This section has been cleared and has been marked as a stand and access was denied to the survey team in this area.

8 Findings of the Survey

8.1 Heritage Resources

The study area is overgrown and was accessed through cattle tracks during a pedestrian survey over one day. Heritage observations within the study area is limited to low density MSA scatters, ruins, a small cemetery and a stone packed feature of unknown purpose. Recorded features were numbered numerically and given the prefix VF for Valschfontein. General site conditions and site distribution of the recorded observations are illustrated in Figure 8.1 and briefly described in Table 7. Recorded features are illustrated in Figure 8.2 to 8.7.

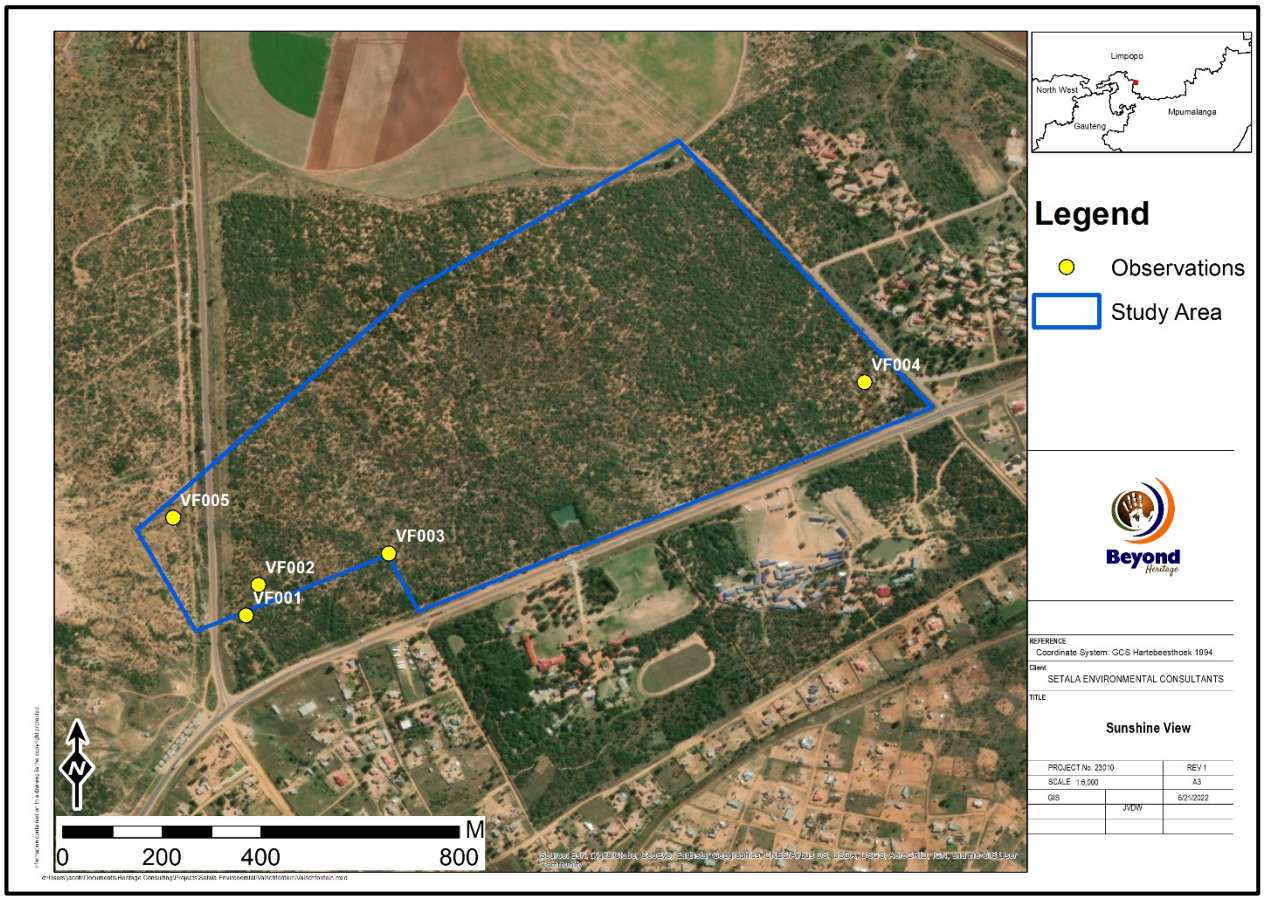


Figure 8.1. Site distribution map.

Table 7. Recorded finds in the study area.

LABEL	LONGITUDE	LATITUDE	DESCRIPTION	Significance	Mitigation
VF001	29° 05' 37.5288" E	25° 06' 40.8024" S	Isolated find consisting of a large (>5cm) MSA side scraper no other lithics are noted in this area	GP C Low Significance	No mitigation required - attributed to background scatter
VF002	29° 05' 38.3568" E	25° 06' 38.8117" S	Two graves situated near the western boundary of the project area covering an area of ~ 8 x 8 meter. The small cemetery is outlined by a single row of stones around the two graves. The first grave is marked by a cement border and headstone and the second grave by a row of packed stones for the border. The inscriptions on the graves are not visible.	GP A High Significance	Avoid with a 30 m buffer and access for family members
VF003	29° 05' 46.8709" E	25° 06' 36.7487" S	Stone packed cairn of unknown purpose. The feature is likely a survey beacon, but the possibility of a burial site cannot be excluded.	GP C Low Significance	Avoid , if not possible confirm the purpose of the stone cairn during social consulting.
VF004	29° 06' 17.9640" E	25° 06' 25.5565" S	This location is marked by the remains of a cement brick foundation of a demolished structure. The site is extremely degraded with some of the bricks showing extensive weathering. The site is situated near the southeastern boundary of the project area. This may possibly have been an informal dwelling but is not indicated on any historical maps.	GP C Low Significance	Monitor during construction to implement change find procedure if required.
VF005	29° 05' 32.7732" E	25° 06' 34.4159" S	A low density scatter of MSA lithic artefacts were identified scattered across an area (30 x 30 m) on the western boundary of the project area. The raw material is from either igneous or metamorphic material. The scatter of lithic artefacts seems to be washing out of the gravel soils that are eroding away due to the movement of downwash towards the small river towards the west. The artefact ratio is less than 5 artefacts per square meter. The area is marked by large scale sheet erosion and the artefacts are found in a deflated context. The wooded vegetation has been mostly cleared across the immediate surrounding area due to a local community member having set up a stand at this location (Andrew) who also denied us further access at this area.	GP C Low Significance	Monitor during construction to implement change find procedure if required.

Figure 8.2. Lithic artefact at VF 001.

Figure 8.3. General site conditions - Small cemetery containing two graves recorded as VF002.

Figure 8.4. Stone packed cairn possibly a survey marker located at VF003.

Figure 8.5. Remnants of a wall that has collapsed - The bricks seem to have been made by hand. The site was recorded at VF 004.

Figure 8.6. General site view at VF 004.

Figure 8.7. Small collection of MSA Lithic artefacts being exposed by sheet erosion at VF005.

8.2 Cultural Landscape

The cultural landscape of the area consisted of areas of cultivation and low scale developments such as railway lines and powerlines (Figure 8.6 to 8.9). The study area itself seems to have been fallow for a number of years.

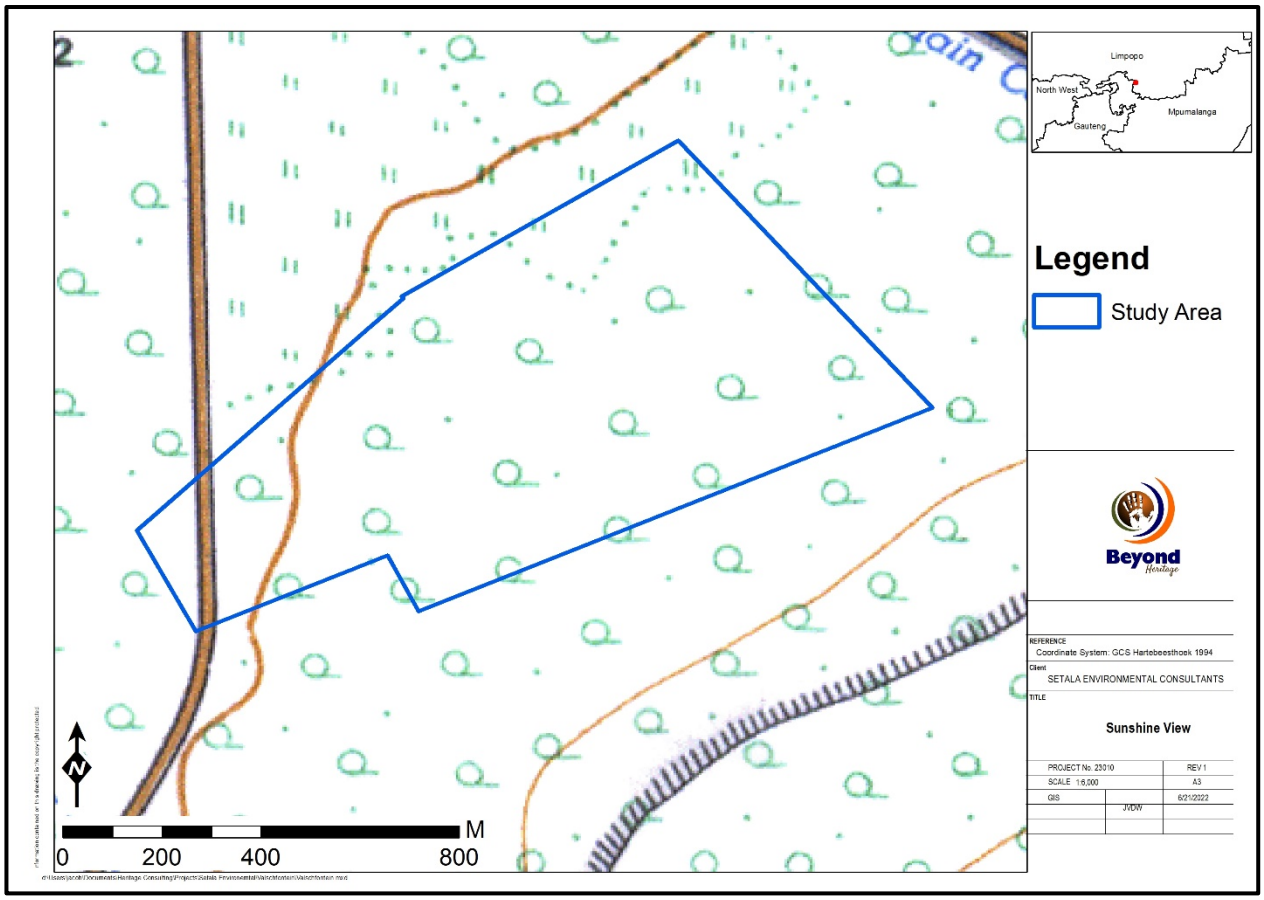


Figure 8.8. 1965 Topographic map of the project area indicating no developments in the study area.

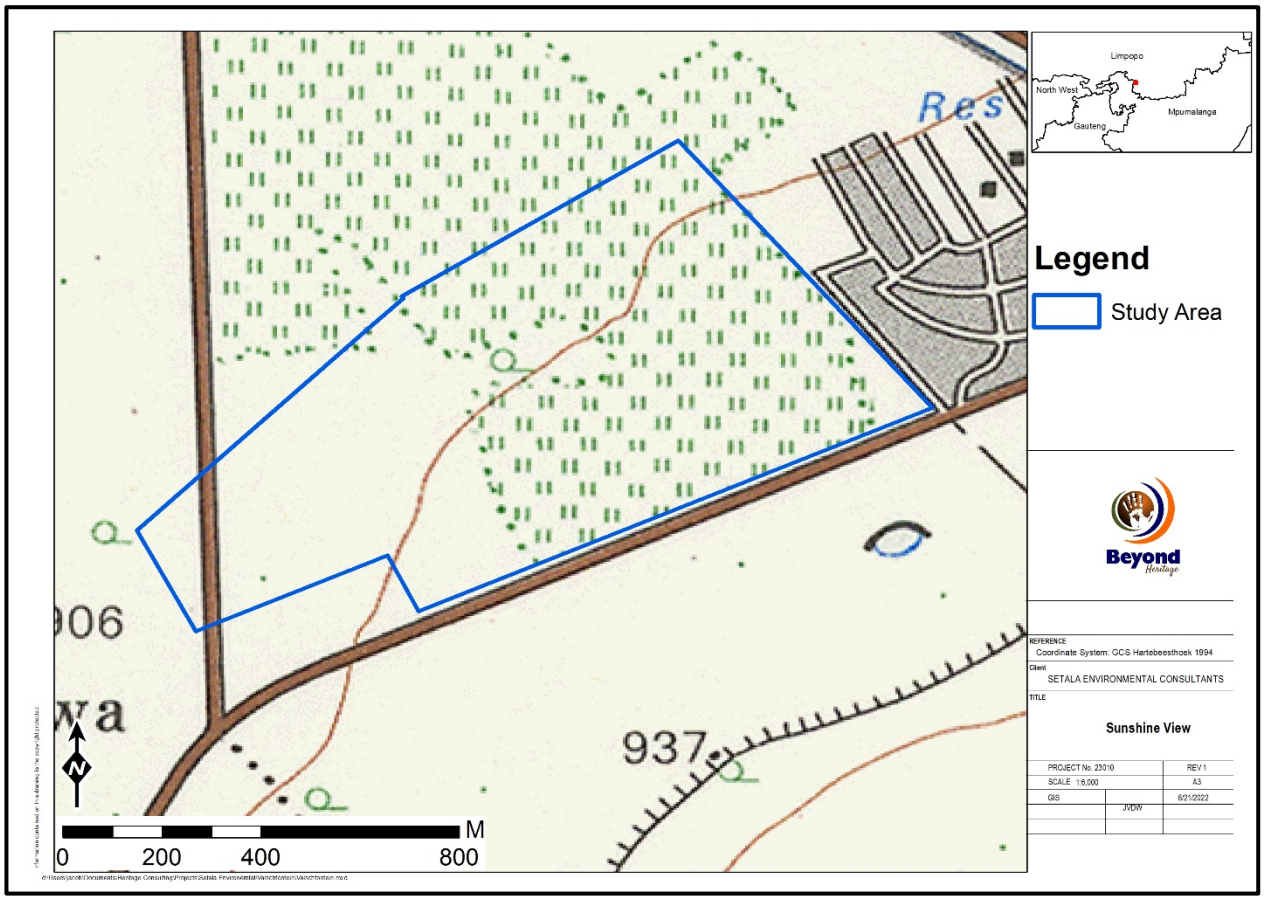


Figure 8.9. 1984 Topographic map of the project area indicating cultivation in the study area.

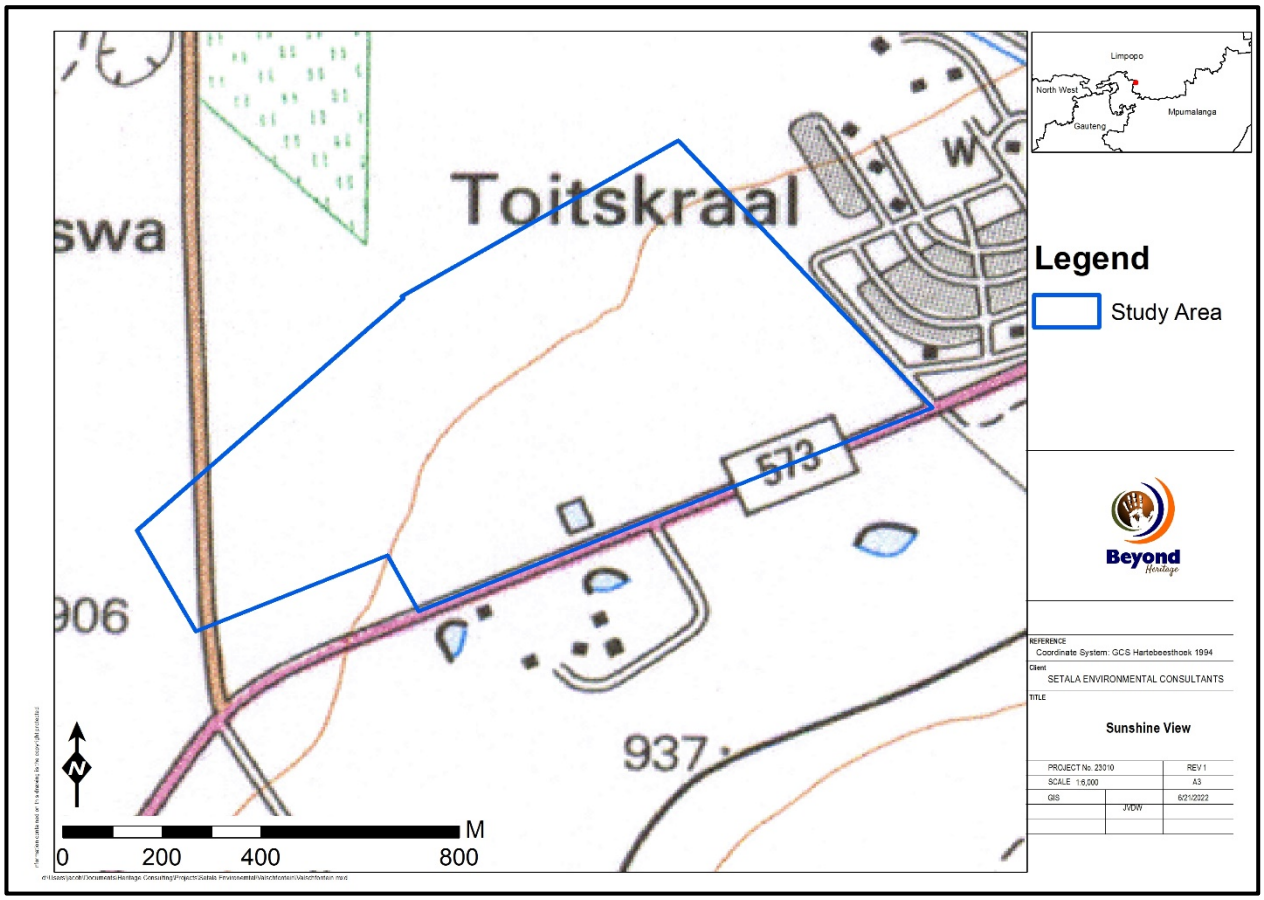


Figure 8.10. 1996 Topographic map indicating a water body on the southern border of the study area.

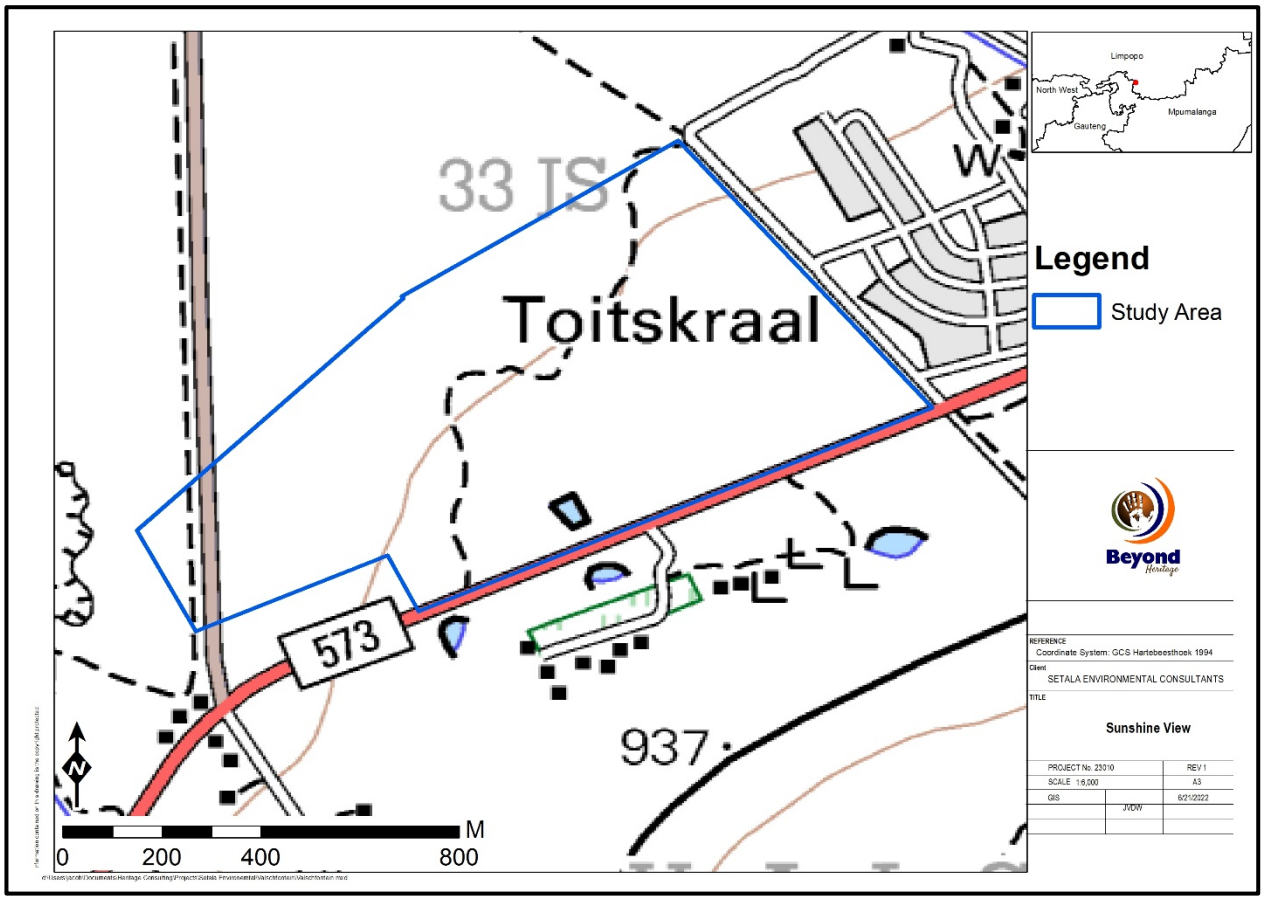
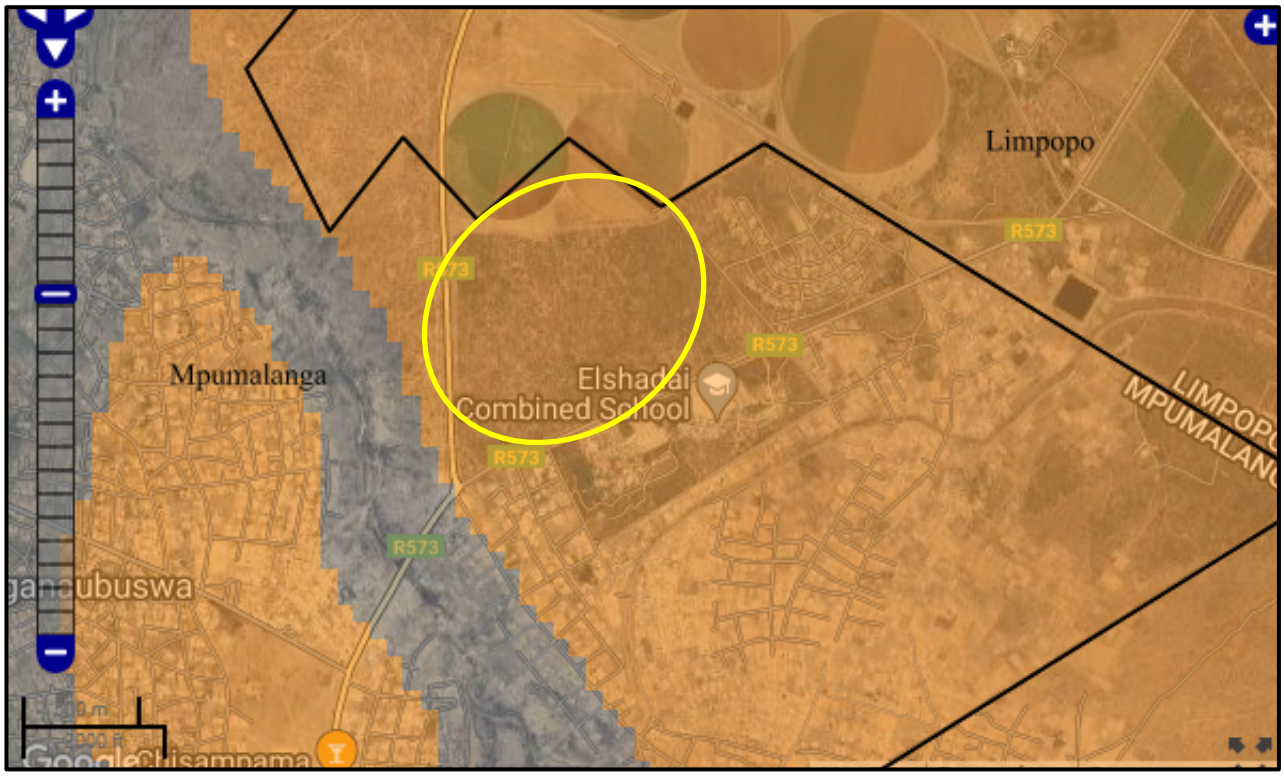


Figure 8.11. 2000 Topographic map of the project area indicating a track and a water body in the study area.

8.3 Paleontological Heritage

The study area is indicated as of high paleontological significance on the SAHRA Paleontological map (Figure 8.10) and an independent study (Bamford 2023) was commissioned for this aspect.



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 8.12. Paleontological sensitivity of the approximate study area (yellow polygon) as indicated on the SAHRA Palaeontological sensitivity map.

9 Potential Impact

Isolated Stone Age scatters (VF001 and VF005) are out of context and scattered too sparsely to be of significance apart from mentioning them in this report. The cemetery at VF002 is of high social significance and if impacted on the impact will be high. Although unlikely the Stone Cairn at VF003 could represent a burial site and this should be confirmed prior to construction. If confirmed to be a grave the feature is of high social significance, if the feature is a survey beacon it is of no significance and the impact will be low. Lastly, the recorded ruin (VF004) is not indicated on any of the historical maps and is therefore assumed to be younger than 60 years and not protected by the NHRA. It should be noted that although the feature has no aesthetic, historical or architectural potential, features like this one are known to contain unmarked graves (especially relating to still born children).

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 is expected to be low during all phases of the development (Table 8 - 11).

9.1.1 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.

9.1.2 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.

9.1.3 Operation Phase

No impacts are expected during the operation phase.

9.1.4 Impact Assessment Tables

Table 8. Impact assessment of isolated Stone Age finds at VF 001 and VF 005.

Nature: During the construction phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological and paleontological material or objects.		
	Without mitigation	**With mitigation (Preservation/ excavation of site)**
Extent	Local (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 resources?	Yes	Yes
Can impacts be mitigated?	NA	NA
Mitigation: • The Stone Age Scatters are isolated, out of context and scattered too sparsely to be of significance apart from mentioning them in this report. No additional preconstruction mitigation is required for this aspect.		

Cumulative impacts: The proposed project will have a low cumulative impact as no significant heritage resources will be adversely affected.
Residual Impacts: Although surface sites can be avoided or mitigated, there is a chance that completely buried sites would still be impacted on, but this cannot be quantified.

Table 9. Potential impact on the cemetery recorded at VF002.

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	Moderate to high (7)	Moderate (6)
Probability	Highly Probable (4)	Not Probable (2)
Significance	**56 (Medium to high)**	**26 (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: • Graves and burial sites (as well as potential graves until proven otherwise) should be avoided with at least a 30m buffer zone. Access for the family members should be ensured; • Recorded heritage features should be indicated on development plans and construction crews should be made aware of expected resources and applicable mitigation measures;		
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 10. Potential impact on the stone cairn at Feature VF003.

Nature: During the construction phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological and paleontological material or objects.		
	Without mitigation	**With mitigation (Preservation/ excavation of site)**
Extent	Local (1)	Local (1)
Duration	Permanent (5)	Permanent (5)
Magnitude	Minor (2)	Minor (2)
Probability	Probable (3)	Improbable (2)
Significance	**24 (Low)**	**16 (Low)**
Status (positive or negative)	Negative	Negative
Reversibility	Not reversible	Not reversible
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	NA	NA

Mitigation: • Confirmation the stone cairn at VF003 represents a grave during the social consultation process.
Cumulative impacts: The proposed project will have a low cumulative impact as no significant heritage resources will be adversely affected.
Residual Impacts: Although surface sites can be avoided or mitigated, there is a chance that completely buried sites would still be impacted on, but this cannot be quantified.

Table 11. Impact assessment of the project on the ruin at VF004.

Nature: During the construction phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological and paleontological material or objects.		
	Without mitigation	**With mitigation (Preservation/ excavation of site)**
Extent	Local (1)	Local (1)
Duration	Permanent (5)	Permanent (5)
Magnitude	Minor (2)	Minor (2)
Probability	Probable (3)	Improbable (2)
Significance	**24 (Low)**	**16 (Low)**
Status (positive or negative)	Negative	Negative
Reversibility	Not reversible	Not reversible
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	NA	NA
Mitigation: • Confirmation whether potential graves occur here during the social consultation process.		
Cumulative impacts: The proposed project will have a low cumulative impact as no significant heritage resources will be adversely affected.		
Residual Impacts: Although surface sites can be avoided or mitigated, there is a chance that completely buried sites would still be impacted on, but this cannot be quantified.		

10 Conclusion and recommendations

The topography of the study area is undulating with no major topographic features (such as pans or shelters) that would have been focal points for human activity in antiquity and heritage finds were limited to isolated Middle Stone Age artefacts (VF001 & VF 005), ephemeral remains of a demolished structure (VF004), a stone cairn (VF003) that could be a survey beacon and a small cemetery (VF002).

The low-density scatters of Stone Age material (VF001 & VF 005) is classified as background scatter (Orton 2016) and attest to human occupation of the wider area from the MSA onwards. These tools are out of context and scattered too sparsely to be of significance apart from mentioning them in this report. Due to the low artefact ratio and open-air context of these artefacts further mitigation is not warranted as it will not further contribute to our understanding of the Stone Age settlement of the area.

The cemetery at VF002 is of high social significance and should be preserved *in situ*. This should be achievable as the site is located on the eastern boundary of the study area. The Stone Cairn at VF003 is interpreted as a survey beacon but although unlikely could mark a burial site and this should be confirmed prior to construction. If confirmed to be a grave the feature is of high social significance, if the feature is a

survey beacon it is of no significance. The recorded ruin (VF004) is not indicated on any of the historical maps and is therefore assumed to be younger than 60 years and not protected by the NHRA. It should be noted that although the feature has no aesthetic, historical or architectural potential, features like this are known to contain unmarked graves (especially of still born children).

The palaeontological sensitivity of the study area is high, and an independent study was conducted by Marion Bamford (2023) for this aspect. The palaeontological site visit found no fossils present within the proposed project area. Nonetheless, a Fossil Chance Find Protocol should be added to the EMPr. As far as the palaeontology is concerned, the project may be authorised. The impact to heritage resources is medium and the project can commence provided that the recommendations in this report are adhered to, based on the South African Heritage Resource Authority (SAHRA) 's approval.

A section of the project area situated on the western side of the R573 has been cleared and marked as a residential stand and access was denied to the survey team in this area by the community.

No adverse impact to heritage resources is expected by the project and it is recommended that the project can commence on the condition that the following recommendations (Section 10) are implemented as part of the EMPr and based on approval from SAHRA.

10.1 Recommendations for condition of authorisation

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

Recommendations:

- Confirmation whether potential graves occur during the social consultation process, especially at the stone cairn at VF003 and the remains of the demolished structure at VF004;
- Regular monitoring of the development footprint by the ECO to implement the Chance Find Procedure for heritage and palaeontology resources (outlined in Section 10.2) in case heritage resources are uncovered during the course of construction;
- Burial sites (VF002) should be avoided with at least a 30m buffer zone. Access for the family members should be ensured and the development of a heritage site development plan that will ensure the ongoing protection of the cemetery;
- Recorded heritage features should be indicated on development plans and construction crews should be made aware of expected resources and applicable mitigation measures;
- The inaccessible western portion of the study area and any additional changes to the layout should be subjected to a heritage walkdown prior to development.

10.2 Chance Find Procedures

10.2.1 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 and monitoring guidelines applicable to the Chance Find procedure is discussed below and monitoring guidelines for this procedure are provided in Section 10.5.

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.

10.2.2 Monitoring Programme for Palaeontology – to commence once the excavations / drilling activities begin.

1. The following procedure is only required if fossils are seen on the surface and when drilling/excavations commence.
2. When excavations begin the rocks and discard must be given a cursory inspection by the environmental officer or designated person. Any fossiliferous material (plants, insects, bone or trace fossils) should be put aside in a suitably protected place. This way the project activities will not be interrupted.
3. Photographs of similar fossils must be provided to the developer to assist in recognizing the trace fossils such as stromatolites in the dolomites or the Quaternary bones, rhizoliths, traces. This information will be built into the EMP's training and awareness plan and procedures.
4. Photographs of the putative fossils can be sent to the palaeontologist for a preliminary assessment.
5. If there is any possible fossil material found by the developer/environmental officer then the qualified palaeontologist sub-contracted for this project, should visit the site to inspect the selected material and check the dumps where feasible.
6. Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site a SAHRA permit must be obtained. Annual reports must be submitted to SAHRA as required by the relevant permits.
7. If no good fossil material is recovered, then no site inspections by the palaeontologist will be necessary. A final report by the palaeontologist must be sent to SAHRA once the project has been completed and only if there are fossils.
8. If no fossils are found and the excavations have finished, then no further monitoring is required.

10.3 Reasoned Opinion

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

10.4 Potential risk

Potential risks to the proposed project are the occurrence of intangible features, sub surface cultural material and unrecorded burial sites. This can cause delays during construction, as well as additional costs involved in mitigation, as well as possible layout changes.

10.5 Monitoring Requirements

Day to day monitoring can be conducted by the Environmental Control Officers (ECO). The ECO or other responsible persons should be trained along the following lines:

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

Table 12. Monitoring requirements for the project

Heritage Monitoring					
Aspect	**Area**	**Responsible for monitoring and measuring**	**Frequency**	**Proactive or reactive measurement**	**Method**
Cultural Resources chance finds	Entire project area	ECO	Weekly (Pre construction and construction phase)	Proactively	• If risks are manifested (accidental discovery of heritage resources) the chance find procedure should be implemented: 1. Cease all works immediately; 2. Report incident to the Sustainability Manager; 3. Contact an archaeologist/ palaeontologist to inspect the site; 4. Report incident to the competent authority; and 5. Employ reasonable mitigation measures in accordance with the requirements of the relevant authorities.

Heritage Monitoring					
Aspect	**Area**	**Responsible for monitoring and measuring**	**Frequency**	**Proactive or reactive measurement**	**Method**
					• Only recommence operations once impacts have been mitigated.

10.6 Management Measures for inclusion in the EMPr

Table 13. Heritage Management Plan for EMPr implementation

Area	Mitigation measures	Phase	Timeframe	Responsible party for implementation	Target	Performance indicators (Monitoring tool)
General project area	Regular monitoring of the development footprint by the ECO to implement the Chance Find Procedure for heritage and palaeontology resources (outlined in Section 10.2) in case heritage resources are uncovered during the course of construction.	Construction	Throughout the project	Applicant EAP	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 35, 36 and 38 of NHRA	ECO Checklist/Report
VF003 and VF004	Confirmation whether potential graves occur during the social consultation process, especially at the stone cairn at VF003 and the remains of the demolished structure at VF004.	Pre Construction	Throughout the project	Applicant EAP	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 35, 36 and 38 of NHRA	ECO Checklist/Report
VF002	Burial sites (VF002) should be avoided with at least a 30m buffer zone. Access for the family members should be ensured and the development of a heritage site development plan that will ensure the ongoing protection of the cemetery.	Pre construction and Construction	Throughout the project	Applicant EAP	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 35, 36 and 38 of NHRA	ECO Checklist/Report
Project Area	Recorded heritage features should be indicated on development plans and construction crews should be made aware of expected resources and applicable mitigation measures;	Pre construction and Construction	Throughout the project	Applicant EAP	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 35, 36 and 38 of NHRA	ECO Checklist/Report
Western Portion	The inaccessible western portion of the study area and any additional changes to the layout should be subjected to a heritage walkdown prior to development.	Pre construction	Throughout the project	Applicant EAP	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 35, 36 and 38 of NHRA	ECO Checklist/Report

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