

# HERITAGE IMPACT ASSESSMENT

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

FOR THE PROPOSED NEW RESIDENTIAL TOWNSHIP DEVELOPMENT OF  
VANDERBIJL PARK SOUTH WEST NO 8 EXT 1, SITUATED ON HOLDING 23,  
LASIANDRA AH, EMFULENI LOCAL MUNICIPALITY, SEDIBENG DISTRICT  
MUNICIPALITY, GAUTENG PROVINCE

**Type of development:**

Residential Township Development

**Client:**

ISQUARE ENVIRONMENTAL PLANNING & GIS

**Applicant:**

TBC

**Report Prepared by:**



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## APPROVAL PAGE

<b>Project Name</b>	Proposed New Residential Township Development Of Vanderbijl Park South West No 8 Ext 1, Situated On Holding 23, Lasiandra Ah, Ermfuleni Local Municipality, Sedibeng District Municipality, Gauteng Province
<b>Report Title</b>	Heritage Impact Assessment for the for the Proposed New Residential Township Development Of Vanderbijl Park South West No 8 Ext 1, Situated On Holding 23, Lasiandra Ah, Ermfuleni Local Municipality, Sedibeng District Municipality, Gauteng Province
<b>Authority Reference Number</b>	TBC
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<b>Applicant Name</b>	TBC

<b>Responsibility</b>	<b>Name</b>	<b>Qualifications and Certifications</b>	<b>Date</b>
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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 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.**

<b>Requirement from Appendix 6 of GN 326 EIA Regulation 2017</b>	<b>Chapter</b>
(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
(b) Declaration that the specialist is independent in a form as may be specified by the competent authority	<i>Declaration of Independence</i>
(c) Indication of the scope of, and the purpose for which, the report was prepared	Section 1
(cA) an indication of the quality and age of base data used for the specialist report	Section 3.4.
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 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 and 10.5
(l) Conditions for inclusion in the environmental authorisation	Section 10. 1 and 10.5
(m) Monitoring requirements for inclusion in the EMPr or environmental authorisation	Section 10. 4.
(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 10.2
(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	TBC
(q) Any other information requested by the competent authority	No other information requested at this time

## Executive Summary

Isquare Environmental Planning & GIS has been appointed to ensure environmental compliance for the proposed South West No 8 Ext 1 Residential Township Development. The proposed development activities are conducted within the Gauteng Province Environmental Management Framework (EMF) and have been given environmental authorisation. Beyond Heritage was appointed to conduct a Heritage Impact Assessment (HIA) for the project, and the study area was assessed through a desktop assessment and by a non-intrusive pedestrian field survey. Key findings of the assessment include:


- The study area is altered through various existing structures and further lacks any focal points that would have attracted human occupation in antiquity and are considered to be of low archaeological potential;
- This was confirmed during the field survey, where no heritage resources of significance were noted;
- According to the SAHRA Palaeontological sensitivity map, the study area is of moderate paleontological significance, and further studies by Bamford (2022), indicated that no fossils have been reported in the area. The site lies on moderately sensitive quaternary sands, alluvium and gravels, and a Fossil Chance Find Protocol should be added to the EMPr.

The impact on heritage resources is considered to be low, and the project can be authorised provided that the recommendations in this report are adhered to and based on the South African Heritage Resource Authority (SAHRA) 's approval.

### Recommendations:

- The study area should be monitored by the ECO during construction to implementation the Chance Find Procedure for the project as outlined under Section 10.2.

**Declaration of Independence**

<b>Specialist Name</b>	Jaco van der Walt
<b>Declaration of Independence</b>	<p>I declare, as a specialist appointed in terms of the National Environmental Management Act (Act No 107 of 1998) and the associated 2014 Environmental Impact Assessment (EIA) Regulations (as amended), that I:</p> <ul style="list-style-type: none"> <li>• I act as an independent specialist in this application;</li> <li>• 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;</li> <li>• I declare that there are no circumstances that may compromise my objectivity in performing such work;</li> <li>• 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;</li> <li>• I will comply with the Act, Regulations and all other applicable legislation;</li> <li>• I have no, and will not engage in, conflicting interests in the undertaking of the activity;</li> <li>• 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;</li> <li>• All the particulars furnished by me in this form are true and correct; and</li> <li>• 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.</li> </ul>
<b>Signature</b>	
<b>Date</b>	12/09/2022

**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 and is a PhD candidate at the University of Johannesburg focussing on Stone Age Archaeology with specific interest in the Middle Stone Age (MSA) and Later Stone Age (LSA). Jaco is an accredited member of 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 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 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 Impact Assessment (HIA) for the proposed South West No 8 Ext 1 Residential Township development. The proposed site is located between Joubert Street and Friedman Street on Holding 23 of Lasiandra Agricultural Holdings, Emfuleni Local Municipality, Gauteng Province (Figure 1.1 to 1.3). The proposed development activities are conducted within the Gauteng Province Environmental Management Framework (EMF) and have been given environmental authorisation.

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, no archaeological sites or artefacts were identified. 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 the National Heritage Resources Act, 1999 (Act No. 25 of 1999) require all environmental documents to be submitted to SAHRA for commenting. Upon submission to SAHRA the project will be automatically given a case number as reference.

### 1.1 Terms of Reference

#### Field study

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

#### Reporting

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

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

## 1.2 Project Description

Project components and the location of the proposed South West No 8 Ext 1 Residential Township Development is outlined under Table 2 and 3.

**Table 2: Project Description**

<b>Farm and Magisterial District</b>	The proposed project is located on Holding 23 of Lasiandra Agricultural Holdings, Sedibeng District Municipality
<b>Central co-ordinate of the development</b>	Property co-ordinates: -26.7324797, 27.8084547
<b>Topographic Map Number</b>	2627DB

**Table 3: Infrastructure and project activities**

<b>Type of development</b>	Residential Township Development
<b>Size of development</b>	2.1414 hectares
<b>Project Description</b>	The project entails the establishment of a residential township development on approximately 2.1414 hectares of land

## 1.3 Alternatives

No alternatives were provided for assessment. The extent of the area assessed allows for siting of the development within this area to minimize impacts to heritage resources.

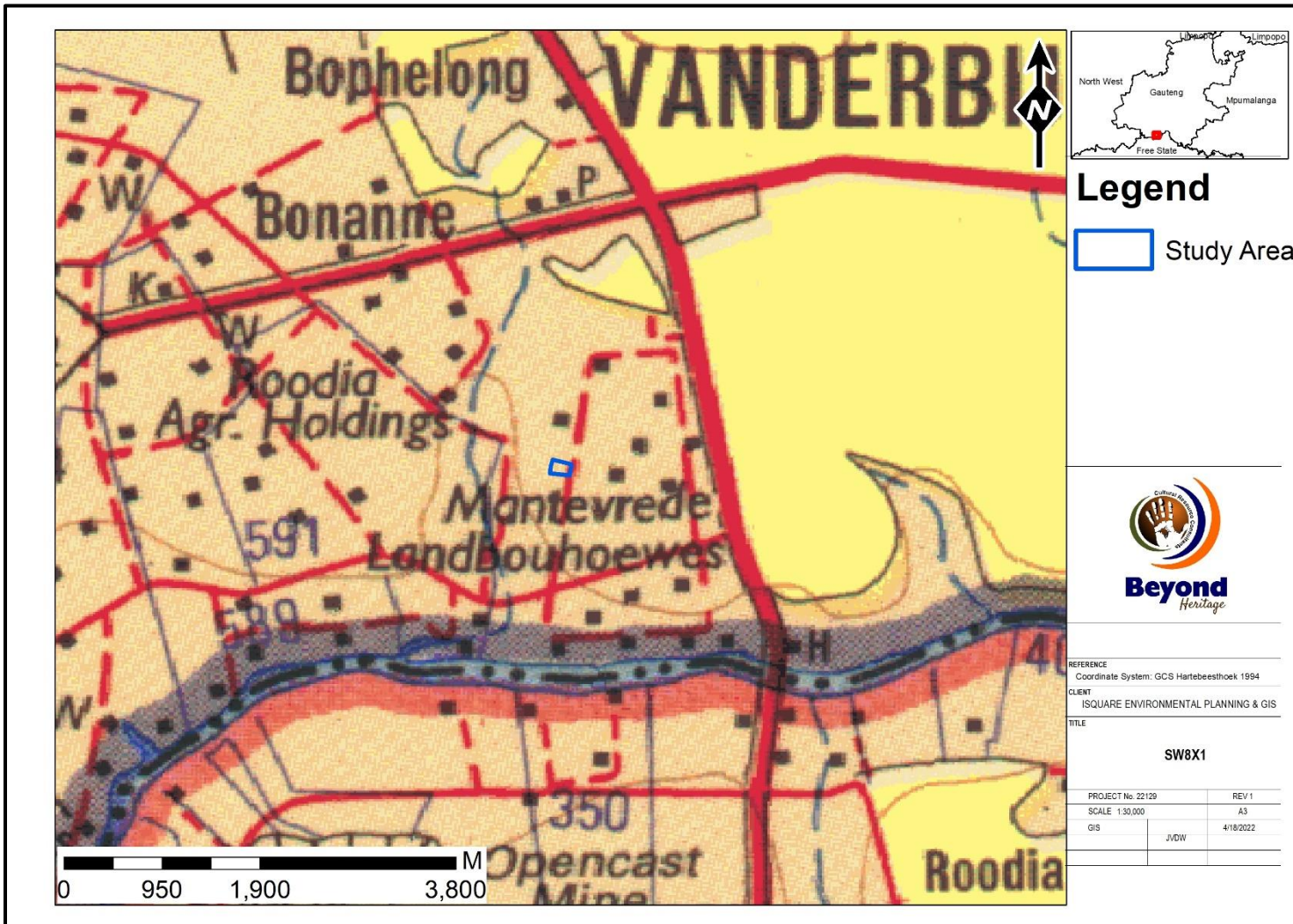


Figure 1.1. Regional setting of the Project (1: 250 000 topographical map).

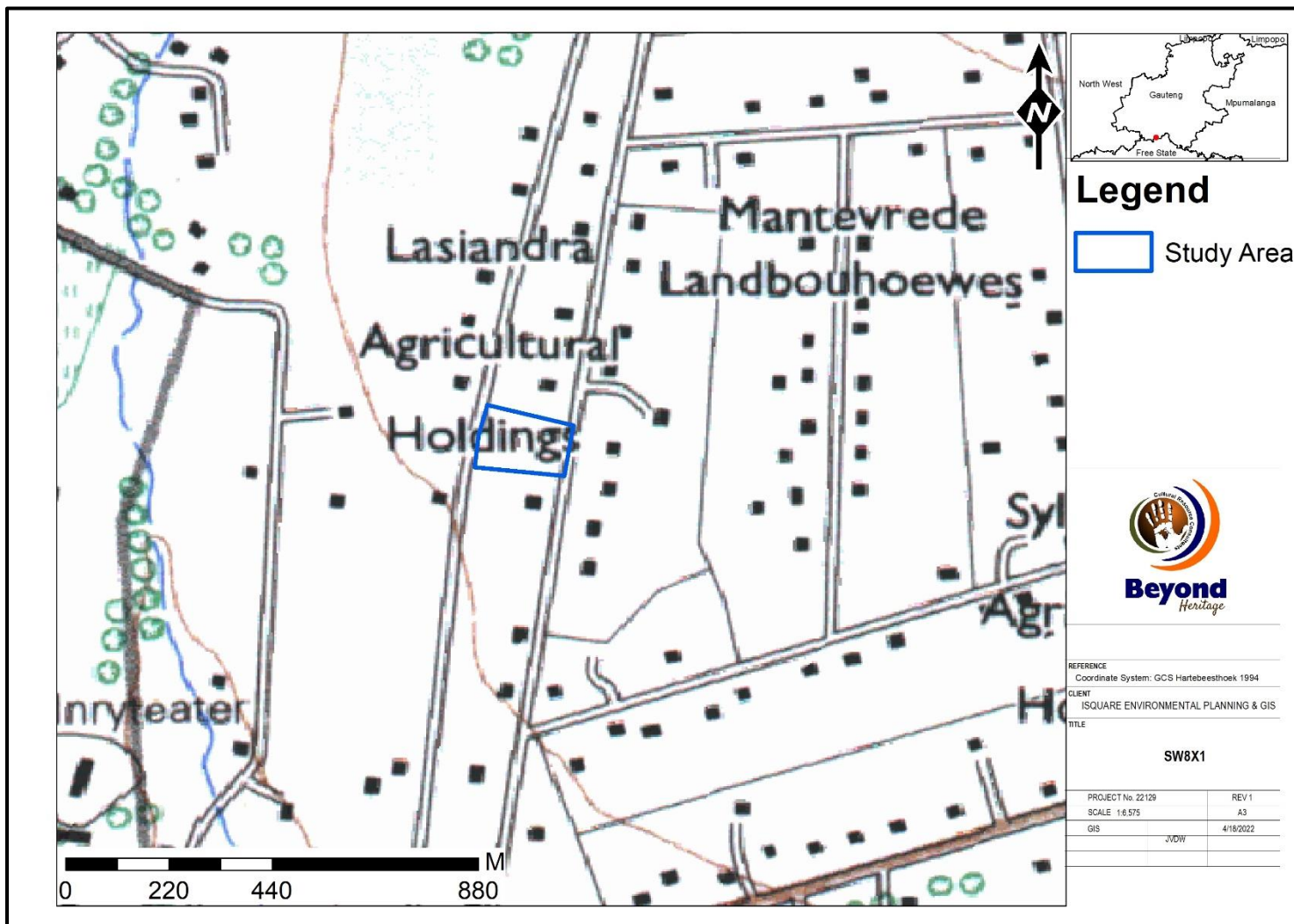


Figure 1.2. Local setting of the Project (1: 50 000 topographical map).

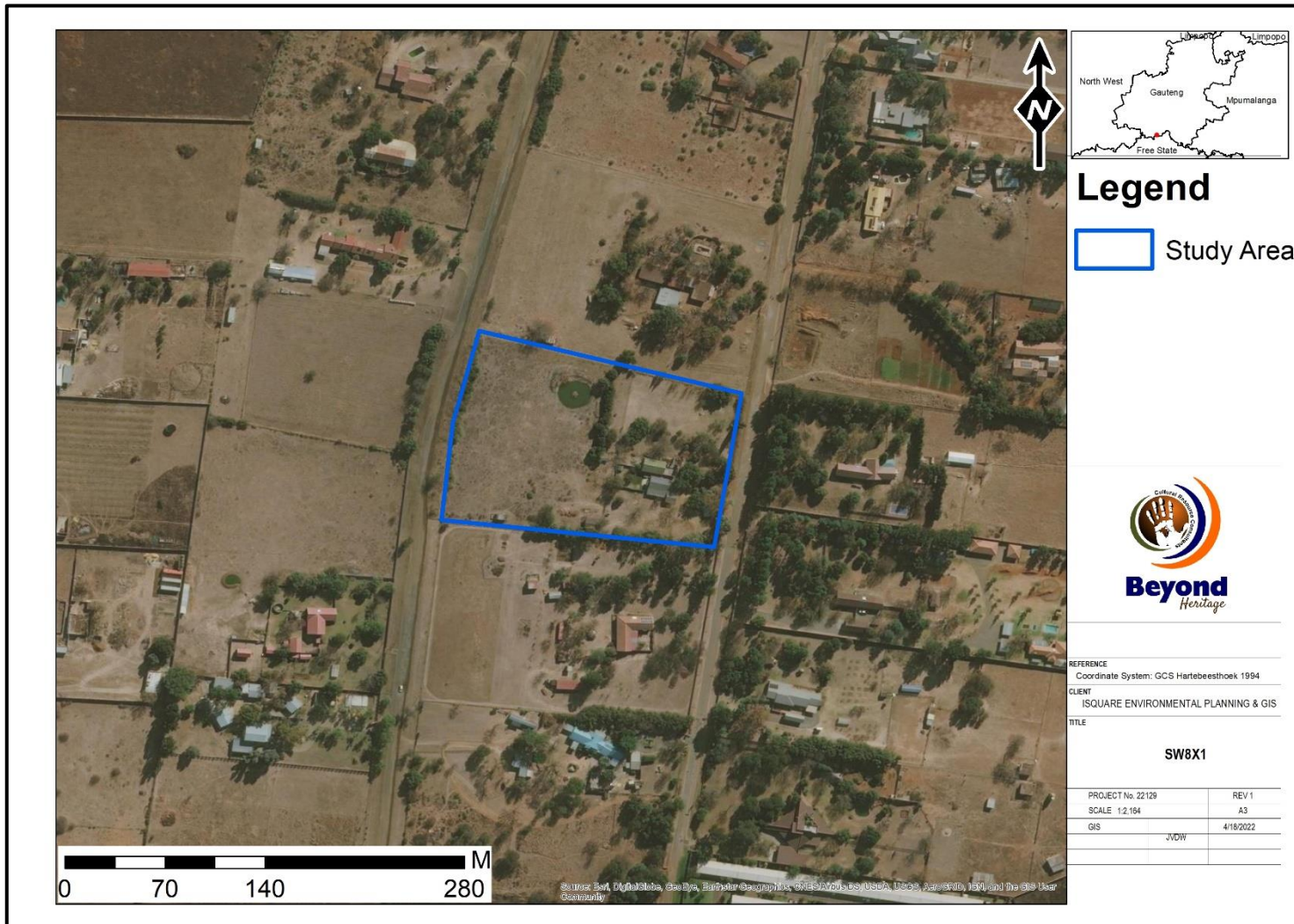


Figure 1.3. Aerial image of the Project area.



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

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

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

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

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

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

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

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

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

### **3 METHODOLOGY**

#### **3.1 Literature Review**

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

#### **3.2 Genealogical Society and Google Earth Monuments**

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

#### **3.3 Public Consultation and Stakeholder Engagement:**

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

### 3.4 Site Investigation

The aim of the site visit was to:

- a) survey the proposed project area to 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 4: Site Investigation Details**

	<b>Site Investigation</b>
Date	18 October 2022
Season	Spring – the time of year and season did not affect the survey. Overall heritage visibility was high due to short grass cover and the Project area was sufficiently covered to understand the heritage character of the area (Figure 3.1).

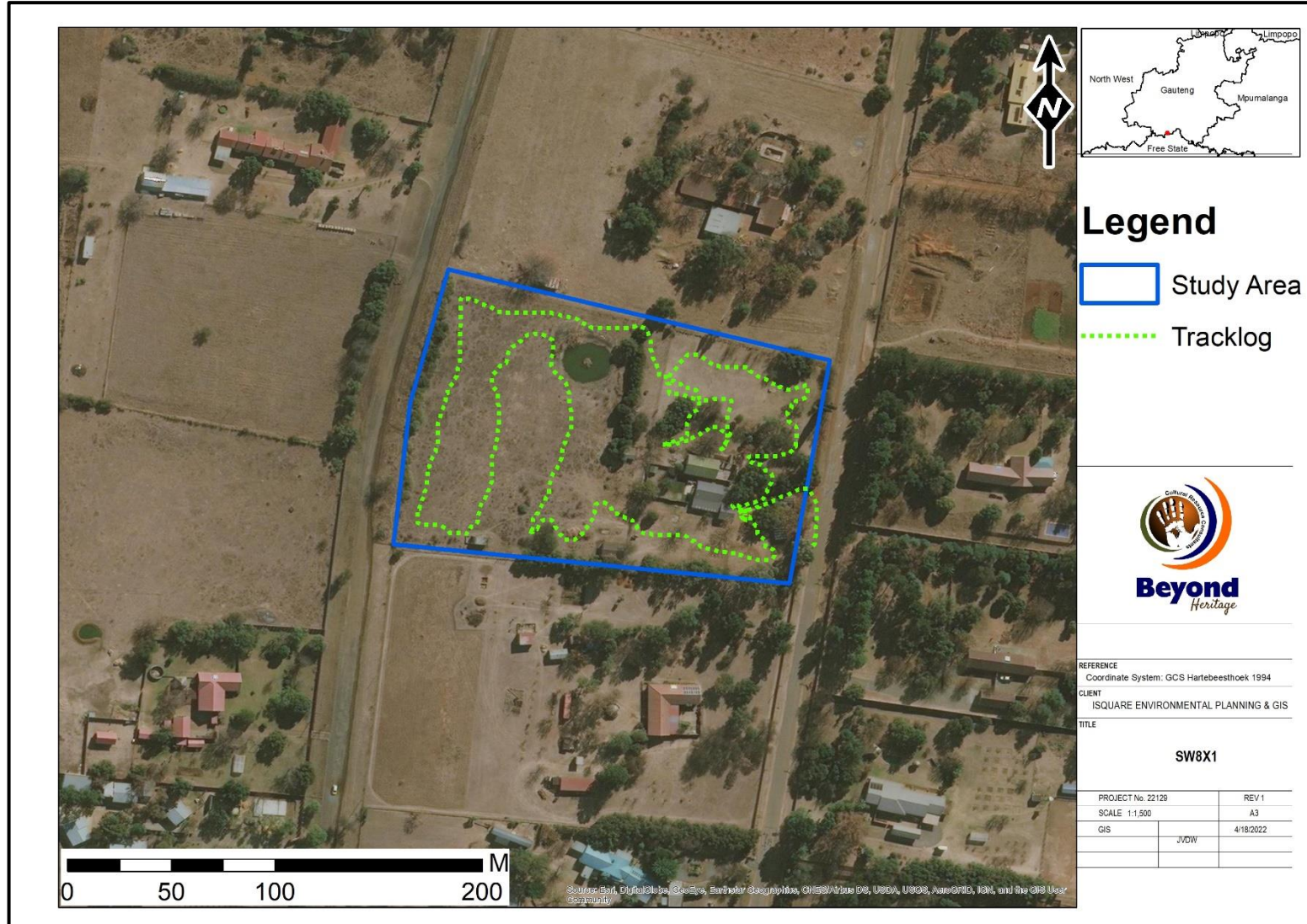


Figure 3.1. Tracklog of the survey path in green.

### 3.5 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**

<b><i>FIELD RATING</i></b>	<b><i>GRADE</i></b>	<b><i>SIGNIFICANCE</i></b>	<b><i>RECOMMENDED MITIGATION</i></b>
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 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 if relevant. It is possible that new information could come to light in future, which might change the results of this Impact Assessment.

## 4 Description of Socio-Economic Environment

According to Census 2011, Emfuleni Local Municipality has a total population of 721 663, of which 85,4% are black African, 12% are white, 1,2% are coloured, and 1,0% are Indian/Asian. Of those 20 years and older, 3,6 % completed primary school, 36,7% have some secondary education, 32,4% completed matric, and 12,9% have some form of higher education. The percentage with no form of schooling is 4,0%. Of the population, 202 543 people are economically active (employed or unemployed but looking for work) and, of these, 34,7% are unemployed. Of the 85 594 economically active youth (15–35 years) in the area, 45% are unemployed.

## 5 Results of Public Consultation and Stakeholder Engagement:

### 5.1.1 Stakeholder Identification

No public consultation was conducted as part of this HIA.



## 6 Literature / Background Study:

### 6.1 Literature Review (SAHRIS)

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

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

Author	Year	Project	Findings
Van Schalkwyk, J.	1998	A Survey of Cultural Resources in the Emfuleni Development Area, Vanderbijlpark, Gauteng.	Middle Stone Age tools were found on the surface as well as two farming related structures relating to recent historical times.
Van der Walt, J., Hutten, M.	2017	Heritage Impact Assessment for the Proposed Construction of a Filling Station and a Retail Centre On Holding 63, Johandeo, Gauteng Province.	No sites
Pistorius, C.C.	2007	A Phase I Heritage Impact Assessment Study for Water and Sewage Pipeline Corridors near Vanderbijlpark in the Gauteng Province of South Africa.	Two historical graves, multiple historical houses, and stone structures.
Van Schalkwyk, J.	2009	Heritage Impact Survey Report for the Proposed Development of a Light Industrial Facility, Vanderbijlpark Magisterial District.	No sites
Coetzee, F.	2004	Archaeological Investigation of the Proposed Establishment of an Industrial Town in Vanderbijl Park, Vanderbijlpark, Gauteng Province.	No sites
Munyai, R.R.	2010	Archaeological Investigation for the Proposed Establishment of a Private Cemetery on Portion 26 (a Portion of Portion 19) of Farm Rietspruit 535 IQ in Vanderbijlpark.	No sites
Dreyer, C.	2005	First Phase Archaeological and Heritage Impact Assessment for the Proposed Development of the Heron Banks Golf and River Estate, Sasolburg, Free State	A graveyard with 13 historical graves.

#### 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

#### 6.2.1 Stone Age

The archaeological record for the greater study area consists of the Stone Age, Iron Age and Historical period.

##### 6.2.1.1 Stone Age

The Stone Age is divided into the Earlier; Middle and Later Stone Age. It refers to the earliest period of occupation of South Africa when people mainly relied on stone for their tools.

**Earlier Stone Age (ESA):** The period from  $\pm 2.5$  million yrs. -  $\pm 250\ 000$  yrs. ago. Acheulean stone tools are dominant. The Early Stone Age in southern Africa is defined by the Oldowan complex, primarily found at the sites Sterkfontein, Swartkrans and Kromdraai, situated within the Cradle of Humankind, just outside Johannesburg (Kuman 1998). Within this complex, tools are more casual and expediently made and tools consist of rough cobble cores and simple flakes. The flakes were used for such activities as skinning and cutting meat from scavenged animals.

**Middle Stone Age (MSA):** The Middle Stone Age includes various lithic industries in SA dating from  $\pm 250\ 000$  yrs. – 25 000 yrs. before present. This period is first associated with archaic *Homo sapiens* and later *Homo sapiens sapiens*. Material culture includes stone tools with prepared platforms and stone tools attached to handles.

**Later Stone Age (LSA):** The period from  $\pm 25\ 000$ -yrs before present to the period of contact with either Iron Age farmers or European colonists. This period is associated with *Homo sapiens sapiens*. Material culture from this period includes: microlithic stone tools; ostrich eggshell beads and rock art. Sites located in the open are usually poorly preserved and therefore have less value than sites in caves or rock shelters.

Scatters of Oldowan and Acheulian tools have been discovered in older gravels along the Vaal River and Klip Rivier in Vereeniging (Le Roux 1971, Pistorius 2007). Tools found include handaxes, cleavers, flakes, choppers, and cores (Le Roux 1971). Provenance of stone tools found along the river has however been under critique in recent decades as they could have undergone post depositional transportation along the rivers. MSA associated finds in the area are limited to blades and points found within the Orange and Vaal River valleys (Pistorius 2007). The Duncanville Archaeological Reserve (around 14km northeast of the study area), found thousands of stone tools associated with both the Early and Middle Stone Age. Early and Middle Stone Age tools have also been found at Henley-On-Klip, situated around 30km from the study area. An LSA associated site containing rock engravings has been found in Redan, near Vereeniging. Around 244 rock engravings of animals, San weapons, circles, and symbols have been identified at the Redan site.

## 6.2.2 The Iron Age

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

**Early Iron Age:** Most of the first millennium AD.

**Middle Iron Age:** 10th to 13th centuries AD.

**Late Iron Age:** 14th century to colonial period.

The Iron Age is characterised by the ability of people to manipulate and work Iron ore into implements that assisted them in creating a favourable environment to make a better living. During the mid-17th century Europeans started to settle in modern-day Cape Town. During and after the conflict caused by the Mfecane (1820-1840), during the reign of king kaSenzangakhona Zulu, known as Shaka, Dutch-speaking farmers started to migrate to the interior regions of South Africa. A period that is marked by various skirmishes and battles between the local inhabitants, Dutch settlers and the British (Giliomee & Mbenga 2007).

The larger surrounding area only saw Iron Age occupation from the Late Iron Age with the Tswana occupying the larger study region since the 16th century. They occupied large stone walled towns which housed thousands of individuals. There are three known capitals of the Tswana namely Molokwane, Kaditshwene, and Kweneng. The closest capital is Kweneng located around 50km northeast of the study area, in the Suikerbosrand Nature Reserve. Kweneng is considerably larger than the other capitals and is about 4,5km long and 2,7km wide. The occupation of Kweneng ended in the early 19th century during the turbulent time

of the Mfecane which caused social unrest as conflict broke out within the Highveld and bordering areas (Sadr 2019).

### 6.3 Historical Information

In 1902 Boer and British generals met in Vereeniging to discuss the terms of peace marking the end of the Boer War (see [www.arcelormittalsa.com](http://www.arcelormittalsa.com)).

Iscor first established a steel works plant in Pretoria with production starting in 1934. The Second World War brought about a higher need for steel. The Pretoria steel works had reached its production capacity and it was decided to build a plate rolling mill in Vereeniging to accommodate wartime needs with the idea that this would later form part of a fully integrated steel works. After the war, it was decided that the new steelworks were to be developed. The chairman of Iscor at the time, Dr Hendrik van der Bijl recommended they purchase 10 000 hectares of land near the Vaal River. The plant was officially opened on 4 October 1947 (Pistorius 2007). Vanderbijlpark was established in 1943 as an industrial town to support the steel works which were being built. The town was named after Dr Hendrik van der Bijl and in 1952 became its own municipality.

The first township close to Vanderbijlpark was established in 1949 and was called as Bophelong while the second was called Boipatong. Other townships such as Seboreng around the Iscor Vanderbijl works were later developed to supply labour demands by the expanding industrial centre. The plant is still operational today and is one of the world's largest inland steel mills.

### 6.4 Sharpeville and Boipatong Massacres

In 1960, citizens were protesting against the pass laws of the Apartheid regime of the time. On the 21st of March, 67 people were killed and 186 people were wounded by the police during the protest (Van der Walt and Hutten 2017). Victims of the Sharpeville massacre were buried in the Phelindaba Cemetery which was declared a National Heritage site in 2016. In 1961, another massacre occurred in the township of Boipatong where 46 people were killed by Inkatha members (Van der Walt and Hutten 2017).

## 7 Description of the Physical Environment

The general landscape is gently to moderately undulating landscape on the Highveld plateau supporting short to medium-high, dense, tufted grassland dominated almost entirely by *Themeda triandra* and accompanied by a variety of other grasses such as *Elionurus muticus*, *Eragrostis racemosa*, *Heteropogon contortus* and *Tristachya leucothrix* (Mucina and Rutherford 2006). The project area is largely developed with various structures situated within the eastern half of the proposed project area. These structures are built in a modern style with modern materials. The rest of the property consists of an open area with short grass cover. The property is completely fenced off with various trees that are scattered across the project area with a small dam near the northern edge of the project area. General site conditions are illustrated in Figures 7.1 to 7.8.



Figure 7.1. General site conditions - View from the property entrance.



Figure 7.2. General site conditions - Eastern edge of the proposed project area as well as the property entrance.



Figure 7.3. General site conditions - Open area within the property.



Figure 7.4. General site conditions - Northern edge of the proposed project area.



Figure 7.5. Small dam situated near the northern edge of the property.



Figure 7.6. General site conditions - Western edge of the proposed project area.

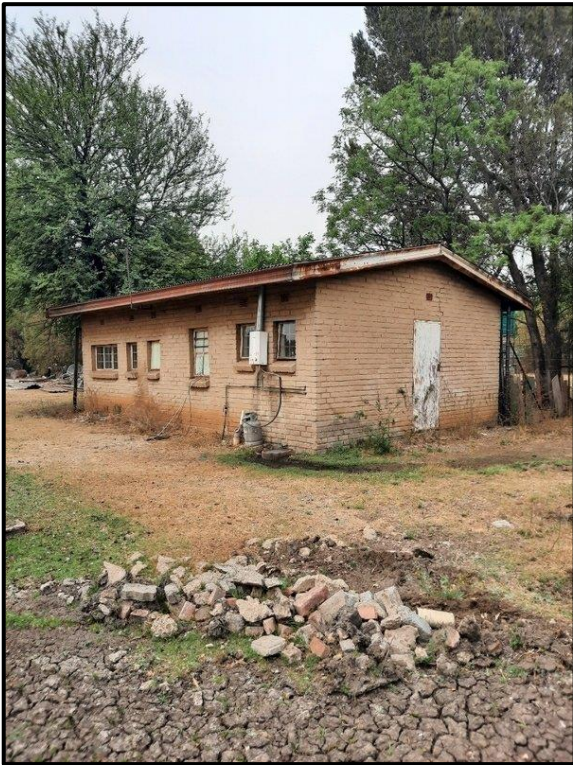


Figure 7.7. Small dwelling situated near the southern edge of the proposed project area.

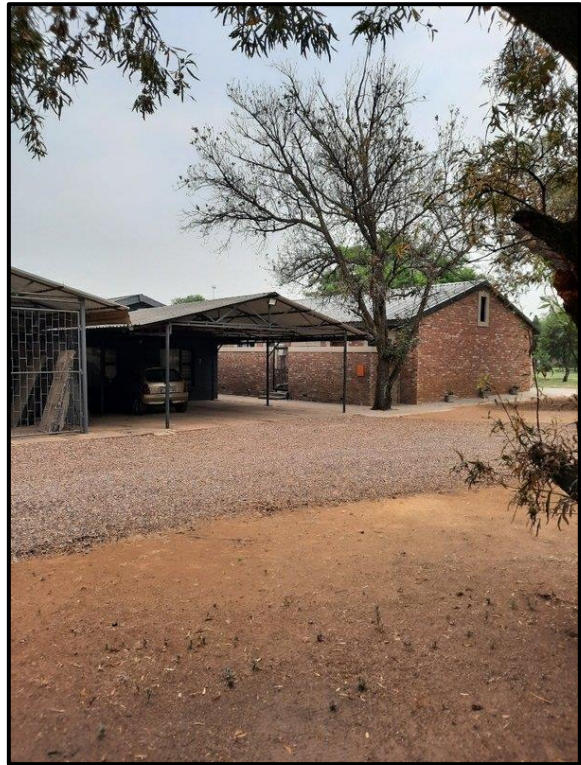


Figure 7.8. View of the sheds facing east.

## 8 Findings of the Survey

### 8.1 Heritage Resources

The study area is generally flat without any major topographical features like pans or rocky outcrops that would be focal points for archaeological sites. Furthermore, the site show signs of disturbance through development of modern structures in the eastern half of the project area. No heritage resources were recorded within the project footprint.

### 8.2 Cultural Landscape

The Project area is located in an urban area that used to be agricultural holdings with a structure within the project area which can be seen from the 1979 topographic map (Figure 8.1 to 8.3).



Figure 8.1. 1954 Topographic map of the area showing agricultural lands and three huts near the project area.

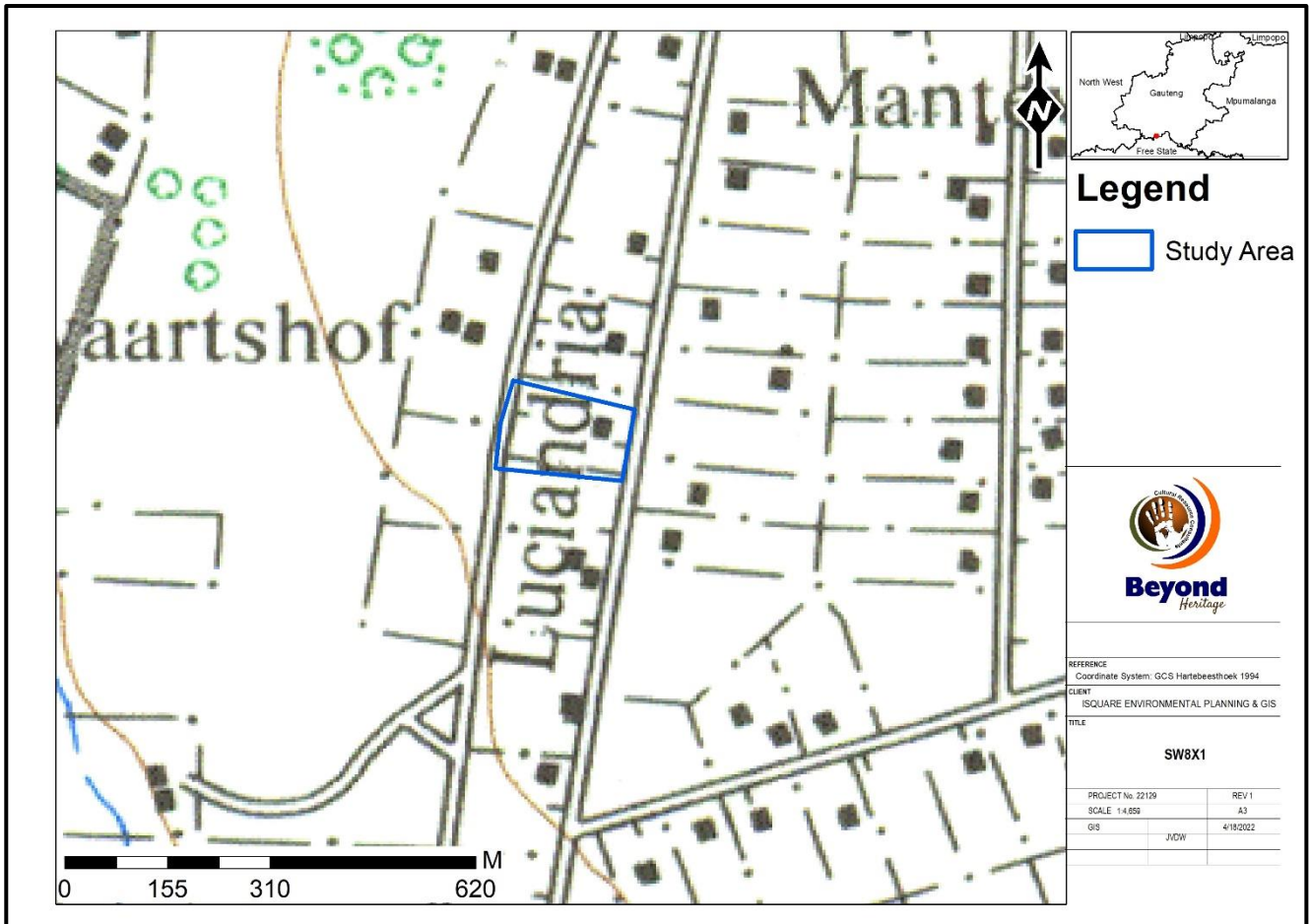


Figure 8.2. 1979 Topographic map showing the development of roads and multiple structures in the area. The map also shows a structure that is built within the project area. These structures are younger than 60 years.

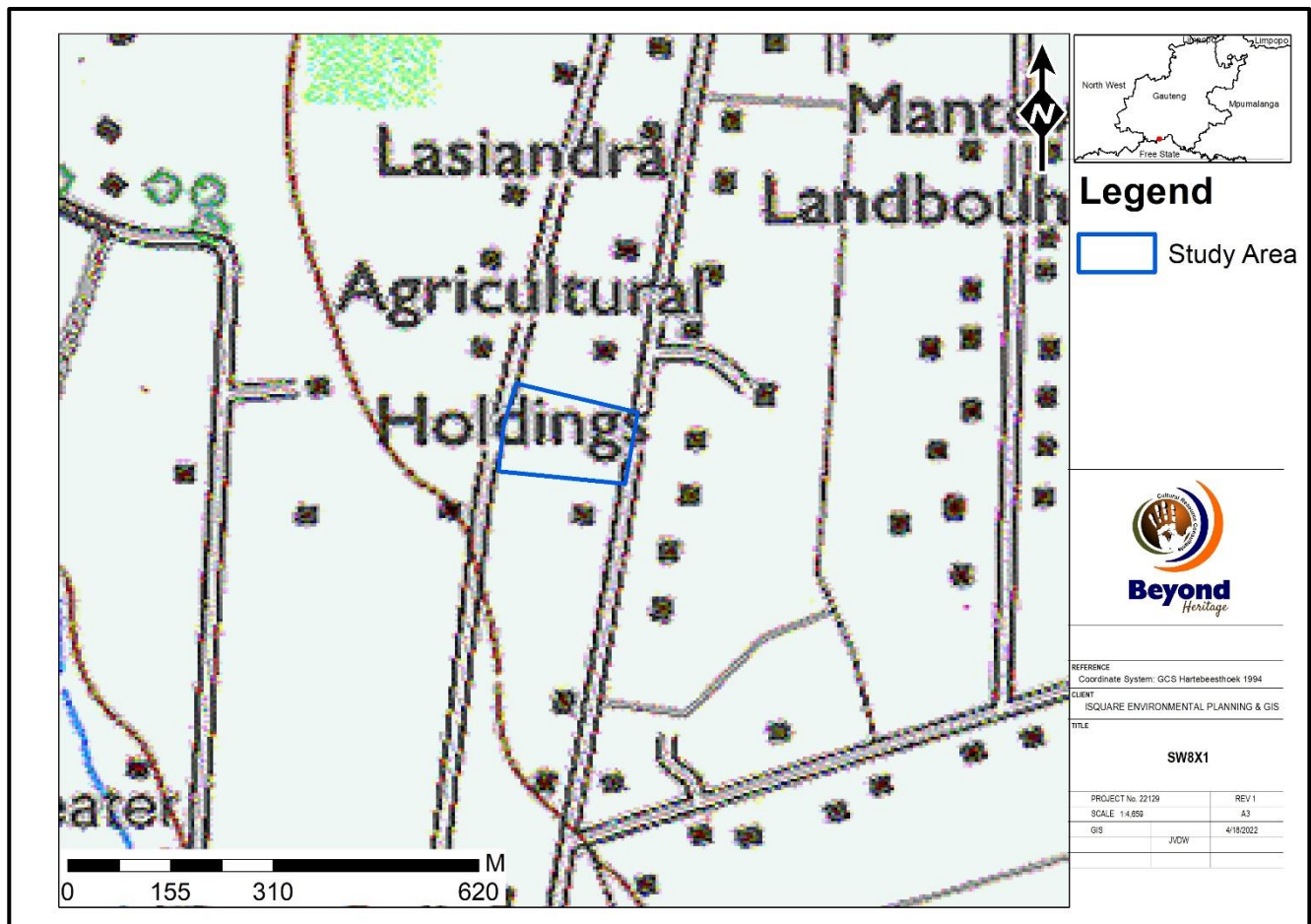
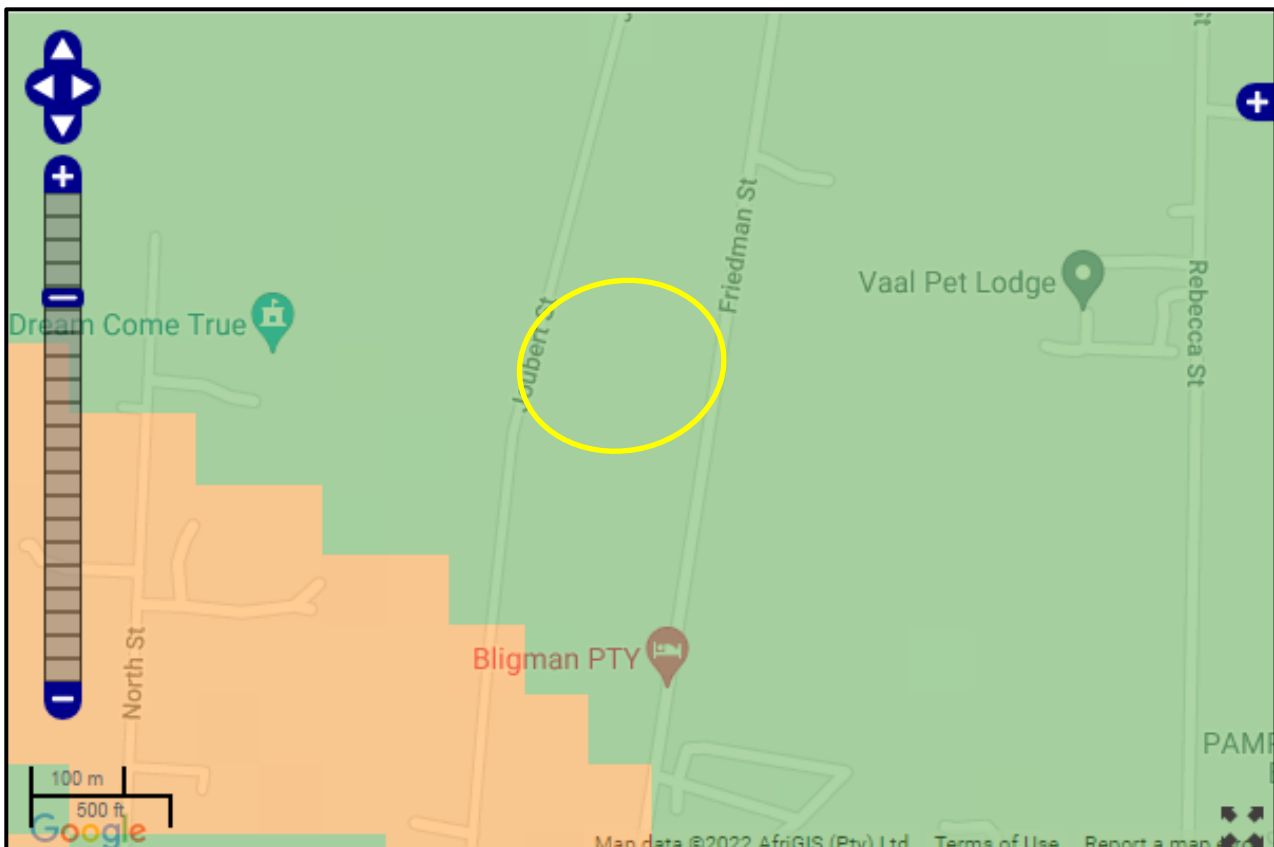


Figure 8.3. 1995 Topographic map of the study area showing newer roads and multiple structures along the roads.



### 8.3 Paleontological Heritage

According to the SAHRA Paleontological map the study area is of moderate paleontological significance (Figure 8.4) and further palaeontological studies were done. Bamford (2022), indicated that no fossils have been noted in the area. The proposed site lies on the Quaternary sands, alluvium and gravels that are moderately paleontologically sensitive. The geological structures suggest that the rocks are either much too old to contain fossils or are transported. Furthermore, the material to be excavated is soil and sand and these do not preserve fossils (Bamford 2022). The sands of the Quaternary period would not preserve fossils but might trap transported fossils that are robust but fragmented. Since there is an extremely small chance that transported fossils from the highlands may be disturbed a Fossil Chance Find Protocol has been added to this report. Taking account of the defined criteria, Bamford (2022), stated that the potential impact to fossil heritage resources is extremely low.



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

## 9 Potential Impact

No heritage sites of significance occur within the impact area and no adverse impact to heritage resources is expected. 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 6).

### 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 for the Project

Table 7. Impact assessment for the proposed project.

<b>Nature:</b> 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.		
	<b>Without mitigation</b>	<b>With mitigation (Preservation/ excavation of site)</b>
<b>Extent</b>	Local (2)	Local (2)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Magnitude</b>	Minor (2)	Minor (2)
<b>Probability</b>	Improbable (2)	Improbable (2)
<b>Significance</b>	<b>18 (Low)</b>	<b>18 (Low)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Not reversible	Not reversible
<b>Irreplaceable loss of resources?</b>	Yes	Yes
<b>Can impacts be mitigated?</b>	NA	NA
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>• Implementation of the Chance Find Procedure for the project;</li> <li>• The study area must be monitored by the ECO during construction.</li> </ul>		
<b>Cumulative impacts:</b>		
The proposed project will have a low cumulative impact as no known heritage resources will be adversely affected.		
<b>Residual Impacts:</b>		
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 study area is a disturbed piece of land with modern structures (younger than 60 years) built in the eastern half. In addition to the existing developments the lack of any focal points like rocky outcrops or pans that would have attracted human occupation in antiquity means that the site is considered to be of low heritage potential. This was confirmed during the site visit and no heritage resources were recorded. According to the SAHRA Paleontological sensitivity map the study area is of moderate paleontological significance and further studies by Bamford (2022), stated that the project will have an extremely low impact on the palaeontological record of the study area.

The impact on heritage resources is considered to be low and the project can be authorised provided that the recommendations in this report are adhered to and based on the South African Heritage Resource Authority (SAHRA) 's approval.

### 10.1 Recommendations for condition of authorisation

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

#### **Recommendations:**

- The study area should be monitored by the ECO during construction to implementation the Chance Find Procedure for the project as outlined under Section 10.2.

## **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 therefore 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 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 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 coal) 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 fossil plants, vertebrates, invertebrates or trace fossils in the shales and mudstones. 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 and unrecorded cultural resources (of which graves and subsurface cultural material are the highest risk). This can cause delays during construction, as well as additional costs involved in mitigation and 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. If any heritage resources are found, the chance finds procedure must be followed as outlined above.

**Table 8. Monitoring requirements for the project**

Heritage Monitoring					
Aspect	Area	Responsible for monitoring and measuring	Frequency	Proactive or reactive measurement	Method
Cultural Heritage Resources chance find	Entire project area	EO & ECO	Weekly (Pre construction and construction phase)	Proactively	<ul style="list-style-type: none"> <li>• If risks are manifested (accidental discovery of heritage resources) the chance find procedure should be implemented:                             <ol style="list-style-type: none"> <li>1. Cease all works immediately;</li> <li>2. Report incident to Site Manager</li> <li>3. EPC (Engineering Procurement and Construction) Contractor to contact an archaeologist/ palaeontologist to inspect the site;</li> <li>4. Report incident to SAHRA; as advised by specialist and</li> <li>5. Employ site specific mitigation measures recommended by the specialist after assessment in accordance with the requirements of the relevant authorities.</li> </ol> </li> <li>• Only recommence operations once impacts have been mitigated.</li> </ul>

## 10.6 Management Measures for inclusion in the EMPr

**Table 9. Heritage Management Plan for EMPr implementation**

Area	Mitigation measures	Phase	Timeframe	Responsible party for implementation	Target	Performance indicators (Monitoring tool)
General project area	The study area should be monitored by the ECO during construction to implementation the Chance Find Procedure for the project as outlined under Section 10.2.	Construction	Throughout the project	Applicant EPC Contractor	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 35, 36 and 38 of NHRA	ECO Checklist/Report

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