

# HERITAGE IMPACT ASSESSMENT

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

## FOR THE PROPOSED SKUTWATER AGRICULTURAL DEVELOPMENT, LIMPOPO PROVINCE

**Type of development:**

Agricultural

**Client:**

Tua Conserva Environmental & Conservation Services cc

**Client info:**

Dons Claassens

**E – mail:**

[dons.tuaconserva@gmail.com](mailto:dons.tuaconserva@gmail.com)

**Developer:**

Mr Pieter Esterhuysen.



**HCAC - Heritage Consultants**

Private Bag X 1049

Suite 34

Modimolle

0510

Tel: 082 373 8491

Fax: 086 691 6461

E-Mail: [jaco.heritage@gmail.com](mailto:jaco.heritage@gmail.com)

Report Author:

Mr. J. van der Walt

Project Reference:

Report date:

September 2020

## APPROVAL PAGE

<b>Project Name</b>	<b>Skutwater agricultural development</b>
<b>Report Title</b>	Heritage Impact Assessment for the proposed Skutwater agricultural development, Limpopo Province
<b>Authority Reference Number</b>	TBC
<b>Report Status</b>	Final Report
<b>Applicant Name</b>	Mr Pieter Esterhuyse.

	<b>Name</b>	<b>Qualifications and Certifications</b>	<b>Date</b>
<b>Archaeologist</b>	Jaco van der Walt	MA Archaeology ASAPA #159	September 2020

**DOCUMENT PROGRESS****Distribution List**

Date	Report Reference Number	Document Distribution	Number of Copies
1 September 2020	2043	Tua Conserva Environmental & Conservation Services CC	Electronic Copy

**Amendments on Document**

Date	Report Reference Number	Description of Amendment

**INDEMNITY AND CONDITIONS RELATING TO THIS REPORT**

The findings, results, observations, conclusions and recommendations given in this report are based on the author's best scientific and professional knowledge as well as available information. The report is based on survey and assessment techniques which are limited by time and budgetary constraints relevant to the type and level of investigation undertaken. HCAC reserves the right to modify aspects of the report including the recommendations if and when new information becomes available from ongoing research or further work in this field or pertaining to this investigation.

Although HCAC exercises due care and diligence in rendering services and preparing documents HCAC accepts no liability, and the client, by receiving this document, indemnifies HCAC against all actions, claims, demands, losses, liabilities, costs, damages and expenses arising from or in connection with services rendered, directly or indirectly by HCAC and by the use of the information contained in this document.

This report must not be altered or added to without the prior written consent of the author. This also refers to electronic copies of this report which are supplied for the purposes of inclusion as part of other reports, including main reports. Similarly, any recommendations, statements or conclusions drawn from or based on this report must make reference to this report. If these form part of a main report relating to this investigation or report, this report must be included in its entirety as an appendix or separate section to the main report.

**COPYRIGHT**

Copyright on all documents, drawings and records, whether manually or electronically produced, which form part of the submission and any subsequent report or project document, shall vest in HCAC.

The client, on acceptance of any submission by HCAC and on condition that the client pays to HCAC the full price for the work as agreed, shall be entitled to use for its own benefit:

- The results of the project;
- The technology described in any report; and
- Recommendations delivered to the client.

Should the applicant wish to utilise any part of, or the entire report, for a project other than the subject project, permission must be obtained from HCAC to do so. This will ensure validation of the suitability and relevance of this report on an alternative project.

## 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 <b>including identified alternatives on the environment</b> or activities;	Section 9
(k) Mitigation measures for inclusion in the EMPr	Section 10
(l) Conditions for inclusion in the environmental authorisation	Section 10
(m) Monitoring requirements for inclusion in the EMPr or environmental authorisation	Section 10
(n) Reasoned opinion - (i) as to whether the proposed activity, activities or portions thereof should be authorised; (iA) regarding the acceptability of the proposed activity or activities; and (ii) if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan	Section 10.2
(o) Description of any consultation process that was undertaken during the course of preparing the specialist report	Section 6
(p) A summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Refer to Environmental Assessment report
(q) Any other information requested by the competent authority	Section 11

## Executive Summary

Tua Conserva Environmental & Conservation Services CC was appointed by Mr Pieter Esterhuyse to conduct an Environmental Authorisation (EA) Application process and Section 24 G process for the proposed clearing of indigenous vegetations for crop rotation on the Farm Skutwater 115 MS. The project is located 61 km west of Mucina in the Vhembe district of the Limpopo province.

The development is divided into two impact areas:

- Cropland 1 (80Ha) that is a Section 24G application and;
- Cropland 2 (±100Ha)


HCAC was appointed to conduct a Heritage Impact Assessment for the project and the study area was assessed on desktop level and by a field survey. The field survey was conducted as a non-intrusive pedestrian survey to cover the extent of the footprint. Key findings of the assessment include:

- The study area is indicated as very sensitive on the SAHRIS paleontological map and an independent study was conducted (Durand 2020). The study concluded that the project area is underlain by the Red Rocks Member of the Clarens Formation. There is a possibility that ex situ dinosaur fossils may be found in the soil covering the bedrock in the study site during development. It is imperative that a palaeontologist be consulted if fossils are exposed during the development process. The ECO should take responsibility for supervising the development and should follow the Chance Find Procedure if a significant fossil discovery is made.
- Within the Section 24G application area – Cropland 1 several Iron Age/ farming community sites used to occur but is impacted on by previous landing strips and the unlawful activities relating to vegetation clearing;
- Within Crop land 2 several *in-situ* Iron Age/farming community sites occur.

The impact of the project on heritage resources can be mitigated to an acceptable level and it is recommended that the proposed project can commence on the condition that the following recommendations are implemented as part of the EMPr and based on approval from SAHRA:

- Sites S3 and S4 - although unlikely, the features might be graves. It is recommended that the features should be retained *in situ*, if this is not possible test excavations should be conducted to determine whether the features represent graves;
- It is recommended that Sites S1, S8-BA 45, S9 and S10 should be retained *in situ*, if this is not possible the sites should be subjected to Phase 2 Mitigation;
- Site S17 located in the Section 24G application area and impacted on by the unlawful activities should be subjected to Phase 2 Mitigation as a trade off to the sites (listed below) impacted on in this area. This site has academic potential;
- Sites S2, S11, S12, S13, S14, S15 and S18 located in the Section 24G application area and impacted on by the unlawful activities will have to be monitored by an archaeologist during initial cultivation activities after application of a destruction permit;
- The following sites should be retained *in situ* with adequate buffers - S5, S6, S7, S16 - BA44 and S19. The buffer zones must be indicated by an archaeologist in the field while determining site extent;
- A destruction permit can be applied for Site S9 after which the site should be monitored during initial cultivation;
- Implementation of a site development plan for the project and;
- Implementation of a chance find procedure for the project.

**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>	03/09/2020

**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>12</b>
<b>GLOSSARY.....</b>	<b>12</b>
<b>1 INTRODUCTION AND TERMS OF REFERENCE: .....</b>	<b>13</b>
1.1 TERMS OF REFERENCE.....	13
<b>2 LEGISLATIVE REQUIREMENTS .....</b>	<b>18</b>
<b>3 METHODOLOGY .....</b>	<b>19</b>
3.1 LITERATURE REVIEW.....	19
3.2 GENEALOGICAL SOCIETY AND GOOGLE EARTH MONUMENTS.....	19
3.3 PUBLIC CONSULTATION AND STAKEHOLDER ENGAGEMENT:.....	19
3.4 SITE INVESTIGATION.....	20
3.5 SITE SIGNIFICANCE AND FIELD RATING.....	22
3.6 IMPACT ASSESSMENT METHODOLOGY.....	23
3.7 LIMITATIONS AND CONSTRAINTS OF THE STUDY .....	24
<b>4 DESCRIPTION OF SOCIO ECONOMIC ENVIRONMENTAL .....</b>	<b>24</b>
<b>5 DESCRIPTION OF THE PHYSICAL ENVIRONMENT: .....</b>	<b>25</b>
<b>6 RESULTS OF PUBLIC CONSULTATION AND STAKEHOLDER ENGAGEMENT: .....</b>	<b>27</b>
<b>7 LITERATURE / BACKGROUND STUDY: .....</b>	<b>28</b>
7.1 LITERATURE REVIEW (SAHRIS) .....	28
7.2 GENERAL HISTORY OF THE AREA .....	29
<b>8 FINDINGS OF THE SURVEY .....</b>	<b>38</b>
8.1 CROP LAND 1.....	41
8.2 CROPLAND 2 .....	45
8.3 PALAEOLOGY .....	56
8.4 CULTURAL LANDSCAPE.....	57
<b>9 POTENTIAL IMPACT .....</b>	<b>58</b>
9.1. IMPACT ASSESSMENT – WORLD HERITAGE SITE.....	58
<b>10 CONCLUSION AND RECOMMENDATIONS .....</b>	<b>63</b>



10.1. CHANCE FIND PROCEDURES ..... 64

10.2. REASONED OPINION ..... 65

**11 REFERENCES..... 66**

**12 APPENDICES:..... 67**

CURRICULUM VITAE OF SPECIALIST ..... 67

**LIST OF FIGURES**

FIGURE 1-1. REGIONAL SETTING (1: 250 000 TOPOGRAPHICAL MAP).....	15
FIGURE 1-2: REGIONAL LOCALITY MAP (1:50 000 TOPOGRAPHICAL MAP).....	16
FIGURE 1-3. SATELLITE IMAGE OF THE PROPOSED IMPACT AREA.....	17
FIGURE 3-1: TRACK LOG OF THE SURVEY IN GREEN.....	21
FIGURE 5-1. ENVIRONMENTAL SETTING OF THE STUDY AREA.....	25
FIGURE 5-2. HILLSHADE OF THE STUDY AREA AND SURROUNDS SHOWING NO MAJOR TOPOGRAPHICAL FEATURES APART FROM THE LIMPOPO RIVER TO THE NORTH AND A RIDGE TO THE SOUTH OF THE STUDY AREA.....	26
FIGURE 5-3. GENERAL SITE CONDITIONS CROPLAND 1.....	27
FIGURE 5-4. GENERAL SITE CONDITIONS CROPLAND 2.....	27
FIGURE 7-1: IRON AGE CERAMIC FACIES FOR THE MAPUNGUBWE REGION (ADAPTED FROM HUFFMAN 2009B). <b>EARLY IRON AGE</b> .....	30
FIGURE 7-2: DEFINITION OF <i>MZONJANI</i> CERAMICS ON THE LEFT AND <i>HAPPY REST</i> CERAMICS ON THE RIGHT (ADAPTED FROM HUFFMAN 2007A).....	31
FIGURE 7-3: DEFINITION OF <i>ZHIZO</i> CERAMICS ON THE LEFT AND <i>LEOKWE</i> CERAMICS ON THE RIGHT (ADAPTED FROM HUFFMAN 2007A).32	32
FIGURE 7-4: MAP OF SOUTHERN AFRICA INDICATING MIGRATION ROUTES OF DIFFERENT IRON AGE TRADITIONS (ADAPTED FROM HUFFMAN 2007A).....	32
FIGURE 7-5: DEFINITION OF <i>K2</i> CERAMICS ON THE LEFT AND <i>TK2</i> CERAMICS ON THE RIGHT (ADAPTED FROM HUFFMAN 2007A) TRANSITIONAL OCCUPATION WAS EQUALLY DIVIDED BETWEEN FLOODPLAIN AND ESCARPMENT WHERE THERE IS A CLEAR DISTINCTION BETWEEN CATTLE AND AGRICULTURALLY ORIENTATED SETTLEMENTS. BY ABOUT AD 1250, THE <i>TK2 FACIES</i> CHANGED INTO CLASSIC MAPUNGUBWE CERAMICS.....	33
FIGURE 7-6: STUDY AREA IN RELATION TO THE WHS OF MAPUNGUBWE AND BUFFER ZONE.....	35
FIGURE 7-7. 1967 TOPOGRAPHICAL MAP OF THE STUDY AREA INDICATING A LANDING STRIP IN THE WESTERN PORTION.....	36
FIGURE 7-8. 1979 TOPOGRAPHICAL MAP OF THE STUDY AREA. THE LANDING STRIP HAS BEEN EXTENDED WITH AN ADDITIONAL STRIP IN CROPLAND 2.....	37
FIGURE 7-9. 1999 TOPOGRAPHICAL MAP OF THE STUDY AREA INDICATING A LANDING STRIP IN CROPLAND 2.....	38
FIGURE 8-1: DOLERITE DYKE SEPARATING THE TWO STUDY AREAS. VEGETATION FROM THE CLEARING ACTIVITIES ARE CLEARLY VISIBLE. ...	39
FIGURE 8-2: KNOWN SITES IN RELATION TO THE STUDY AREA FROM THE WITS DATABASE AND SAHRIS.....	39
FIGURE 8-3. SITES RECORDED DURING THE SURVEY.....	40
FIGURE 8-4. EXISTING AIRSTRIP.....	41
FIGURE 8-5. CROP LAND 1 CLEARED OF VEGETATION.....	41
FIGURE 8-6. SITE S11 VIEWED FROM THE NORTH.....	43
FIGURE 8-7. UNDECORATED RIM FRAGMENTS FOUND AT SITE S11.....	43
FIGURE 8-8. NECKED JARS AND BOWLS WITH DECORATED CERAMICS FROM S17.....	44
FIGURE 8-9. GENERAL SITE CONDITIONS AT S17.....	44
FIGURE 8-10. OVERGROWN AREA IN CROPLAND 2.....	46
FIGURE 8-11. DAM AREA IN CROPLAND 2.....	46
FIGURE 8-12. PREPARED CORE.....	46
FIGURE 8-13. MSA FLAKE WITH FACETED PLATFORM.....	46

FIGURE 8-14: DORSAL AND VENTRAL VIEWS OF LITHICS. ....	46
FIGURE 8-15: OPEN ARE WITH LOW DENSITY BACKGROUND SCATTER. ....	46
FIGURE 8-16. GENERAL VIEW OF S1.....	48
FIGURE 8-17. VITRIFIED DUNG AT S1.....	48
FIGURE 8-18. EXTEND OF KRAAL DEPOSIT INTO CROPLAND 1 .....	48
FIGURE 8-19. UNDECORATED CERAMICS AT S1.....	48
FIGURE 8-20. ARTEFACTS AT S2 .....	49
FIGURE 8-21. ARTEFACTS AT S2 .....	49
FIGURE 8-22. STONE CAIRN S4.....	49
FIGURE 8-23. STONE CAIRN AT S3. ....	49
FIGURE 8-24. VITRIFIED DUNG. ....	50
FIGURE 8-25. GENERAL VIEW OF SITE. ....	50
FIGURE 8-26. CERAMICS FROM S5.....	50
FIGURE 8-27. MSA LITHICS FROM S5.....	50
FIGURE 8-28. CATTLE KRAAL AT S6. ....	51
FIGURE 8-29. GENERAL VIEW OF SITE. ....	51
FIGURE 8-30. CERAMICS FROM S6.....	51
FIGURE 8-31. DORSAL AND VENTRAL VIEW OF MSA LITHICS. ....	51
FIGURE 8-32. GENERAL SITE CONDITIONS AT S7 .....	52
FIGURE 8-33. ARTEFACTS AT S7. ....	52
FIGURE 8-34. EROSION GULLY INDICATED WITH YELLOW ARROW AT S8. ....	52
FIGURE 8-35. DUMPED SOIL AND SAND ON S8. ....	52
FIGURE 8-36. EPHEMERAL STONE FEATURE. ....	53
FIGURE 8-37. STORAGE POT FRAGMENT.....	53
FIGURE 8-38. CHANGE OF SOIL COLOUR INDICATING THE CATTLE KRAAL OR MIDDEN. ....	54
FIGURE 8-39. GENERAL VIEW OF THE SITE.....	54
FIGURE 8-40. DECORATED CERAMIC AT SITE.....	54
FIGURE 8-41. PROPERTY FENCE WITH MAJORITY OF SITE ON THE OTHER SIDE. ....	55
FIGURE 8-42. POSSIBLE GRAIN BIN FOUNDATION. ....	55
FIGURE 8-43. CERAMIC FRAGMENTS ON SITE.....	55
FIGURE 8-44. GENERAL VIEW OF SITE WITH THE MAIN AREA INDICATED WITH A YELLOW ARROW LOCATED OUTSIDE OF THE STUDY AREA. ....	55
FIGURE 8-45. POSSIBLE GRAIN BIN FOUNDATION. ....	56
FIGURE 8-46. DECORATED FRAGMENTS AT S19.....	56
FIGURE 8-47. INDENTS TYPICAL OF OLD EXCAVATIONS.....	56
FIGURE 8-48. GENERAL VIEW OF SITE S19.....	56
FIGURE 8-49. PALEONTOLOGICAL SENSITIVITY OF THE STUDY AREA AS INDICATED ON THE SAHRA PALAEOLOGICAL SENSITIVITY MAP. ....	57
.....	57
FIGURE 9-1. RECORDED HERITAGE FEATURES AND SIGNIFICANCE RATINGS. ....	59

**LIST OF TABLES**

TABLE 1. SPECIALIST REPORT REQUIREMENTS.....	4
TABLE 2: PROJECT DESCRIPTION .....	14
TABLE 3: INFRASTRUCTURE AND PROJECT ACTIVITIES .....	14
TABLE 4: SITE INVESTIGATION DETAILS .....	20
TABLE 5. SITES IDENTIFIED IN CROPLAND 1.....	42
TABLE 6. SITES IDENTIFIED IN CROPLAND 2.....	47
TABLE 7. ICOMOS SYSTEM FOR ASSESSING/ EVALUATING IMPACT.....	58
TABLE 8. SIGNIFICANCE AND PROPOSED MITIGATION OF HERITAGE SITES .....	60
TABLE 9. IMPACT ASSESSMENT .....	61
TABLE 10. IMPACT ASSESSMENT TABLE – STONE CAIRNS .....	62

**ABBREVIATIONS**

AIA: Archaeological Impact Assessment
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
EMP: 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
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:

HCAC is contracted by Tua Conserva Environmental & Conservation Services CC to conduct a heritage impact assessment of the proposed Skutwater Development. The site is located on the farm Skutwater 115 MS in the Vhembe District Municipal area (Figure 1 -3).

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, several Iron Age sites and a background scatter of Stone Age lithics 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. As such the Basic Assessment report and its appendices must be submitted to the case as well as the EMP, 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).

**Table 2: Project Description**

<b>Farm and portions</b>	Skutwater 115 MS
<b>Magisterial District</b>	Musina Local Municipality, Vhembe District
<b>1: 50 000 map sheet number</b>	2229 BA
<b>Central co-ordinate of the development</b>	Cropland 1: Latitude 22° 11' 30.38" S and Longitude 29° 32' 52.07" E. Cropland 2: Latitude 22° 11' 44.77" S and Longitude 29° 32' 49.70" E.

**Table 3: Infrastructure and project activities**

<b>Type of development</b>	Bush Clearing
<b>Project size</b>	Crop land 1 - 80Ha Crop land 2 - ±100Ha
<b>Project Components</b>	The clearance of indigenous vegetation for crop lands.



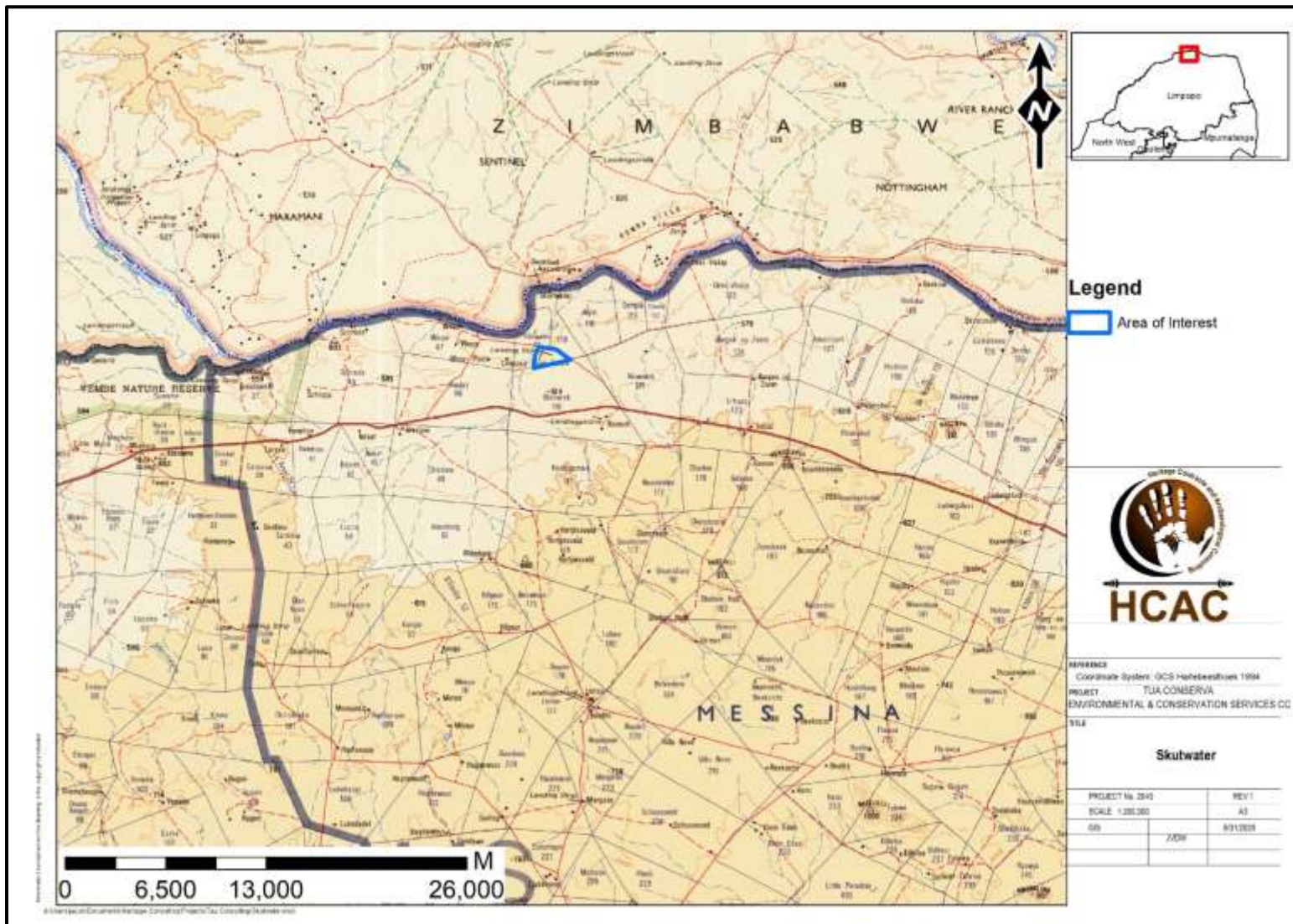


Figure 1-1. Regional setting (1: 250 000 topographical map).



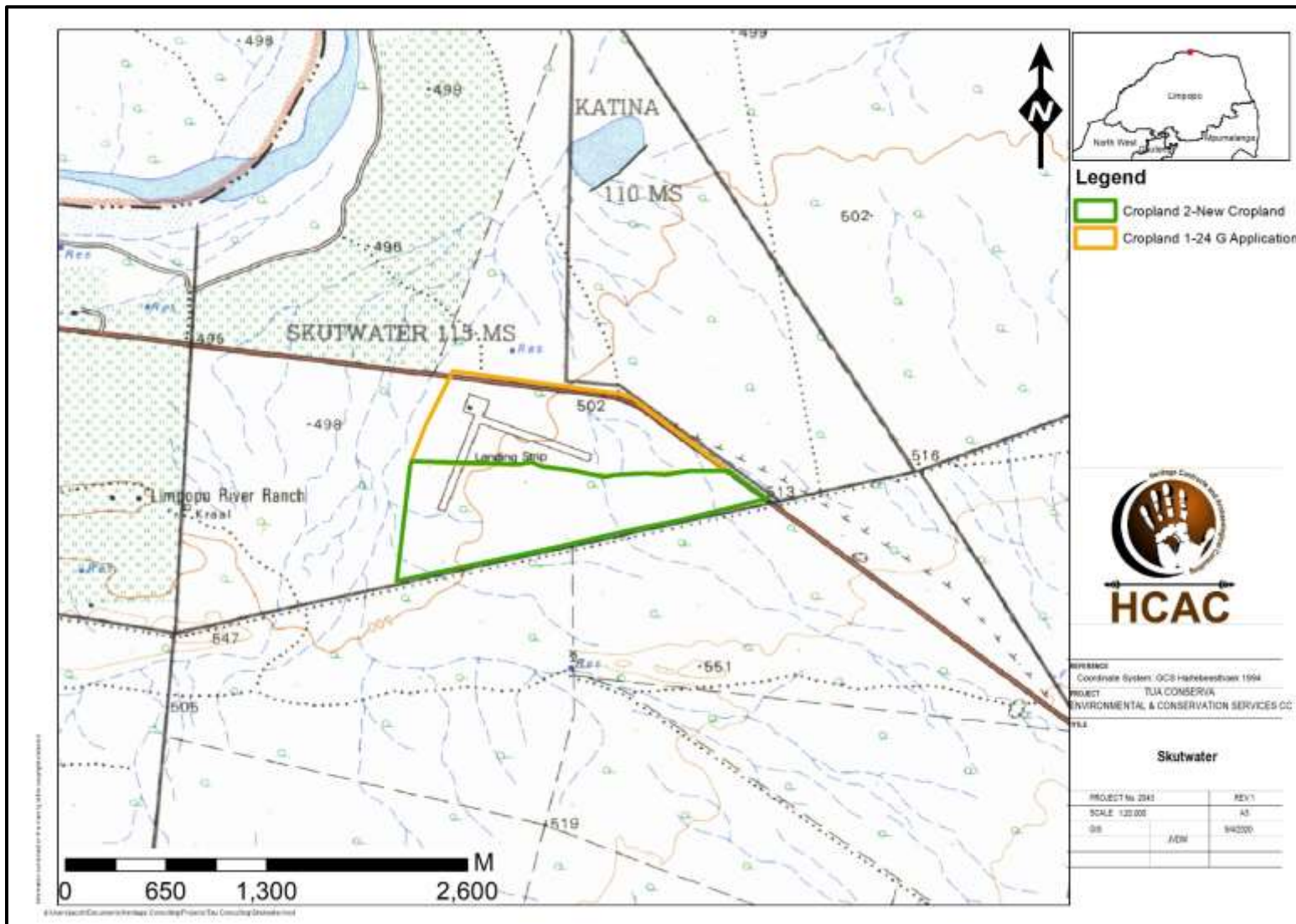


Figure 1-2: Regional locality map (1:50 000 topographical map).

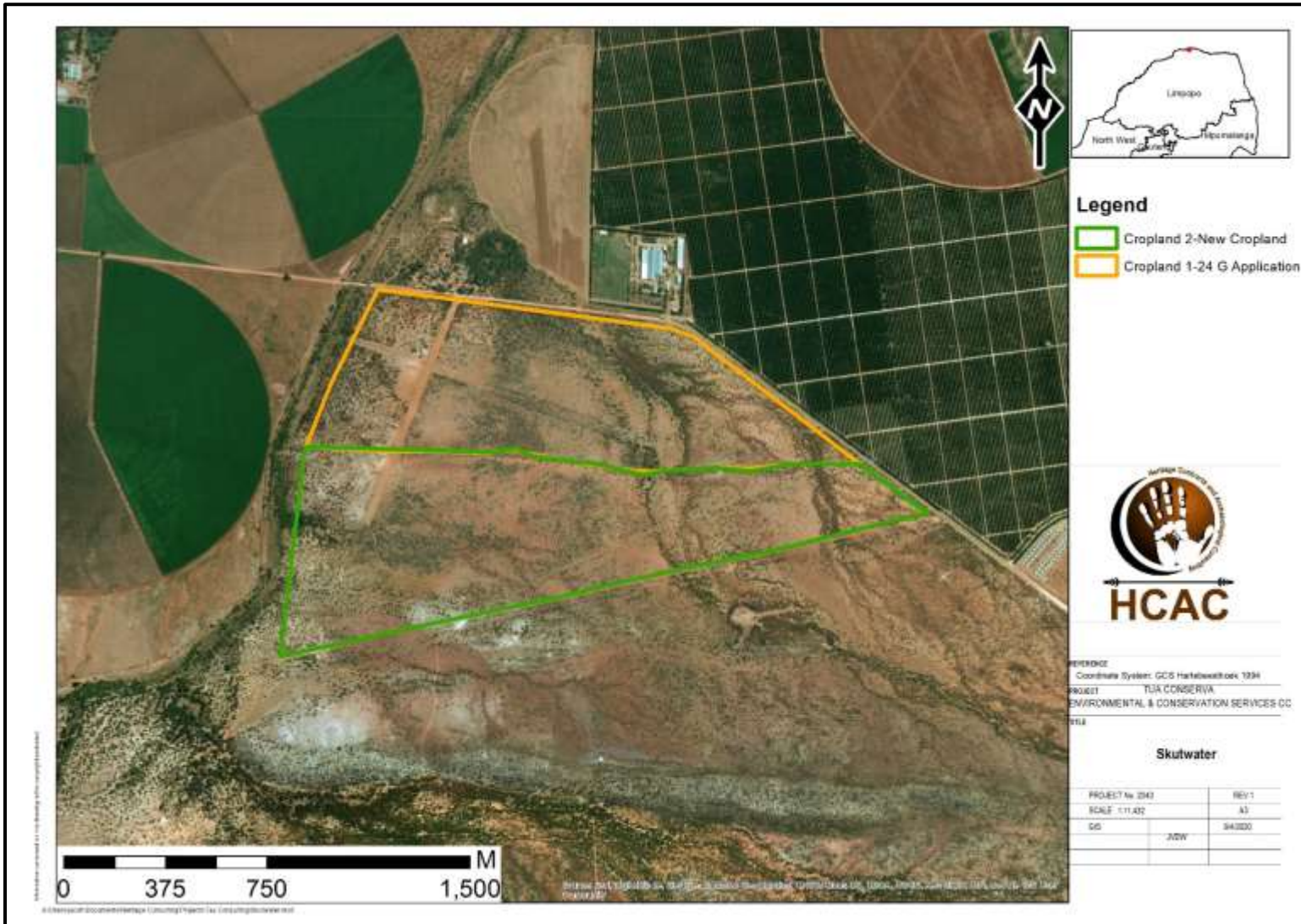


Figure 1-3. Satellite image of the proposed impact area.

## 2 Legislative Requirements

The HIA, as a specialist sub-section of the EIA, is required under the following legislation:

- National Heritage Resources Act (NHRA), Act No. 25 of 1999)
- National Environmental Management Act (NEMA), Act No. 107 of 1998 - Section 23(2)(b)
- 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 professional evaluation of Phase 1 AIA reports upon which review comments will be issued. 'Best practice' requires Phase 1 AIA 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 AIA 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 AIA'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 BAR 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 during key stakeholder and public meetings. The process involved:

- Placement of advertisements and site notices
- Stakeholder notification (through the dissemination of information and meeting invitations);
- Stakeholder meetings undertaken with I&APs;
- Authority Consultation
- The compilation of a Report.

Please refer to section 6 for more detail.

### 3.4 Site Investigation

Conduct a field study to: a) systematically 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**

	<b>Site Investigation</b>
Date	6 and 7 July 2020
Season	Winter – vegetation in the study area is low and archaeological visibility is high in most of the study area. The impact area was sufficiently covered (Figure 4) to understand the heritage character of the study area

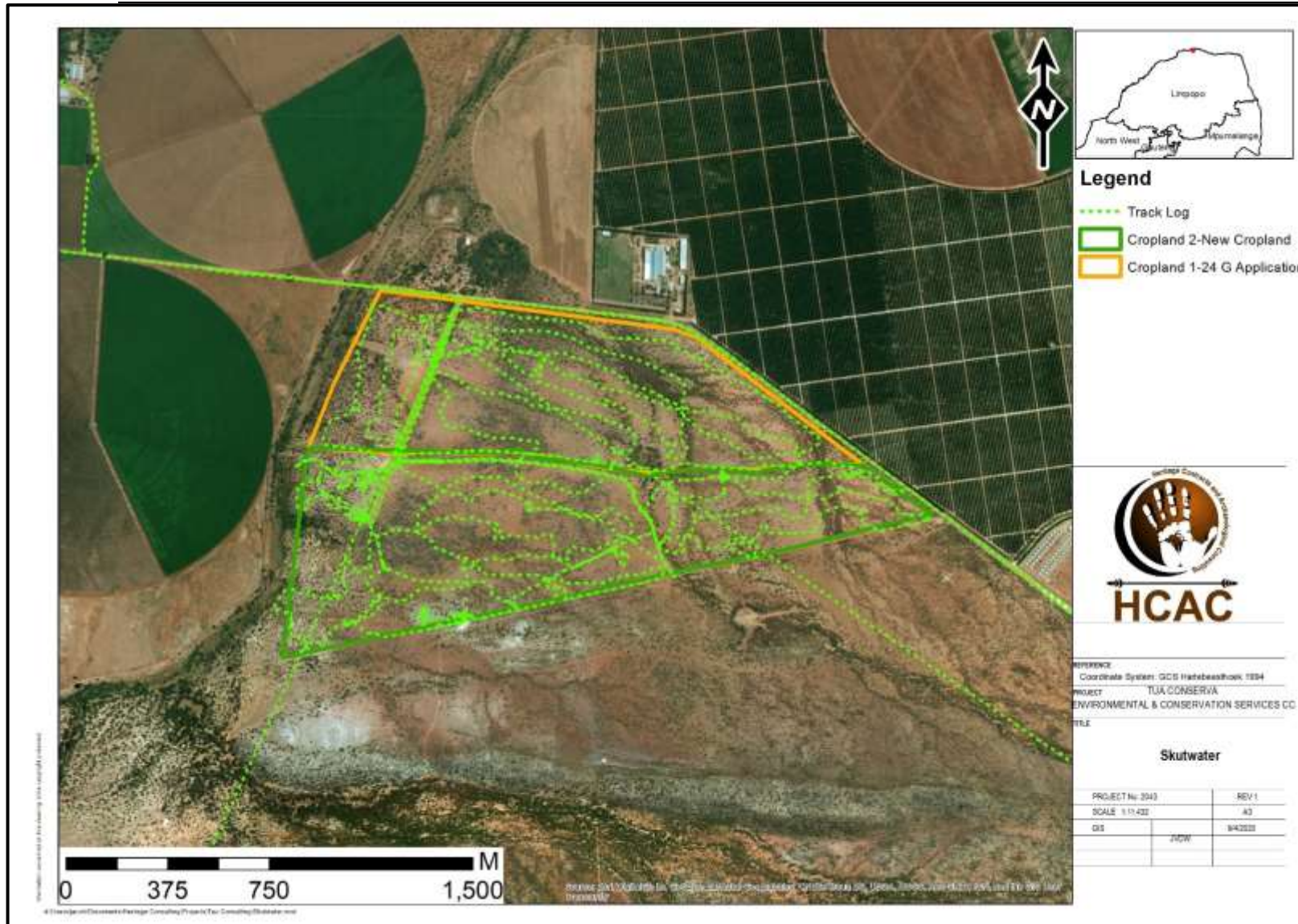


Figure 3-1: Track log of the survey in green.

### 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.

<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 during the survey and the possible occurrence of graves and other cultural material cannot be excluded. Similarly, the depth of the deposit of heritage sites cannot be accurately determined due its subsurface nature. It is assumed that the spatial data available to the author for the World Heritage Site and buffer zones are accurate and up to date. This report only deals with the footprint area of the proposed development and consisted of non-intrusive surface surveys. This study did not assess the impact on medicinal plants and intangible heritage as it is assumed that these components would have been highlighted through the public consultation process if relevant. It is possible that new information could come to light in future, which might change the results of this Impact Assessment.

## 4 Description of Socio Economic Environmental

According to StatsSA the Musina Municipality is a multi-racial municipality, due to the influence of the mining industry and the Beit bridge border gate. Only 50% of the population in the municipality speaks Tshivenda as their first language, followed by 8,8% who speak Sesotho, which is unusual in this area. The population in the municipality is dominated by people of aged 15–36. There are over 20 042 household in Musina Municipality with an average of 3,1 persons per household. The majority of households live in a house or brick/concrete block structures at 78%, followed by those who lives in traditional dwelling at 15,4 %. The majority of households in the district have access to piped water at 93%.

**5 Description of the Physical Environment:**

The project is located approximately 61 kilometres west of Musina, district of Vhembe in the Limpopo Province. The physical environment includes one unnamed terrestrial drainage line. The study area is located within the Limpopo Valley and the terrain is relatively flat without major topographic features within the impact areas (Figure 5-1 and 5-2).

The prevailing vegetation type and landscape features of the larger area form part of the Musina Mupane Bushveld. It is described as undulating plains to very irregular plains with some hills. In the western section, open woodland to moderately closed shrubveld is dominated by *Colophospermum mopane* on clayey bottomlands and *Combretum apiculatum* on hills. In the eastern section on basalt, moderately closed to open shrubveld it is dominated by *Colophospermum mopane* and *Terminalia prunoides*. On areas with deep sandy soils, moderately open savannah is dominated by *Colophospermum mopane*, *T. sericea*, *Grewia flava* and *Combretum apiculatum*. The field layer is well developed (especially on the basalt), open during the dry season; the herbaceous layer is poorly developed in areas with dense cover of *Colophospermum mopane* shrubs, for example, north of Alldays bordering the Limpopo floodplain (Mucina & Rutherford, 2006).

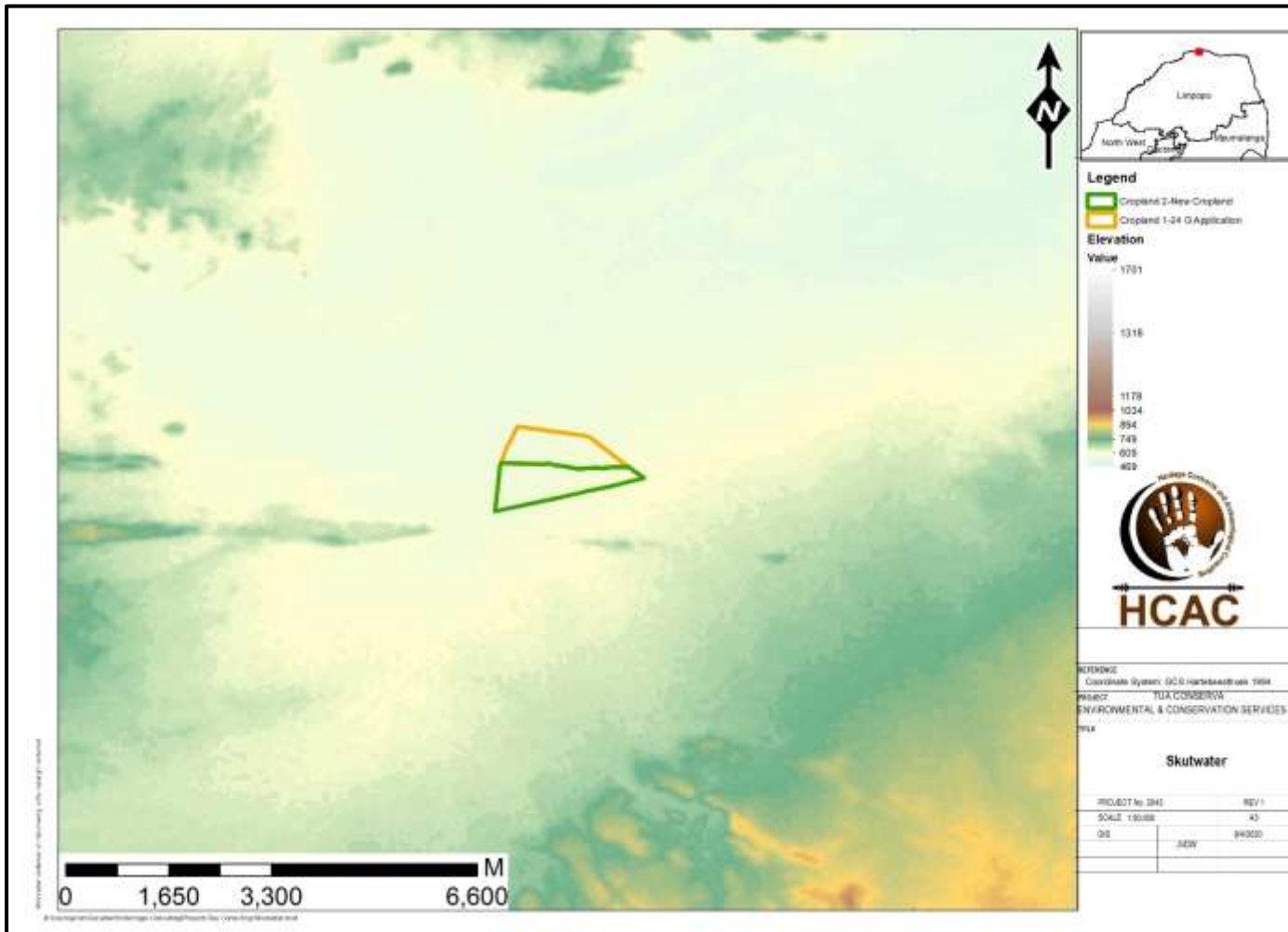


Figure 5-1. Environmental setting of the study area.

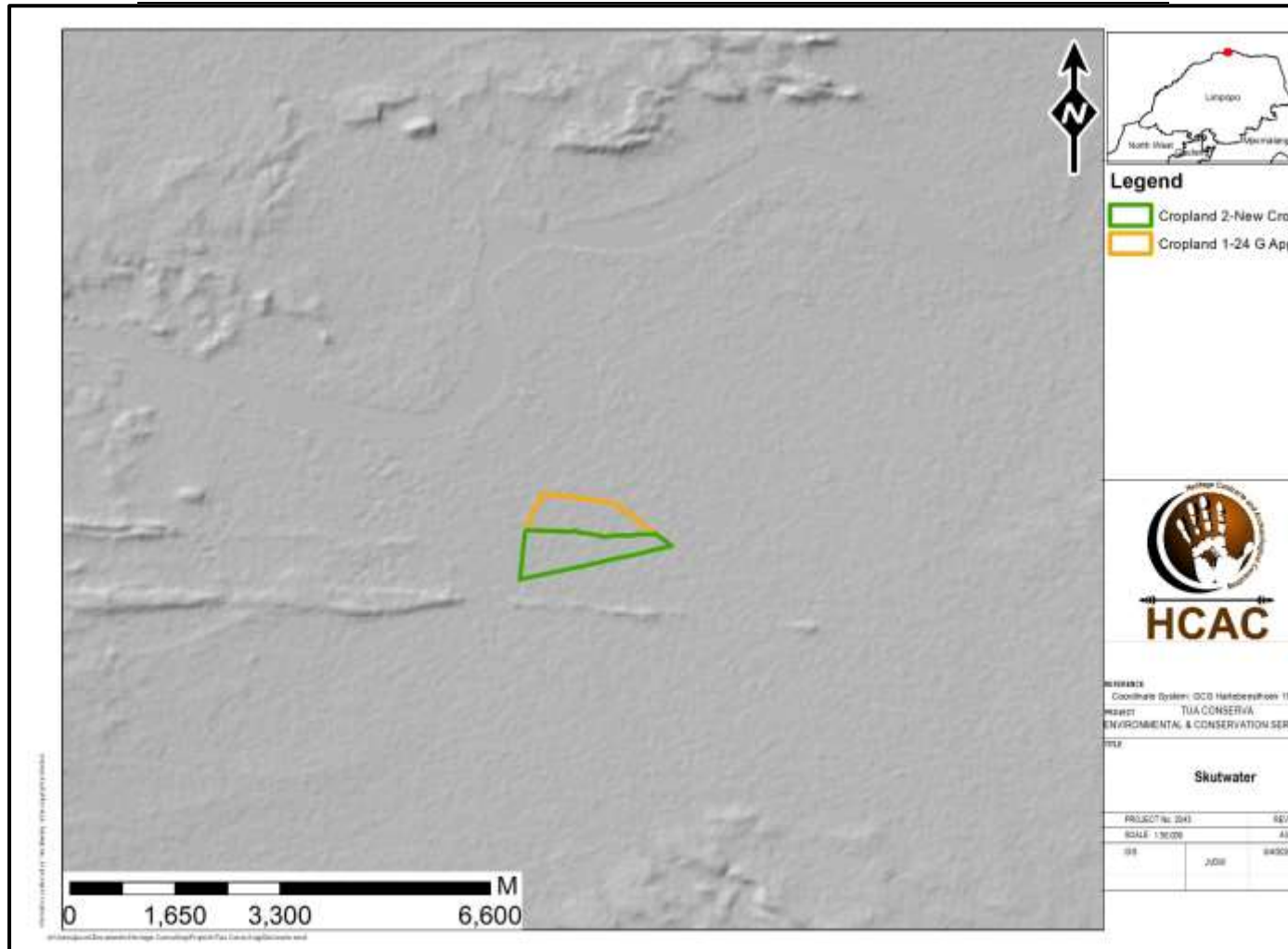


Figure 5-2. Hillshade of the study area and surrounds showing no major topographical features apart from the Limpopo River to the north and a ridge to the south of the study area.

The study area is divided into two areas:

- Cropland 1 (80 hectares) is historically impacted on by various changes to airstrips (indicated on historical maps Figure 7-7 – 7-9) and vegetation clearing (Figure 5-3).
- Cropland 2 (100 hectares) is characterized by Mopani veld and dense vegetation in the south west along a drainage line. The majority of the site is however void of ground cover (Figure 5-4).



Figure 5-3. General site conditions Cropland 1.



Figure 5-4. General site conditions Cropland 2.

## 6 Results of Public Consultation and Stakeholder Engagement:

### 6.1.1 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.



## 7 Literature / Background Study:

### 7.1 Literature Review (SAHRIS)

The study area is located close to the World Heritage Site of Mapungubwe and a vast amount of research is available on the area. Due to tourism and mining developments as well as a strong agricultural sector numerous reports were conducted in the vicinity of the study area and were consulted for this report. Reports included finds ranging from fossils and Stone age sites to important Farming Communities/ Iron Age Settlements as well as burial sites. For the purposes of this report the term Iron Age will be used, in line with the referenced courses. The following studies were consulted for this report:

Author	Year	Project	Findings
Gaigher, S.	2000	Preliminary Archaeological impact assessment of two agricultural fields on the farm Alyth 118MS	Stone Age, Iron Age and burial sites.
Huffman, T.	2003	Archaeological assessment of tourism developments in the Mapungubwe Cultural Landscape.	Stone Age and Iron Age sites
Munyai, R & Roodt, F.	2007	Heritage Impact Assessment – an archaeological investigation of a proposed irrigation dam at farm Overlakte 125 MS, Musina Municipality, Vhembe district,	No sites
Roodt, F.	2009	Heritage Impact Assessment Report Proposed Vele Colliery Weipe Vhembe District Municipality: Limpopo	Stone Age, Iron Age, Grave Sites and Historical structures.
Pikarayi, I. Chirikure, S. Manyanga, M Mothulatshipi, S.	2012	Heritage Impact Assessment Report and Management Plan Relating to the Establishment of the Vele Colliery near Mapungubwe World Heritage Site, Musina, Limpopo Province: South Africa	36 Sites ranging from Stone Age artefacts to significant Iron Age and Burial sites.
Steggman, L. & Roodt, F.	2018	Phase 1 Heritage Resources Scoping Report Proposed Expansion of the Existing Dam on Rem Portion of the Farm Overlakte 125 MS, Musina Local Municipality, Vhembe District, Limpopo Province	Iron Age grain bin and ceramic site. The study also indicated that for the paleontological component there is a very high likelihood of the occurrence of fossils, typically palaeoflora of <i>Glossopteris</i> , <i>Dadoxylon</i> and <i>Vertebraria</i> within the lower Karoo strata

The farm Skutwater was also the subject of an MA dissertation in 1987 (Van Ewyk 1987) and the study included extensive research on the Iron Age Settlement sites on the farm. The study concluded that the Skutwater settlements date to the first half of the 12<sup>th</sup> century and that the Settlements were characterized by substantial hut features attesting to sedentary occupation of the area. Van Ewyk (1987) also stated that Skutwater was linked economically, socially and politically to the Greefswald phase of the Mapungubwe occupation.

### 7.1.1 Genealogical Society and Google Earth Monuments

No known grave sites are indicated in the study area.

## 7.2 General History of the area

### 7.2.1 Archaeology of the area

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

#### 7.2.1.1 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 (LSA), the Middle Stone Age (MSA) and the Earlier Stone Age (ESA). Each of these phases contain sub-phases or industrial complexes, and within these we can expect regional variation regarding characteristics and time ranges. The three main phases can be divided as follows;

- \* 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 humans. 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.

The larger geographical area was inhabited since the ESA and was subjected to intensive research (Kuman *et al* 2000). In terms of the MSA evidence of bipolar flaking that is associated with the MSA Pietersburg Industry (Mason 1962) occurs at the earlier Limpopo site, Kudu Koppie (Sumner 2013). During the LSA, people started to occupy sites on a recurring basis often in rock shelters and caves and often left panels of rock art in these shelters a rock art survey on both sides of the Limpopo Sashi confluence area identified close to 150 rock art sites (Eastwood and Cnoops 1999).

#### 7.2.1.2 The Iron Age

The Iron Age as a whole represents the spread of Bantu speaking people and includes both the pre-Historic and Historic periods. 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. The Iron Age is 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.

Phases within each period are marked by different ceramic *facies* (Figure 7-1). A short summary of occupation in the Limpopo valley will now be discussed.

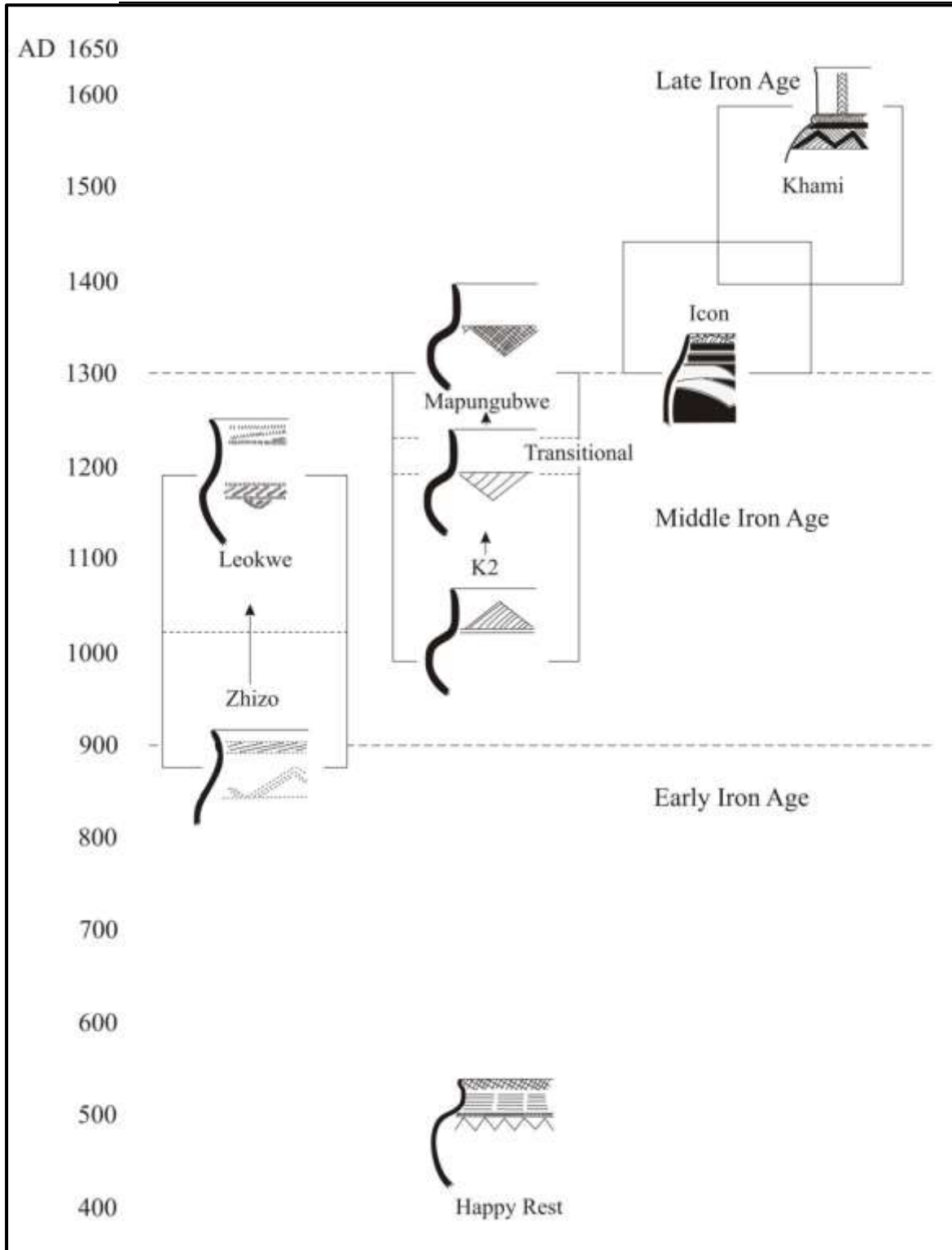


Figure 7-1: Iron Age ceramic facies for the Mapungubwe region (Adapted from Huffman 2009b).

### Early Iron Age

Between AD 500 and 700, agro-pastoralists joined the hunter gatherers in the region. This was marked by ceramics belonging to the *Happy Rest* and *Mzonjani* facies (Figure 7-2). These societies were patrilineal (cf. Hammond-Tooke 1993) and spoke an Eastern Bantu language (Huffman & Herbert 1994/1995).

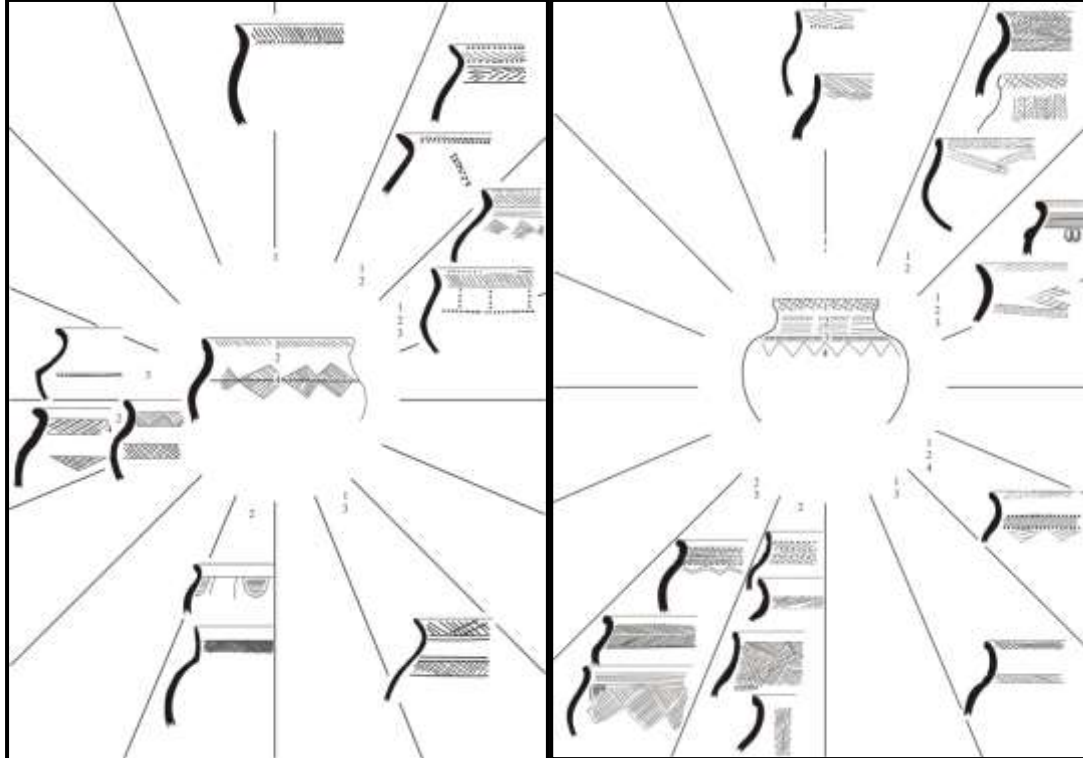


Figure 7-2: Definition of *Mzonjani* ceramics on the left and *Happy Rest* ceramics on the right (Adapted from Huffman 2007a).

After this initial intrusion, agro-pastoralists seem to have abandoned the area until AD 900 because of adverse climatic conditions (Huffman 1996a). From AD 900 to 1000, *Zhizo* pottery (Figure 7-3) marks the second phase of occupation. *Zhizo* ceramics belong to the Nkope Branch of the Urewe Tradition (or Central Stream) (Figure 7-4). Initially it was thought that *Zhizo* people moved into the area to practise agriculture (Huffman 1996a). However, isotopic analysis shows that the climate was no better than today (Smith 2005). *Zhizo* farmers would therefore have found farming difficult, and some other factors must have lured them to the area. Presumably, they moved in to the valley to take advantage of the East Coast trade (Huffman 2000; Smith 2005), where the Limpopo River acted as a route into the interior. The location of settlements (most are located well away from the rich agricultural soils around the floodplain because elephants would have destroyed the crops) as well as ivory chippings and exotic goods at Schroda (Hanisch 1980) suggest that trade was the main attraction. Ivory, like gold, was a lucrative export commodity, and historical accounts record large amounts of ivory reaching Sofala from the interior (Kusimba 1999). In addition, the wide distribution of *Zhizo*-period glass beads (Wood 2005) suggests that *Zhizo* people traded them for grain with more successful farmers outside the valley.



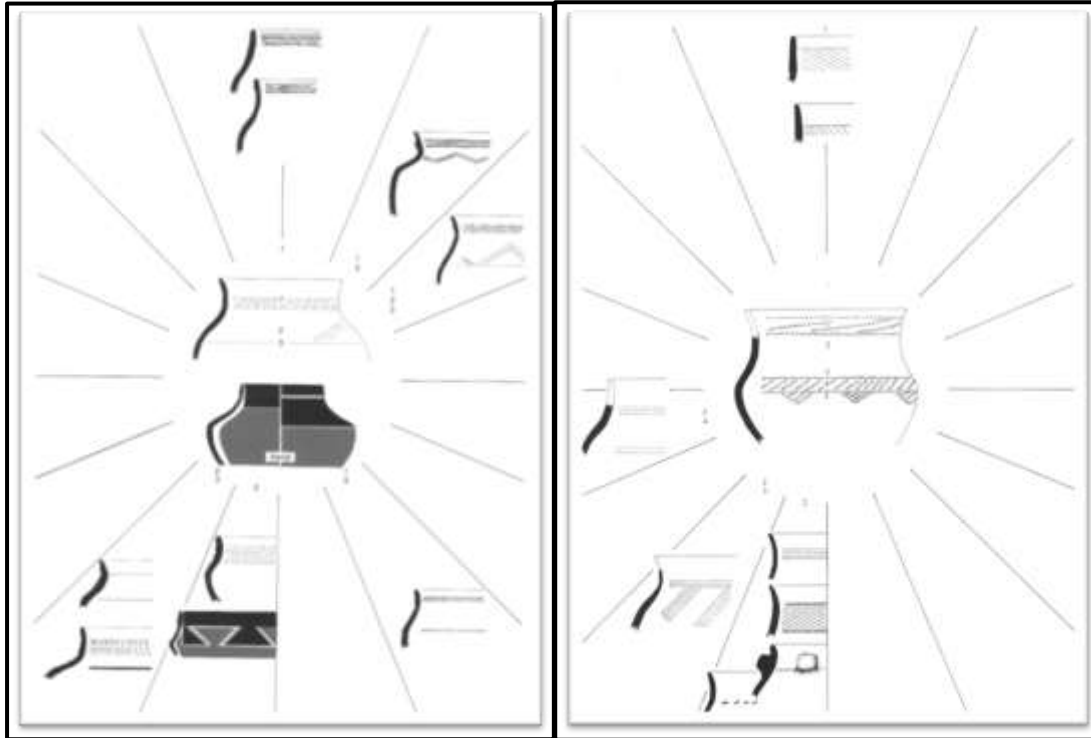


Figure 7-3: Definition of *Zhizo* ceramics on the left and *Leokwe* ceramics on the right (Adapted from Huffman 2007a).

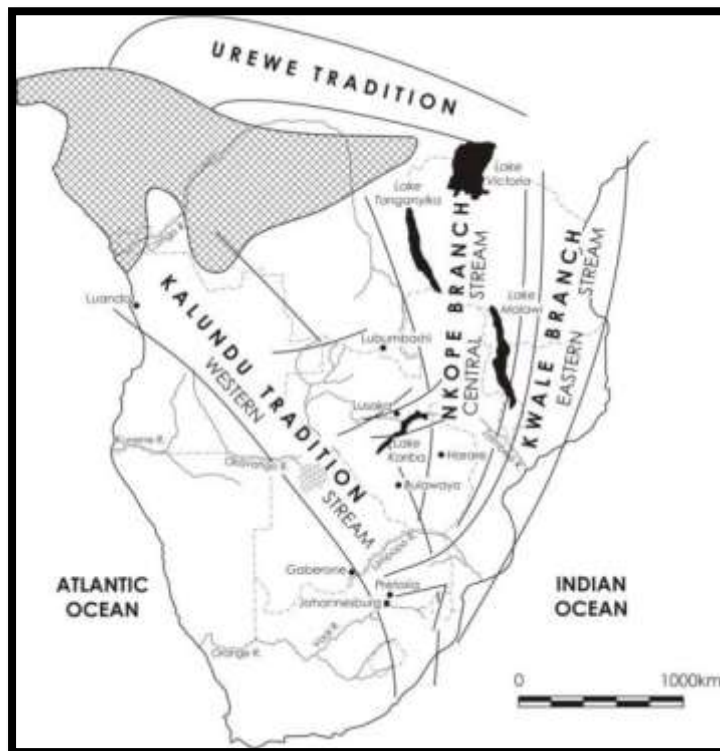


Figure 7-4: Map of southern Africa indicating migration routes of different Iron Age Traditions (Adapted from Huffman 2007a).

### **Middle Iron Age**

After approximately 100 years, around AD 1010, the Zhizo political control over the area and coastal trade was terminated by the arrival of new agro-pastoralists that archaeologists refer to as Leopard's Kopje. Leopard's Kopje ceramics are derived from the *Doornkop* facies (formerly Lydenburg) to the south (Huffman 2007a), an Early Iron Age phase of the Kalundu Tradition (Figure 7-4).

After replacing the Zhizo chiefdom, Leopard's Kopje people established their capital at K2, located at the base of Bambandyanalo Hill (Fouché 1937; Gardner 1963). K2 was occupied between AD 1000 and 1220 (Vogel 2000). This period was marked by higher rainfall (Smith 2005), resulting in an emphasis on floodplain agriculture (Huffman 2000; Smith 2005) allowing for population growth.

Changes in world view are marked by a shift away from the Central Cattle Pattern (CCP) to the elite Zimbabwe Pattern (ZP). The new ideology of sacred leadership was materialised when Leopard's Kopje people abandoned K2 for Mapungubwe, less than a kilometre away.

During this period (AD 1200 to 1250) of transition the ceramic style also changed (Figure 7-5). This transitional ceramic *facies* are now termed *Transitional K2*, or *TK2*.

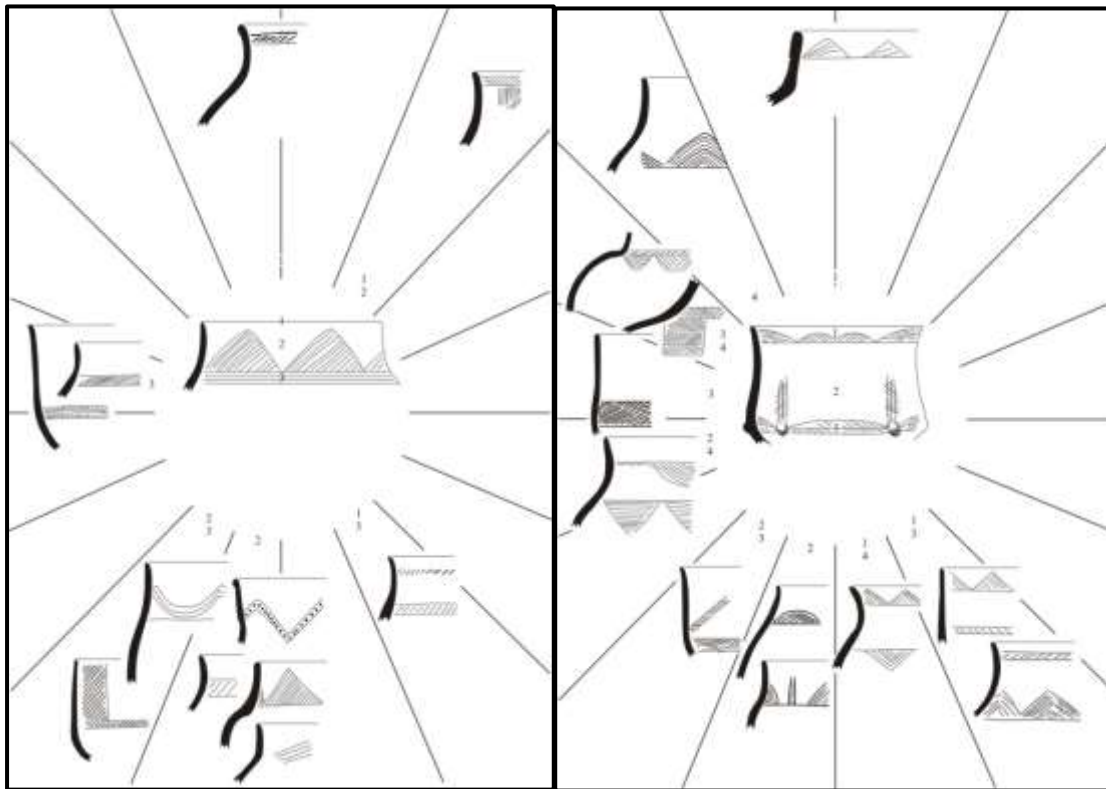


Figure 7-5: Definition of *K2* ceramics on the left and *TK2* ceramics on the right (Adapted from Huffman 2007a) Transitional occupation was equally divided between floodplain and escarpment where there is a clear distinction between cattle and agriculturally orientated settlements. By about AD 1250, the *TK2* *facies* changed into classic Mapungubwe ceramics.

### 7.3 Historical Information

In 1903 the copper deposits in the Musina area were investigated by Colonel John P Grenfell. He also established the Messina (Transvaal) Development Company Limited to exploit the copper deposits. The town of Messina now referred to as Musina was founded in 1904 on the farm Berkenrode, as a result of the exploitation of the copper deposits. It was proclaimed as town in 1957 (Hammerbeck & Schoeman 1976).

#### 7.3.1. Anglo-Boer War

No sites dating to the Anglo-Boer War are known close to the study area.

#### 7.3.2. Cultural Landscape

Musina was occupied by pre-historic copper miners, before prospector John Pascoe Grenfell laid out claims in 1904 and the mining town of “Messina” developed from there (Bulpin, 1980). It is still a mining town, but a lot of attention is currently on the cross-border trade with Zimbabwe. Musina is the seat of the local municipality and is also the economic and commercial hub of the region.

The World Heritage site of Mapungubwe is located approximately 8km to the west of the development and the site is located outside of the buffer zone (Figure 7-6). The Mapungubwe Cultural Landscape is comprised of:

- Remains of palaces – (Mapungubwe period);
- Archaeological remains testifying to Mapungubwe’s growth 900-1200 AD (Zhizo, Leopard’s Kopje);
- Remains of early settlement: Stone Age & Iron Age & rock art;
- ‘Natural’ landscape surrounding the built remains;
- Intangible heritage: Mapungubwe Hill associated with sacredness, beliefs, customs and traditions of local communities;
- Living heritage: continuing traditions and associations such as rain making, and participation by local communities in reburial ceremonies;
- Landscape sharing and interaction between farmers and hunter-gatherers.

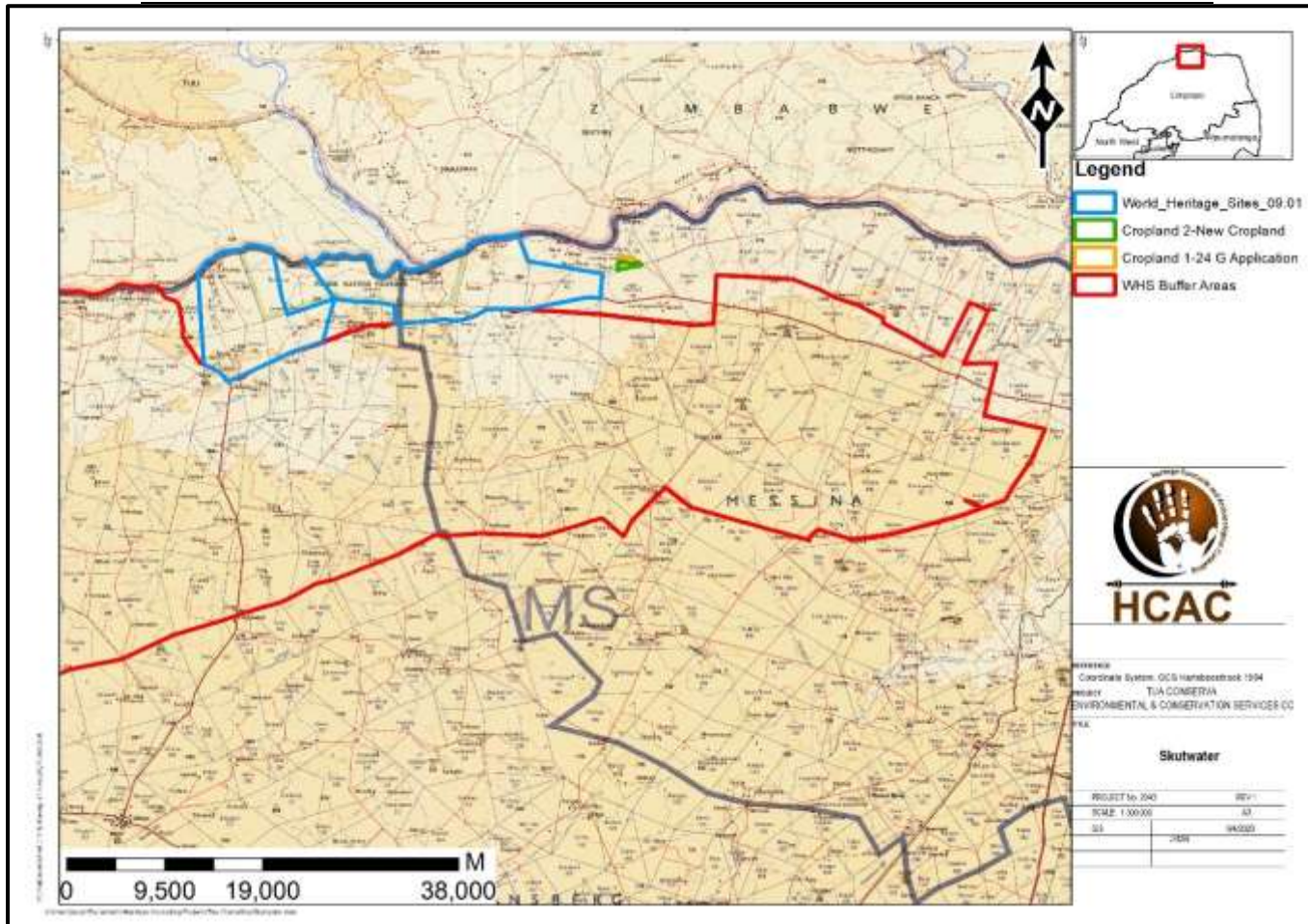


Figure 7-6: Study area in relation to the WHS of Mapungubwe and buffer zone.

The area has been subjected to limited development from prior to 1967 (Figure 7-7) and successive historical topographic maps indicate the changes in the study area and surrounds (Figure 7-8 and Figure 7-9).



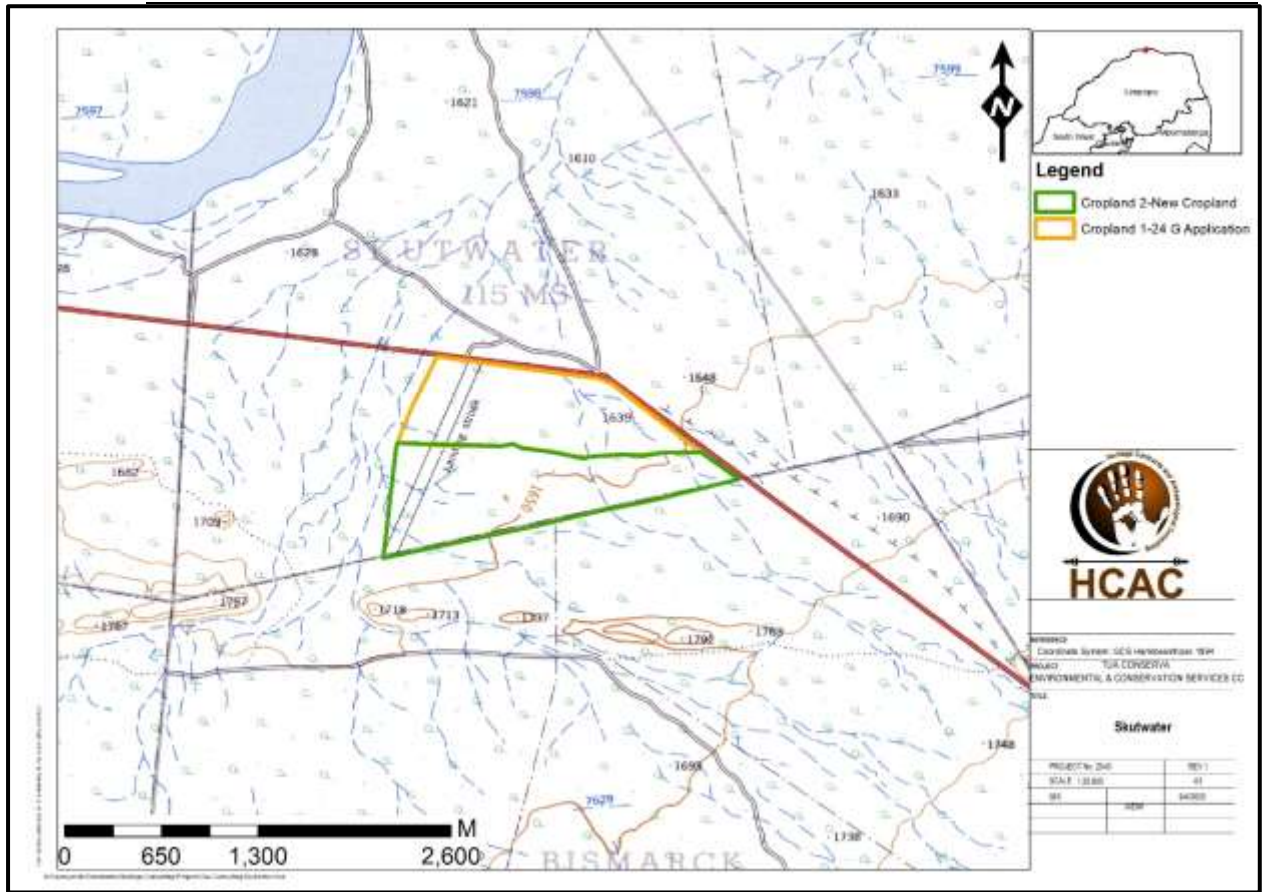


Figure 7-7. 1967 Topographical map of the study area indicating a landing strip in the western portion.

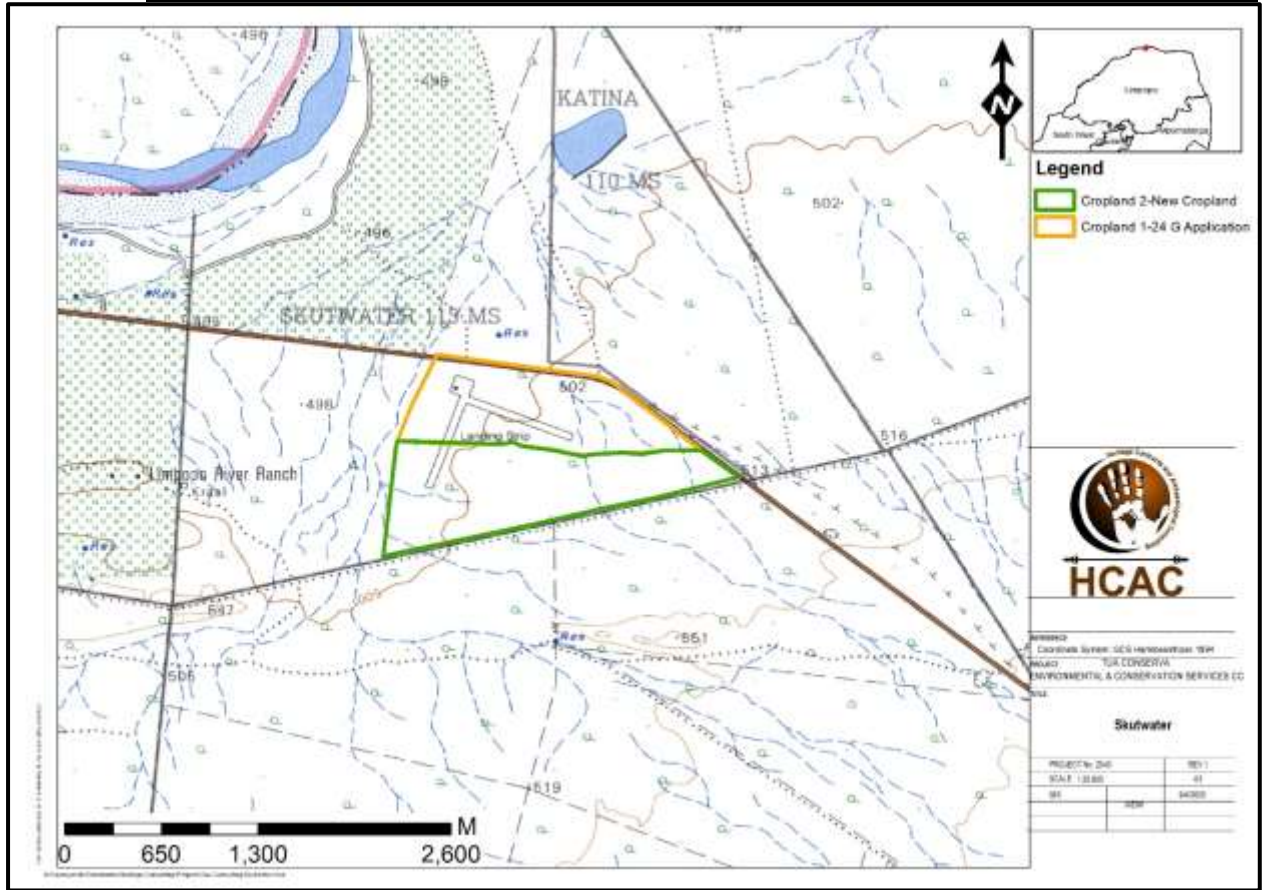


Figure 7-8. 1979 Topographical map of the study area. The landing strip has been extended with an additional strip in Cropland 2.

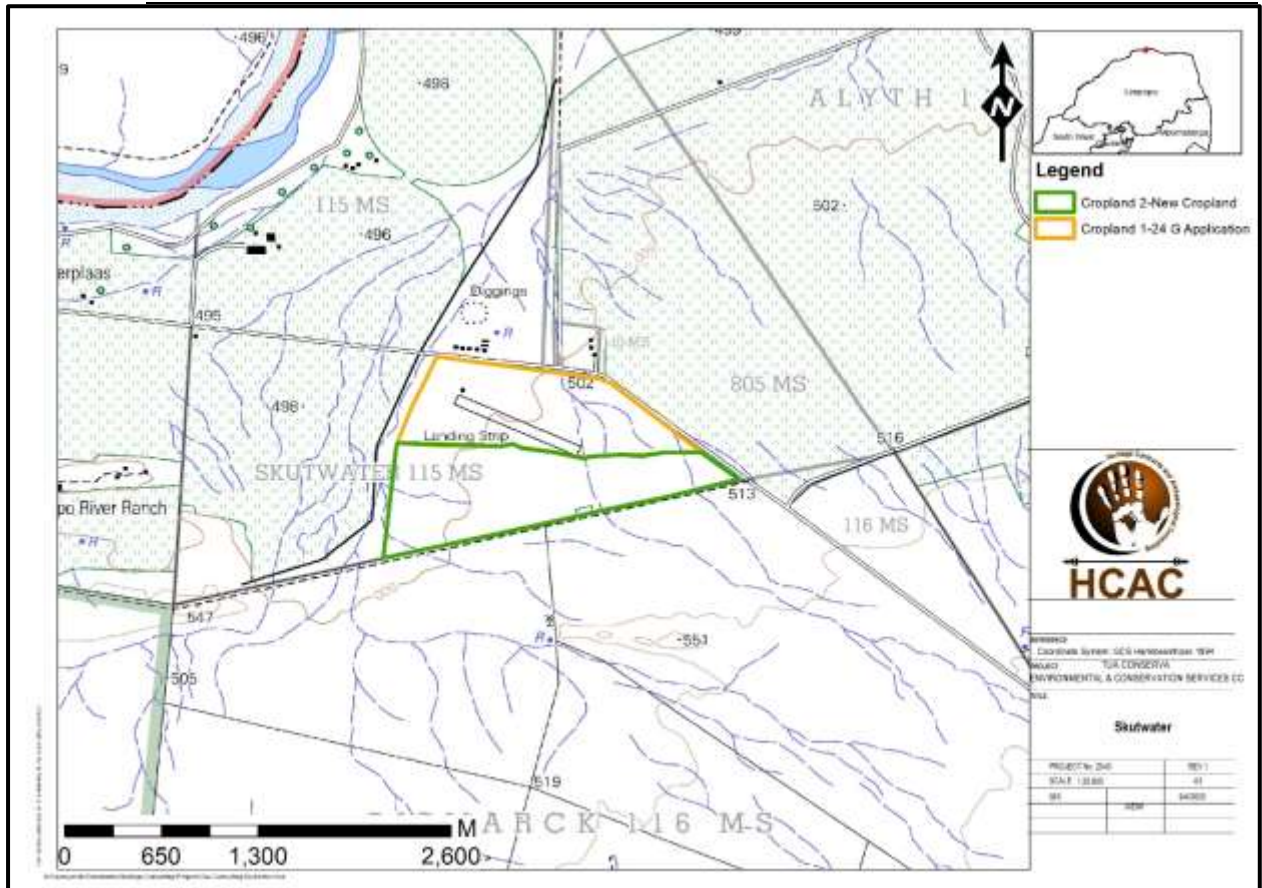


Figure 7-9. 1999 Topographical map of the study area indicating a landing strip in Cropland 2.

## 8 Findings of the Survey

In line with the proposed development the survey and impact assessment are divided into two areas separated by a low dolerite dyke (Figure 8-1) consisting of:

- Crop land 1 (80Ha) that is a Section 24G application and;
- Crop land 2 ( $\pm$ 100Ha) that is a new area.

Surrounding these areas, several Iron Age sites are on record at the University of Johannesburg (Wits) database of which two sites are located within Crop land 2 with numerous others located outside on SAHRIS (Figure 8-2). In addition, several sites (Figure 8-3) were recorded during the current assessment including Iron Age sites, Stone Cairns of unknown purpose and a background scatter of MSA lithics. A specialist on the area Professor Thomas Huffman was consulted and assisted in identifying some of the decorated ceramics. Seven Iron Age features are in Cropland 1 (Table 5) and 10 Iron Age features the two Stone cairns and the MSA lithics in Cropland 2 (Table 6) and is briefly discussed below.





Figure 8-1: Dolerite dyke separating the two study areas. Vegetation from the clearing activities are clearly visible.

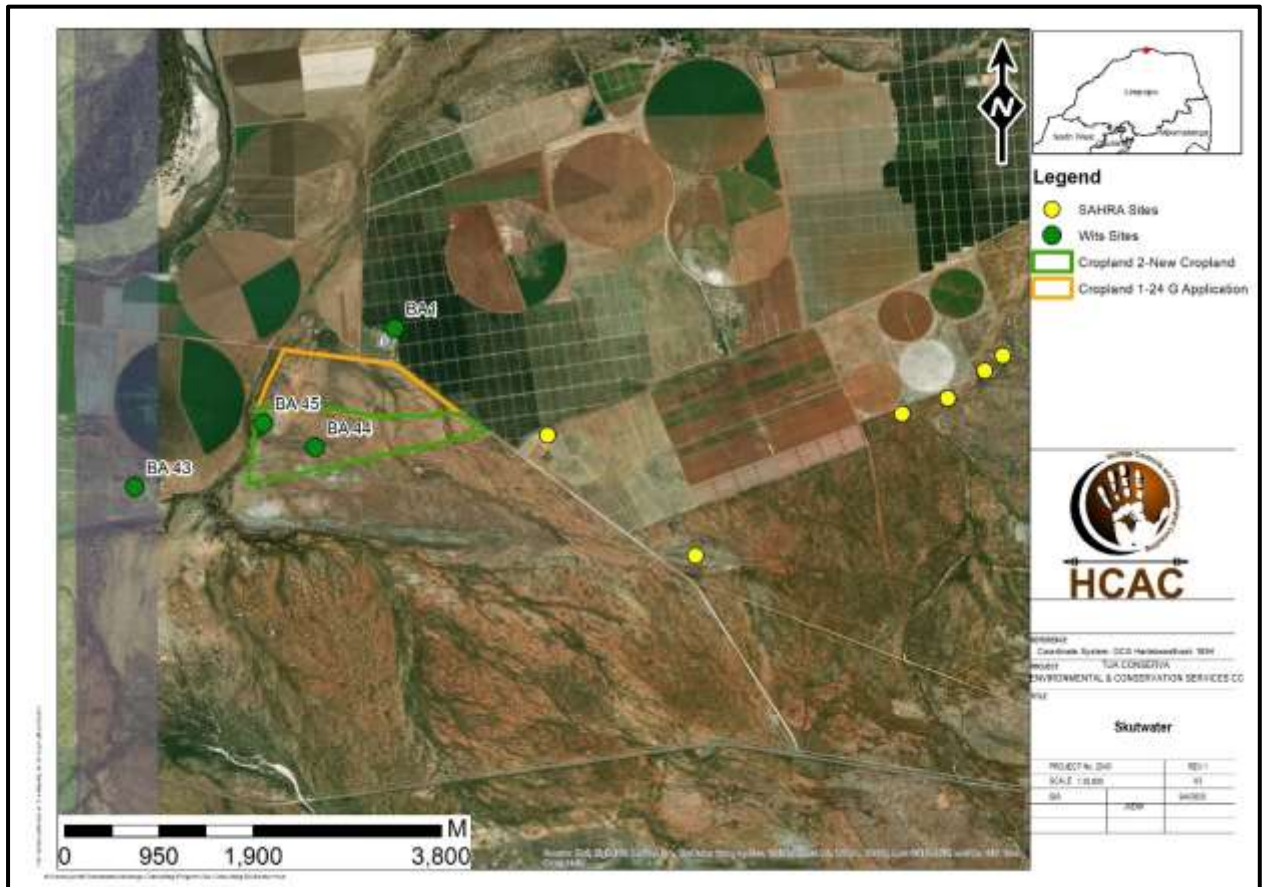


Figure 8-2: Known sites in relation to the study area from the Wits database and SAHRIS.



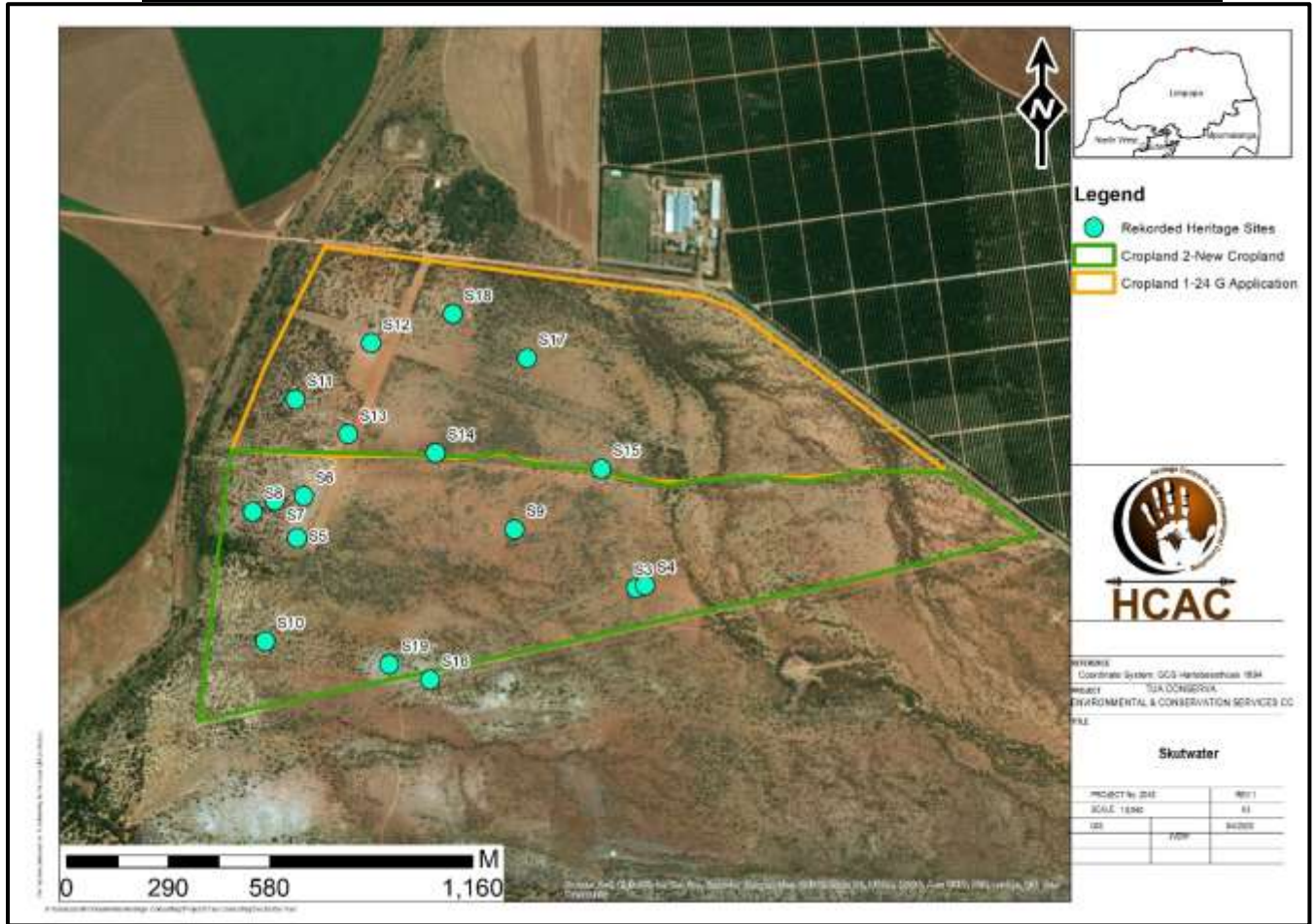


Figure 8-3. Sites recorded during the survey.

## 8.1 Crop land 1

Cropland 1 has been impacted on by previous airstrips dating from prior to 1967 (Figure 7-7) and by an airstrip that is currently in use (Figure 8-4). However unlawful activities relating to the removal of vegetation occurred in the remaining areas (Figure 8-5).



Figure 8-4. Existing airstrip.



Figure 8-5. Crop land 1 cleared of vegetation.

Table 5. Sites identified in Cropland 1.

LABEL	LONGITUDE	LATITUDE	Significance	Impact Area	Type Site	ELEVATION
S11	29° 32' 31.0417" E	22° 11' 30.2459" S	Low	Section 24 G	Iron Age	500,6521
S12	29° 32' 38.0797" E	22° 11' 25.0368" S	Low	Section 24 G	Iron Age	499,119873
S13	29° 32' 35.9376" E	22° 11' 33.4716" S	Low	Section 24 G	Iron Age	500,277435
S14	29° 32' 44.0519" E	22° 11' 35.1925" S	Low	Section 24 G	Iron Age	500,807343
S15	29° 32' 59.3735" E	22° 11' 36.6864" S	Low	Section 24 G	Iron Age	504,080353
S17	29° 32' 52.4997" E	22° 11' 26.4270" S	High	Section 24 G	Iron Age	0
S18	29° 32' 45.6409" E	22° 11' 22.3220" S	Low	Section 24 G	Iron Age	0

### 8.1.1 Site S11- Iron Age

This location is marked by undecorated ceramics located on a slightly elevated area. The site is impacted on by the Section 24 G activities and little is visible on the surface in terms of features (burned hut remains, kraal or midden) other than two rim fragments and the few undecorated ceramics observed here.

Heritage significance – Low. The site is of low significance since little in the form of material culture is visible on the surface. Field Rating GP C



Figure 8-6. Site S11 viewed from the north.



Figure 8-7. Undecorated rim fragments found at site S11.

### 8.1.2 Site S12 – Iron Age

This area is marked by a few undecorated ceramics and slight change in colour in the soil of a cattle kraal or midden. This area has been impacted on by the old runway and cultural material is found spread over an area that is less than 10 meters in diameter.

Heritage Significance – Low. The site is of low significance since it has been impacted on by the previous runways and the small extent of the site and little in the form of material culture is visible on the surface. Field Rating – GP C

### 8.1.3 Site S13 – Iron Age

This area is marked by a few undecorated ceramics and slight change in the colour of the soil of a cattle kraal or midden. This area has been impacted on by the old runway and cultural material is found spread over an area that is less than 10 meters in diameter.

Heritage Significance – Low. The site is of low significance since it has been impacted on by the previous runways and the small extent of the site and little in the form of material culture is visible on the surface. Field Rating – GP C



#### 8.1.4 Site S14 – Iron Age

Small area marked by a few undecorated ceramics and is rather a findspot than a site. No other cultural material or anthropogenic deposit is visible on the surface.

Heritage Significance – Low. This site/findspot is of low significance due to the lack of cultural material and the low likelihood of any cultural deposit.  
Field Rating – GP C

#### 8.1.5 Site S15 – Iron Age

Very few ceramics, with a possible change of colour in the soil. Could be natural rather than anthropogenic.

Heritage Significance – Low This site/findspot is of low significance due to the lack of cultural material and the low likelihood of any cultural deposit.  
Field Rating – GP C

#### 8.1.6 Site S17 – Iron Age

The site is in the deforested area and the site is clearly visible on Google earth marked by white patches from the cattle kraals and middens. Ceramics consist of necked jars and bowls (Decoration found on the ceramics indicate a possible TK2/Mapungubwe occupation) and bone and rubbing stones are scattered over a wide area because of the surface disturbance by the deforestation. Cultural material is found scattered over an area of 60 meters in diameter.

Heritage Significance – High. This site is of high significance, although the site has been impacted on by the illegal activities site extent is visible together with areas clearly being kraals and midden and archaeological deposit. This site is also the only one left in this area that can provide data from the other sites that has been destroyed.  
Field Rating – GP A



Figure 8-8. Necked jars and bowls with decorated ceramics from S17.



Figure 8-9. General site conditions at S17.

#### 8.1.7 Site S18 – Iron Age

This location is marked by undecorated ceramics located on a slightly elevated area. The site is impacted on by the Section 24 G activities and little is visible on the surface in terms of features (burned hut remains, kraal or midden) other than two rim fragments and the few undecorated ceramics observed here.

Heritage Significance – Low. The site is of low significance since little in the form of material culture is visible on the surface. Field Rating GP C

## 8.2 Cropland 2

In the south western corner of Cropland 2 is a dam with a few drainage lines that is highly overgrown (Figure 8-10 & 8-11) limiting archaeological visibility. Quartzite gravel is scattered over the south eastern portion of the area and a background scatter (Orton 2006) of mainly MSA lithics is identified (S22° 11.687' E29° 33.144' & S22° 11.751' E29° 33.404'). Artefacts have faceted platforms characteristic of the MSA with prepared cores and Levallois points.



Figure 8-10. Overgrown area in Cropland 2.



Figure 8-11. Dam area in Cropland 2.



Figure 8-12. Prepared core.



Figure 8-13. MSA flake with faceted platform.



Figure 8-14: Dorsal and ventral views of lithics.



Figure 8-15: Open area with low density background scatter.

Table 6. Sites identified in Cropland 2.

LABEL	LONGITUDE	LATITUDE	Significance	Impact Area	Type Site	ELEVATION
S1	29° 33' 14.5548" E	22° 11' 38.1409" S	Medium	Cropland 2	Iron Age	502,156067
S2	29° 33' 29.5885" E	22° 11' 38.2776" S	Low	Cropland 2	Iron Age	504,253998
S3	29° 33' 02.6028" E	22° 11' 47.7455" S	Low	Cropland 2	Stone Cairns	506,107117
S4	29° 33' 03.4453" E	22° 11' 47.4972" S	Low	Cropland 2	Stone Cairns	506,06955
S5	29° 32' 31.2071" E	22° 11' 43.0799" S	High	Cropland 2	Iron Age	501,499786
S6	29° 32' 31.8227" E	22° 11' 39.1922" S	High	Cropland 2	Iron Age	501,664459
S7	29° 32' 29.1193" E	22° 11' 39.6203" S	High	Cropland 2	Iron Age	498,513855
S8 BA 45	29° 32' 27.0961" E	22° 11' 40.6535" S	Medium	Cropland 2	Iron Age	498,893616
S9	29° 32' 51.3455" E	22° 11' 42.2736" S	Low	Cropland 2	Iron Age	505,75354
S10	29° 32' 28.2659" E	22° 11' 52.6525" S	Medium	Cropland 2	Iron Age	498,463684
S16 / BA44	29° 32' 43.5263" E	22° 11' 56.2168" S	High	Cropland 2	Iron Age	0
S19 / BA 44	29° 32' 39.7617" E	22° 11' 54.7907" S	High	Cropland 2	Iron Age	0



### 8.2.1 Site S1 – Iron Age

This is the location of a small Iron Age site located within Cropland 2 but with a small portion extending into cropland 1 (Figure 8-16). The site is impacted on by a gravel road in cropland 2 and deforestation activities in cropland 1 (Figure 8-18). Low frequencies of ceramics are recorded here and cultural material consists of un-decorated ceramics (Figure 8-19). The ceramics is weathered and some pieces display evidence of burnish. The site is marked by a white patch easily recognisable on Google earth marking the vitrified cattle kraal deposit (Figure 8-17). The vitrified cattle kraal an low frequency of decorated ceramics could possible indicate a Khami occupation.

Heritage Significance – Medium. The site is of medium significance since it is impacted on but do have cultural deposit. Field Rating – GP B



Figure 8-16. General view of S1



Figure 8-17. Vitrified dung at S1.



Figure 8-18. Extend of kraal deposit into cropland 1



Figure 8-19. Undecorated ceramics at S1.

### 8.2.2 Site S2 – Iron Age

This is the location of an ephemeral scatter of ceramics with a few miscellaneous stone tools. The site is impacted on by deforestation activities from cropland 1. Few decorated ceramics were found, the decorated pieces consist of cross hatching motifs with graphite (Figure 8-20 & 8-21) indicative of Khami period sites.

Heritage Significance – Low. The site is of low heritage significance due to the small amount of cultural material and the lack of cultural deposit and features. Field Rating – GP C



Figure 8-20. Artefacts at S2



Figure 8-21. Artefacts at S2

### 8.2.3 Site S3 and S4 – Stone cairns

Both these locations mark small stone cairns approximately 12 meters apart. The cairns are small measuring one metre by 50 centimetres. No other cultural material is found in this area. These cairns of unknown purpose are, although unlikely possible graves, but rather the result of clearing of fields etc.

Heritage Significance – Low

Field Rating – GP C

Unless the cairns are proven to be graves in which case, they are of High Social significance with a GP A Field rating.



Figure 8-22. Stone cairn S4.



Figure 8-23. Stone cairn at S3.

### 8.2.4 Site S5 – Iron Age

This is the location of an intact Iron Age settlement measuring approximately 50 meters in diameter. The site is marked by vitrified dung (Figure 8-24) marking the cattle kraal with an ash midden to the west (Figure 8-25). This site contains deep anthropogenic deposit clearly forming a talus. Ceramics is found scattered over the site with vessels consisting of necked jars and open bowls often with Black burnish (Figure 8-26). Decoration found on the ceramics indicate TK2 period occupation. An MSA core and blade on volcanic material like felsic tuff were recorded (Figure 8-27).





Figure 8-24. Vitrified dung.



Figure 8-25. General view of site.



Figure 8-26. Ceramics from S5



Figure 8-27. MSA lithics from S5.

Heritage Significance – High. This site is intact with cultural deposit and therefore of high significance. Field Rating – GP A

### 8.2.5 Site S6 – Iron Age

Iron Age cattle kraal somewhat smaller than S5 but with Mapungubwe period ceramics (Figure 8-20). The site also burned but based on surface evidence suggest that the site is not as well vitrified as S5.



Figure 8-28. Cattle kraal at S6.



Figure 8-29. General view of site.



Figure 8-30. Ceramics from S6.



Figure 8-31. Dorsal and ventral view of MSA lithics.

Heritage Significance – High. This site is intact with cultural deposit and therefore of high significance.

Field Rating – GP A

### 8.2.6 Site S7 – Iron Age

This is the location of yet another Iron Age settlement forming part of a cluster of sites in this area. Deposit here is either a cattle kraal or a midden. Ceramics is the same as on other sites (TK2 period sites) with decoration motives scratched into the burnish found on the pots. A dirt track goes over the side with trees from the deforestation exercise that has been dumped on the site.

Heritage Significance – High. This site is intact with cultural deposit and therefore of high significance.

Field Rating – GP A



HIA – Skutwater

September 2020



Figure 8-32. General site conditions at S7



Figure 8-33. Artefacts at S7.

### 8.2.7 Site S8 BA 45 – Iron Age

This is the location of yet another Iron Age settlement. The site is small and is severely impacted on by erosion washing away most of the deposit. The remainder of the deposit seems to be cattle kraal/midden with very few ceramics. Trees and soil from the deforestation exercise has been dumped on a portion of the site.

Heritage Significance – Medium. The site is of medium significance since most of the site has eroded away.  
Field Rating – GP B



Figure 8-34. Erosion gully indicated with yellow arrow at S8.



Figure 8-35. Dumped soil and sand on S8.

### 8.2.8 Site S9 – Iron Age

This is the location of two stone packed features. The features are very ephemeral and approximately 2 metres in diameter. It's not possible to determine shape of these features however several undecorated ceramics is found scattered around these features. These packed features are located away from the Iron Age settlements in an open area in the natural topography with good alluvial soil typical of cultivatable fields and could possibly be associated with grain bins. The ceramics found are very thick typical of storage pots.

Heritage Significance – Low. The site is of low significance since it is probably related to small agricultural fields with no cultural deposits.  
Field Rating – GP C

HIA – Skutwater

September 2020



Figure 8-36. ephemeral stone feature.



Figure 8-37. Storage pot fragment.

### 8.2.9 Site S10 – Iron Age

This site is located next to a small stream and consists of the remains of an Iron Age settlement. The site is marked by a small midden/cattle kraal on top of red alluvial soil. Few ceramics are found making it difficult to temporally date the site. Decoration motifs consist of incisions scratched into the burnish possibly dating to the Khami period.

Heritage Significance – Medium Field Rating – GP B



HIA – Skutwater

September 2020



Figure 8-38. Change of soil colour indicating the cattle kraal or midden.



Figure 8-39. General view of the site.



Figure 8-40. Decorated ceramic at site.

### 8.2.10 Site S16 / BA44 – Iron Age

This is the location of a large Iron Age site divided by the property fence. The majority of the site is located on the other side of the fence outside of the study area with material gravitating downslope into crop land 2. The ceramics recorded is mostly undecorated, other cultural material recorded is a possible grain bin foundation. Stone Age material is scattered over the site with two distinct Middle Stone Age blades recorded. The one is made on quartzite with dorsal removal and possibly an end and side scraper. The other artefact is made on hornfels and very patinated.

Heritage Significance – High. The site occurs on the Southern boundary of the development forming part of a cluster of sites in this area and therefore of high significance. Field Rating – GP A



Figure 8-41. Property fence with majority of site on the other side.



Figure 8-42. Possible grain bin foundation.



Figure 8-43. Ceramic fragments on site.



Figure 8-44. General view of site with the main area indicated with a yellow arrow located outside of the study area.

### 8.2.11 Site S19 / BA 44 – Iron Age

This is the location of a large Iron Age settlement also with a possible grain bin foundation. No evidence is seen of vitrified dung although the site is marked by a large talus. Ceramics is very fragmented with a few decorated potsherds found. On the middle of the site on the highest portion several indents are noted typical of previous excavations. Unknown if this site was ever excavated.

Heritage Significance – High. This site is intact with cultural deposit and therefore of high significance.  
Field Rating – GP A



HIA – Skutwater

September 2020



Figure 8-45. Possible grain bin foundation.



Figure 8-46. Decorated fragments at S19.



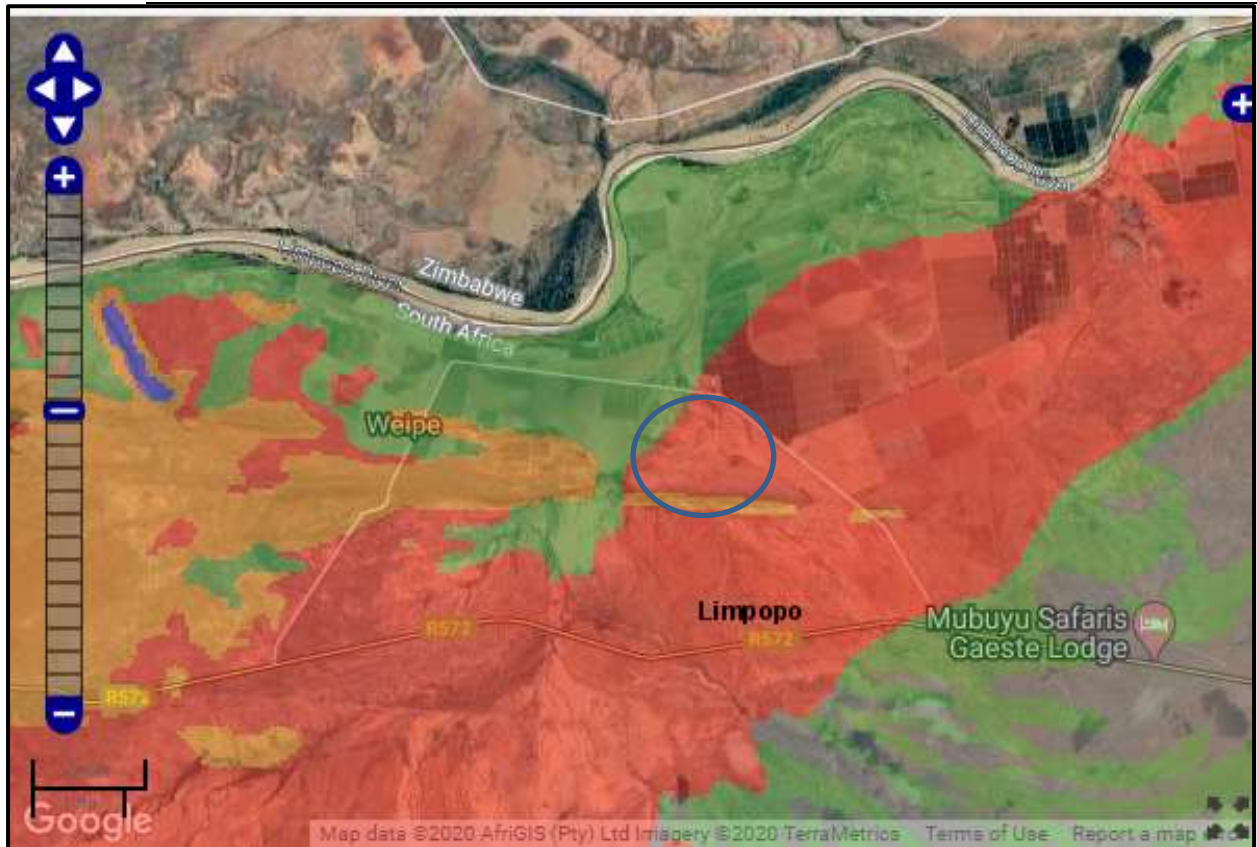
Figure 8-47. Indents typical of old excavations.



Figure 8-48. General view of site S19.

### 8.3 Palaeontology

Based on the SAHRA Paleontological Sensitivity map the area is of moderate to high significance. An independent Palaeontological study was facilitated by Tua Conserva Environmental & Conservation Services CC. Durand (2020) found no fossils at the study site during the site visit. The geology of the study area is covered to a great extent by a thick layer of sandy soil and only limited outcrops of rock are exposed in gullies. The study concluded that the project area is underlain by the Red Rocks Member of the Clarens Formation. There is a possibility that ex situ dinosaur fossils may be found in the soil covering the bedrock in the study site during development. It is imperative that a palaeontologist be consulted if fossils are exposed during the development process. The ECO should take responsibility for supervising the development and should follow the Chance Find Procedure if a significant fossil discovery is made.



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 8-49. Paleontological sensitivity of the study area as indicated on the SAHRA Palaeontological sensitivity map.

#### 8.4 Cultural Landscape

The layered cultural landscape of the Mapungubwe area has many facets and projects such as this one highlights the multiple components that form part of human history in the area. The site attests to occupation from the Stone Age through to Farming community settlement and the surrounding land use to a continuation of agricultural and associated activities in modern times. Through synergy and balancing the valuable contribution of our understanding of the heritage of the area as well as the scientific contribution of the study of recorded heritage sites and the important role that modern-day agricultural activities play in

food security, projects such as these enhance the cultural landscape. The long-term impact on the cultural landscape can be mitigated to an acceptable level as the proposed project is in line with the surrounding land use. Visual impacts to scenic routes and sense of place are also considered to be low as the proposed project is in line with the current land use.

## 9 Potential Impact

Although in close proximity to the Mapungubwe World Heritage Site, the proposed project is located outside of the buffer zone of the heritage site (Figure 9.1). Impacts will be permanent and negative and occur during the vegetation clearing and initial cultivation phase only and would be of medium to high significance, but can be mitigated to an acceptable level as outlined in Section 10 of this report. Cumulative impacts occur from the combination of effects of various impacts on heritage resources. The importance of identifying and assessing cumulative impacts is that the whole is greater than the sum of its parts. In the case of the development, impacts can be mitigated to an acceptable level. However, this and other projects in the area have a negative impact on Iron Age sites in the area, but the impact can be mitigated to an acceptable level as the sites will then be documented and recorded.

### 9.1. Impact assessment – World Heritage Site

The proposed project will not impact on any of the heritage attributes of the Mapungubwe WH property. Although the development area contain cultural heritage sites of low to medium significance (Figure 9-1) these sites can be mitigated. Following the Icomos Impact Assessment table the impact of the proposed development on the WH property with the implementation of the mitigation measures as recommended in this report is Slight.

**Table 7.** ICOMOS System for assessing/ evaluating Impact.

VALUE OF HERITAGE ASSET	SCALE & SEVERITY OF CHANGE/IMPACT				
	Neutral	Slight	Moderate/ Large	Large/ Very Large	Very Large
For WH properties Very High – attributes which Convey OUV	SIGNIFICANCE OF EFFECT OR OVERALL IMPACT (EITHER ADVERSE OR BENEFICIAL)				
	Neutral	Slight	Moderate/ Large	Large/ Very Large	Very Large
FOR OTHER HERITAGE ASSETS OR ATTRIBUTES	SIGNIFICANCE OF IMPACT (EITHER ADVERSE OR BENEFICIAL)				
Very High	Neutral	Slight	Moderate/ Large	Large/ Very Large	Very Large
High	Neutral	Slight	Moderate/ Slight	Moderate/ Large	Large/ Very Large
Medium	Neutral	Neutral/Slight	Slight Skutwater Cropland development	Moderate	Moderate/ Large



HIA – Skutwater

September 2020

Low	Neutral	Neutral/ Slight	Neutral/ Slight	Slight	Slight/ Moderate
Negligible	Neutral	Neutral	Neutral/ Slight	Neutral/ Slight	Slight

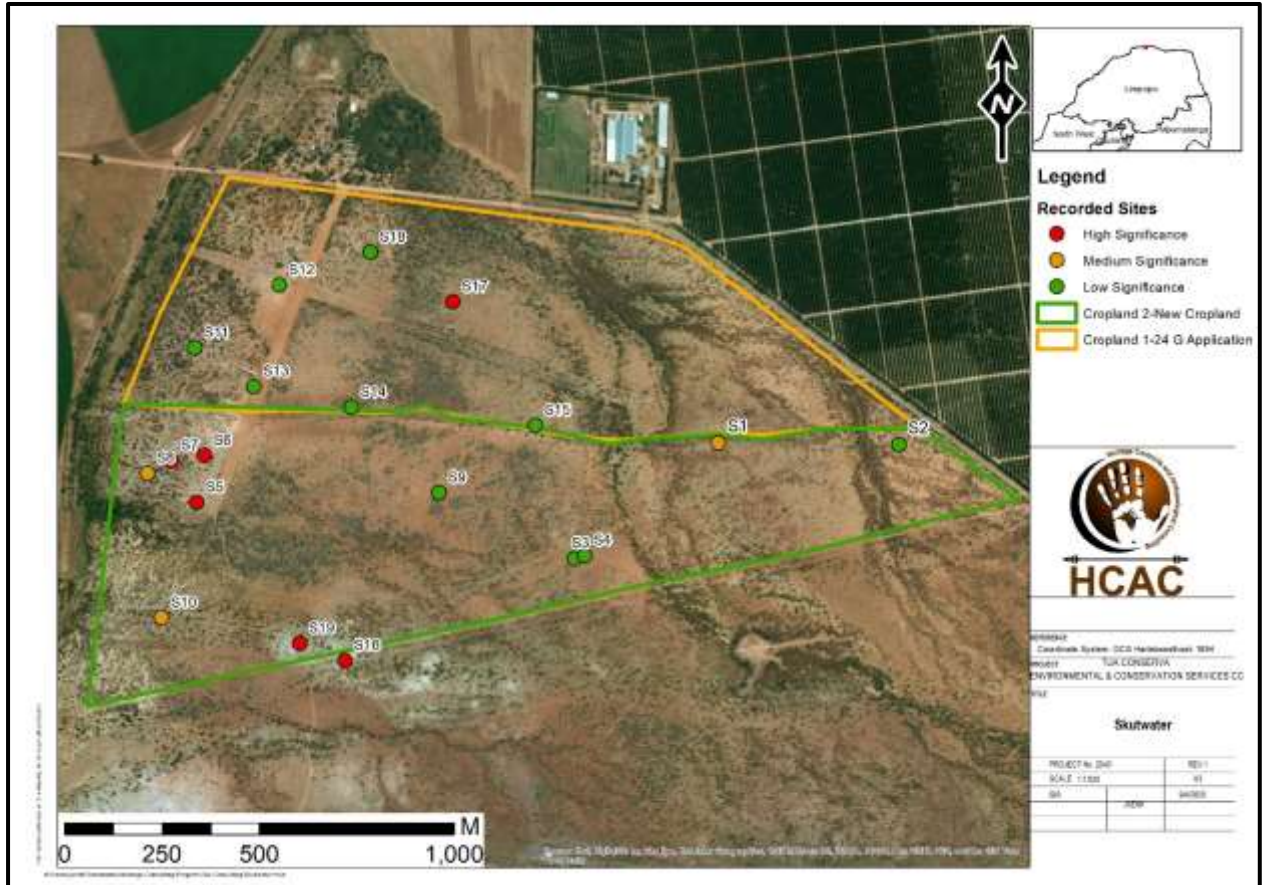


Figure 9-1. Recorded heritage features and significance ratings.



**Table 8. Significance and proposed mitigation of heritage sites**

LABEL	Significance	Mitigation
S1	Medium	Preferably <i>in situ</i> preservation, alternatively phase 2 mitigation of the site.
S2	Low	Monitoring the site during initial ploughing of the croplands
S3	Low	The purpose of the cairns is unknown and, although unlikely, the features might be graves. It is recommended that the features should be retained <i>in situ</i> , if this is not possible test excavations should be conducted to determine whether the features represent graves.
S4	Low	The purpose of the cairns is unknown and, although unlikely, the features might be graves. It is recommended that the features should be retained <i>in situ</i> , if this is not possible test excavations should be conducted to determine whether the features represent graves.
S5	High	Forming part of a cluster of intact sites. These sites should be retained <i>in situ</i> .
S6	High	Forming part of a cluster of intact sites. These sites should be retained <i>in situ</i>
S7	High	Forming part of a cluster of intact sites. These sites should be retained <i>in situ</i>
S8 BA 45	Medium	The site is part of the above-mentioned cluster of sites but has been impacted on. If the site cannot be retained <i>in situ</i> phase 2 mitigation is recommended.
S9	Low	As there are no surface features these features cannot be mitigated. It is most probably a small agricultural field and a destruction permit can be applied for after which the site should be monitored during initial cultivation.
S10	Medium	Site to be retained <i>in situ</i> , if this is not possible phase 2 mitigation.
S11	Low	Monitoring the site during initial ploughing of the croplands
S12	Low	Monitoring the site during initial ploughing of the croplands
S13	Low	Monitoring the site during initial ploughing of the croplands
S14	Low	Monitoring the site during initial ploughing of the croplands
S15	Low	Monitoring the site during initial ploughing of the croplands
S16 / BA44	High	The site occurs on the Southern boundary of the development. These sites are intact and it is recommended that the sites are preserved <i>in situ</i> with adequate buffer zone. This should be determined by an archaeologist and land surveyor on the ground.
S17	High	Site S17 located in the Section 24G application area and impacted on by the unlawful activities should be subjected to Phase 2 Mitigation as a trade off to the sites impacted on in this area (S11 – S15). This site has academic potential
S18	Low	Monitoring the site during initial ploughing of the croplands
S19 / BA 44	High	The site occurs on the Southern boundary of the development. These sites are intact, and it is recommended that the sites are preserved <i>in situ</i> with a adequate buffer zone. The buffer zone should be determined by an archaeologist and land surveyor on the ground.

Table 9. Impact Assessment

<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 (3)	Local (3)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Magnitude</b>	Moderate (6)	Low (4)
<b>Probability</b>	Very Probable (4)	Not probable (2)
<b>Significance</b>	<b>56 (Medium)</b>	<b>24 (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, a chance find procedure should be implemented.	Yes
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>It is recommended that S1, S8 BA 45, S9 and S10 should be retained <i>in situ</i>, if this is not possible the sites should be subjected to Phase 2 Mitigation.</li> <li>Site S17 located in the Section 24G application area and impacted on by the unlawful activities should be subjected to Phase 2 Mitigation as a trade off to the sites (listed below) impacted on in this area. This site has academic potential.</li> <li>Sites S2, S11, S12, S13, S14, S15 and S18 will have to be monitored by an archaeologist during initial cultivation activities.</li> <li>The following sites should be retained <i>in situ</i> with adequate buffers - S5, S6, S7, S16 - BA44 and S19. The buffer zones must be indicated by an archaeologist in the field while determining site extent.</li> <li>A destruction permit can be applied for S9 after which the site should be monitored during initial cultivation.</li> <li>Implementation of a site development plan for the project and.</li> <li>Implementation of a chance find procedure for the project.</li> </ul>		
<b>Cumulative impacts:</b>		
Other authorised projects (e.g., mining and agricultural projects) in the area could have a cumulative impact on the heritage landscape. The added impact of Skutwater project is seen as low as the development will take place partly in areas that have previously been disturbed by landing strips and dam developments and is in line with surrounding land use, therefore minimising additional impacts on the cultural landscape. The impact on physical heritage sites can also be mitigated through preservation or phase 2 mitigation of the sites.		
<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 10. Impact Assessment table – Stone Cairns

<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 as well as graves (if present).		
	<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>	Low (2)	Low (2)
<b>Probability</b>	Probable (3)	Not probable (2)
<b>Significance</b>	<b>24 (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>	No resources were recorded	No resources were recorded.
<b>Can impacts be mitigated?</b>	Yes, a chance find procedure should be implemented.	Yes
<p><b>Mitigation:</b> To mitigate the impact of the proposed project on the recorded heritage resources the following recommendations apply as a condition of authorisation (part of the EMP) and based on approval from SAHRA.</p> <ul style="list-style-type: none"> <li>S3 and S4 - although unlikely, the features might be graves. It is recommended that the features should be retained <i>in situ</i>, if this is not possible test excavations should be conducted to determine whether the features represent graves.</li> </ul>		
<p><b>Residual Impacts:</b> Although surface sites can be avoided or mitigated, there is a chance that completely buried sites would still be impacted but this cannot be quantified.</p>		
<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 as well as graves (if present).		

## 10 Conclusion and recommendations

The study area is divided into two areas:

- Cropland 1 (80 hectares) is historically impacted on by various changes to airstrips (indicated on historical maps Figure 7-7 – 7-9) and vegetation clearing (Figure 5-3).
- Cropland 2 (100 hectares) is characterized by Mopani veld and dense vegetation in the south west along a drainage line. Much of the site is however void of ground cover (Figure 5-4).

It is important to note that the survey was concentrated on the above-mentioned areas and not the entire farm. In terms of the national estate as defined by the NHRA the following key findings apply:

- In terms of the built environment of the area (Section 34 of the NHRA Act 25 of 1999), no standing structures older than 60 years occur within the impact area;
- Regarding the archaeological component of Section 35 several features have been identified of which many have been disturbed by previous developments in the area;
- The study area is indicated as very sensitive on the SAHRIS paleontological map and an independent study was conducted (Durand 2020). The study concluded that the project area is underlain by the Red Rocks Member of the Clarens Formation. Agricultural development is planned at the study site. There is a possibility that *ex situ* dinosaur fossils may be found in the soil covering the bedrock in the study site during development. It is imperative that a palaeontologist be consulted if fossils are exposed during the development process. The ECO should take responsibility for supervising the development and should follow the Chance Find Procedure if a significant fossil discovery is made.
- In terms of Section 36 of the Act no formal burial sites were recorded although two stone cairns of unknown purpose were noted;
- The World Heritage Site of Mapungubwe is located to the West of the study area. The area under investigation is located outside of the WHS and the buffer zone and in line with current land use and will not impact significantly on cultural landscapes or viewsapes.
- During the public participation process conducted for the project no heritage concerns were raised.

The impact of the project on heritage resources can be mitigated to an acceptable level and it is recommended that the proposed project can commence on the condition that the following recommendations are implemented as part of the EMP and based on approval from SAHRA:

- Sites S3 and S4 - although unlikely, the features might be graves. It is recommended that the features should be retained *in situ*, if this is not possible test excavations should be conducted to determine whether the features represent graves;
- It is recommended that Sites S1, S8-BA 45, S9 and S10 should be retained *in situ*, if this is not possible the sites should be subjected to Phase 2 Mitigation;
- Site S17 located in the Section 24G application area and impacted on by the unlawful activities should be subjected to Phase 2 Mitigation as a trade off to the sites (listed below) impacted on in this area. This site has academic potential;
- Sites S2, S11, S12, S13, S14, S15 and S18 located in the Section 24G application area and impacted on by the unlawful activities will have to be monitored by an archaeologist during initial cultivation activities after application of a destruction permit;
- The following sites should be retained *in situ* with adequate buffers - S5, S6, S7, S16 - BA44 and S19. The buffer zones must be indicated by an archaeologist in the field while determining site extent;
- A destruction permit can be applied for Site S9 after which the site should be monitored during initial cultivation;
- Implementation of a site development plan for the project and;
- Implementation of a chance find procedure for the project as outlined below.

### 10.1. Chance Find Procedures - 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.

The **Paleontological Chance find procedure** is indicated below as outlined in the Durand (2020) report.

The following procedure must be considered in the event that previously unknown fossils or fossil sites are exposed or found during the life of the project:

1. Surface excavations should continuously be monitored by the ECO and any fossil material be unearthed the excavation must be halted.
2. If fossiliferous material has been disturbed during the excavation process it should be put aside to prevent it from being destroyed.
3. The ECO then has to take a GPS reading of the site and take digital pictures of the fossil material and the site from which it came.
4. The ECO then should contact a palaeontologist and supply the palaeontologist with the information (locality and pictures) so that the palaeontologist can assess the importance of the find and make recommendations.
5. If the palaeontologist is convinced that this is a major find an inspection of the site must be scheduled as soon as possible in order to minimise delays to the development.

From the photographs and/or the site visit the palaeontologist will make one of the following recommendations:

- a. The material is of no value so development can proceed, or:
  - b. Fossil material is of some interest and a representative sample should be collected and put aside for further study and to be incorporated into a recognised fossil repository after a permit was obtained from SAHRA for the removal of the fossils, after which the development may proceed, or:
  - c. The fossils are scientifically important and the palaeontologist must obtain a SAHRA permit to excavate the fossils and take them to a recognised fossil repository, after which the development may proceed.
7. If any fossils are found then a schedule of monitoring will be set up between the developer and palaeontologist in case of further discoveries.



**10.2. Reasoned Opinion**

The impact of the proposed project on heritage resources can be mitigated to an acceptable level based on approval from SAHRA. Furthermore, the socio-economic benefits also outweigh the possible impacts of the development if the correct mitigation measures are implemented for the project.

**10.3. Potential risk**

Potential risks to the proposed project are the occurrence of unknown and unmarked graves of which surface indicators have been destroyed. These risks can be mitigated to an acceptable level with monitoring and the implementation of a chance find procedure as outlined in Section 10.1.

## 11 References

- Durand, J.F. 2020. Development of farmland on Farm Skutwater 115 MS, Musina Local Municipality, Vhembe District. Unpublished report.
- Eastwood, E.B. & Cnoops, C. 1999. Results of the Limpopo-Shashi Confluence area rock art study. 2 Vols. Louis Trichardt: Palaeo-Art Field Services.
- Fouché, L. (Ed) 1937. Mapungubwe: Ancient Bantu civilization on the Limpopo. Cambridge: Cambridge University Press.
- Gaigher, S. 2000. Preliminary Archaeological Assessment. Proposed shopping centre in rural Messina
- Gardner, G. A. 1963. Mapungubwe: Volume II. Pretoria: J.L. Van Schaik.
- Huffman, T.N. 2000. Mapungubwe and the origins of the Zimbabwe culture. In M. Leslie & T. Maggs (Eds), African Naissance: The Limpopo Valley 1 000 Years Ago. (South African Archaeological Society Goodwin Series 8), pp. 14-29.
- Kuman, K, Gibbon, R, Kempson, H, Langejans, G, Le Baron, J, Pollarolo, L & Suttin, M. 2005. Stone Age signatures in northernmost South Africa: early archaeology in the Mapungubwe National Park and vicinity. In d'Errico, F. & Backwell, L. (eds.) 2005. From tools to symbols: from Early Hominids to Modern Humans. Johannesburg: Witwatersrand University Press.
- Kusimba, C.M. 1999. The Rise and Fall of Swahili States. Walnut Creek: AltaMira.
- Mason, R. J., 1962. Prehistory of the Transvaal. Johannesburg: Witwatersrand University Press.
- National Heritage Resources Act NHRA of 1999 (Act 25 of 1999)
- Pistorius, J. 2016. A Scoping Heritage Study for the Proposed Musina Copper Project near Musina in the Limpopo Province.
- Wood, M. 2005. Glass Beads and Pre-European Trade in the Shashe-Limpopo Region. Masters Dissertation, University of the Witwatersrand, Johannesburg.
- SAHRIS South African Heritage Resource Information System (viewed November 2017)
- Sumner, T.A. 2013. A refitting study of late Early to Middle Stone Age lithic assemblages from the site of Kudu Koppie, Limpopo Province, South Africa. *Journal of African Archaeology* 11: 133–153.
- Van Ewyk, J.F. 1987. *The Prehistory of an Iron Age Site on Skutwater*. Master's dissertation, University of Pretoria
- van Schalkwyk, J. 2015. Cultural Heritage Impact Assessment For The Proposed Expansion Of The Existing Waste Disposal Site In Musina, Limpopo Province.

**12 Appendices:****Curriculum Vitae of Specialist**

Jaco van der Walt  
Archaeologist

jaco.heritage@gmail.com  
+27 82 373 8491  
+27 86 691 6461

**Education:****Particulars of degrees/diplomas and/or other qualifications:**

<b>Name of University or Institution:</b>	:	University of Pretoria
<b>Degree obtained</b>	:	BA Heritage Tourism & Archaeology
<b>Year of graduation</b>	:	2001
<b>Name of University or Institution:</b>	:	University of the Witwatersrand
<b>Degree obtained</b>	:	BA Hons Archaeology
<b>Year of graduation</b>	:	2002
<b>Name of University or Institution</b>	:	University of the Witwatersrand
<b>Degree Obtained</b>	:	MA (Archaeology)
<b>Year of Graduation</b>	:	2012
<b>Name of University or Institution</b>	:	University of Johannesburg
<b>Degree</b>	:	PhD
<b>Year</b>	:	Currently Enrolled

**EMPLOYMENT HISTORY:**

2011 – Present:	<b>Owner – HCAC (Heritage Contracts and Archaeological Consulting CC).</b>
2007 – 2010 :	<b>CRM Archaeologist</b> , Managed the Heritage Contracts Unit at the University of the Witwatersrand.
2005 - 2007:	<b>CRM Archaeologist</b> , Director of Matakoma Heritage Consultants
2004:	<b>Technical Assistant</b> , Department of Anatomy University of Pretoria
2003:	<b>Archaeologist</b> , Mapungubwe World Heritage Site
2001 - 2002:	<b>CRM Archaeologists</b> , For R & R Cultural Resource Consultants, Polokwane
2000:	<b>Museum Assistant</b> , Fort Klapperkop.

**Countries of work experience include:**

Republic of South Africa, Botswana, Zimbabwe, Mozambique, Tanzania, The Democratic Republic of the Congo, Lesotho and Zambia.

**SELECTED PROJECTS INCLUDE:****Archaeological Impact Assessments (Phase 1)**

Heritage Impact Assessment Proposed Discharge Of Treated Mine Water Via The Wonderfontein Spruit Receiving Water Body Specialist as part of team conducting an Archaeological Assessment for the Mmamabula mining project and power supply, Botswana

Archaeological Impact Assessment Mmamethlake Landfill

Archaeological Impact Assessment Libangeni Landfill

**Linear Developments**

Archaeological Impact Assessment Link Northern Waterline Project At The Suikerbosrand Nature Reserve

Archaeological Impact Assessment Medupi – Spitskop Power Line,

Archaeological Impact Assessment Nelspruit Road Development

**Renewable Energy developments**

Archaeological Impact Assessment Karoshoek Solar Project

**Grave Relocation Projects**

Relocation of graves and site monitoring at Chlookop as well as permit application and liaison with local authorities and social processes with local stakeholders, Gauteng Province.

Relocation of the grave of Rifle Man Maritz as well as permit application and liaison with local authorities and social processes with local stakeholders, Ndumo, Kwa Zulu Natal.

Relocation of the Magolwane graves for the office of the premier, Kwa Zulu Natal

Relocation of the OSuthu Royal Graves office of the premier, Kwa Zulu Natal

**Phase 2 Mitigation Projects**

Field Director for the Archaeological Mitigation For Booyendal Platinum Mine, Steelpoort, Limpopo Province. Principle investigator Prof. T. Huffman

Monitoring of heritage sites affected by the ARUP Transnet Multipurpose Pipeline under directorship of Gavin Anderson.

Field Director for the Phase 2 mapping of a late Iron Age site located on the farm Kameelbult, Zeerust, North West Province. Under directorship of Prof T. Huffman.

Field Director for the Phase 2 surface sampling of Stone Age sites effected by the Medupi – Spitskop Power Line, Limpopo Province

**Heritage management projects**

Platreef Mitigation project – mitigation of heritage sites and compilation of conservation management plan.

---

**MEMBERSHIP OF PROFESSIONAL ASSOCIATIONS:**


---

- Association of Southern African Professional Archaeologists. Member number 159  
Accreditation:
  - Field Director                      Iron Age Archaeology
  - Field Supervisor                  Colonial Period Archaeology, Stone Age  
   Archaeology and Grave Relocation
- Accredited CRM Archaeologist with SAHRA
- Accredited CRM Archaeologist with AMAFA
- Co-opted council member for the CRM Section of the Association of Southern African Association Professional Archaeologists (2011 – 2012)

---

**PUBLICATIONS AND PRESENTATIONS**


---

- A Culture Historical Interpretation, Aimed at Site Visitors, of the Exposed Eastern Profile of K8 on the Southern terrace at Mapungubwe.
  - J van der Walt, A Meyer, WC Nienaber
  - Poster presented at Faculty day, Faculty of Medicine University of Pretoria 2003
- 'n Reddingsondersoek na Anglo-Boereoorlog-ammunisie, gevind by Ifafi, Noordwes-Provinsie. South-African Journal for Cultural History 16(1) June 2002, with A. van Vollenhoven as co-writer.
- Fieldwork Report: Mapungubwe Stabilization Project.
  - WC Nienaber, M Hutten, S Gaigher, J van der Walt
  - Paper read at the Southern African Association of Archaeologists Biennial Conference 2004
- A War Uncovered: Human Remains from Thabantšho Hill (South Africa), 10 May 1864.
  - M. Steyn, WS Boshoff, WC Nienaber, J van der Walt
  - Paper read at the 12<sup>th</sup> Congress of the Pan-African Archaeological Association for Prehistory and Related Studies 2005
- Field Report on the mitigation measures conducted on the farm Bokfontein, Brits, North West Province .
  - J van der Walt, P Birkholtz, W. Fourie
  - Paper read at the Southern African Association of Archaeologists Biennial Conference 2007
- Field report on the mitigation measures employed at Early Farmer sites threatened by development in the Greater Sekhukhune area, Limpopo Province. J van der Walt
  - Paper read at the Southern African Association of Archaeologists Biennial Conference 2008
- Ceramic
- J]nalysis of an Early Iron Age Site with vitrified dung, Limpopo Province South Africa.



- 
- J van der Walt. Poster presented at SAFA, Frankfurt Germany 2008
- Bantu Speaker Rock Engravings in the Schoemanskloof Valley, Lydenburg District, Mpumalanga (*In Prep*)
    - J van der Walt and J.P Celliers
  - Sterkspruit: Micro-layout of late Iron Age stone walling, Lydenburg, Mpumalanga. W. Fourie and J van der Walt. A Poster presented at the Southern African Association of Archaeologists Biennial Conference 2011
  - Detailed mapping of LIA stone-walled settlements' in Lydenburg, Mpumalanga. J van der Walt and J.P Celliers
    - Paper read at the Southern African Association of Archaeologists Biennial Conference 2011
  - Bantu-Speaker Rock engravings in the Schoemanskloof Valley, Lydenburg District, Mpumalanga. J.P Celliers and J van der Walt
    - Paper read at the Southern African Association of Archaeologists Biennial Conference 2011
  - Pleistocene hominin land use on the western trans-Vaal Highveld ecoregion, South Africa, Jaco van der Walt.
    - J van der Walt. Poster presented at SAFA, Toulouse, France. Biennial Conference 2016

---

**REFERENCES:**


---

1. Prof Marlize Lombard      Senior Lecturer, University of Johannesburg, South Africa  
E-mail: mlombard@uj.ac.za
2. Prof TN Huffman      Department of Archaeology Tel: (011) 717 6040  
University of the Witwatersrand
3. Alex Schoeman      University of the Witwatersrand  
E-mail: Alex.Schoeman@wits.ac.za