

# HERITAGE IMPACT ASSESSMENT

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

FOR THE PROPOSED RUIGTEVLEY MINING PERMIT LOCATED ON A PORTION OF  
PORTION 1 OF FARM RUIGTEVLEY 97 KQ, NORTH - EAST OF THABAZIMBI LIMPOPO  
PROVINCE

**Type of development:**

Mining Permit

**Client:**

Greenmined Environmental

**Applicant:**

TBC

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## APPROVAL PAGE

<b>Project Name</b>	Ruigtevley Mining Permit
<b>Report Title</b>	Heritage Impact Assessment for the proposed Ruigtevley Mining Permit Located On A Portion Of Portion 1 Of Farm Ruigtevley 97 KQ, North - East Of Thabazimbi Limpopo Province
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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.**

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
(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 7, 8 and 9
(g) Identification of any areas to be avoided, including buffers.	Section 7,8 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
(l) 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 9.1 and 9.5
(l) Conditions for inclusion in the environmental authorisation.	Section 9. 1 and 9.5
(m) Monitoring requirements for inclusion in the EMPr or environmental authorisation.	Section 9.6
(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 9.3
(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.	Refer to the BA report
(q) Any other information requested by the competent authority.	No other information requested at this time

## Executive Summary

The Applicant identified the need to apply for environmental authorisation (EA) and a mining permit (MP) on an undisturbed and inactive area on a portion of Portion 1 of Farm Ruigtevley 97 KQ, Thabazimbi Local Municipality, Limpopo Province. 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 Project area is characterised by a wooded area with reddish sand and gravel soils;
- Two observations were made including a small cement and brick foundation (48 m to the west of the development footprint) recorded as RV002 and a degraded road just to the west of the development footprint recorded as RV001. It should be noted that RV002 can be associated with unmarked graves and this area should be avoided during development. The features potential to contribute to aesthetic, historic, scientific, and social aspects are non-existent, and they are of no significance apart from mentioning them in this report;
- According to the South African Heritage Resource Authority (SAHRA) Paleontological sensitivity map the study area is of moderate palaeontological sensitivity and no further studies are required for this aspect.


The impact on heritage resources is expected to be low, and the Project can be authorised provided that the recommendations in this report are adhered to and based on the SAHRA's approval.

### Recommendations:

The following recommendations for Environmental Authorisation apply and the Project may only proceed after receiving comment from SAHRA:

- Development activities must be confined to the approved development footprint only;
- Monitoring of the Project area by the ECO during pre-construction and construction phases for heritage chance finds, if chance finds are encountered to implement the Chance Find Procedure for the Project as outlined in Section 9.

**Declaration of Independence**

<b>Specialist Name</b>	Lara Lucija Kraljević
<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>	06/12/2024

**a) Expertise of the specialist**

Lara Kraljević completed her masters in archaeology at the University of Pretoria specialising in chemical and mineralogical studies of Iron Age ceramics. Lara is an accredited member of the Association of South African Professional Archaeologists (ASAPA) (#661). She has co-authored over 100 impact assessments in Gauteng, Limpopo, Mpumalanga, Northern Cape, Eastern Cape, and North West Provinces in South Africa.

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**TABLE OF CONTENTS**

<b>REPORT OUTLINE</b> .....	<b>4</b>
<b>EXECUTIVE SUMMARY</b> .....	<b>5</b>
<b>DECLARATION OF INDEPENDENCE</b> .....	<b>6</b>
A) EXPERTISE OF THE SPECIALIST.....	6
<b>ABBREVIATIONS</b> .....	<b>10</b>
<b>GLOSSARY</b> .....	<b>10</b>
<b>1 INTRODUCTION</b> .....	<b>11</b>
1.1 TERMS OF REFERENCE.....	15
1.2 PROJECT DESCRIPTION .....	16
1.3 ALTERNATIVES .....	17
<b>2 LEGISLATIVE REQUIREMENTS</b> .....	<b>18</b>
<b>3 METHODOLOGY</b> .....	<b>20</b>
3.1 LITERATURE REVIEW AND BACKGROUND STUDY.....	20
3.2 GENEALOGICAL SOCIETY AND GOOGLE EARTH MONUMENTS.....	20
3.3 PUBLIC CONSULTATION AND STAKEHOLDER ENGAGEMENT:.....	20
3.4 SITE INVESTIGATION.....	21
3.5 SITE SIGNIFICANCE AND FIELD RATING.....	23
3.6 IMPACT ASSESSMENT METHODOLOGY.....	25
3.7 ASSUMPTIONS AND LIMITATIONS OF THE STUDY.....	26
<b>4 DESCRIPTION OF SOCIO-ECONOMIC ENVIRONMENT</b> .....	<b>26</b>
<b>5 RESULTS OF PUBLIC CONSULTATION AND STAKEHOLDER ENGAGEMENT:</b> .....	<b>26</b>
<b>6 CONTEXTUALISING THE STUDY AREA</b> .....	<b>27</b>
6.1 ARCHAEOLOGICAL BACKGROUND.....	27
6.1.1 Stone Age.....	27
6.1.2 Iron Age (general).....	28
6.1.3 Historical Background .....	29
6.2 LITERATURE REVIEW (SAHRIS) .....	30
6.3 GOOGLE EARTH AND THE GENEALOGICAL SOCIETY OF SOUTH AFRICA (GRAVES AND BURIAL SITES) .....	31
<b>7 HERITAGE BASELINE</b> .....	<b>31</b>
7.1 DESCRIPTION OF THE PHYSICAL ENVIRONMENT .....	31



7.2	HERITAGE RESOURCES.....	33
7.3	CULTURAL LANDSCAPE.....	34
7.4	PALEONTOLOGICAL HERITAGE .....	34
<b>8</b>	<b>ASSESSMENT OF IMPACTS.....</b>	<b>35</b>
8.1	IMPACTS ON TANGIBLE HERITAGE RESOURCES.....	35
8.1.1	<i>Cumulative impacts</i> .....	35
8.2	IMPACT ASSESSMENT TABLES.....	35
<b>9</b>	<b>CONCLUSION AND RECOMMENDATIONS.....</b>	<b>36</b>
9.1	RECOMMENDATIONS FOR CONDITION OF AUTHORISATION.....	36
9.2	CHANCE FIND PROCEDURE .....	36
9.2.1	<i>Heritage Resources</i> .....	36
9.3	REASONED OPINION .....	37
9.4	POTENTIAL RISK.....	37
9.5	MONITORING REQUIREMENTS .....	38
9.7	MANAGEMENT MEASURES FOR INCLUSION IN THE EMPR .....	39
<b>10</b>	<b>REFERENCES.....</b>	<b>40</b>

## LIST OF FIGURES

FIGURE 1.1.	REGIONAL SETTING OF THE PROJECT (EXTRACT OF THE 2627 1: 250 000 TOPOGRAPHICAL MAP). .....	12
FIGURE 1.2.	LOCAL SETTING OF THE PROJECT (EXTRACT FROM 1:50 000 TOPOGRAPHIC MAP SHEETS 2627 BB). .....	13
FIGURE 1.3.	AERIAL IMAGE OF THE PROJECT AREA AND SURROUNDS. ....	14
FIGURE 3.1.	TRACKLOG OF THE SURVEY PATH IN WHITE. ....	22
FIGURE 6.1:	MOVEMENT OF BANTU SPEAKING FARMERS (HUFFMAN 2007). ....	28
FIGURE 7.1.	VIEW OF THE LARGE THICKET OF 'BLACK WATTLE' TREES ALONG THE SOUTHERN BOUNDARY OF THE PROJECT AREA.....	32
FIGURE 7.2.	IMAGE SHOWING THE THICK GRASS COVER NEAR THE MAN-MADE DRAINAGE LINE THROUGH THE EASTERN PART OF THE PROJECT AREA.....	32
FIGURE 7.3.	VIEW OF THE THICK GROUND VEGETATION ACROSS THE PROJECT AREA.....	32
FIGURE 7.4.	EXISTING STRUCTURES WITHIN FENCED OFF YARD. ACCORDING TO HISTORICAL MAPS, NO STRUCTURES ARE PRESENT WITHIN THE PROJECT AREA PRIOR TO 1995.....	32
FIGURE 7.5.	EXISTING STRUCTURES WITHIN FENCED OFF YARD. THE STRUCTURES DO NOT SEEM OLDER THAN 60 YEARS. ....	<b>ERROR!</b>
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FIGURE 7.6.	EXISTING BOREHOLE SITUATED WITHIN THE PROJECT AREA.....	<b>ERROR! BOOKMARK NOT DEFINED.</b>
FIGURE 7.7.	PALEONTOLOGICAL SENSITIVITY OF THE APPROXIMATE STUDY AREA (YELLOW POLYGON) AS INDICATED ON THE SAHRA PALAEONTOLOGICAL SENSITIVITY MAP. ....	34

**LIST OF TABLES**

TABLE 1. SPECIALIST REPORT REQUIREMENTS .....	4
TABLE 2: PROJECT DESCRIPTION .....	16
TABLE 3: INFRASTRUCTURE AND PROJECT ACTIVITIES .....	16
TABLE 4: SITE INVESTIGATION DETAILS .....	21
<b>TABLE 5. HERITAGE SIGNIFICANCE AND FIELD RATINGS .....</b>	<b>24</b>
TABLE 6. STUDIES CONSULTED FOR THE PROJECT. ....	30
TABLE 8. IMPACT ASSESSMENT FOR THE BURIAL SITE .....	35
TABLE 9. MONITORING REQUIREMENTS FOR THE PROJECT .....	38
TABLE 10. HERITAGE MANAGEMENT PLAN FOR EMPr IMPLEMENTATION .....	39

**ABBREVIATIONS**

ASAPA	Association of South African Professional Archaeologists
BGG	Burial Ground and Graves
CFPs	Chance Find Procedures
CMP	Conservation Management Plan
CoGHSTA	Co-operative Governance, Human Settlements and Traditional Affairs
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
NCHM	National Cultural History Museum
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
Earlier Stone Age	~ 2.6 million to 250 000 years ago
Middle Stone Age	~ 250 000 to 40-25 000 years ago
Later Stone Age	~ 40-25 000, to the historic period
The Iron Age	~ AD 400 to 1840
Historic	~ AD 1840 to 1950
Historic building	Over 60 years old

## 1 Introduction

Greenmined Environmental appointed Beyond Heritage to conduct a Heritage Impact Assessment (HIA) for the proposed Ruigtevley Mining Permit on a portion of Portion 1 of the Farm Ruigtevley 97 KQ, Thabazimbi Local Municipality, Limpopo Province. The report forms part of the Basic Assessment (BA) and Environmental Management Programme (EMPr) for the development.

The aim of the study was to survey the proposed development footprint in an effort to understand the cultural layering of the area, and if heritage features are found, to assess their importance within local, provincial, and national context. It further served to assess the impact of the proposed Project on non-renewable heritage resources. The study will 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. Recommendations are included to protect, preserve, and develop such resources within the framework provided by the National Heritage Resources Act of 1999 (Act No 25 of 1999) (NHRA).

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 heritage resources were recorded in the study area. General site conditions and features in the study area were recorded by means of photographs, GPS locations and descriptions. Possible impacts were identified, and mitigation measures are proposed in this report.

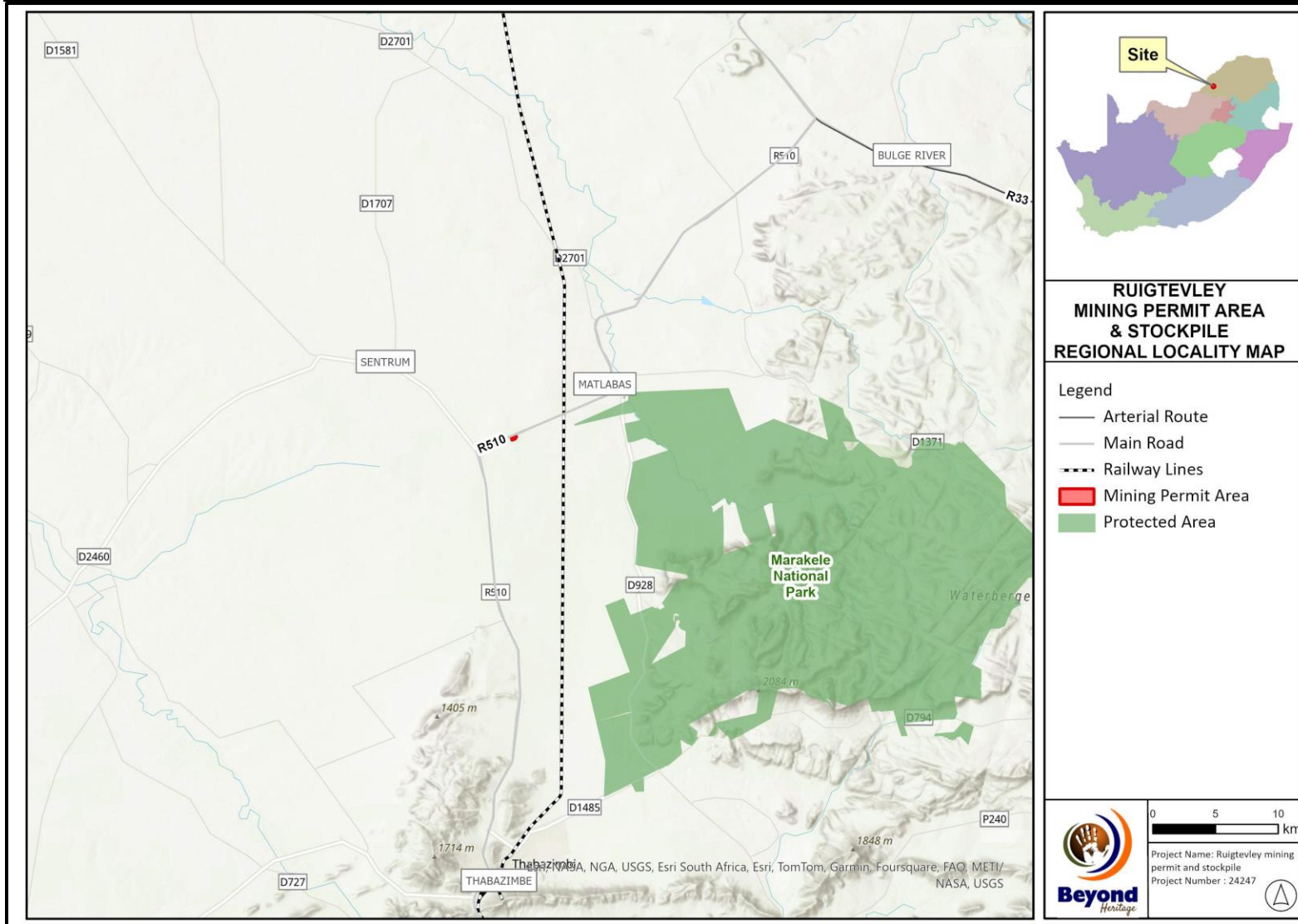


Figure 1.1. Regional setting of the Project.

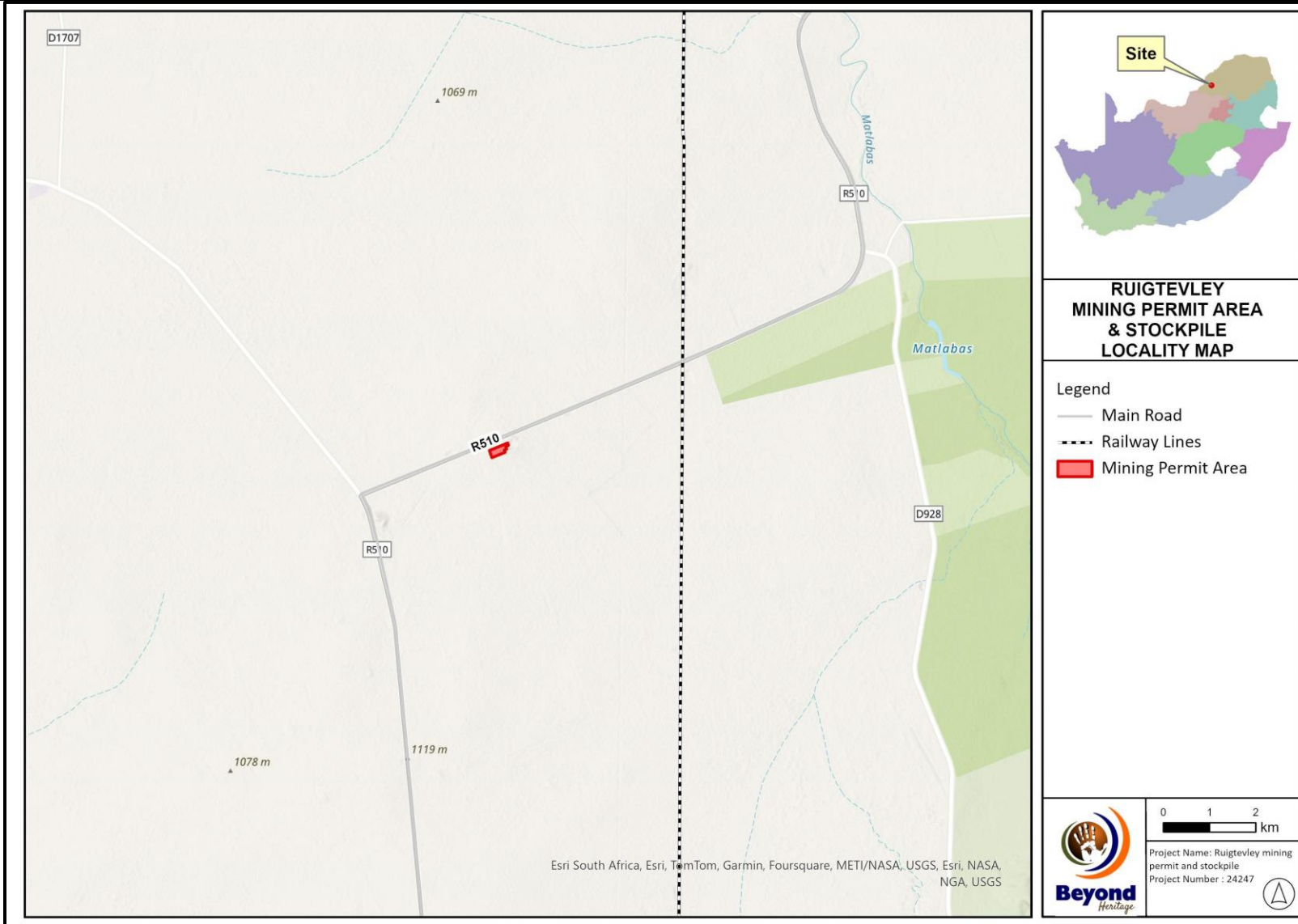


Figure 1.2. Local setting of the Project.





Figure 1.3. Aerial image of the Project area and surrounds.

### 1.1 Terms of Reference

The following Terms of Reference were adhered to in conducting this HIA.

#### Field study

Conduct a field study to: (a) survey the development footprint to understand the heritage character of the impact area; 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 Association of South African Professional Archaeologists (ASAPA).

Recommendations are provided 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 Ruigtevley Mining Permit are outlined in Tables 2 and 3.

**Table 2: Project Description**

<b>Magisterial District</b>	Thabazimbi Local Municipality, Limpopo Province.
<b>Central co-ordinates of the development</b>	24°18'24.05"S 27°24'49.16"E

**Table 3: Infrastructure and project activities**

<b>Type of development</b>	Mining Permit
<p>Project Details:</p> <p>The applicant, intends to win material from the area for at least 2 years with a possible extension of another 3 years. The aggregate to be removed from the quarry will be used for construction industry in the vicinity. The proposed quarry will contribute to the upgrading / maintenance of road infrastructure and building contracts in and around the Thabazimbi area.</p> <p>The mining activities will consist out of the following:</p> <ul style="list-style-type: none"> <li>• Stripping and stockpiling of topsoil;</li> <li>• Excavating;</li> <li>• Crushing;</li> <li>• Stockpiling and transporting;</li> <li>• Sloping and landscaping upon closure of the site; and</li> <li>• Replacing the topsoil and vegetation the disturbed area.</li> </ul> <p>The proposed mining activities will entail the following:</p> <ul style="list-style-type: none"> <li>• The 4.9 ha proposed mining location is located over an undeveloped, inactive portion of the property.</li> <li>• The mining method will make use of blasting to loosen the hard rock; the material will then be loaded and hauled to the crushing plant where it will be screened to various sized stockpiles. The aggregate will be stockpiled until it is transported from site using tipper trucks. All mining related activities will be contained within the approved mining permit boundaries. The aggregate will be stockpiled and transported to clients via trucks and trailers.</li> <li>• All activities will be contained within the boundaries of the site.</li> </ul> <p>Should the MP be issued, and the mining of gravel be allowed, the proposed project will comprise of activities that can be divided into three key phases (discussed in more detail below) namely the:</p> <ol style="list-style-type: none"> <li>1. Site establishment/construction phase which will involve the demarcation of the permitted mining area. Site establishment will also necessitate the clearing of vegetation, the stripping and stockpiling of topsoil, and the introduction of mining machinery and equipment.</li> <li>2. Operational phase that will entail the mining of aggregate from the approved footprint area via conventional open cast mining methods. The mining method will make use of blasting in order to loosen the hard rock; upon</li> </ol>	

which the loosened material will be transported to the crushing and screening processing plant where it will be screened to various sized stockpiles, before it is sold and transported from site to clients.

3. Decommissioning phase which entails the rehabilitation of the affected environment prior to the submission of a closure application to the Department of Mineral Resources and Energy (DMRE). The permit holder will further be responsible for the seeding (only if needed) of all rehabilitated areas. Once the full mining area is rehabilitated, the mining permit holder will be required to submit a closure application to the DMRE in accordance with section 43(4) of the MPRDA, 2002. The Closure Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).
  - Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required), and weed / alien clearing.
  - All infrastructures, equipment, and other items used during the mining period will be removed from the site (section 44 of the MPRDA).
  - Waste material of any description, including receptacles, scrap, rubble, and tyres, will be removed entirely from the mining area and disposed of at a recognised landfill facility. It will not be permitted to be buried or burned on the site.
  - Weed / Alien clearing will be done in a sporadic manner during the life of the mining activities. Species categorised as weeds according to the National Environmental Management: Biodiversity Act (Act No. 10 of 2004) [NEMBA] Alien and Invasive Species Regulation GNR 598 and 599 of 2014 Species regarded as need to be eradicated from the site on final closure.
  - Final rehabilitation shall be completed within a period specified by the Regional Manager. Once the mining area was rehabilitated, the mining permit holder will submit a closure application to the DMRE in accordance with section 43(4) of the MPRDA, 2002. The Closure Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).

### 1.3 Alternatives

No alternatives were provided, but the area assessed allows for siting of the development to avoid impacts to heritage resources.

## 2 Legislative Requirements

The HIA, as a specialist study to the BA, 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;
- 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 The South African Heritage Resources Agency (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.

SAHRA as a commenting authority under section 38(8) of the NHRA require all environmental documents, compiled in support of an EA application as defined by the National Environmental Management Act (NEMA) (Act No 107 of 1998) to be submitted to SAHRA for commenting. Environmental Impact Assessment (EIA) Regulations section 40 (1) and (2). The Environmental Impact Assessment (EIA) Regulations, Government Notice Regulation (GN) R.982 were published on 04 December 2014 and promulgated on 08 December 2014. Together with the EIA Regulations, the Minister also published GN R.983 (Listing Notice No. 1), GN R.984 (Listing Notice No. 2) and GN R.985 (Listing Notice No. 3) in terms of Sections 24(2) and 24D of the NEMA, as amended) Upon submission to SAHRA the project will be automatically given a case number as reference. As such the BA 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).

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 HIAs 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 (refer to Section 3.5). Relevant conservation or mitigation recommendations should be made. Recommendations are subject to evaluation by SAHRA.

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

Conservation or 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 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 of the National Heritage Resources Act (NHRA), as well as the National Health Act of 2003 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) re-instituted by Proclamation 109 of 17 June 1994 and implemented by CoGHSTA as well as the National Health Act 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 and background study

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). Findings are included in Section 6.1 and 6.2.

#### 3.2 Genealogical Society and Google Earth Monuments

Google Earth and 1:50 000 topographic maps of the area were utilised to identify possible places of heritage sensitivity might be located; these locations were marked and visited during the fieldwork phase. The database of the Genealogical Society of South Africa (GSSA) was consulted to collect data on any known graves in the area. Results are included in Section 6.3.

#### 3.3 Public Consultation and Stakeholder Engagement:

Stakeholder engagement is a key component of any BA 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 process undertaken by the EAP was to capture and address any issues raised by community members and other stakeholders. Results are included in Section 5 and the final EA 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**

	Site Investigation
Date	3 November 2023
Season	Summer – The general archaeological visibility across the project area was low due to vegetation cover. The Project area was however sufficiently covered to understand the heritage character of the area (Figure 3.1).





Figure 3.1. Tracklog of the survey path in white.

### 3.5 Site Significance and Field Rating

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 (2006), 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 9 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 Assumptions and limitations of the study

- The authors acknowledge that the brief literature review is not exhaustive of 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 (CFP) 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.
- Field data were recorded by handheld GPS and Mobile GPS applications. It must be noted that during the process of converting spatial data to final drawings and maps the accuracy of spatial data may be compromised. Printing or other forms of reproduction might also distort the spatial distribution in maps. Due care has been taken to preserve accuracy.
- 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. This process is facilitated by the EAP and if not done this can be considered a significant limitation and as a potential Project risk. 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 StatsSA: There are 85 234 people residing in the municipality, of which 84,3% are black African, 14,4% are white, with other population groups making up the remaining 1,3%. Amongst those aged 20 years and above, 26,1% have completed matric, 8,2% have some form of higher education, and 8,8% have no form of schooling. The unemployment rate (20,6%) and the youth unemployment rate (26,9%) is the lowest in the district. The mining industry is a major source of employment. Agricultural activities include Cattle, Poultry and Game while mining activities include Iron and Platinum (statssa.gov.za).

## 5 Results of Public Consultation and Stakeholder Engagement:

In line with the NHRA, stakeholder engagement is a key component of any EA process, it involves stakeholders interested in or affected by the proposed development. At the time of writing no heritage concerns have been raised.

## 6 Contextualising the study area

### 6.1 Archaeological Background

South Africa has one of the longest archaeological sequences in the world because humanity evolved in the area stretching from the Cape to Ethiopia. Most of this sequence covers the times when our ancestors used stone tools. It is worthwhile, thus, to review the archaeological record for southern Africa and to place in context the known occurrences. The archaeology of the area can be divided into the Stone Age, Iron Age and Historical timeframe. These can be divided as follows:

#### 6.1.1 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 Cultural Resources Management (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 (Lombard 2011). The three main phases can be divided as follows;

- 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.;
- 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;
- Earlier Stone Age (ESA); The period from  $\pm 2.5$  million yrs. -  $\pm 250\ 000$  yrs. ago. Acheulean stone tools are dominant. 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.

Acheulian artefacts are usually found near the raw material from where they were quarried, at butchering sites, or as isolated finds. No Acheulian sites are on record near the project area, but isolated finds are possible. However, isolated finds have little value. Therefore, the project is unlikely to disturb a significant site. The closest Stone Age terrain to the study area is located to the west. This ESA terrain is situated near the Rooiberg Hill and the Blaauwberg Stone Age Terrain. (Bergh 1999: 4)

MSA artefacts have been found in the Oliboompoot Cave to the south of Lephalale (Mason, 1962; M. van der Ryst, 2006) and in the river gravels of the Limpopo, northwest of the project area (Pistorius, 2007). A large-scale survey of almost 9000ha in 2011 by Huffman and van der Walt found that Middle Stone Age sites were associated with pans and ancient drainage systems throughout the larger area. The lack of prominent pans in the study area or raw material suitable for knapping may explain the paucity of significant sites in the study area. Important LSA deposits have been excavated in Oliboompoot Cave (Mason, 1962) and other sites in the Waterberg to the south (Van der Ryst, 1998).

### 6.1.2 Iron Age (general)

The Iron Age as a whole represents the spread of Bantu speaking people (Figure 6.1) and includes both the pre-Historic and Historic periods. It can be divided into three distinct periods:

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

The Iron Age is characterised by the ability of these early people to manipulate and work Iron ore into implements that assisted them in creating a favourable environment to make a better living.

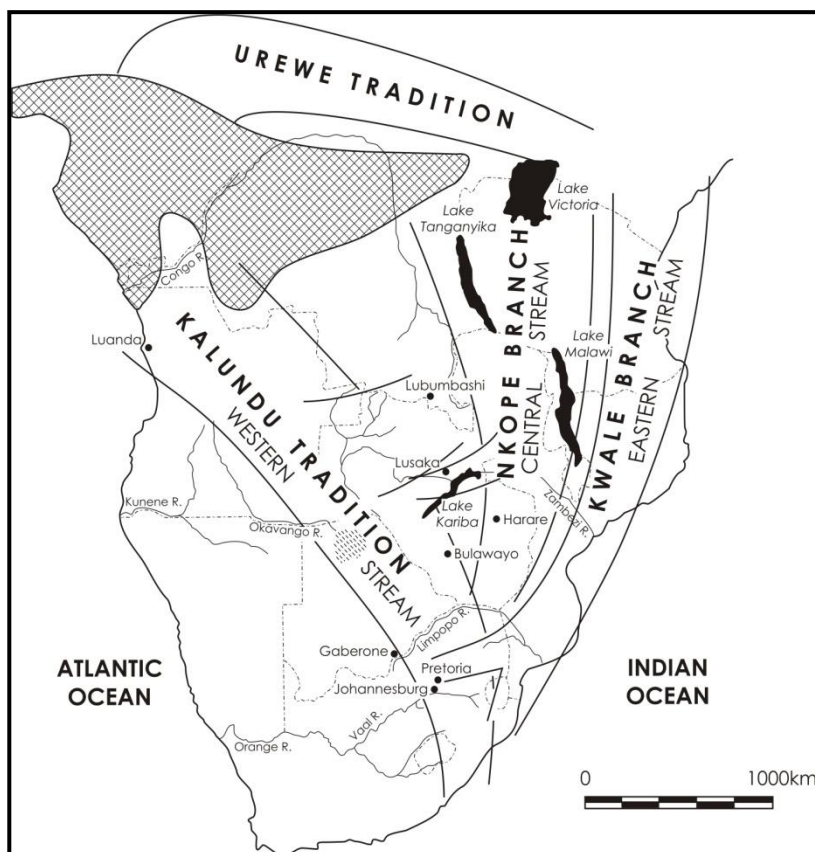


Figure 6.1. Movement of Bantu speaking farmers (Huffman 2007).

A meaningful interpretation of the Early Iron Age has been hampered by the uneven distribution of research conducted so far; this can be partly attributed to the poor preservation of these early sites.

Sites belonging to the EIA consisting of *Happy Rest* and *Mzonjani facies* have been recorded to the north of the project area. *Happy Rest* and *Mzonjani* pottery form part of two traditions (Kalundu and Urewe) that represent the spread of mixed farmers into southern Africa during the Early Iron Age (See Figure 6.1). This find is important as it provides evidence for early interaction between these groups. Later, by the 8<sup>th</sup> and 9<sup>th</sup> centuries, the two merged to form a new *facies*, *Doornkop*.

For the area in question and the LIA the history and archaeology of the Sotho Tswana are of interest. The ceramic sequence for the Sotho Tswana is referred to as *Moloko* and consists of different facies with origins in either the *Ikon* facies or a different branch associated with Nguni speakers. Several sites belonging to the *Madikwe* and *Olifantspoort facies* (from *Ikon*) have been recorded close to the project area. These sites date to between AD 1500 and 1700 and predate stone walling ascribed to Sotho-Tswana speakers. Sotho Tswana stonewalled sites with *Uitkomst* pottery have been found close to the study area and dates to the seventeenth to nineteenth centuries. Stone walled sites belonging to the LIA have also been identified next to the study area but so far have not been linked to a cultural group.

Late Iron Age peoples were attracted to the area because of the relatively fertile soils around the hills and valleys, and because of the iron ore and red ochre. Mining techniques associated with the ancient mine workings are the same as those found in the Rooiberg area some 30km from Thabazimbi (Huffman 2006). Three groups are found in the Rooiberg area, specifically Madikwe, Melora and Rooiberg groups. Stratigraphically, the relationship between Madikwe and Rooiberg is evident where the Madikwe site 20/85 lies underneath the Rooiberg site 11/85, suggesting that Rooiberg is the more recent (Mason 1986). Ceramic evidence suggests then that Sotho-Tswana people were mining at Rooiberg. The ceramic evidence from the excavations at the Rhino Andalusite Mine shows that the Sotho-Tswana people living there were directly related to the miners at Rooiberg: both belonged to the Western Sotho-Tswana cluster. Therefore, the relationship, between the ochre mine and Madikwe settlements, is of importance. Associated with the Madikwe settlements, in addition to the ochre mine is the several maize grindstones found.

Trade connections for ochre and tin have a bearing on the presence of maize. Trade networks spanned a wide area, up to the Zimbabwe culture area in the north, and as far as Maputo in the east before the arrival of the Dutch (Friede & Steel 1976). Maize came to Maputo sometime after the early 16<sup>th</sup> century through Portuguese trade with the New World. The grindstones found at the site CB14 in the Rhino Andalusite Mine indicate that maize was grown in the Thabazimbi area during the 17<sup>th</sup> century (Huffman 2006). If one accepts the grindstone as diagnostic, then maize was cultivated some 150 years earlier than in Kwazulu-Natal.

Evidence for Iron Age activity will most likely be concentrated along water courses and rocky outcrops marked by ceramic clusters or dry-stone walling for instance alongside the Matlabas River (Aukema in Huffman, 1990) and in Botswana (Biemond, 2005) and south of the Limpopo close to Steenbokpan (Huffman & vd Walt 2011). These sites are recognized by distinctive pottery known as the Letsibogo facies of Moloko (Huffman, 2007). The Little Ice Age began at about AD 1300, and its impact on farming societies was particularly severe. Another major drought occurred at about AD 1650, and it is unlikely that Iron Age people lived in the study area at these times.

### 6.1.3 Historical Background

The Historical period of the area can be traced back to the 1830s to 1840s when Voortrekkers crossed over the Vaal River and began establishing farms within the region (Bergh 1999). Remains of historical farmhouses can still be seen within the region. This marked the first interaction with the Agropastoralists already settled in the region. Voortrekkers allocated land for the Bafokeng people near current Rustenburg but later evicted them of their allocated farms (Bergh 2005). This along with enforced labour by the Voortrekkers caused tensions to rise.

In 1919, prospector J.H Williams noticed the iron rich mountains of the area, thereafter he obtained the rights to large sections of the iron ore deposits. In 1930, Iscor then obtained rights to the iron ores and began mining iron in the area the following year. Mining activities led to the establishment of the present-day town of Thabazimbi to support infrastructural needs of the growing mining community. As Northam was the nearest town with a train station, ox-wagons were used to transport ore to the station to then get transported elsewhere. The need for a safe way to cross the Crocodile River resulted in the development of a concrete slab in the river to allow for the safe passage for ox-wagons. The crossing, called the Helpmekaar Drift can still be seen today. In 1934, a railway line was established from Northam to Thabazimbi which further enhanced mining activities (Bergh 1999).

In 1924, Andries Lombard showed a platinum ore sample to geologist Hans Merensky which had been found near Lydenburg (Machens 2009). It was then discovered that the area was rich in platinum ores with a large platinum reef found in the area which resulted in the subsequent development of platinum mines.

## 6.2 Literature Review (SAHRIS)

Several Cultural Resource Management (CRM) surveys are on record for the larger area and the relevant results of these studies are briefly discussed below and outlined in Table 6.

**Table 6. Studies consulted for the project.**

Author	Year	Project	Findings
van der Walt, J. & Fourie, W.	2006	Township establishment on remainder of Portion 8 of the Farm Onverwacht 503 LQ, near Ellisras (Lephalale), Limpopo Province.	None
Fourie, W.	2006	Heritage Impact Assessment. Paarl Eco Estate Portion 2 of the Farm Paarl 522 LQ, near Elisras (Lephalale) in the suburb of Onverwacht, Limpopo Province.	None
van Schalkwyk, J.A.	2009	Heritage scoping assessment for the Proposed development of coal mining activities west of Lephalale, Limpopo Province.	None
Hutten, M.	2010	HIA for the proposed residential township development, South of Northam.	No sites were identified
Pelser, A.J.	2011	Desktop Heritage Assessment Study for prospecting rights application on various farms near Alldays in the Musina & Blouberg Magisterial Districts, Limpopo Province.	Desktop study
Gaigher, S.	2012	Proposed Venetia Photovoltaic (PV) Concentrated Photovoltaic (CPV) Solar Energy facility Gotha Farm, Phase 1 (up to 100MW), near Alldays in the Limpopo Province.	Not specified
Gaigher, S.	2013	Proposed Venetia Photovoltaic (PV) Concentrated Photovoltaic (CPV) Solar Energy facility Gotha Farm, Phase 1 (up to 100MW), near Alldays in the Limpopo Province. Revised Report.	Not specified
Ages EIA report	2014	Platinum EIA report.	Structures
Hutten, M.	2015	Heritage Impact Assessment for the Proposed Township Development at Tom Burke, Lephalale Local Municipality, Limpopo Province.	Fenced off cemetery with 23 graves. It also includes the grave of Tom Burke. Old farmhouse
Van der Walt, J.	2016	AIA For the proposed additional underground and opencast mining, associated infrastructure and processing facilities at Thaba Cronimet Chrome Mine, Limpopo Province.	Stone age and Iron Age sites were identified.
Gaigher, S.	2016	Heritage Impact Assessment (HIA) Report for the Proposed Re-alignment of the Railway Line at the proposed 37 open pits, Amandelbult Mine, Limpopo Province.	No sites were identified.
Van der Walt, J.	2018	Heritage Impact Assessment Northam Ext 20.	No sites were identified
Birkholtz, P.	2018	Proposed Mokolo and Crocodile River (West) Water Augmentation Project (Phase 2a) (Mcwap-2a): Water Transfer Infrastructure and Borrow Pits, Limpopo Province. Phase 1 – Heritage Impact Assessment – Final Report.	Burial sites, Homesteads, Farmsteads, Memorial, metal working sites, Stone Age sites.
Pelser, A.J., van der Walt, J.	2020	Phase 1 HIA report for the Marnitz Kraal boreholes on portions of the farms Cochin-China 46LR, Bristol 17LR & Naples 35LR near Marnitz in the Limpopo Province.	None
Roodt, F.	2020	Phase 1 heritage impact assessment of the proposed development of a township on the remaining extent of portion 4 of the Alldays 295 MS within Blouberg local municipality of Capricorn District.	None

Pelser, A.J., van der Walt, J.	2021	Phase 1 HIA report for various exploration boreholes on the farms Neederland 45LR, Minorca 31LR & Yarmouth 152MR between Marnitz and Tolwe in the Limpopo Province.	None
van Schalkwyk, J.A.	2021	Phase 1 Cultural Heritage Impact Assessment: The proposed development of the Steamboat Graphite Mine on portions of the farms Steamboat 305-MR and Inkom 306-MR, Blouberg Local Municipality, Capricorn District, Limpopo Province.	Low number of MSA stone tools Single grave marked by circular stones (historic era) Historic mining area.
Anderson, G.	2021	Heritage survey of the proposed Lephalale solar project, Lephalale Local Municipality, Waterberg district, Limpopo Province.	None

### 6.3 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.

## 7 Heritage Baseline

### 7.1 Description of the Physical Environment

The prevailing vegetation type and landscape features of the area form part of the Dwaalboom Thornveld in the Savanna Biome. It is described as plains with a layer of scattered, low to medium high, deciduous trees and shrubs with a few broad-leaved tree species, and an almost continuous herbaceous layer dominated by grass species. *Acacia trottilis* and *A. nilotica* dominate on the medium clays (at least 21% clay in the upper soil horizon but high in the lower horizons). On particularly heavy clays (>55% clay in all horizons) most other woody plants are excluded and the diminutive *A. tenuispina* at a height of less than 1m above ground. On the sandy clay loam soils (with not more than 35% clay in the upper horizon but high in the lower horizons) *A. erubescens* is the most prominent tree. The alternation of these substrate types creates a mosaic of patches typically 1-5km across (Mucina & Rutherford, 2006). Land use in the general area is characterized by agriculture, dominated by cattle farming as well as mining activities. General site conditions are indicated in (Figure 7.1 to 7.4).





Figure 7.1. View of the large thicket of 'black wattle' trees along the southern boundary of the Project area.



Figure 7.2. General site conditions near the western boundary of the Project area.



Figure 7.3. View of the vegetation across the Project area.



Figure 7.4. General view of the vegetation in the study area.



### 7.2 Heritage Resources

Although the larger region has well documented LIA sites, the Project area is generally flat and does not have any hills or topographical focal points that would have attracted human settlement in antiquity. The hiatus of archaeological sites in the Project area can be attributed to the local geology and the topography that lack any of the abovementioned focal points. Stones sourced from hills and rocky outcrops provide building material for the stonewalled settlements as well as lookouts and defensive positions on the elevated areas and is not present in the Project area. In terms of the Stone Age the Project area also lacks raw material for manufacturing stone tools and shelters that would have been inhabited or water sources that would have been focal points during the Stone Age. This was confirmed during the field survey and no archaeological sites were recorded within the development footprint. Two observations were made including a small cement and brick foundation (48 m to the west of the development footprint) recorded as RV002 and a degraded road just to the west of the development footprint recorded as RV001. It should be noted that RV002 can be associated with unmarked graves and this area should be avoided during development. The features potential to contribute to aesthetic, historic, scientific, and social aspects are non-existent, and they are of no significance apart from mentioning them in this report.

**Table 7. Observations recorded during the survey.**

Label	Location	Description	Significance
RV001	24°18'25.44"S 27°24'43.59"E	Degraded section of road.	GP C Low Significance
RV002	24°18'25.37"S 27°24'43.00"E	Small, square, cement and brick foundation.	GP C Low Significance

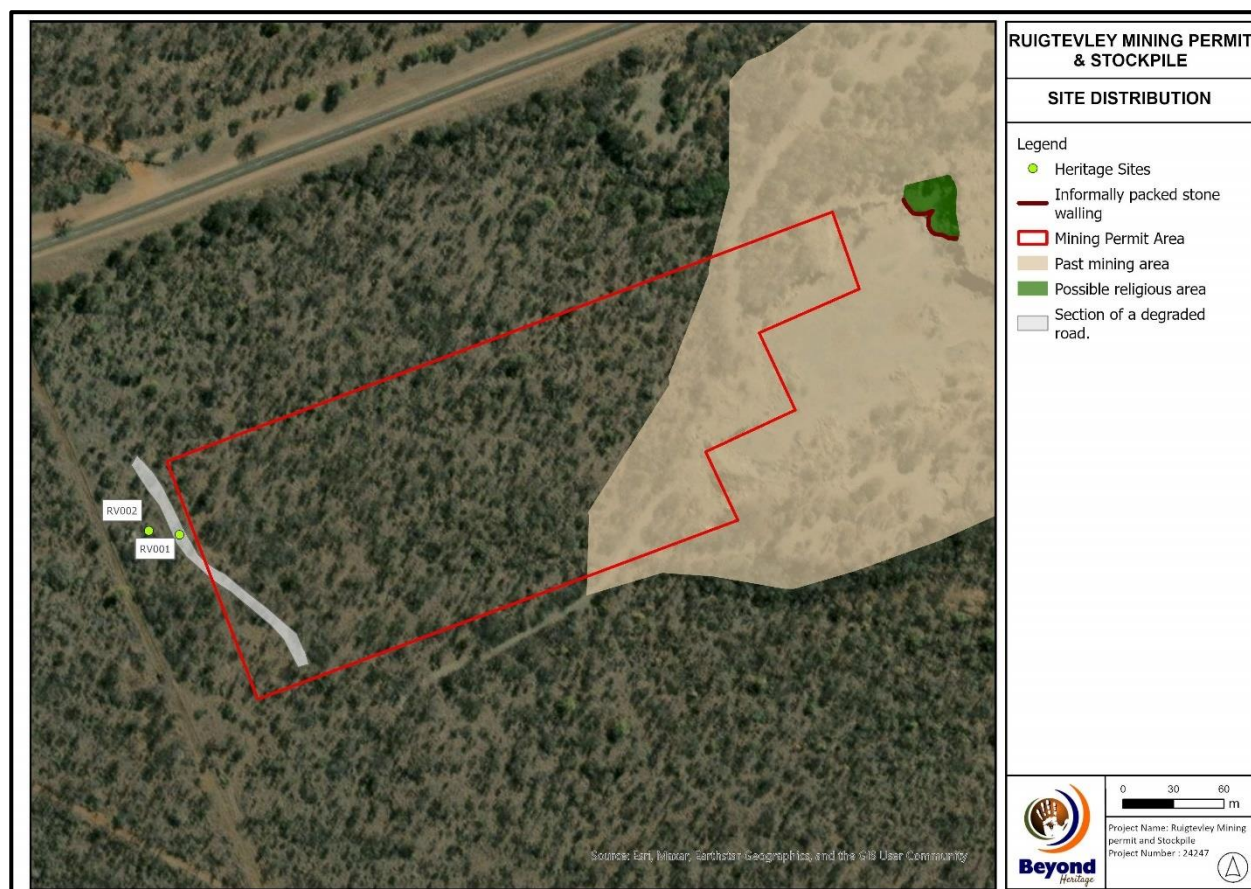


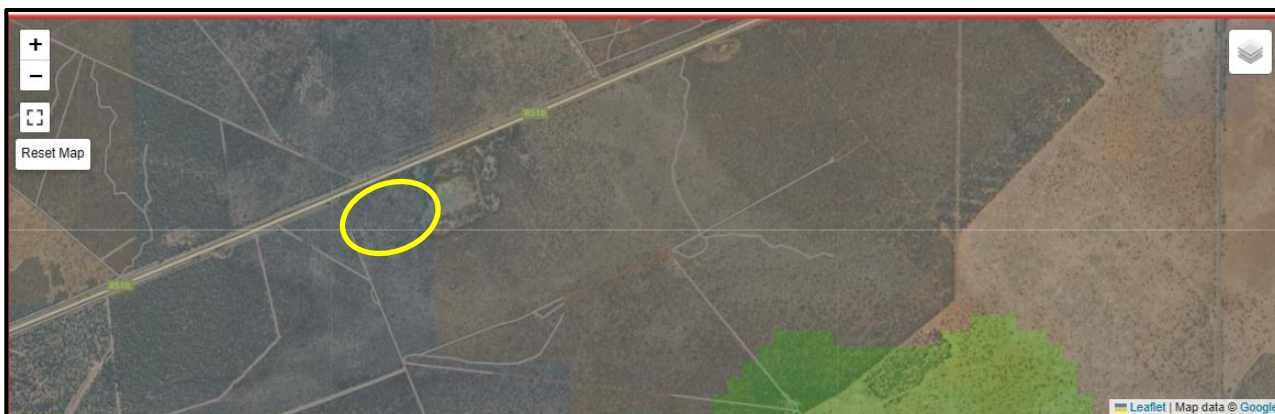
Figure 7.5. Recorded observations in relation the project footprint.

### 7.3 Cultural Landscape

The study area is in a rural setting and characterised by previous mining activities with a historical layering dating from the Stone Age to recent farming with infrastructure relating to railway lines, powerlines and gravel roads.

### 7.4 Paleontological Heritage

According to the SAHRA palaeontological sensitivity map, the study area is indicated as insignificant/zero palaeontological sensitivity (Figure 7.7), and no further palaeontological studies are required 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 7.6. Paleontological sensitivity of the approximate study area (yellow polygon) as indicated on the SAHRA Palaeontological sensitivity map.

## 8 Assessment of impacts

### 8.1 Impacts on tangible heritage resources.

The main cause of impacts to archaeological resources is physical disturbance of the material itself and its context during removal of topsoil and vegetation as well as the excavations associated with the establishment of infrastructure and mining.

No impacts on heritage resources are expected by the project. 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 based on adherence to the recommendations in this report.

#### 8.1.1 Cumulative impacts

Cumulative impacts are expected to be low as no recorded heritage resources will be adversely affected by the project.

### 8.2 Impact Assessment Tables

**Table 8. Impact assessment for the burial site**

<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 (1)	Local (1)
<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>16 (Low)</b>	<b>16 (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>• Development activities must be confined to the approved development footprint only;</li> <li>• Monitoring of the Project area by the ECO during pre-construction and construction phases for heritage chance finds, if chance finds are encountered to implement the Chance Find Procedure for the Project as outlined in Section 9</li> </ul>		
<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.		

## 9 Conclusion and recommendations

The Project area is characterised by a wooded area with reddish sand and gravel soils. The Project area is generally flat and does not have any hills or topographical focal points that would have attracted human settlement in antiquity. Two observations were made including a small cement and brick foundation (48 m to the west of the development footprint) recorded as RV002 and a degraded road just to the west of the development footprint recorded as RV001. It should be noted that RV002 can be associated with unmarked graves and this area should be avoided during development. The features potential to contribute to aesthetic, historic, scientific, and social aspects are non-existent, and they are of no significance apart from mentioning them in this report. According to the South African Heritage Resource Authority (SAHRA) Paleontological sensitivity map the study area is of insignificant/zero palaeontological sensitivity and no further studies are required or this aspect.

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

### 9.1 Recommendations for condition of authorisation

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

- Development activities must be confined to the approved development footprint only;
- Monitoring of the Project area by the ECO during pre-construction and construction phases for heritage chance finds, if chance finds are encountered to implement the Chance Find Procedure for the Project as outlined in Section 9.

### 9.2 Chance Find Procedure

#### 9.2.1 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 applicable to the Chance Find procedure is discussed below and monitoring guidelines for this procedure are provided in Section 9.5.

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.

### **9.3 Reasoned Opinion**

The overall impact of the Project with the recommended mitigation measures is acceptable 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.

### **9.4 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. The stakeholder engagement process will assess intangible heritage resources further if this is listed as a concern.

**9.5 Monitoring Requirements**

Day to day monitoring can be conducted by the 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.
  - Staff should also receive training on the CFP.
- *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 9. Monitoring requirements for the Project

Heritage Monitoring					
Aspect	Area	Responsible for monitoring and measuring	Frequency	Proactive or reactive measurement	Method
Cultural Heritage Resource Chance Find	Entire Project area	ECO	Weekly (Pre construction and construction phase)	Proactively	<p>If risks are manifested (accidental discovery of heritage resources) the chance find procedure should be implemented:</p> <ol style="list-style-type: none"> <li>1. Cease all works immediately;</li> <li>2. Report incident to the Sustainability Manager;</li> <li>3. Contact an archaeologist to inspect the site;</li> <li>4. Report incident to the competent authority; and</li> <li>5. Employ reasonable mitigation measures in accordance with the requirements of the relevant authorities.</li> </ol> <p>Only recommence operations once impacts have been mitigated.</p>

9.7 Management Measures for inclusion in the EMPr

Table 10. Heritage Management Plan for EMPr implementation

Area	Mitigation measures	Phase	Timeframe	Responsible party for implementation	Target	Performance indicators (Monitoring tool)
General Project area	Monitoring of the Project area by the ECO during pre-construction and construction phases for chance finds, if chance finds are encountered to implement the Chance Find Procedure for the project	Pre-Construction & Construction	Weekly	Applicant Construction Contractor	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 34, 35, 36 and 38 of NHRA	ECO Checklist/Report
General Project Area	Development activities must be confined to the approved development footprint only.	Construction	Construction	Applicant Construction 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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