

# HERITAGE IMPACT ASSESSMENT

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

FOR THE PROPOSED ACORN CITY MIXED USE TOWNSHIP DEVELOPMENT,  
LIMPOPO PROVINCE

**Type of development:**

Mixed use Township

**Client:**

Eco 8 Environmental Planners

**Developer:**

Dzana Investments (Pty) Ltd



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Project Reference:

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## APPROVAL PAGE

<b>Project Name</b>	Acorn City Mixed Use Township
<b>Report Title</b>	Heritage Impact Assessment for the proposed Acorn City Mixed Use Township, Limpopo Province
<b>Authority Reference Number</b>	TBC
<b>Report Status</b>	Final Report
<b>Applicant Name</b>	Dzana Investments (Pty) Ltd

<b>Responsibility</b>	<b>Name</b>	<b>Qualifications and Certifications</b>	<b>Date</b>
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Date	Report Reference Number	Description of Amendment
30 November 2021	2184	Technical 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.**

Requirement from Appendix 6 of GN 326 EIA Regulation 2017	Chapter
(a) Details of - (i) the specialist who prepared the report; and (ii) the expertise of that specialist to compile a specialist report including a curriculum vitae	Section a Section 12
(b) Declaration that the specialist is independent in a form as may be specified by the competent authority	<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 and 7.1.
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	9
(d) Duration, Date and season of the site investigation and the relevance of the season to the outcome of the assessment	Section 3.4
(e) Description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used	Section 3
(f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of site plan identifying site alternatives;	Section 8 and 9
(g) Identification of any areas to be avoided, including buffers	Section 8 and 9
(h) Map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers	Section 8
(I) Description of any assumptions made and any uncertainties or gaps in knowledge	Section 3.7
(j) a description of the findings and potential implications of such findings on the impact of the proposed activity including identified alternatives on the environment or activities;	Section 1.3
(k) Mitigation measures for inclusion in the EMPr	Section 10.1
(l) Conditions for inclusion in the environmental authorisation	Section 10. 1.
(m) Monitoring requirements for inclusion in the EMPr or environmental authorisation	Section 10. 5.
(n) Reasoned opinion - (i) as to whether the proposed activity, activities or portions thereof should be authorised; (iA) regarding the acceptability of the proposed activity or activities; and (ii) if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan	Section 10.3
(o) Description of any consultation process that was undertaken during the course of preparing the specialist report	Section 6
(p) A summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Refer to BAR report
(q) Any other information requested by the competent authority	N.A

## Executive Summary

Eco 8 Environmental Planners was appointed as the Environmental Assessment Practitioner (EAP) by Dzana Investments (Pty) Ltd to undertake the required Environmental Authorisation Process for the proposed Acorn City mixed use development, Limpopo Province.

Beyond Heritage was appointed to conduct a Heritage Impact Assessment (HIA) for the project and the study area was assessed on desktop level and by a non-intrusive pedestrian field survey. Key findings of the assessment include:


- The Project is located south of Acornhoek and is characterised by an open area amid a densely developed residential settlement. The area is mainly used for grazing for animals with illegal dumping on the edges of the project area.
- Dense vegetation in the study area hampered accessibility and although unlikely the possibility that more heritage resources could occur cannot be excluded. This limitation can be successfully mitigated with the implementation of a chance find procedure;
- The survey team was accompanied by community members who indicated numerous grave sites (marked and unmarked) in the study area;
- The area is of insignificant paleontological sensitivity and no further action is required for this aspect.

The impact of the project on heritage resources (burial sites) is high and will require extensive mitigation based on the current layout. The following recommendations are applicable subject to the South African Heritage Resource Authority (SAHRA) 's approval.

### Recommendations:

- Implementation of a chance find procedure for the project.
- A preconstruction survey of the area should be conducted after vegetation clearing and prior to construction.
- It is recommended that the presence of additional graves or burial sites should be confirmed during social consultation.
- Graves should preferably be retained *in situ* with a 30 m buffer, in the case of the Acorn City Development this is not a feasible option as this will render the township layout completely inefficient. Legislation allows for the grave sites to be relocated subject to consent from the Next of Kin (NOK) and adhering to all legal requirements with the necessary permits in place and this seems to be the preferred option from a socio-economic perspective following NHRA 25 of 1999 Section 38 (3).

**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 108 of 1998) and the associated 2014 Environmental Impact Assessment (EIA) Regulations, that I:</p> <ul style="list-style-type: none"> <li>• I act as the 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 24F of the Act.</li> </ul>
<b>Signature</b>	
<b>Date</b>	08/11/2021

**a) Expertise of the specialist**

Jaco van der Walt has been practising as a 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 ASAPA (#159) and have conducted more than 500 impact assessments in Limpopo, Mpumalanga, North West, Free State, Gauteng, KZN as well as he Northern and Eastern Cape Provinces in South Africa.

Jaco has worked on various international projects in Zimbabwe, Botswana, Mozambique, Lesotho, DRC Zambia, Guinea and Tanzania. Through this, he has a sound understanding of the IFC Performance Standard requirements, with specific reference to Performance Standard 8 – Cultural Heritage.

**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 AND TERMS OF REFERENCE:</b> .....	<b>11</b>
1.1 TERMS OF REFERENCE.....	11
1.2 PROJECT DESCRIPTION .....	12
1.3 ALTERNATIVES .....	12
<b>2 LEGISLATIVE REQUIREMENTS</b> .....	<b>16</b>
<b>3 METHODOLOGY</b> .....	<b>17</b>
3.1 LITERATURE REVIEW.....	17
3.2 GENEALOGICAL SOCIETY AND GOOGLE EARTH MONUMENTS.....	17
3.3 PUBLIC CONSULTATION AND STAKEHOLDER ENGAGEMENT:.....	17
3.4 SITE INVESTIGATION.....	18
3.5 SITE SIGNIFICANCE AND FIELD RATING.....	20
3.6 IMPACT ASSESSMENT METHODOLOGY.....	21
3.7 LIMITATIONS AND CONSTRAINTS OF THE STUDY .....	22
<b>4 DESCRIPTION OF SOCIO-ECONOMIC ENVIRONMENT</b> .....	<b>22</b>
<b>5 RESULTS OF PUBLIC CONSULTATION AND STAKEHOLDER ENGAGEMENT:</b> .....	<b>22</b>
<b>6 LITERATURE / BACKGROUND STUDY:</b> .....	<b>23</b>
6.1 LITERATURE REVIEW (SAHRIS) .....	23
6.2 BACKGROUND TO THE GENERAL AREA .....	23
6.3 CULTURAL LANDSCAPE.....	25
6.4 GRAVES AND BURIAL SITES.....	27
<b>7 DESCRIPTION OF THE PHYSICAL ENVIRONMENT</b> .....	<b>27</b>
<b>8 FINDINGS OF THE SURVEY</b> .....	<b>29</b>
8.1 PALEONTOLOGICAL HERITAGE .....	32
<b>9 POTENTIAL IMPACT</b> .....	<b>33</b>
<b>10 CONCLUSION AND RECOMMENDATIONS</b> .....	<b>37</b>



10.1	RECOMMENDATIONS FOR CONDITION OF AUTHORISATION.....	37
10.2	CHANCE FIND PROCEDURES .....	38
10.3	REASONED OPINION .....	38
10.4	POTENTIAL RISK .....	38
10.5	MONITORING REQUIREMENTS .....	39
10.6	MANAGEMENT MEASURES FOR INCLUSION IN THE EMPR .....	41
10.7	KNOWLEDGE GAPS .....	43
<b>11</b>	<b>REFERENCES.....</b>	<b>44</b>

## LIST OF FIGURES

FIGURE 1.1.	REGIONAL SETTING (1: 250 000 TOPOGRAPHICAL MAP) OF THE PROJECT. ....	13
FIGURE 1.2.	LOCAL SETTING OF THE PROJECT (1: 50 000 TOPOGRAPHICAL MAP). ....	14
FIGURE 1.3.	AERIAL IMAGE OF THE PROJECT. ....	15
FIGURE 3.1:	TRACKLOG OF THE SURVEY IN GREEN. ....	19
FIGURE 6.1:	MOVEMENT OF BANTU SPEAKING FARMERS (HUFFMAN 2007).....	24
FIGURE 6.2.	2003 GOOGLE IMAGE OF THE STUDY AREA. VERY LITTLE DEVELOPMENT OCCURS AROUND THE STUDY AREA WITH SOME DWELLINGS VISIBLE TO THE NORTH. ....	26
FIGURE 6.3.	2015 GOOGLE IMAGE OF THE STUDY AREA. THE SURROUNDING AREA IS MORE DENSELY DEVELOPED.....	26
FIGURE 6.4.	2019 GOOGLE IMAGE OF THE STUDY AREA. BY NOW THE SURROUNDING AREA HAS BEEN ALMOST COMPLETELY DEVELOPED AND COMPRISES A DENSELY DEVELOPED RESIDENTIAL AREA WITH ASSOCIATED INFRASTRUCTURE. ....	27
FIGURE 7.1.	R40 ADJACENT TO THE PROJECT AREA. ....	28
FIGURE 7.2.	ILLEGAL DUMPING IN THE STUDY AREA.....	28
FIGURE 7.3.	WOODED AREAS CHARACTERIZE LARGE PARTS OF THE STUDY AREA.....	28
FIGURE 7.4.	GENERAL SITE CONDITIONS THICKETS AND GRAVEL ROADS. ....	28
FIGURE 7.5.	GRAVEL ROADS SURROUND THE STUDY AREA. ....	29
FIGURE 7.6.	CATTLE TRACKS PROVIDE ACCESS IN THE STUDY AREA.....	29
FIGURE 8.1.	SITE DISTRIBUTION MAP. ....	30
FIGURE 8.2.	PALEONTOLOGICAL SENSITIVITY OF THE STUDY AREA AS INDICATED ON THE SAHRA PALAEOLOGICAL SENSITIVITY MAP..	32
FIGURE 9.1.	BURIAL SITES IN RELATION TO THE PROPOSED PROJECT. ....	34

**LIST OF TABLES**

TABLE 1. SPECIALIST REPORT REQUIREMENTS .....	4
TABLE 2: PROJECT DESCRIPTION .....	12
TABLE 3: INFRASTRUCTURE AND PROJECT ACTIVITIES .....	12
TABLE 4: SITE INVESTIGATION DETAILS .....	18
TABLE 5. HERITAGE SIGNIFICANCE AND FIELD RATINGS .....	21
TABLE 6. RECORDED FEATURES .....	30
TABLE 7. SOURCES OF IMPACT .....	33
TABLE 8. IMPACT OF THE PROJECT ON BURIAL SITES.....	35
TABLE 9. IMPACT ASSESSMENT OF THE PROPOSED PROJECT ON ISOLATED ARCHAEOLOGICAL ARTEFACT .....	36
TABLE 10. HERITAGE MONITORING FOR THE PROJECT .....	39
TABLE 11. HERITAGE MANAGEMENT PLAN FOR EMPR IMPLEMENTATION .....	41

**ABBREVIATIONS**

ASAPA: Association of South African Professional Archaeologists
BGG Burial Ground and Graves
BIA: Basic Impact Assessment
CFPs: Chance Find Procedures
CMP: Conservation Management Plan
CRR: Comments and Response Report
CRM: Cultural Resource Management
DEA: Department of Environmental Affairs
EA: Environmental Authorisation
EAP: Environmental Assessment Practitioner
ECO: Environmental Control Officer
EIA: Environmental Impact Assessment*
EIA: Early Iron Age*
EIA Practitioner: Environmental Impact Assessment Practitioner
EMPr: Environmental Management Programme
ESA: Early Stone Age
ESIA: Environmental and Social Impact Assessment
GIS Geographical Information System
GPS: Global Positioning System
GRP Grave Relocation Plan
HIA: Heritage Impact Assessment
LIA: Late Iron Age
LSA: Late Stone Age
MEC: Member of the Executive Council
MIA: Middle Iron Age
MPRDA: Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
MSA: Middle Stone Age
NEMA National Environmental Management Act, 1998 (Act No. 107 of 1998)
NHRA National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NID Notification of Intent to Develop
NoK Next-of-Kin
PRHA: Provincial Heritage Resource Agency
SADC: Southern African Development Community
SAHRA: South African Heritage Resources Agency

*\*Although EIA refers to both Environmental Impact Assessment and the Early Iron Age both are internationally accepted abbreviations and must be read and interpreted in the context it is used.*

**GLOSSARY**

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

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

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

Later Stone Age (~ 40-25 000, to recently, 100 years ago)

The Iron Age (~ AD 400 to 1840)

Historic (~ AD 1840 to 1950)

Historic building (over 60 years old)

## 1 Introduction and Terms of Reference:

Beyond Heritage was appointed to conduct a HIA for the proposed Acorn City mixed use township development, Limpopo Province (Figure 1.1 to 1.3). The report forms part of the Environmental Impact Assessment (EIA) and Environmental Management Programme Report (EMPr) for the development.

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

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

### 1.1 Terms of Reference

#### Field study

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

#### Reporting

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

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

## 1.2 Project Description

Dzana Investments (Pty) Ltd is proposing the development of the mixed-use township in Acornhoek, Limpopo Province. Project components and the location is outlined under Table 2 and 3.

**Table 2: Project Description**

<b>Project area</b>	Portion 276 of the Farm Arthursseat 214 KU
<b>Magisterial District</b>	Bushbuckridge Local Municipality
<b>Central co-ordinate of the development</b>	24°38'21.06"S 31° 2'26.41"E
<b>Topographic Map Number</b>	2431 CA

**Table 3: Infrastructure and project activities**

<b>Type of development</b>	Mixed Use Township
<b>Size of development</b>	49,69 hectares
<b>Project Components</b>	The project is a mixed-use township development including agricultural, business, institutional, transportation and residential areas as well as public open spaces and associated infrastructure.

## 1.3 Alternatives

No alternatives were provided to be assessed although the extent of the area assessed allows for siting of the development to minimise impacts to heritage resources.

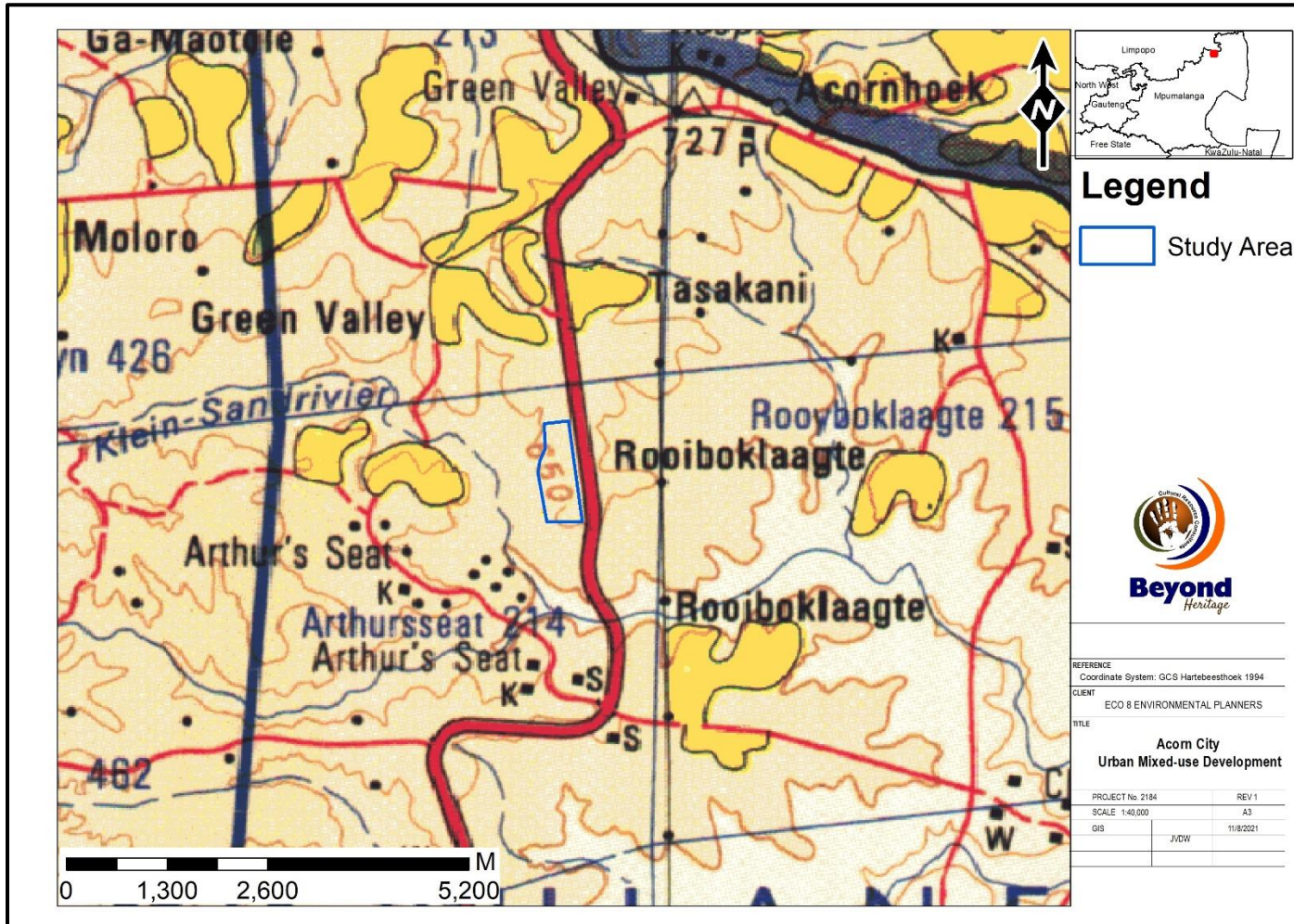


Figure 1.1. Regional setting (1: 250 000 topographical map) of the project.

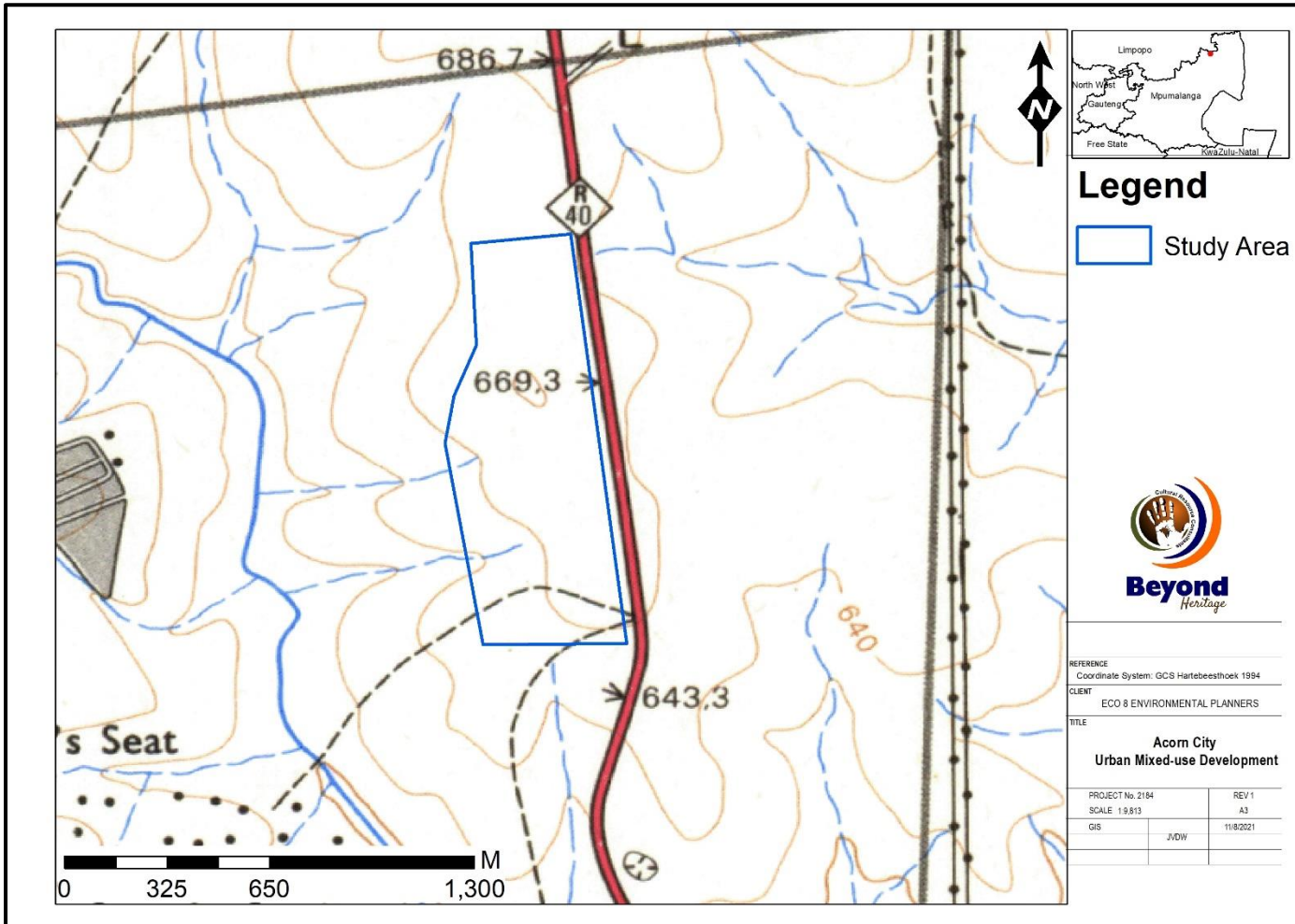


Figure 1.2. Local setting of the project (1: 50 000 topographical map).

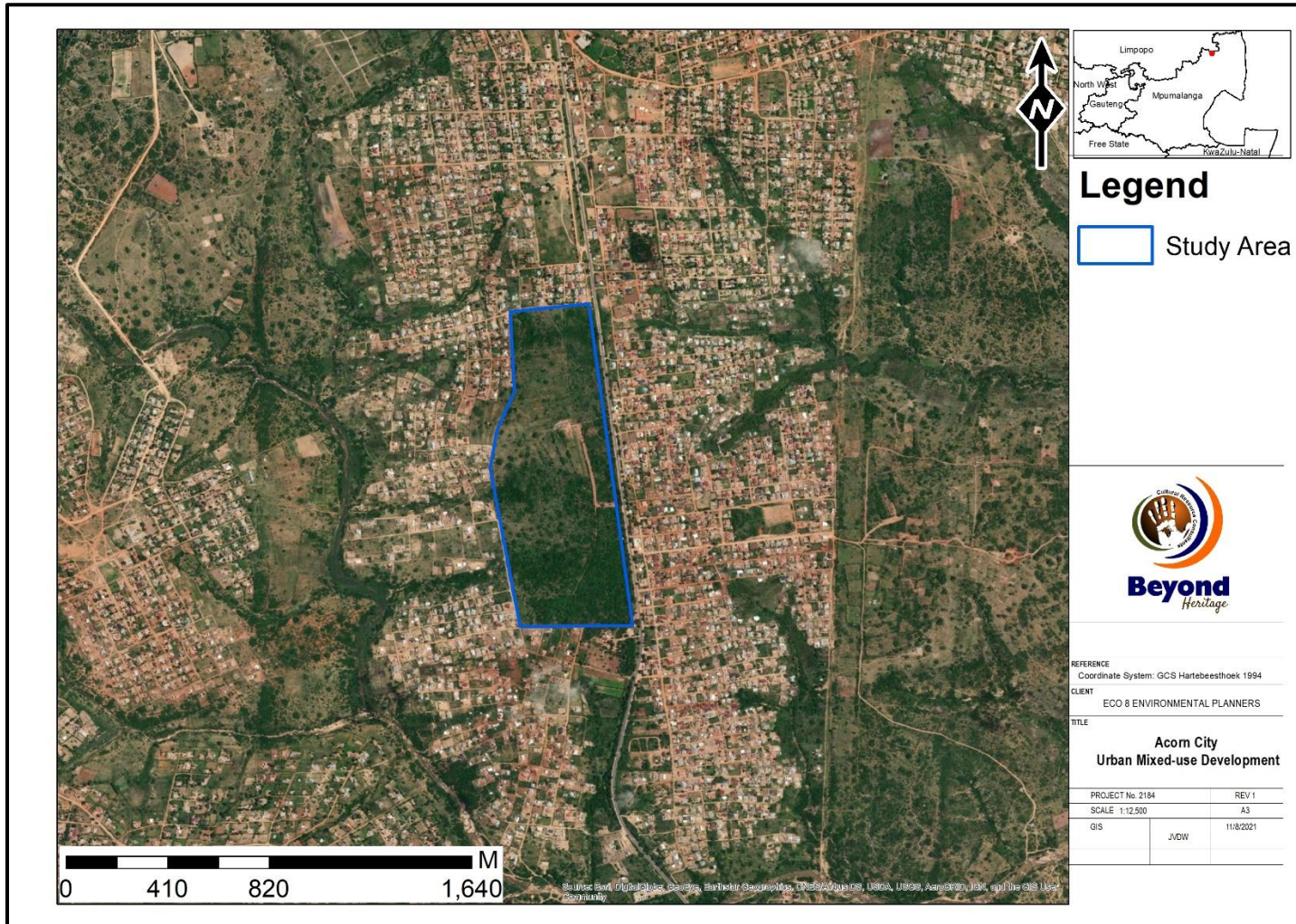


Figure 1.3. Aerial image of the project.



## 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)
- Mineral and Petroleum Resources Development Act (MPRDA), Act No. 28 of 2002 - Section 39(3)(b)(iii)

A Phase 1 HIA is a pre-requisite for development in South Africa as prescribed by SAHRA and stipulated by legislation. The overall purpose of heritage specialist input is to:

- Identify any heritage resources, which may be affected;
- Assess the nature and degree of significance of such resources;
- Establish heritage informants/constraints to guide the development process through establishing thresholds of impact significance;
- Assess the negative and positive impact of the development on these resources; and
- Make recommendations for the appropriate heritage management of these impacts.

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

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

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

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

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

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

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

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

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

### **3 METHODOLOGY**

#### **3.1 Literature Review**

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

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

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

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

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

- Placement of advertisements and site notices

- Stakeholder notification (through the dissemination of information);
- Authority Consultation
- The compilation of Basic Assessment Report (BAR).

### 3.4 Site Investigation

The aim of the site visit was to:

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

**Table 4: Site Investigation Details**

	Site Investigation
Date	21 September 2021
Season	Spring – Large sections of the project area was overgrown and could not be accessed, the project area was however sufficiently covered to understand the heritage character of the area (Figure 3.1).

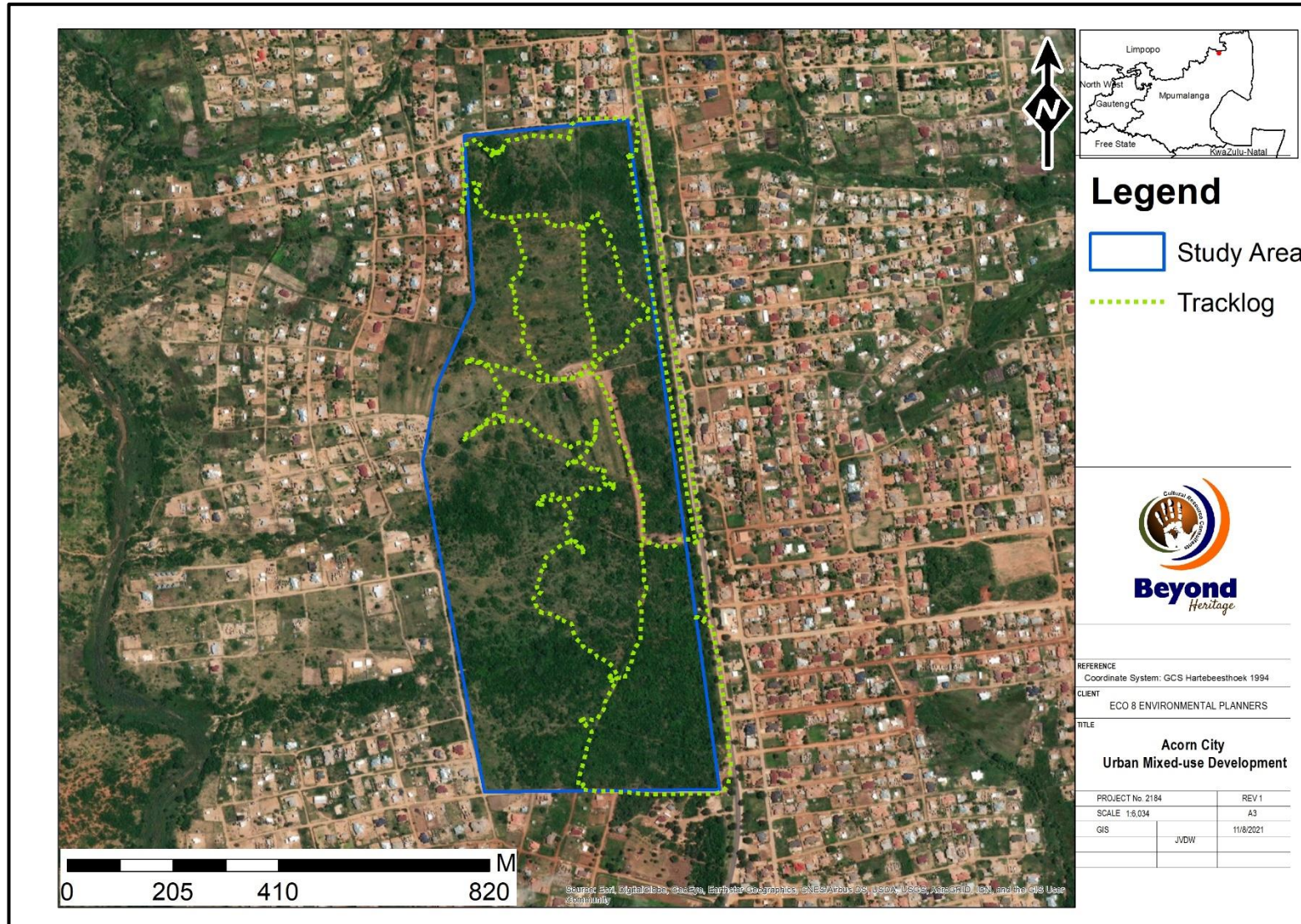


Figure 3.1: Tracklog of the survey in green.

### 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 (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 10 of this report.

**Table 5. Heritage significance and field ratings**

<b>FIELD RATING</b>	<b>GRADE</b>	<b>SIGNIFICANCE</b>	<b>RECOMMENDED MITIGATION</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. Similarly, the depth of cultural deposits and the extent of heritage sites cannot be accurately determined due its subsurface nature. This report only deals with the footprint area of the proposed development and consisted of non-intrusive surface surveys. Portions of the study area are covered in dense vegetation, decreasing visibility and the presence of graves cannot be excluded in these areas. This study did not assess the impact on medicinal plants and intangible heritage as it is assumed that these components would have been highlighted through the public consultation process if relevant. It is possible that new information could come to light in future, which might change the results of this Impact Assessment.

## 4 Description of Socio-Economic Environment

According to the 2019 – 2020 IDP for the Bushbuckridge Local Municipality the population of Bushbuckridge Local municipality was 545 811 according to the Statistics South Africa 1996 Census, then the 2001 census shows that there was decrease to 500 128 in population. There was an increase in population in the 2011 census as the number rose to 541 248. In Bushbuckridge Local municipality's households' income is relatively low in the province as its ranked number 13 as per department of finance 2011 report.

## 5 Results of Public Consultation and Stakeholder Engagement:

### 5.1.1 Stakeholder Identification

Adjacent landowners and the public at large were informed of the proposed activity as part of the BA process. Site notices and advertisements notifying interested and affected parties were placed at strategic points and in local newspapers as part of the process. The survey was conducted together with two local stakeholders who pointed out areas of interest to the archaeologist and indicated the known burial sites and cemeteries within the study area. The community members included Docktor Nziyane (contact number 0714227979) and Obed Mokoena (contact number 0739108273).

## 6 Literature / Background Study:

### 6.1 Literature Review (SAHRIS)

Several previous CRM surveys are on record for the larger study area. Including the following:

- An archaeological impact study done in March 2012 by JP Celliers (Celliers, 2012) near Acornhoek (indicated no sites of archaeological or heritage significance). Site monitoring during earthworks at Elephant Point near the Kruger Gate of the Kruger National Park conducted by Celliers in September 2012 also revealed no archaeologically significant feature or material.
- Van Wyk Rowe (2008) conducted a heritage assessment for the proposed Shatale Branch Pipeline Injaka Water Treatment Works (Maviljan) - Shatale Branch (Dwarsloop) Mpumalanga Province and no resources were recorded.
- Van Schalkwyk, (2006) recorded a similar investigation in respect of the upgrading work to be done to the Acornhoek dam. No heritage resources were identified within the proposed upgrade area.
- Dr U S Küsel conducted an archaeological impact survey near Hoedspruit on various portions of the farm Guernsey 81 KU in October of 2005. No sites or features of heritage significance were located during this survey (Küsel, 2005).
- Frans Roodt conducted two assessments in the area. The 2002 study for the bulk water supply at Dwarsloop recorded possible graves, historical features and Iron Age sites. (Roodt, 2005) conducted an archaeological impact assessment in October 2005 in respect of a road development near Acornhoek. The focus area was on the farms Craigieburn 462 KT and Authursseat 214 KU. Two Early Iron Age sites were recorded where pottery fragments and the remains of a hut floor were visible. Two historic graves were also recorded.
- Van der Walt conducted an archaeological impact assessment in respect of a proposed service station in Acornhoek (van der Walt 2003). No sites or features of archaeological or heritage significance were documented.
- Van Schalkwyk, (2001) also recorded no sites or features of archaeological significance during his visit to the farms Greenvalley 213 KU and Islington 219 KU.
- 

#### 6.1.1 Genealogical Society and Google Earth Monuments

No known grave sites are indicated in the study area.

### 6.2 Background to the general area

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

#### 6.2.1 Stone Age

South Africa has a long and complex Stone Age sequence of more than 2 million years. The broad sequence includes the Later Stone Age, the Middle Stone Age and the Earlier Stone Age. Each of these phases contains sub-phases or industrial complexes, and within these we can expect regional variation regarding characteristics and time ranges. For Cultural Resources Management (CRM) purposes it is often only expected/ possible to identify the presence of the three main phases:

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

Very few Early Stone Age (ESA) sites are on record for Mpumalanga. An example where ESA tools have been discovered located outside of the study area is at Maleoskop (Bergh 1999) on the farm Rietkloof, which is one of only a handful of such sites in Mpumalanga. Another example also outside of the study area is at Bushman Rock Shelter (Mason 1969, Wadley 1987), a well-known site in the Ohrigstad district.



This cave was excavated twice in the 1960s by Louw and later by Eloff. The MSA layers show that the cave was repeatedly frequented over a long period. Lower layers have been dated to over 40 000 Before Present (BP), while the top layers date to approximately 27 000 BP (Esterhuysen and Smith in Delius, 2007). MSA material is found widely across South Africa and some MSA manifestations can be expected in the study area.

Sites dating to the LSA are found in numerous rock shelters throughout Eastern Mpumalanga, where some of their rock art is still visible. A number of these shelters have been documented throughout the Province (Schoonraad in Barnard, 1975; Bornman, 1995 and Delius, 2007). These include areas such as Witbank, Ermelo, Barberton, Nelspruit, White River, Lydenburg and Ohrigstad. At Honingklip near Badplaas in the Carolina District, two LSA rock shelters with four panels of rock art was excavated. The site was used between 4870 BP and as recently as 200 BP. Stone walls at both sites date to the last 250 years of hunter-gatherer occupation and they may have served as protection against intruders and predators. Pieces of clay ceramic and iron beads found at the site indicates that there was early social interaction between the hunter-gatherer (San) communities and the first farmers who moved into this area at around 500 AD.

### 6.2.2 Iron Age and historical period

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

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

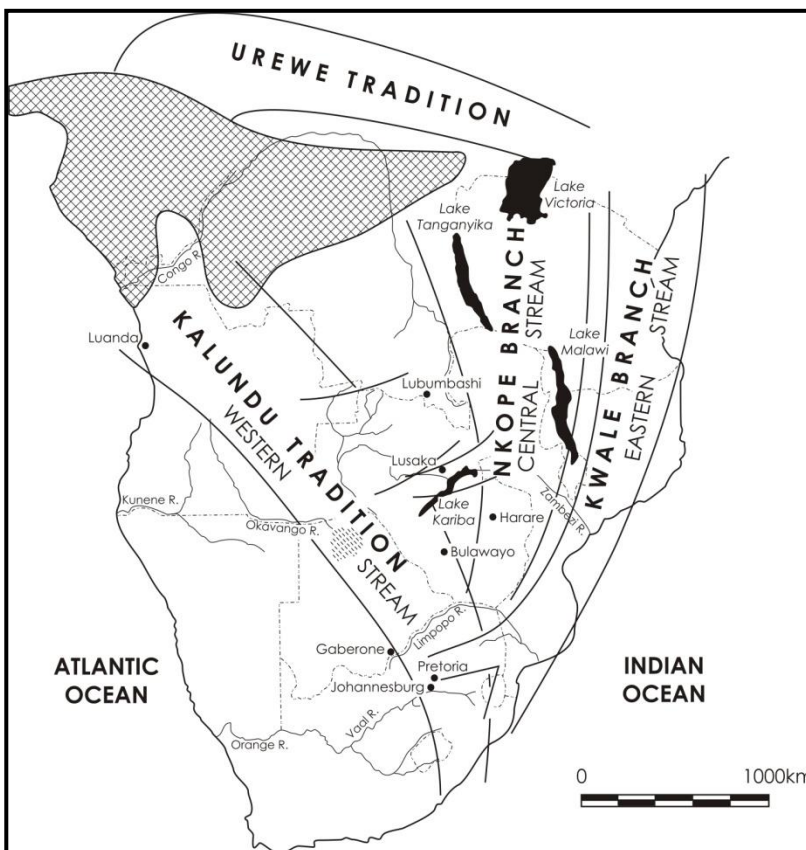


Figure 6.1: Movement of Bantu speaking farmers (Huffman 2007).

The later phases of the Iron Age (AD 1600-1800's) are represented by various tribes including Ndebele, Swazi, BaKoni, and Pedi, marked by extensive stonewalled settlements found throughout the escarpment and particularly around Machadodorp, Lydenburg, Badfontein, Sekhukuneland, Roossenekal and Steelpoort. The BaKoni were the architects of a unique archaeological stone building complex who by the 19th century spoke seKoni which was similar to Sepedi. The core elements of this tradition are stone-walled enclosures, roads, and terraces. These settlement complexes may be divided into three basic features: homesteads, terraces, and cattle tracks.

Researchers such as Mike Evers (1975) and David Collett (1982) identified three basic settlement layouts in this area. These sites can be divided into simple and complex ruins. Simple ruins are normally small in relation to more complex sites and have smaller central cattle byres and fewer huts. Complex ruins consist of a central cattle byre, which has two opposing entrances and several semi-circular enclosures surrounding it. The perimeter wall of these sites is sometimes poorly visible. Huts are built between the central enclosure and the perimeter wall. These are all connected by trackways referred to as cattle tracks. These tracks are made by building stone walls, which forms a walkway for cattle to the centrally located cattle byres. A combination of these features occurs on a few dispersed sites to the north west of the study area.

Individual sites range from simple enclosures, which consist of single or two concentric stonewalled circles found in small, isolated settlements, to complex sites with large central enclosures which have smaller enclosures attached to their outer walls. The walls are built with undressed, locally occurring, stone. Walls on average are 0.5 to approximately 1 meter high, although often only the foundation stones are left. The Early Iron Age site Plaston is located close to Witrivier.

### **6.2.3 Anglo-Boer War**

The Anglo-Boer War, which took place between 1899 and 1902 in South Africa, was one of the most turbulent times in South Africa's history. Even before the outbreak of war in October 1899 British politicians, including Sir Alfred Milner and Mr Chamberlain, had declared that should Britain's differences with the Z.A.R. result in violence, it would mean the end of republican independence. This decision was not immediately publicized, and republican leaders based their assessment of British intentions on the more moderate public utterances of British leaders. Consequently, in March 1900, they asked Lord Salisbury to agree to peace on the basis of the status quo ante bellum. Salisbury's reply was, however, a clear statement of British war aims (Du Preez 1977).

General Louis Botha, with his Boer forces, marched through Nelspruit on 11 September 1900. A week later, on 18 September 1900, the British battalion of Lieutenant General F. Roberts arrived in Nelspruit. No major skirmishes in the war took place near Nelspruit, but a black concentration camp was established a small distance to the north of the town. The reason for this is possibly that there was a railway station at Nelspruit. Another event of import in the area was the arrival of the President of the Transvaal, Paul Kruger, in Nelspruit on 29 May 1900, where he received a message saying Lord Roberts had annexed the Transvaal. Kruger declared the annexation illegitimate on 3 September 1900, the same day that Nelspruit was proclaimed the administrative capital of the Transvaal Republic. Kruger left Nelspruit in June of that year and travelled to board a ship to Swaziland (Bergh, 1999: 51; 54).

## **6.3 Cultural Landscape**

The study area is part of a rural landscape with sparse informal settlement. The project area and surrounds are still rural, but settlement density has increased around the study area (Figure 6.2 – 6.4).

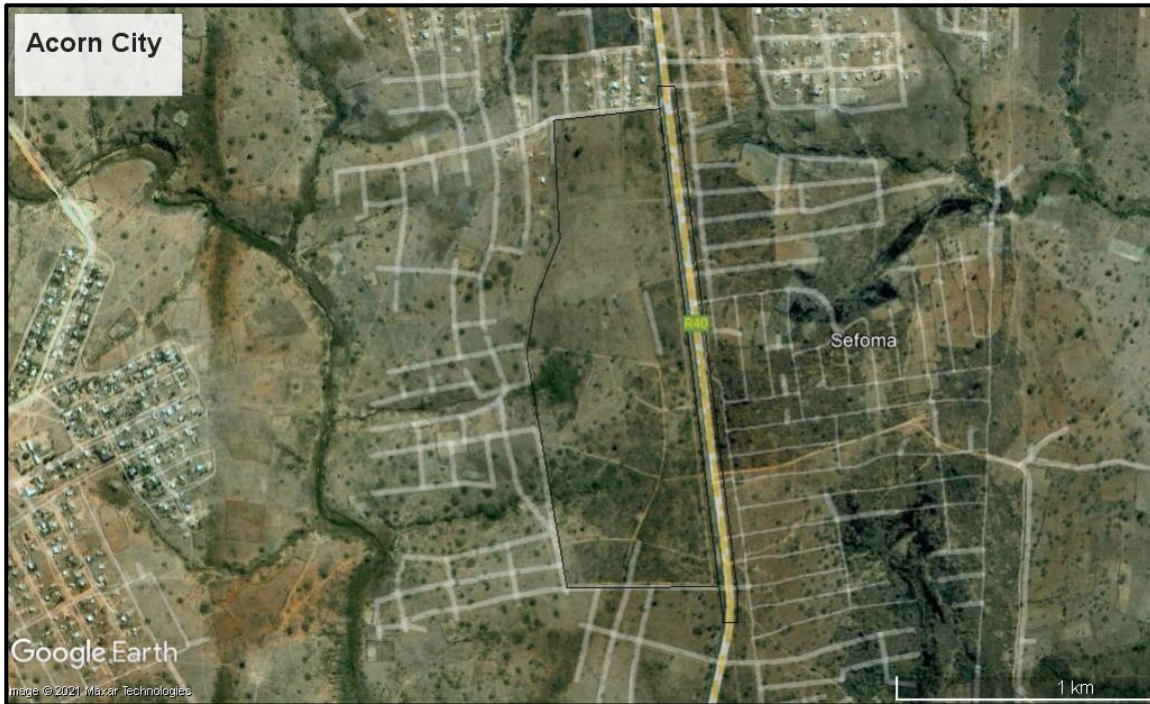


Figure 6.2. 2003 Google image of the study area. Very little development occurs around the study area with some dwellings visible to the North.

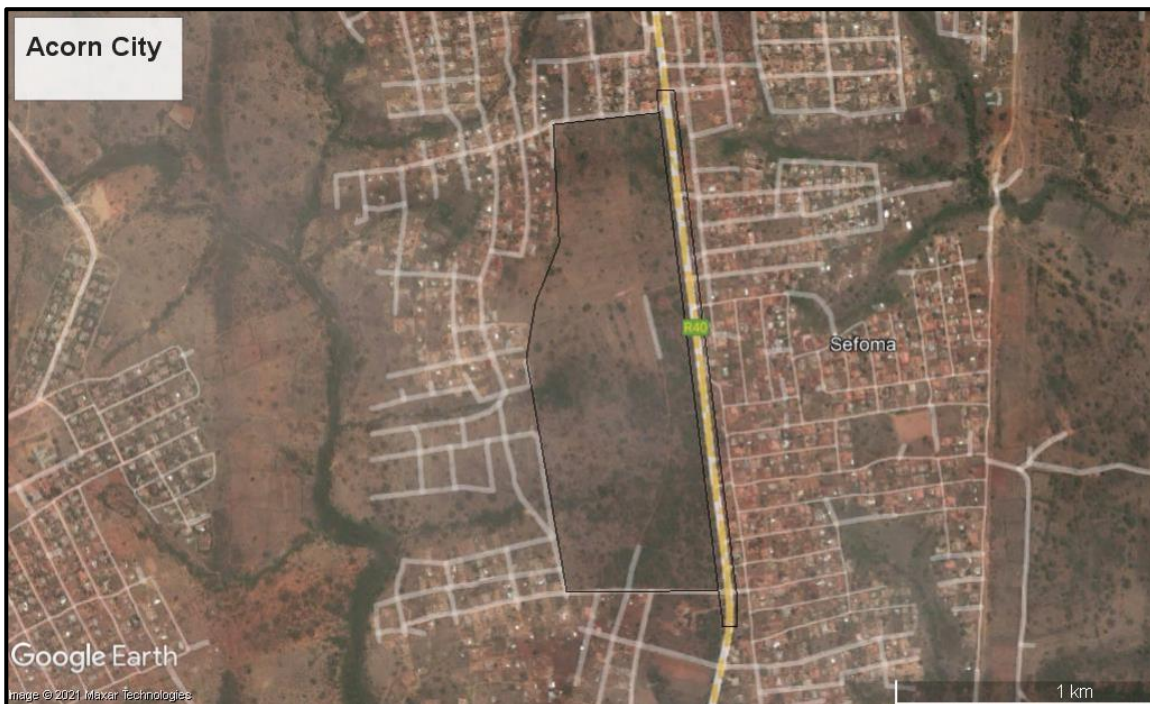


Figure 6.3. 2015 Google image of the study area. The surrounding area is more densely developed.

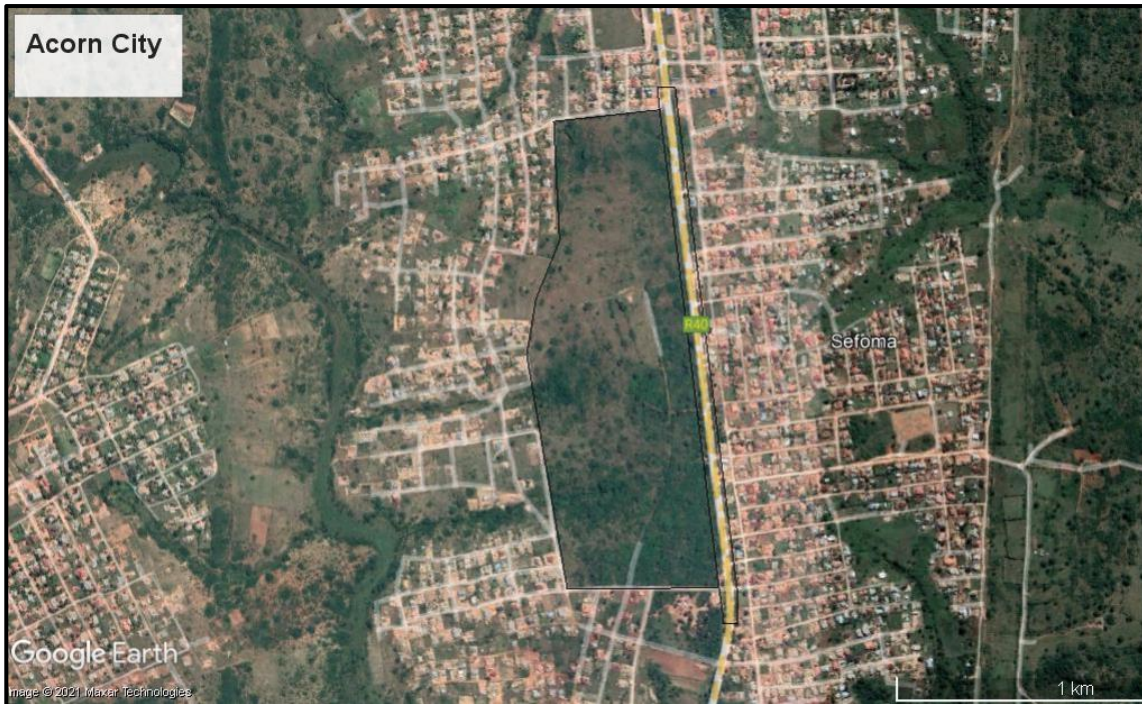


Figure 6.4.2019 Google image of the study area. By now the surrounding area has been almost completely developed and comprises a densely developed residential area with associated infrastructure.

#### 6.4 Graves and Burial Sites

No known graves are indicated on databases consulted but graves and cemeteries are widely distributed across the landscape and can be expected anywhere.

### 7 Description of the Physical Environment

The Project is located south of Acornhoek and is characterised by an open area amid a densely developed residential settlement. The project area is situated next to the R40 and is completely encircled by the built up surroundings. The area is mainly used for grazing for animals. Illegal dumping takes place on the edges of the project area closest to the residential areas (Figure 7.1 to &.7.2).

The vegetation is classed as Legogote Sour Bushveld comprising gently to moderately sloping upper pediment with dense woodland including many medium to large shrubs. Parts of the study area retains the original vegetation, and the area is largely dominated by overgrown thickets of small trees and shrubs growing in very sandy soil. Some areas within these thickets are so overgrown that visibility was very low and accessibility difficult (Figure 7.4 to 7.5).



Figure 7.1. R40 adjacent to the project area.



Figure 7.2. Illegal dumping in the study area.

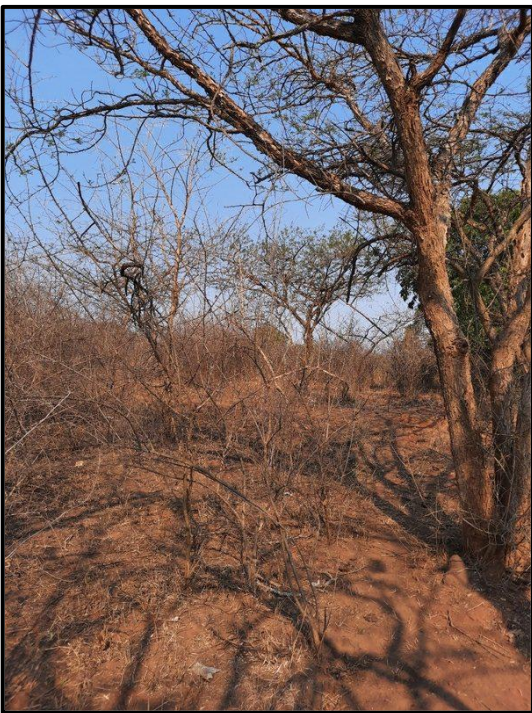


Figure 7.3. Wooded areas characterize large parts of the study area.



Figure 7.4. General site conditions thickets and gravel roads.



Figure 7.5. Gravel roads surround the study area.



Figure 7.6. Cattle tracks provide access in the study area.

## 8 Findings of the Survey

It is important to note that only the development footprint was surveyed over 1 day by a professional archaeologist. The project area is overgrown with *Dichrostachys cinerea* severely hampering accessibility and heritage visibility in the study area. Fortunately, the archaeologists was accompanied by community members (as indicated in Section 5) who pointed out grave sites in the study area.

The survey recorded 21 burial sites, consisting of a combination of graves with headstones and locations pointed out by the community representatives as burial sites where no surface indicators of graves were visible. Although no surface indicators of graves were noted these were recorded as burial sites. An broken isolated lower grinder was also noted but are out of context without any other associated cultural material. The recorded finds were labelled with the prefix AC (for Acorn City) and waypoint numbers were retained as site numbers. Site distribution is spatially indicated in Figure 8.1 with a short description in Table 6. Complete descriptions and photographs of recorded features are included in Annexure A.

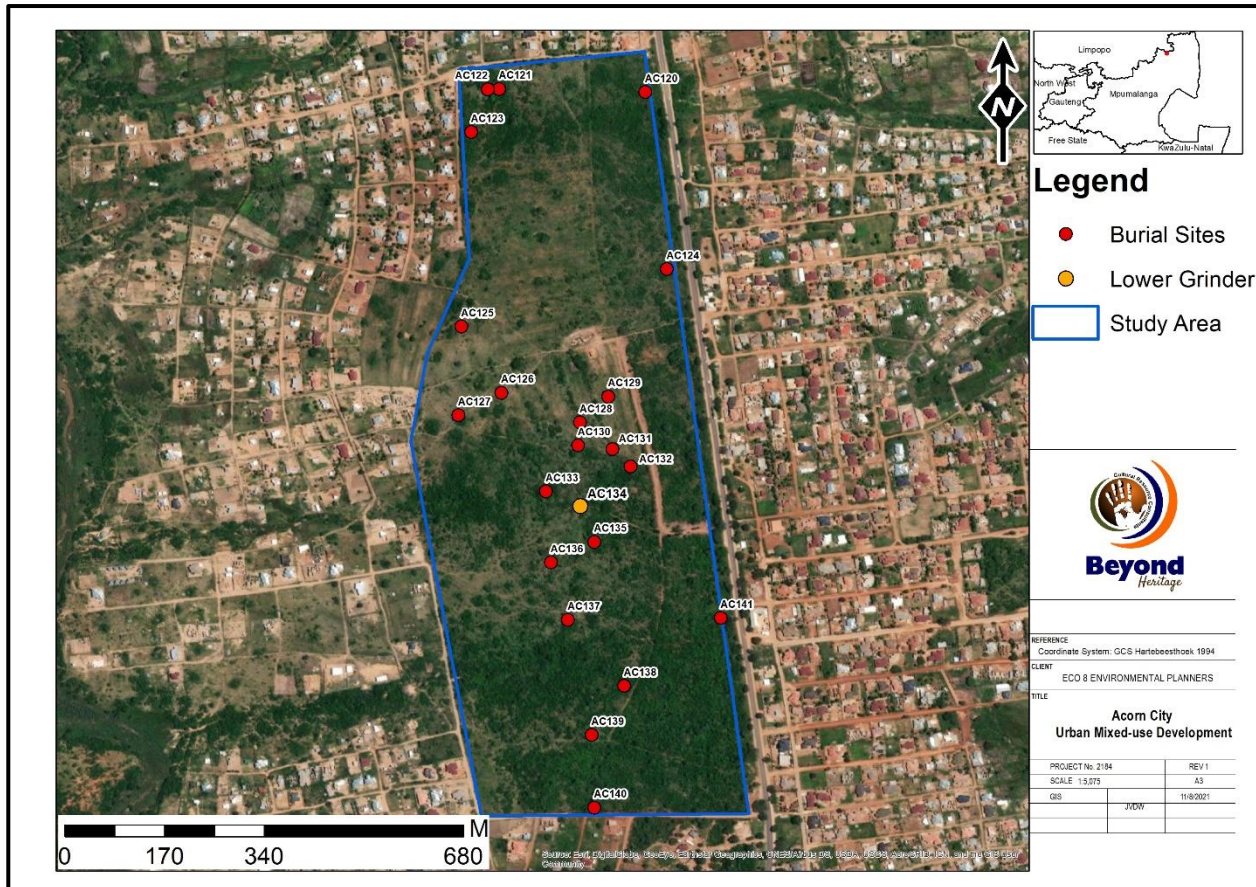


Figure 8.1. Site distribution map.

Table 6. Recorded features

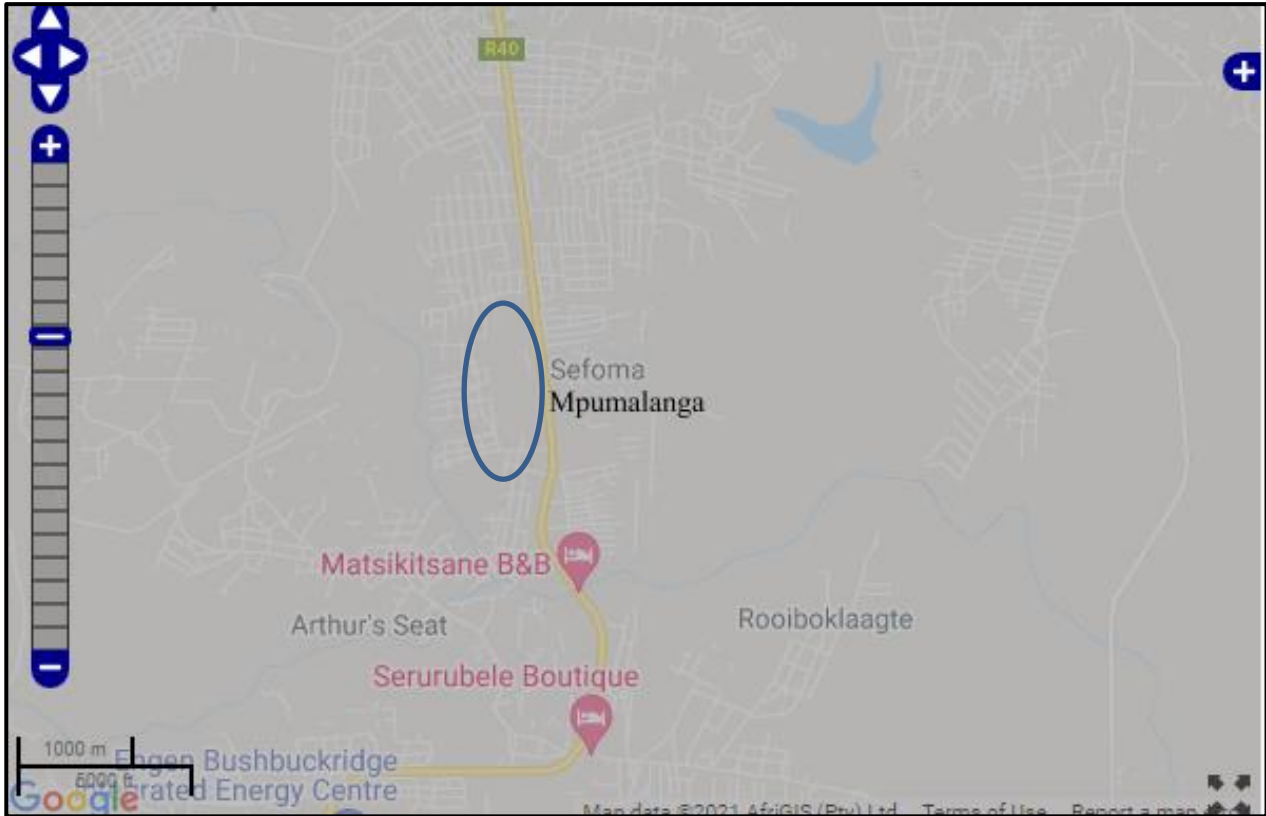
Label	Description	Longitude	Latitude	Elevation	Field Rating and Significance
AC120	A single cement grave positioned under two large trees near the R40. The grave consists of a large cement cover and a small cement headstone without an inscription.	31° 02' 27.4669" E	24° 37' 56.5284" S	673,1161	GP A High Social Significance
AC121	Possible grave that was indicated by local community members. Only a large rock and a piece of broken metal are visible	31° 02' 19.3957" E	24° 37' 56.3555" S	675,794	GP A High Social Significance
AC122	Possible grave under a large termite mound indicated by the local community. No grave features are present	31° 02' 18.7835" E	24° 37' 56.3772" S	674,2545	GP A High Social Significance
AC123	Possible grave located within a dense thicket that was indicated by the local community	31° 02' 17.8656" E	24° 37' 58.7387" S	669,9156	GP A High Social Significance
AC124	Graves indicated inside a dense thicket of <i>Dichrostachys cinerea</i> under a large termite mound	31° 02' 28.6657" E	24° 38' 06.3168" S	679,9182	GP A High Social Significance
AC125	Three graves located on an open field within a small thicket of small trees. Two of the graves have the remnants of packed stone borders	31° 02' 17.3149" E	24° 38' 09.4848" S	679,6289	GP A High Social Significance
AC126	Possible graves situated under a termite mound	31° 02' 19.5216" E	24° 38' 13.1423" S	680,9446	GP A High Social Significance
AC127	A single grave located near a Sisal thicket under a large tree. Some packed stones still remain.	31° 02' 17.1456" E	24° 38' 14.3771" S	674,9263	GP A High Social Significance
AC128	Possible grave indicated by the local community situated within a	31° 02' 23.8523" E	24° 38' 14.7733" S	683,9024	GP A

	thicket of trees. The feature is identified by a small mound marked with 2 x R2 coins placed on the grave.				High Social Significance
AC129	2 x Possible graves situated near a small thicket. The graves are marked with a single stone each.	31° 02' 25.4256" E	24° 38' 13.3511" S	687,7933	GP A High Social Significance
AC130	A single grave situated under a large tree with a cement marker. The grave was indicated by the local community.	31° 02' 23.7482" E	24° 38' 16.0476" S	682,3815	GP A High Social Significance
AC131	A single grave situated under a termite mound near a large tree and thicket. The grave was indicated by the local community members.	31° 02' 25.6452" E	24° 38' 16.2636" S	684,2383	GP A High Social Significance
AC132	4 graves situated within an area that seems to contain the remnants of multiple structures/foundations. The graves are marked with various items such as stones and glass bottles.	31° 02' 26.6531" E	24° 38' 17.2069" S	684,3316	GP A High Social Significance
AC133	2 Graves situated within a wooded thicket under a large tree near a termite mound. The graves are marked with metal markers with inscriptions painted in red.	31° 02' 21.9841" E	24° 38' 18.5928" S	676,979	GP A High Social Significance
AC134	Large Lower grinder – archaeological/ historical	31° 02' 23.8740" E	24° 38' 19.3955" S	679,9275	GP C Low Significance
AC135	Two large graves situated within a wooded area. These graves consist of a large cement grave cover with no headstones present. Some grave items were placed on the grave such as R2 coins. The graves are situated under a large tree.	31° 02' 24.6552" E	24° 38' 21.3792" S	678,3599	GP A High Social Significance
AC136	Possible grave situated under a large termite mound. The grave was indicated by the local community. No grave features were identified	31° 02' 22.2503" E	24° 38' 22.5204" S	674,749	GP A High Social Significance
AC137	Possible grave situated within a dense wooded area/thicket. No grave features were identified	31° 02' 23.2044" E	24° 38' 25.6848" S	667,3684	GP A High Social Significance
AC138	2 Possible graves situated under a large termite mound. The graves were identified by the local community members	31° 02' 26.3112" E	24° 38' 29.3351" S	669,4398	GP A High Social Significance
AC139	2 Possible graves situated under a large termite mound. The graves were indicated by the local community members	31° 02' 24.5077" E	24° 38' 32.0424" S	668,5721	GP A High Social Significance
AC140	Possible grave situated under a large termite mound and an illegal dumping site.	31° 02' 24.6552" E	24° 38' 36.0601" S	664,7838	GP A High Social Significance
AC141	Possible graves located under a large termite mound near the main road	31° 02' 31.6392" E	24° 38' 25.5804" S	674,5997	GP A High Social Significance



## 8.1 Paleontological Heritage

Based on the SAHRA Paleontological map the study area is of insignificant sensitivity and no further studies are required in this regard (Figure 8.6).



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 8.2. Paleontological sensitivity of the study area as indicated on the SAHRA Palaeontological sensitivity map.

## 9 Potential Impact

The study identified 21 burial sites as well as a broken isolated lower grinder. Graves and cemeteries are of high social significance and will be directly impacted on as per the development layout (Figure 9.1 and Table 7). The impact rating for graves and burial sites is high. With the implementation of extensive mitigation measures of which the preferred option is avoidance and the alternative is grave relocation adhering to all legal requirements, the impact of the development on graves and burial sites can be mitigated to an acceptable level (Table 8). The isolated grinding stone is of low significance as it is out of context. Impacts to this artefact are low (Table 9). Any additional effects to subsurface heritage resources can be successfully mitigated by implementing a chance find procedure. A chance find procedure as recommended in this report should be implemented during all phases of the project. (Table 8, 9 and Figure 9.1).

**Table 7. Sources of impact**

Label	Type Site	Source of impact
AC120	Burial/ Grave .	Hotel and associated infrastructure
AC121	Burial/ Grave .	Hotel and associated infrastructure
AC122	Burial/ Grave .	Hotel and associated infrastructure
AC123	Burial/ Grave .	Hotel and associated infrastructure
AC124	Burial/ Grave .	Retail Area
AC125	Burial/ Grave .	Subsistence Farming Area
AC126	Burial/ Grave .	Light Industrial area
AC127	Burial/ Grave .	Subsistence Farming Area
AC128	Burial/ Grave .	Road
AC129	Burial/ Grave .	Retail Area
AC130	Burial/ Grave .	Light Industrial area
AC131	Burial/ Grave .	Retail Area
AC132	Burial/ Grave .	Retail Area
AC133	Burial/ Grave .	Residential Area
AC134	Isolated lower grinder	Residential Area
AC135	Burial/ Grave .	Community Centre
AC136	Burial/ Grave .	Community Centre
AC137	Burial/ Grave .	Community Centre
AC138	Burial/ Grave .	Sports Field
AC139	Burial/ Grave .	Sports Field
AC140	Burial/ Grave .	Sports Field
AC141	Burial/ Grave .	Retail (CTM)

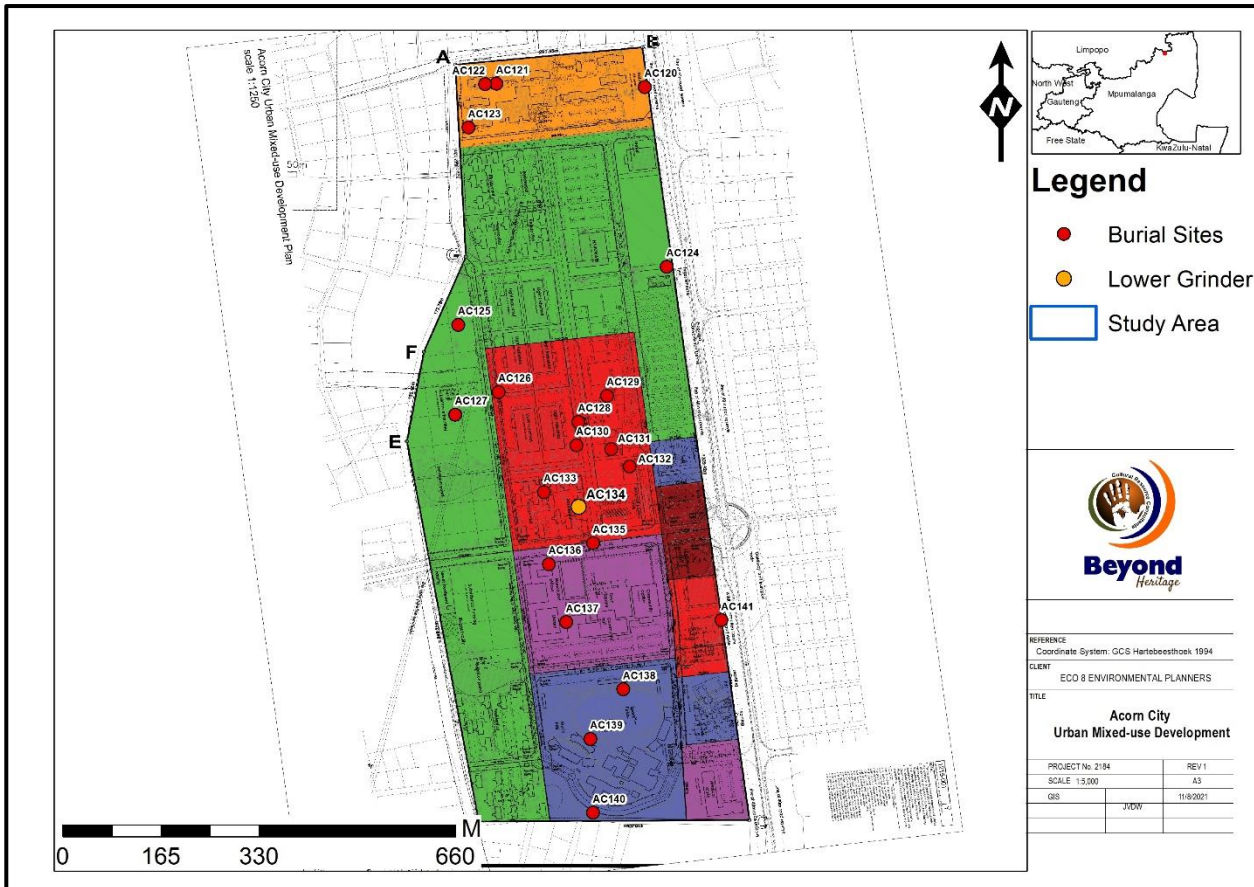


Figure 9.1. Burial sites in relation to the proposed project.

### 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 8. Impact of the project on burial sites.

<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 material or objects.		
	<b>Without mitigation</b>	<b>With mitigation (Preservation/ excavation of site)</b>
<b>Extent</b>	Regional (4)	Regional (3)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Magnitude</b>	Moderate (6)	Moderate (4)
<b>Probability</b>	Definite (5)	Probable (3)
<b>Significance</b>	<b>75 (High)</b>	<b>36 (Medium)</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>	Yes	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>Graves should preferably be retained <i>in situ</i> with a 30 m buffer, in the case of the Acorn City Development this is not a feasible option as this will render the township layout completely inefficient. Legislation allows for the grave sites to be relocated subject to consent from the Next of Kin (NOK) and adhering to all legal requirements with the necessary permits in place and this seems to be the preferred option from a socio-economic perspective following NHRA 25 of 1999 Section 38 (3).</li> </ul>		
<b>Cumulative impacts:</b>		
Impacts to heritage resources are high but can be mitigated to an acceptable level. With the implementation of the mitigation measures as proposed in this report the cumulative impact is medium. .		
<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.		

Table 9. Impact assessment of the proposed project on isolated archaeological artefact.

<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 material or objects.		
	<b>Without mitigation</b>	<b>With mitigation (Preservation/ excavation of site)</b>
<b>Extent</b>	Local (2)	Local (1)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Magnitude</b>	Low (2)	Low (2)
<b>Probability</b>	Probable (3)	Probable (3)
<b>Significance</b>	<b>27 (Low)</b>	<b>27 (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>	Yes	
<b>Mitigation:</b> The recorded features are out of context and of low significance and is sufficiently recorded in this report. No additional mitigation required.		
<b>Cumulative impacts:</b> Cumulative impacts are of no concern for this aspect.		
<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 project area is overgrown with *Dichrostachys cinerea* severely hampering accessibility and heritage visibility in the study area. Fortunately, the archaeologists was accompanied by community members (as indicated in Section 5) who pointed out grave sites in the study area.

The survey recorded 21 burial sites, consisting of a combination of graves with headstones and locations pointed out by the community representatives as burial sites where no surface indicators of graves were visible. Although no surface indicators of graves were noted these were recorded as burial sites. An broken isolated lower grinder was also noted but are out of context without any other associated cultural material.

The impact of the project on heritage resources (burial sites) is high and will require extensive mitigation based on the current layout. The following recommendations are applicable subject to the South African Heritage Resource Authority (SAHRA) 's approval and must be implemented as part of the EMPr:

### 10.1 Recommendations for condition of authorisation

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

#### **Recommendations:**

- Implementation of a chance find procedure for the project.
- A preconstruction survey of the area should be conducted after vegetation clearing and prior to construction.
- It is recommended that the presence of additional graves or burial sites should be confirmed during social consultation.
- Graves should preferably be retained *in situ* with a 30 m buffer, in the case of the Acorn City Development this is not a feasible option as this will render the township layout completely inefficient. Legislation allows for the grave sites to be relocated subject to consent from the Next of Kin (NOK) and adhering to all legal requirements with the necessary permits in place and this seems to be the preferred option from a socio-economic perspective following NHRA 25 of 1999 Section 38 (3).

## **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.

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.

### **10.3 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 are the highest risk). This can cause delays during construction, as well as additional costs involved in mitigation, as well as additional layout changes.

### 10.5 Monitoring Requirements

Ideally, site monitoring should be conducted by an experienced archaeologist or heritage specialist. 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 the initial soil removal and subsequent earthworks during construction. The ECO should monitor all such activities daily. If any heritage resources are found, the chance finds procedure must be followed as outlined above.

Monitoring requirements is outlined in Table 8.

Table 10. Heritage monitoring for the project

Heritage Monitoring					
Aspect	Area	Responsible for monitoring and measuring	Frequency	Proactive or reactive measurement	Method
Clearing activities and construction.	Entire project area	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 the Sustainability Manager;</li> <li>3. Contact an archaeologist/ palaeontologist 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> </li> </ul>



Heritage Monitoring					
Aspect	Area	Responsible for monitoring and measuring	Frequency	Proactive or reactive measurement	Method
					<ul style="list-style-type: none"> <li>Only recommence operations once impacts have been mitigated.</li> </ul>
Clearing activities and construction	Cemeteries and burial sites	ECO	Weekly (Preconstruction and construction phase)	Proactively	<ul style="list-style-type: none"> <li>Ensure no encroaching occurs at the cemetery;</li> <li>Measure levels of change and compare with recorded baseline conditions;</li> <li>Status quo will be recorded through photographs; and;</li> <li>Results will be reported in the progress reporting.</li> </ul>

## 10.6 Management Measures for inclusion in the EMPr

Table 11. Heritage Management Plan for EMPr implementation

Area	Mitigation measures	Phase	Timeframe	Responsible party for implementation	Target	Performance indicators (monitoring tool)
<b>All graves and burial sites</b>	Graves should preferably be retained <i>in situ</i> with a 30 m buffer, in the case of the Acorn City Development this is not a feasible option and therefore the identified grave sites can be effectively mitigated by relocating the graves to either a municipal cemetery or to plan a small cemetery site on the property as part of the proposed township layout plan to accommodate the graves. Relocation should be conducted adhering to all legal requirements with the required permissions and permits in place.	Pre-Construction and construction	Pre-Construction and construction	Applicant & EAP	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 36 of NHRA	ECO Checklist/Report
<b>General project area</b>	Heritage walkdown of the study area after vegetation clearing.	Pre Construction	Prior to construction	Applicant EAP	Ensure compliance with relevant legislation and recommendations from SAHRA under	ECO Checklist/Report

## HIA –Acorn City

November 2021

Area	Mitigation measures	Phase	Timeframe	Responsible party for implementation	Target	Performance indicators (monitoring tool)
					Section 35, 36 and 38 of NHRA	
<b>General project area</b>	Implement chance find procedures in case possible heritage finds are uncovered	Pre Construction and construction	Throughout the project	Applicant EAP	Ensure compliance with relevant legislation and recommendations from SAHRA under Section 35, 36 and 38 of NHRA	ECO Checklist/Report

### **10.7 Knowledge Gaps**

Due to the subsurface nature of heritage resources, the possibility of discovery of heritage resources during the construction phase cannot be excluded. Also, thick vegetation cover hampered ground visibility and although unlikely informal graves could have been undetected This limitation is successfully mitigated with the implementation of a chance find procedure.

## 11 References

- Amery, L.S. (ed), 1909. The times history of the war in South Africa 1899-1902, Vol VI. London, Archaeological database, University of the Witwatersrand.
- Barnard, C. 1975. Die Transvaalse Laeveld. Komee van 'n Kontrei.
- Bergh, J.S. (ed.) 1998. Geskiedenisatlas van Suid-Afrika. Die vier noordelike provinsies. (J.L. van Schaik, Pretoria).
- Bornman, H. 1995. Pioneers of the Lowveld.
- Bornman, H. (red.) 1979. Nelspruit: 75 in '80. Stadsraad van Nelspruit.
- Breutz, P.L. 1985. Pre-Colonial Africa: The South-Eastern Bantu Cultural Province.
- Celliers, J.P. 2012. Report on Phase 1 Archaeological Impact Assessment on Portion 17 of the farm Acornhoek 212 KU located in Bushbuckridge Local Municipality, Mpumalanga Province.
- Celliers, J.P. 2012. Second Progress Report on the Archaeological Monitoring of construction activity at Elephant Point located on Portion 10 of the farm Belfast 291 KU, Mpumalanga Province.
- Delius, P. 2007. Mpumalanga History and Heritage. University of KwaZulu-Natal Press.
- Du Preez, S. J. Peace attempts during the Anglo Boer War until March 1901. Magister Artium thesis in History. Pretoria: University of Pretoria.
- Evers, T.M. in Voight, E.A. 1981. Guide to Archaeological Sites in the Northern and Eastern Transvaal. Transvaal Museum, Pretoria.
- Giliomee, H. 2003. The Afrikaners – biography of a people. Tafelberg, Cape Town & Charlottesville.
- Hall, H.L. 1938 (1990). I Have Reaped my Mealies. An Autobiography. Whitnall Simonsen.
- Huyser, J. D. Die Naturelle-Politiek van die Suid-Afrikaanse Republiek. D. LITT. Verhandeling, Universiteit van Pretoria.
- Huffman, T. N. 2007. Handbook to the Iron Age: The Archaeology of Pre-Colonial Farming Societies in Southern Africa. Kwa-Zulu Natal Press.
- Jones, H. M. & Jones G. M. 1999. A Gazetteer of the Second Anglo-Boer War. 1899-1902. Buckinghamshire: The Military Press.
- Küsel, U. 2005. Cultural Heritage Resources Impact Assessment of a Portion of Kapama Hoedspruit (Guernsey 81 KU Portions 6, 34, 98, 109, 56, 204 and 210). An unpublished report by African Heritage Consultants CC on file at SAHRA as: 2005-SAHRA-0264.
- Mason, R. 1962. Prehistory of the Transvaal: a record of human activity. Witwatersrand University Press, Johannesburg.
- Massie, R.H. 1905. The Native tribes of Transvaal. Prepared for the general staff war office. Harrison and Sons, London.
- Mucina, L. & Rutherford, M.C. 2006. The vegetation map of South Africa, Lesotho and Swaziland. SANBI, Pretoria.
- Myburgh, A.C. 1956. Die Stamme van die Distrik Carolina. Staatsdrukker. Pretoria.
- National Heritage Resources Act NHRA of 1999 (Act 25 of 1999)

- Packard, P. 2001. "Malaria blocks development" revisited: the role of disease in the history of agricultural development in the Eastern and Northern Transvaal Lowveld. 1890-1960. *Journal of Southern African Studies* 27 (3), September 2001.
- Ross, R. 2002. *A Concise History of South Africa*. Cambridge.
- Van der Walt, J. 2003. Phase 1 Archaeological Impact Assessment: Cultural Heritage Evaluation for the Proposed Service Station in Acornhoek. An unpublished report on file at SAHRA as: 2003-SAHRA-0064.
- Van Schalkwyk, J.A. 2001. Archaeological Investigation of Two Sites in the Acornhoek Area. An unpublished report by the National Cultural History Museum on file at SAHRA as: 2001-SAHRA-0056.
- Van Schalkwyk, J.A. 2001. A Survey of Cultural Resources in Two Potential Borrow Pit Areas, Acornhoek, Northern Province. An unpublished report by the National Cultural History Museum on file at SAHRA as: 2001-SAHRA-0064.
- Van Schalkwyk, L.O. 2006. Heritage Impact Assessment of Acornhoek Dam, Klaserie, Limpopo Province, South Africa. An unpublished report by eThembeni Cultural Heritage on file at SAHRA as: 2006-SAHRA-0256.
- Van Vollenhoven, A.C. 2002. Die Metodiek van Kultuurhulpbronbestuur (KHB). S.A. *Tydskrif vir Kultuurgeskiedenis* 16(2).
- Van Vollenhoven, A.C. 1995. Die bydrae van Argeologie tot Kultuurhulpbronbestuur. Referaat gelewer voor die Suid-Afrikaanse Vereniging vir Kultuurgeskiedenis, Transvaal Streektak, Sunnyside.
- Union of South Africa. 1918. Majority Report of the Eastern Transvaal Natives Land Committee. Cape Town.