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**DELRON ENVIRONMENTAL: PROPOSED SANPARKS
MAPUNGUBWE SECTION 24G PROJECT ON A PORTION OF
THE FARM HAMILTON 41MS, MAPUNGUBWE NATIONAL
PARK, VHEMBE DISTRICT MUNICIPALITY, LIMPOPO
PROVINCE**

Archaeological Impact Assessment

A 3D rendering of a globe with water splashing over it, symbolizing sustainability and environmental impact.

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The logo for EOH, consisting of the letters "EOH" in a bold, white, sans-serif font with a small triangle above the letter 'O'.

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ARCHAEOLOGICAL IMPACT ASSESSMENT (AIA) FOR THE PROPOSED SANPARKS MAPUNGUBWE SECTION 24G PROJECT ON A PORTION OF THE FARM HAMILTON 41MS, MAPUNGUBWE NATIONAL PARK, VHEMBE DISTRICT MUNICIPALITY, LIMPOPO PROVINCE

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DECLARATION

I, Nelius Le Roux Kruger, declare that –

- I act as the independent specialist;
- I am conducting any work and activity relating to the proposed SanPARKS Mapungubwe Section 24G Project in an objective manner, even if this results in views and findings that are not favourable to the client;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have the required expertise in conducting the specialist report and I will comply with legislation, including the relevant Heritage Legislation (National Heritage Resources Act no. 25 of 1999, Human Tissue Act 65 of 1983 as amended, Removal of Graves and Dead Bodies Ordinance no. 7 of 1925, Excavations Ordinance no. 12 of 1980), the Minimum Standards: Archaeological and Palaeontological Components of Impact Assessment (Limpopo-PHRA, SAHRA and the CRM section of ASAPA), regulations and any guidelines that have relevance to the proposed activity;
- I have not, and will not engage in, conflicting interests in the undertaking of the activity;
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EXECUTIVE SUMMARY

This report details the results of an Archaeological Impact Assessment (AIA) study on a portion of the Farm Hamilton 41MS, subject to an Environmental Basic Assessment (BA) process for the proposed SanPARKS Mapungubwe Section 24G Project in the Mapungubwe National Park, Limpopo Province. The project entails the NEMA S24G rectification of an area where new office buildings were constructed over an area of approximately 0.5ha. By examining archive aerial images, maps and relevant literature, and through the investigation of heritage signatures and potential site distribution of occurrence in the immediate surroundings of the project area, this study attempted to predict and assess the level of impact that the developments might have had on the heritage landscape at the time of construction. The AIA report includes background information on the area’s archaeology, its representation in Southern Africa, and the history of the larger area under investigation, survey methodology and results as well as heritage legislation and conservation policies. A copy of the report will be supplied to the Limpopo Provincial Heritage Resources Authority (Limpopo-PHRA) and recommendations contained in this document will be reviewed.

Project Title	SanPARKS Mapungubwe Section 24G Project
Project Location	S22.243661° E29.409225°
1:50 000 Map Sheet	2229AB
Farm Portion / Parcel	Farm Hamilton 41MS
Magisterial District / Municipal Area	Vhembe District Municipality
Province	Limpopo Province

This section of the Limpopo valley, presenting the most important time periods in the history of South Africa, have been utilised and cultivated from the beginning of mankind, the signs of which are still visible today in the hundreds of archaeological sites scattered across the SLCA (Sashe-Limpopo Confluence Area) landscape. These signs range from 300 000 year old handaxes from the Earlier Stone Age, microlithic tools from the Later Stone Age, pot sherds, grinding stones and walling of previous Venda inhabitants to rock paintings and engravings. A large number of academic and commercial archaeological and historical studies have been conducted in the Limpopo Valley, many of them focusing around the internationally significant Mapungubwe Cultural landscape and World Heritage Site. Most of these studies infer a rich and wealthy heritage landscape. Not only do several sites of cultural, historical or archaeological significance occur in the area but a wealth of undocumented sites probably exists in the landscape. Similarly, artefacts and signs of prehistorical human occupation including Stone Age lithics and Iron Age farmer material culture were observed on surfaces directly surrounding the SanPARKS Mapungubwe Section 24G project.

However, it has been established that the project site and its immediate surrounds have previously been transformed by intensive historical agriculture and farming and it is highly unlikely that the development of the office compound impacted on archaeological artefacts, features or structures surviving in primary context at the time of construction. The following general heritage management recommendations are made based on general observations in the proposed project area:

- Considering the localised nature of heritage remains and the sensitivity of the surrounding heritage landscape, the general monitoring of further development progress by an ECO or by the heritage specialist is recommended for all stages of the project. Should any subsurface palaeontological, archaeological or historical material, or burials be exposed during construction activities, all activities should be suspended and the archaeological specialist should be notified immediately
- Should, at any stage, the development extend beyond the footprint denoted in this report, further detailed site inspections as part of additional Heritage Impact Assessment (HIA) processes for these areas should be conducted, subject to section 38 of the National Heritage Resources Act (NHRA - Act 25 of 1999).
- It is essential that cognisance be taken of the larger archaeological landscape of the area in order to avoid the destruction of previously undetected heritage sites. It should be stated that it is likely that further undetected archaeological remains might occur elsewhere in the project landscape along water sources and drainage lines, fountains and pans would often have attracted human activity in the past. Also, since Stone Age material seems to originate from below present soil surfaces in eroded areas, the larger landscape should be regarded as potentially sensitive in terms of possible subsurface deposits. Burials and historically significant structures dating to the Colonial Period occur on farms in the area and these resources should be avoided during all phases of construction and development, including the operational phases of the development.

Cognisant of known site distribution patterns in this section of the Limpopo Province, and based on general on-site observations and off-site assessments and, notably the fact that the project site and its immediate surrounds have previously been transformed by intensive historical agriculture and farming, the author of this report is of the opinion that the construction of the SanParks Office Complex, had a minimal (if any) impact on archaeological artefacts, features or structures surviving in primary context at the time of construction.

This report details the methodology, limitations and recommendations relevant to these heritage areas, as well as areas of proposed development. It should be noted that recommendations and possible mitigation measures are valid for the duration of the development process, and mitigation measures might have to be implemented on additional features of heritage importance not detected during this Phase 1 assessment (e.g. uncovered during the construction process)

Absolute dating: Absolute dating provides specific dates or range of dates expressed in years.

Archaeological record: The archaeological record minimally includes all the material remains documented by archaeologists. More comprehensive definitions also include the record of culture history and everything written about the past by archaeologists.

Artefact: Entities whose characteristics result or partially result from human activity. The shape and other characteristics of the artefact are not altered by removal of the surroundings in which they are discovered. In the Southern African context examples of artefacts include potsherds, iron objects, stone tools, beads and hut remains.

Assemblage: A group of artefacts recurring together at a particular time and place, and representing the sum of human activities.

Context: An artefact's context usually consists of its immediate *matrix*, its *provenience* and its *association* with other artefacts. When found in *primary context*, the original artefact or structure was undisturbed by natural or human factors until excavation and if in *secondary context*, disturbance or displacement by later ecological action or human activities occurred.

Cultural Heritage Resource: The broad generic term *Cultural Heritage Resources* refers to any physical and spiritual property associated with past and present human use or occupation of the environment, cultural activities and history. The term includes sites, structures, places, natural features and material of palaeontological, archaeological, historical, aesthetic, scientific, architectural, religious, symbolic or traditional importance to specific individuals or groups, traditional systems of cultural practice, belief or social interaction.

Cultural landscape: A cultural landscape refers to a distinctive geographic area with cultural significance.

Cultural Resource Management (CRM): A system of measures for safeguarding the archaeological heritage of a given area, generally applied within the framework of legislation designed to safeguard the past.

Feature: Non-portable artefacts, in other words artefacts that cannot be removed from their surroundings without destroying or altering their original form. Hearths, roads, and storage pits are examples of archaeological features

Impact: A description of the effect of an aspect of the development on a specified component of the biophysical, social or economic environment within a defined time and space.

Lithic: Stone tools or waste from stone tool manufacturing found on archaeological sites.

Matrix: The material in which an artefact is situated (sediments such as sand, ashy soil, mud, water, etcetera). The matrix may be of natural origin or human-made.

Midden: Refuse that accumulates in a concentrated heap.

Microlith: A small stone tool, typically knapped of flint or chert, usually about three centimetres long or less.

Monolith: A geological feature such as a large rock, consisting of a single massive stone or rock, or a single piece of rock placed as, or within, a monument or site.

Phase 1 CRM Assessment: An Impact Assessment which identifies archaeological and heritage sites, assesses their significance and comments on the impact of a given development on the sites. Recommendations for site mitigation or conservation are also made during this phase.

Phase 2 CRM Study: In-depth studies which could include major archaeological excavations, detailed site surveys and mapping / plans of sites, including historical / architectural structures and features. Alternatively, the sampling of sites by collecting material, small test pit excavations or auger sampling is required. Mitigation / Rescue involves planning the protection of significant sites or sampling through excavation or collection (in terms of a permit) at sites that may be lost as a result of a given development.

Phase 3 CRM Measure: A Heritage Site Management Plan (for heritage conservation), is required in rare cases where the site is so important that development will not be allowed and sometimes developers are encouraged to enhance the value of the sites retained on their properties with appropriate interpretive material or displays.

Provenience: Provenience is the three-dimensional (horizontal and vertical) position in which artefacts are found. Fundamental to ascertaining the provenience of an artefact is *association*, the co-occurrence of an artefact with other archaeological remains; and *superposition*, the principle whereby artefacts in lower levels of a matrix were deposited before the artefacts found in the layers above them, and are therefore older.

Random Sampling: A probabilistic sampling strategy whereby randomly selected sample blocks in an area are surveyed. These are fixed by drawing coordinates of the sample blocks from a table of random numbers.

Scoping Assessment: The process of determining the spatial and temporal boundaries (i.e. extent) and key issues to be addressed in an impact assessment. The main purpose is to focus the impact assessment on a manageable number of important questions on which decision making is expected to focus and to ensure that only key issues and reasonable alternatives are examined. The outcome of the scoping process is a Scoping Report that includes issues raised during the scoping process, appropriate responses and, where required, terms of reference for specialist involvement.

Site (Archaeological): A distinct spatial clustering of artefacts, features, structures, and organic and environmental remains, as the residue of human activity. These include surface sites, caves and rock shelters, larger open-air sites, sealed sites (deposits) and river deposits. Common functions of archaeological sites include living or habitation sites, kill sites, ceremonial sites, burial sites, trading, quarry, and art sites,

Stratigraphy: This principle examines and describes the observable layers of sediments and the arrangement of strata in deposits

Systematic Sampling: A probabilistic sampling strategy whereby a grid of sample blocks is set up over the survey area and each of these blocks is equally spaced and searched.

Trigger: A particular characteristic of either the receiving environment or the proposed project which indicates that there is likely to be an *issue* and/or potentially significant *impact* associated with that proposed development that may require specialist input. Legal requirements of existing and future legislation may also trigger the need for specialist involvement.

LIST OF ABBREVIATIONS

Abbreviation	Description
ASAPA	Association for South African Professional Archaeologists
AIA	Archaeological Impact Assessment
BP	Before Present
BCE	Before Common Era
CRM	Culture Resources Management
EIA	Early Iron Age (also Early Farmer Period)
EIA	Environmental Impact Assessment
EFP	Early Farmer Period (also Early Iron Age)
ESA	Earlier Stone Age
GIS	Geographic Information Systems
HIA	Heritage Impact Assessment
ICOMOS	International Council on Monuments and Sites
K2/Map	K2/Mapungubwe Period
LFP	Later Farmer Period (also Later Iron Age)
LIA	Later Iron Age (also Later Farmer Period)
LSA	Later Stone Age
MIA	Middle Iron Age (also Early later Farmer Period)
MSA	Middle Stone Age
NHRA	National Heritage Resources Act No.25 of 1999, Section 35
PFS	Pre-Feasibility Study
PHRA	Provincial Heritage Resources Authorities
SAFA	Society for Africanist Archaeologists
SAHRA	South African Heritage Resources Association
SLCA	Sashe-Limpopo Confluence Area
YCE	Years before Common Era (Present)

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1 BACKGROUND

1.1 Scope and Motivation

Exigo Sustainability was commissioned by Delron Environmental for an Archaeological Impact Assessment (AIA) study subject to an Environmental Basic Assessment (BA) process for the SanPARKS Mapungubwe Section 24G Project in the Vhembe District Municipality, Limpopo Province. The rationale of this AIA is to predict and assess the level of impact that the construction of office buildings in the project area might have had on the heritage landscape at the time of construction by means of a desktop assessment, site inspection observations and a detailed aerial survey. Ultimately, the study provides appropriate recommendations with regard to the cultural resources management measures that may be required at affected sites / features.

1.2 Project Direction

Exigo Sustainability's expertise ensures that all projects be conducted to the highest international ethical and professional standards. As archaeological specialist for Exigo Sustainability, Mr Nelius Kruger acted as field director for the project; responsible for the assimilation of all information, the compilation of the final consolidated AIA report and recommendations in terms of heritage resources on the demarcated project areas. Mr Kruger is an accredited archaeologist and Culture Resources Management (CRM) practitioner with the Association of South African Professional Archaeologists (ASAPA), a member of the Society for Africanist Archaeologists (SAFA) and the Pan African Archaeological Association (PAA) as well as a Master's Degree candidate in archaeology at the University of Pretoria.

1.3 Project Brief

The author was contracted to undertake a heritage assessment of proposed activities related to the SanPARKS Mapungubwe Section 24G Project in the Mapungubwe National Park in the Limpopo Province. The project entails the NEMA of an area where new park office buildings were constructed over an area of approximately **0.5ha** near the current Park Staff housing complex (see Figure 1-1 and Figure 1-2).

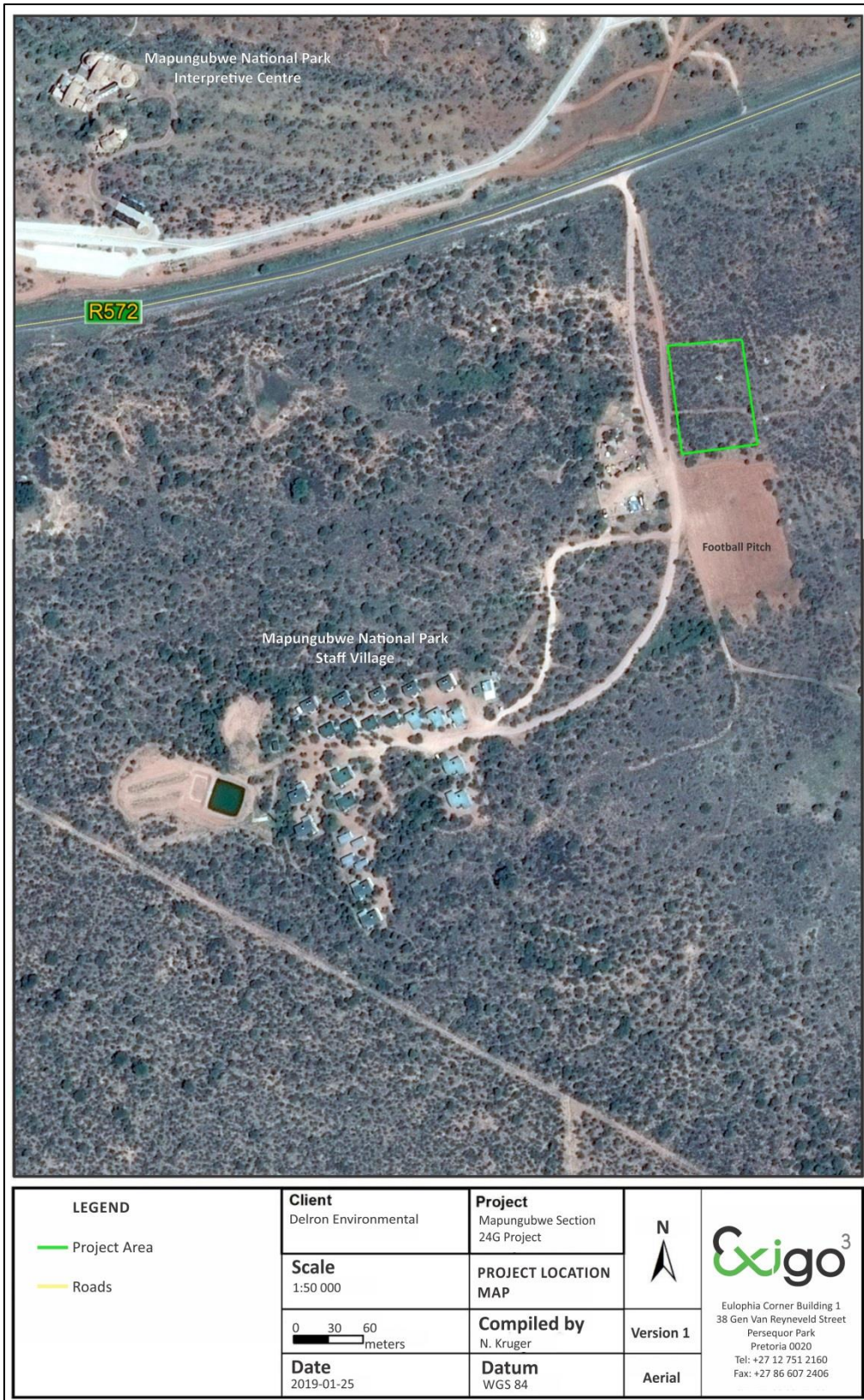


Figure 1-1: Aerial image indicating the location and extent of the SanPARKS Mapungubwe Section 24G Project site.

1.4 Terms of Reference

Heritage specialist input into the Environmental Impact Assessment (EIA) process is essential to ensure that, through the management of change, developments still conserve our heritage resources. It is also a legal requirement for certain development categories which may have an impact on heritage resources. Thus, EIAs should always include an assessment of heritage resources. The heritage component of the EIA is provided for in the **National Environmental Management Act, (Act 107 of 1998)** and endorsed by section 38 of the **National Heritage Resources Act (NHRA - Act 25 of 1999)**. In addition, the NHRA protects all structures and features older than 60 years, archaeological sites and material and graves as well as burial sites. The objective of this legislation is to ensure that developers implement measures to limit the potentially negative effects that the development could have on heritage resources. Based hereon, this project functioned according to the following **terms of reference** for heritage specialist input:

- *Provide a detailed description of all archaeological artefacts, structures (including graves) and settlements which may be affected, if any.*
- *Assess the nature and degree of significance of such resources within the area.*
- *Establish heritage informants/constraints to guide the development process through establishing thresholds of impact significance;*
- *Assess and rate any possible impact on the archaeological and historical remains within the area emanating from the proposed development activities.*
- *Propose possible heritage management measures provided that such action is necessitated by the development.*
- *Liaise and consult with the South African Heritage Resources Agency (SAHRA)*

1.5 CRM: Legislation, Conservation and Heritage Management

The broad generic term *Cultural Heritage Resources* refers to any physical and spiritual property associated with past and present human use or occupation of the environment, cultural activities and history. The term includes sites, structures, places, natural features and material of palaeontological, archaeological, historical, aesthetic, scientific, architectural, religious, symbolic or traditional importance to specific individuals or groups, traditional systems of cultural practice, belief or social interaction.

1.5.1 Legislation regarding archaeology and heritage sites

The South African Heritage Resources Agency (SAHRA) and its provincial offices aim to conserve and control the management, research, alteration and destruction of cultural resources of South Africa. It is therefore vitally important to adhere to heritage resource legislation at all times.

a. National Heritage Resources Act No 25 of 1999, section 35

According to the National Heritage Resources Act No 25 of 1999 (section 35) the following features are protected as cultural heritage resources:

- a. Archaeological artifacts, structures and sites older than 100 years
- b. Ethnographic art objects (e.g. prehistoric rock art) and ethnography
- c. Objects of decorative and visual arts
- d. Military objects, structures and sites older than 75 years

- e. Historical objects, structures and sites older than 60 years
- f. Proclaimed heritage sites
- g. Grave yards and graves older than 60 years
- h. Meteorites and fossils
- i. Objects, structures and sites of scientific or technological value.

In addition, the national estate includes the following:

- a. Places, buildings, structures and equipment of cultural significance
- b. Places to which oral traditions are attached or which are associated with living heritage
- c. Historical settlements and townscapes
- d. Landscapes and features of cultural significance
- e. Geological sites of scientific or cultural importance
- f. Archaeological and paleontological importance
- g. Graves and burial grounds
- h. Sites of significance relating to the history of slavery
- i. Movable objects (e.g. archaeological, paleontological, meteorites, geological specimens, military, ethnographic, books etc.)

With regards to activities and work on archaeological and heritage sites this Act states that:

“No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit by the relevant provincial heritage resources authority.” (34. [1] 1999:58)

and

“No person may, without a permit issued by the responsible heritage resources authority-

- (a) *destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;*
- (b) *destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;*
- (c) *trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or*
- (d) *bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites. (35. [4] 1999:58).”*

and

“No person may, without a permit issued by SAHRA or a provincial heritage resources agency-

- (a) *destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;*

- (b) *destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority;*
- (c) *bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) and excavation equipment, or any equipment which assists in the detection or recovery of metals (36. [3] 1999:60)."*

b. Human Tissue Act of 1983 and Ordinance on the Removal of Graves and Dead Bodies of 1925

Graves and burial grounds are commonly divided into the following subsets:

- a. ancestral graves
- b. royal graves and graves of traditional leaders
- c. graves of victims of conflict
- d. graves designated by the Minister
- e. historical graves and cemeteries
- f. human remains

Graves 60 years or older are heritage resources and fall under the jurisdiction of both the National Heritage Resources Act and the Human Tissues Act of 1983. However, graves younger than 60 years are specifically protected by the Human Tissues Act (Act 65 of 1983) and Ordinance on Excavations (Ordinance no. 12 of 1980) as well as any local and regional provisions, laws and by-laws. Such burial places also fall under the jurisdiction of the National Department of Health and the Provincial Health Departments. Approval for the exhumation and re-burial must be obtained from the relevant Provincial MEC as well as the relevant local authorities.

c. National Heritage Resources Act No 25 of 1999, section 35

This act (Act 107 of 1998) states that a survey and evaluation of cultural resources must be done in areas where development projects, that will change the face of the environment, will be undertaken. The impact of the development on these resources should be determined and proposals for the mitigation thereof are made. Environmental management should also take the cultural and social needs of people into account. Any disturbance of landscapes and sites that constitute the nation's cultural heritage should be avoided as far as possible and where this is not possible the disturbance should be minimized and remedied.

1.5.2 Background to HIA and AIA Studies

South Africa's unique and non-renewable archaeological and palaeontological heritage sites are 'generally' protected in terms of the National Heritage Resources Act (Act No 25 of 1999, section 35) and may not be disturbed at all without a permit from the relevant heritage resources authority. Heritage sites are frequently threatened by development projects and both the environmental and heritage legislation require impact assessments (HIAs & AIAs) that identify all heritage resources in areas to be developed. Particularly, these assessments are required to make recommendations for protection or mitigation of the impact of the sites. HIAs and AIAs should be done by qualified professionals with adequate knowledge to (a) identify all heritage resources including archaeological and palaeontological sites that might occur in areas of developed and (b) make recommendations for protection or mitigation of the impact on the sites.

A detailed guideline of statutory terms and requirements is supplied in Addendum 1.

2 REGIONAL CONTEXT

2.1 Area Location

The SanPARKS Mapungubwe Section 24G Project occurs on a portion of the farm Hamilton 41MS in the Vhembe District Municipality, Limpopo Province. The project area occurs in the Mapungubwe National Park along the Limpopo River; the international border with Zimbabwe. The town of Musina occurs approximately 70km east of the project area and Alldays lies 50km to the southwest. The project area is situated within the greater Mapungubwe Cultural Landscape with the Mapungubwe archaeological site situated no more than 5km north-west of the site. The R572 regional road routes directly north of the project site. More specifically, the project site is located at:

- **S22.243661° E29.409225°**

The site is located on 1:50 000 map sheet 2229AB.

2.2 Area Description: Receiving Environment

The Mapungubwe National Park lies within the Savanna biome which is the largest biome in Southern Africa. It is characterized by a grassy ground layer and a distinct upper layer of woody plants (trees and shrubs). The environmental factors delimiting the biome are complex and include altitude, rainfall, geology and soil types, with rainfall being the major delimiting factor. Fire and grazing also keep the grassy layer dominant. According to Acocks (1975) the site falls within the Mopane veld vegetation type, while the most recent classification by Mucina & Rutherford (2006) is the Musina Mopane Bushveld and Limpopo Ridge Bushveld vegetation types. The project area is located within the Limpopo Plain Eco-region and is situated to the north of the Soutpansberg and to the south of the Limpopo River. The study area is defined as extremely irregular plains to slightly undulating plains. The topography of the area is a mixture of terrains, ranging from flat to moderately undulating plains, outcrops, bottomlands (drainage channels) and moderately undulating hills.

2.3 Site Description

The landscape around the SanPARKS Mapungubwe Section 24G project area is generally flat, with undulating hills and sporadic mountains occurring in the area. For the largest part, the site is situated in an area that has been transformed by past farming activities and more recently, infrastructure development relating to the Mapungubwe National Park operations. Pockets of undisturbed grassland, Umbrella Thorn, Blackthorn and Mopane Trees remain in places in the surroundings but pioneering species such as Sicklebush occur throughout in disused cultivated land.

Existing infrastructure at the project site include the partially completed offices, temporary site office structures and an access road. A football pitch and an aviation beacon occur south of the site.

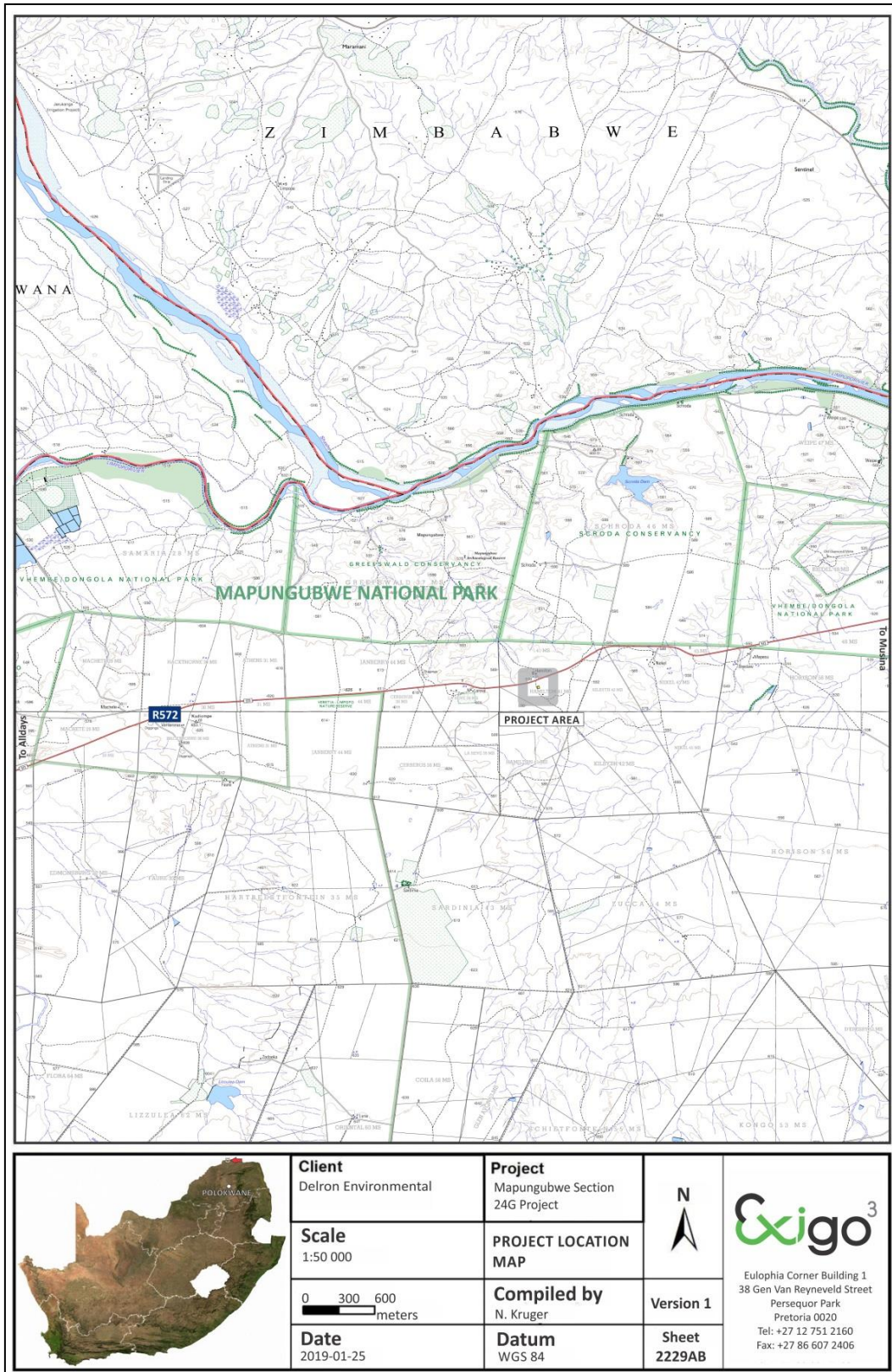


Figure 2-1: 1:50 00 Map representation of the location of the SanPARKS Mapungubwe Section 24G Project (sheet 2229AB).

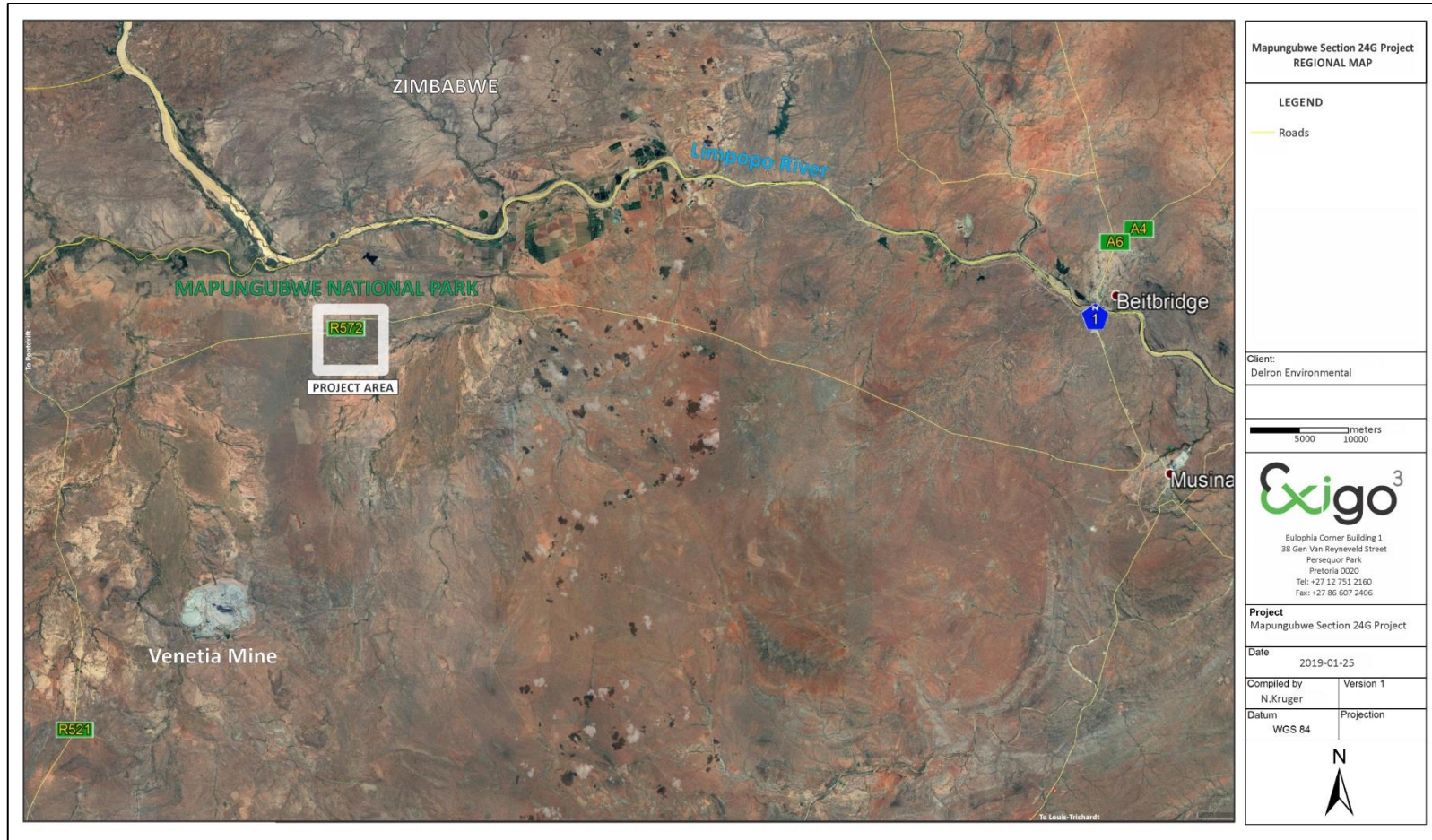


Figure 2-2: Aerial map providing a regional setting for the SanPARKS Mapungubwe Section 24G Project.

3 METHOD OF ENQUIRY

3.1 Sources of Information

Data from detailed desktop, aerial and field studies were employed in order to sample surface areas systematically and to ensure a high probability of heritage site recording. Since much of the office complex subject to this study has already been constructed and impact has, in essence already occurred, this assessment attempted to identify heritage signatures and site distribution in the immediate surroundings in order to ultimately predict and assess the level of impact that the development might have had on the heritage landscape at the time of construction. This was done by means of a detailed desktop and aerial study and a site inspection.

3.1.1 Desktop Study

The larger landscape of Limpopo has been well documented in terms of its archaeology and history. This assessment employed a detailed desktop study using existing sources of information in order to inform on the archaeo-historical landscape. Here, several unpublished archival databases and unpublished Heritage and Archaeological Impact Assessment reports were consulted to give a comprehensive representation of known sites in the study area. Furthermore, numerous academic papers and research articles supplied a historical context for the proposed project and archival sources, aerial photographs, historical maps and local histories were used to map out the landscape's heritage. A number of Archaeological Impact Assessments by qualified archaeological specialists and consultancies have been conducted in the Limpopo Valley which includes:

- A survey of the farms Uitenpas and Musina for the conversion of prospecting rights to mining rights on these properties (Archaic Heritage Consultants: 2009).
- A survey of the Nancefield area for the extension of residential units 2007 (Kruger & Antonites: 2007).
- A survey of the site where the Musina Shopping Centre was constructed (Archaeo-Info:2000)
- A survey of large surface areas south of Musina for the construction of electricity distribution power lines (Nzumbululo Heritage Solutions: 2008)
- A survey of the farms Jooste 511 MS and Dorothy 254 MS for the construction of the Sand River Valley Development (Nzumbululo Heritage Solutions:2006)
- A survey of large surface areas south of Musina for the construction of a new power line from Paradise-T to Musina Substations (Pistorius, J.C.C: 2008)
- A survey of Portion 5 of the farm Uitenpas 2 MT for a new township establishment on (Vhufa Hashu Heritage Consultants: 2007)
- A survey of the farm Overvlagte 125 MS for the construction of an irrigation dam (Vhufa Hashu Heritage Consultants: 2007)
- A survey of the farm Modena 13 MS Development of a Medium Density Security Wildlife Estate (R & R Cultural Resource Consultants)
- A survey for the proposed Alldays solar facility photovoltaic (pv)/ concentrated photovoltaic (cpv) solar energy facility (Nzumbululo Heritage Solutions)
- A survey for the Proposed Construction of Electricity Distribution Powerlines Within, Limpopo Province (Nzumbululo Heritage Solutions)
- A survey of the farm Bivack for the Proposed Two Rivers Limpopo Tourism (Archaeo-Info)
- A survey in Mhinga Xikundu Village for the Construction of Power-Line (Nzumbululo Heritage Solutions)
- An archaeological assessment of Tourist Developments in the Mapungubwe Cultural Landscape (Archaeological Resources Management)

Furthermore, numerous academic papers and research articles supplied a historical context for the proposed project and archival sources, aerial photographs, historical maps and local histories were used to create a baseline of the landscape's heritage.

3.1.2 Aerial Representations and Survey

Aerial photography is often employed to locate and study archaeological sites. This method was applied to assist the foot site survey where depressions, variation in vegetation, soil marks and landmarks were examined. Specific attention was given to shadow sites (shadows of walls or earthworks which are visible early or late in the day), crop mark sites (crop mark sites are visible because disturbances beneath crops cause variations in their height, vigour and type) and soil marks (e.g. differently coloured or textured soil (soil marks) might indicate ploughed-out burial mounds). Attention was also given to moisture differences, as prolonged dampening of soil as a result of precipitation frequently occurs over walls or embankments. By superimposing high frequency aerial photographs with images generated with Google Earth, potential sensitive areas were subsequently identified, geo-referenced and transferred to a handheld GPS device. These areas served as referenced points from where further vehicular and foot surveys were carried out. The aerial survey identified vast surface areas within and around the proposed SanPARKS Mapungubwe Section 24G Project footprint which have been subjected to historical and more recent disturbances such as those brought resulting from intensive farming (see Figure 3-1).

3.1.3 Mapping of sites

Merging data generated during the desktop study and the aerial survey, sites and areas of heritage importance were plotted on 1:50 000 topographic maps of the larger Musina area using ArcGIS 9.3. These maps were then superimposed on high definition aerial representations in order to graphically demonstrate the geographical locations and distribution of sensitive areas. Information on areas with dense clusters of heritage sites were expanded in the text employing academic and research based literature. Similar to indications on historical aerial imagery, historical topographic maps indicate a portion of cultivated land where the SanPARKS Mapungubwe Section 24G Project – and particularly areas subject to this assessment – can today be found (see Figure 3-2).

3.1.4 Field Survey

Archaeological survey implies the systematic procedure of the identification of archaeological sites. An archaeological survey of the SanPARKS Mapungubwe Section 24G Project area was conducted in January 2018. Since the office block has already been constructed, the site inspection attempted to identify the localities and spatial distribution of potential heritage receptors in areas adjacent to the project footprint. The process encompassed a systematic field survey in accordance with standard archaeological practice by which heritage resources are observed and documented. GPS reference points identified during the aerial survey were also visited and random spot checks were made (see detail in previous section).

Using a Garmin Montana GPS objects and structures of archaeological / heritage value were recorded and photographed with a Samsung Digital camera. Real time aerial orientation, by means of a mobile Google Earth application was also employed to investigate possible disturbed areas during the survey

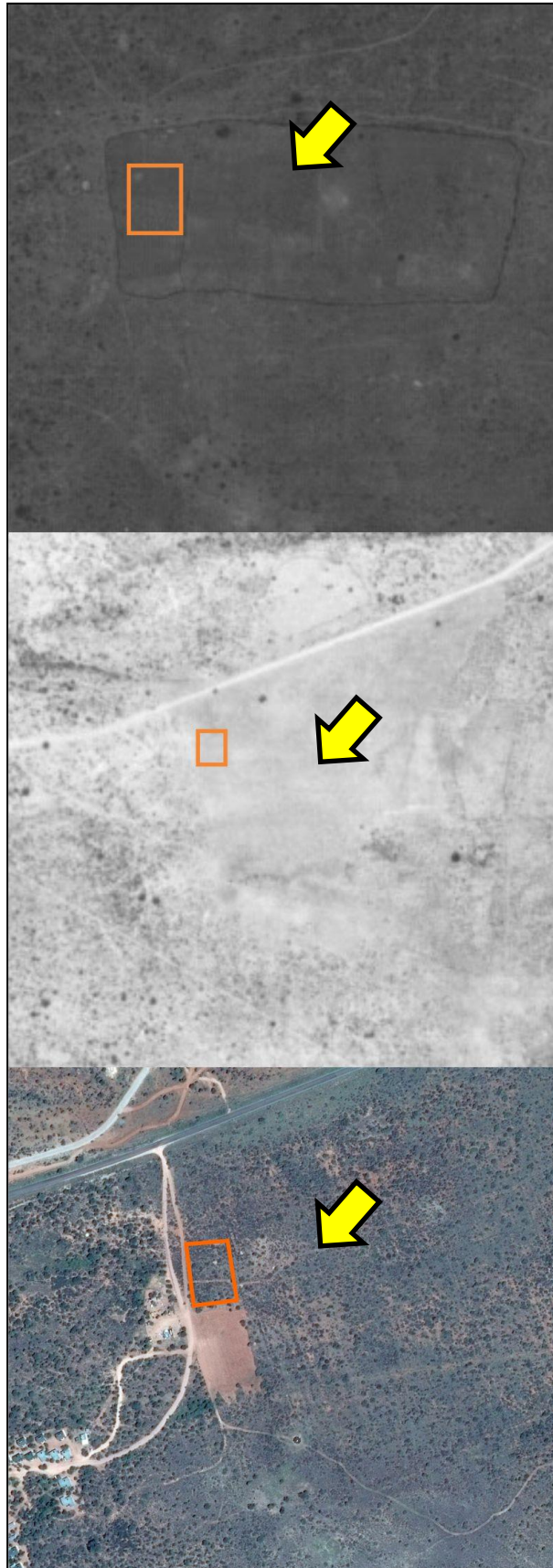


Figure 3-1: Historical aerial photographs of the Hamilton area dating to 1955 (top), 1965 (middle) and 2016 (bottom) indicating the location of the project area (orange outline) and visible remains of cultivated fields (yellow arrows) prior to the establishment of the office complex.

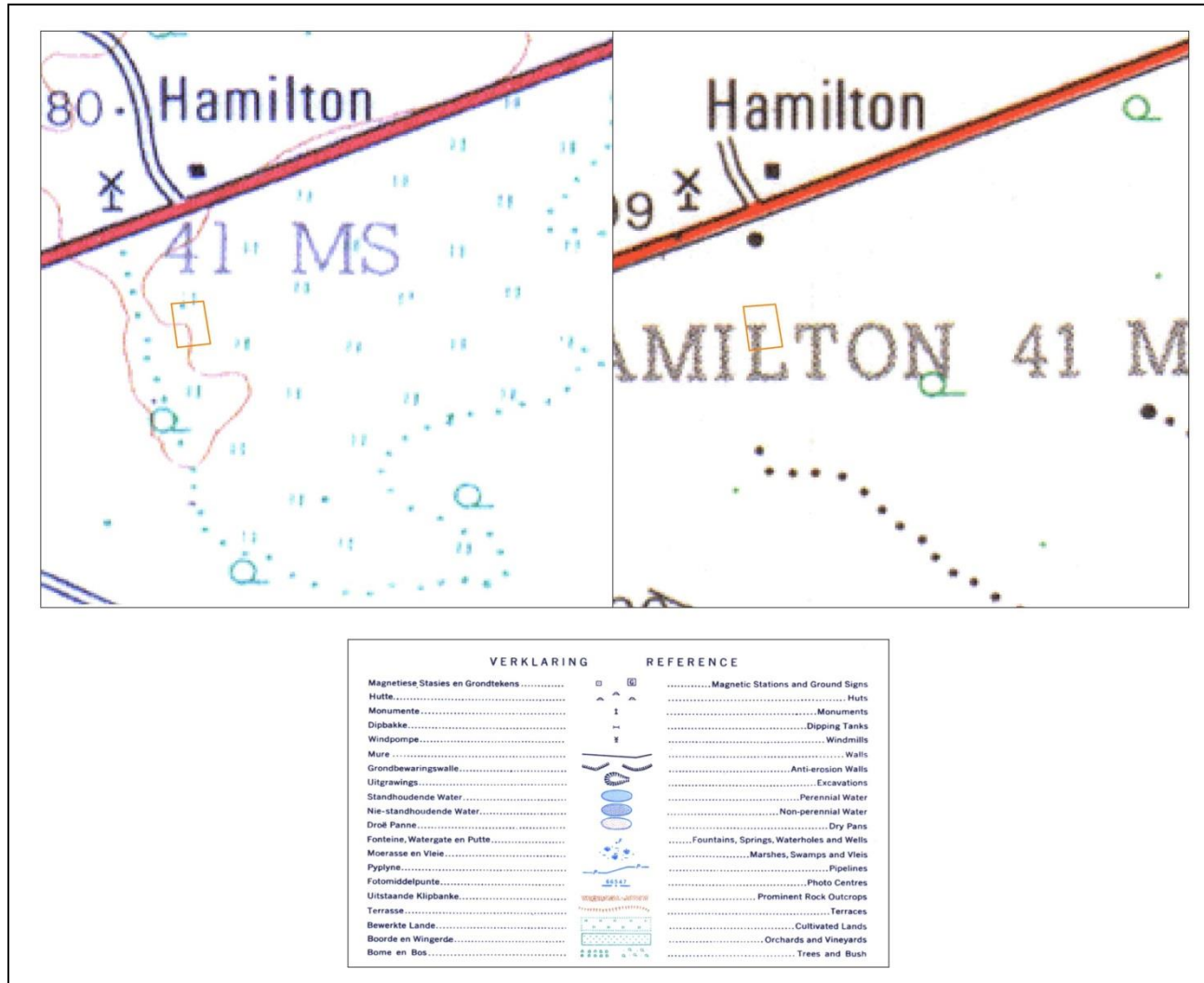


Figure 3-2: Historical topographic maps of Hamilton dating to 1968 (left) and 1980 (right) indicating the location of the project area (orange outline). Note the indicated cultivated land within and around the project area on the 1968 map.

3.2 Limitations

3.2.1 Access

The farm Hamilton is accessed via an access road connecting to the R572 regional road to Musina. Access control is not applied to the farm portion relevant to this assessment but no restrictions were encountered during the site visits as the author of this report was accompanied by a SanPARKS official.

3.2.2 Visibility

The surrounding vegetation around Limpopo Valley is mostly comprised out of mixed grasslands and dense tree cover in places. The surroundings at the project area have been transformed by long term agriculture and visibility in these areas at the time of the AIA site inspection (January 2019) was moderate to high (see Figures 3-3 to 3-11). In single cases during the survey sub-surface inspection was possible. Where applied, this revealed no archaeological deposits.



Figure 3-3: View of partially-completed offices in the project area.



Figure 3-4: View of partially completed additional offices in the project area.



Figure 3-5: View of a football pitch directly south of the project area.



Figure 3-6: The access road connecting the project area to the R572 road.



Figure 3-7: View of Umbrella Thorn, Blackthorn and Sicklebush visible in areas surrounding the project area.



Figure 3-8: View of the general landscape in areas surrounding the project area. Note calcrete extrusions on the surface.



Figure 3-9: Pioneering species such as Sicklebush visible in a brick pile in the project area.



Figure 3-10: View of the general landscape in areas surrounding the project area.



Figure 3-11: View of an aviation beacon south of the project area.

3.2.3 Limitations and Constraints Summary

The foot site survey for the SanPARKS Mapungubwe Section 24G Project primarily focused around areas of potential heritage sensitivity as well as areas of high human settlement catchment probability (for example near drainage lines, in association with vegetation changes or around soil disturbances). The following constraints were encountered:

- **Visibility:** Visibility proved to be a minor constraint in the areas surrounding the project development zone where denser and more pristine surface cover occurs.

Thus, even though it might be assumed that survey findings are representative of the heritage landscape of the project area for the SanPARKS Mapungubwe Section 24G Project, it should be stated that the possibility exists that individual sites could be missed due to the localised nature of some heritage remains as well as the possible presence of sub-surface archaeology. Therefore, maintaining due cognisance of the integrity and accuracy of the archaeological survey, it should be stated that the heritage resources identified during the study do not necessarily represent all the heritage resources present in the project area. The subterranean nature of some archaeological sites, dense vegetation cover and visibility constraints sometimes distort heritage representations and any additional heritage resources located during consequent development phases must be reported to the Heritage Resources Authority or an archaeological specialist.

3.3 Impact Assessment

For consistency among specialists, impact assessment ratings by Exigo Specialists are generally done using the Plomp¹ impact assessment matrix scale supplied by Exigo. According to this matrix scale, each heritage receptor in the study area is given an impact assessment. A cumulative assessment for the proposed project is also included.

¹ Plomp, H., 2004

4 ARCHAEO-HISTORICAL CONTEXT

4.1 The archaeology of Southern Africa

Archaeology in Southern Africa is typically divided into two main fields of study, the **Stone Age** and the **Iron Age** or **Farmer Period**. The following table provides a concise outline of the chronological sequence of periods, events, cultural groups and material expressions in Southern African pre-history and history.

Table 1 Chronological Periods across Southern Africa

Period	Epoch	Associated cultural groups	Typical Material Expressions
Early Stone Age 2.5m – 250 000 YCE	Pleistocene	Early Hominins: <i>Australopithecines</i> <i>Homo habilis</i> <i>Homo erectus</i>	Typically large stone tools such as hand axes, choppers and cleavers.
Middle Stone Age 250 000 – 25 000 YCE	Pleistocene	First <i>Homo sapiens</i> species	Typically smaller stone tools such as scrapers, blades and points.
Late Stone Age 20 000 BC – present	Pleistocene / Holocene	<i>Homo sapiens sapiens</i> including San people	Typically small to minute stone tools such as arrow heads, points and bladelets.
Early Iron Age / Early Farmer Period 300 – 900 AD	Holocene	First Bantu-speaking groups	Typically distinct ceramics, bead ware, iron objects, grinding stones.
Middle Iron Age (Mapungubwe / K2) / early Later Farmer Period 900 – 1350 AD	Holocene	Bantu-speaking groups, ancestors of present-day groups	Typically distinct ceramics, bead ware and iron / gold / copper objects, trade goods and grinding stones.
Late Iron Age / Later Farmer Period 1400 AD -1850 AD	Holocene	Various Bantu-speaking groups including Venda, Thonga, Sotho-Tswana and Zulu	Distinct ceramics, grinding stones, iron objects, trade objects, remains of iron smelting activities including iron smelting furnace, iron slag and residue as well as iron ore.
Historical / Colonial Period ±1850 AD – present	Holocene	Various Bantu-speaking groups as well as European farmers, settlers and explorers	Remains of historical structures e.g. homesteads, missionary schools etc. as well as, glass, porcelain, metal and ceramics.

4.1.1 The Stone Ages

- The Earlier Stone Age (ESA)

The Earlier Stone Age, from between 1.5 million and 250 000 years ago, refers to the earliest that *Homo sapiens sapiens*' predecessors began making stone tools. The earliest stone tool industry was referred to as the Olduvai Industry, originating from stone artefacts recorded at Olduvai Gorge, Tanzania. The Acheulian Industry, the predominant Southern African Early Stone Age Industry, which replaced the Olduvai Industry approximately 1.5 million years ago, is attested to in diverse environments and over wide geographical areas. The hallmark of the Acheulian Industry is its large cutting tools (LCTs or bifaces), primarily handaxes and cleavers. Bifaces emerged in East Africa more than 1.5 million years ago but have been reported from a wide range of areas, from South Africa to northern Europe and from India to the Iberian coast. Earlier Stone Age deposits typically occur on the flood-plains of perennial rivers. These ESA open sites sometimes contain stone tool scatters and manufacturing debris ranging from pebble tool choppers to core tools such as handaxes and cleavers. These groups seldom actively hunted, and relied heavily on the opportunistic scavenging of meat from carnivore kill sites. The most well-known Early Stone

Age site in Southern Africa is Amanzi Springs, situated about 10km north-east of Uitenhage, near Port Elizabeth (Deacon 1970). In a series of spring deposits a large number of stone tools were found in situ to a depth of 3-4m. Wood and seed material preserved remarkably very well within the spring deposits, and possibly date to between 800 000 to 250 000 years old.

- **The Middle Stone Age (MSA)**

The Middle Stone Age (MSA) spans a period from 250 000-30 000 years ago and focuses on the emergence of modern humans through the change in technology, behaviour, physical appearance, art and symbolism. Various stone artefact industries occur during this time period, although less is known about the time prior to 120 000 years ago, extensive systemic archaeological research is being conducted on sites across Southern Africa dating within the last 120 000 years (Thompson & Marean 2008). The large handaxes and cleavers were replaced by smaller stone artefacts called the MSA flake and blade industries. Surface scatters of these flake and blade industries occur widespread across Southern Africa although rarely with any associated botanical and faunal remains. It is also common for these stone artefacts to be found between the surface and approximately 50-80cm below ground. Fossil bone may in rare cases be associated with MSA occurrences (Gess 1969). These stone artefacts, like the Earlier Stone Age handaxes are usually observed in secondary context with no other associated archaeological material. The MSA is distinguished from the ESA by the smaller-sized and distinctly different stone artefacts and *chaine operateire* (method) used in manufacture, the introduction of other types of artefacts and evidence of symbolic behaviour. The prepared core technique was used for the manufacture of the stone artefacts which display a characteristic faceted striking platform and includes mainly unifacial and bifacial flake blades and points. The Howiesons Poort Industry (80 000-55 000 years ago) is distinguished from the other MSA stone artefacts: the size of tools are generally smaller, the range of raw materials include finer-grained rocks such as silcrete, chalcedony, chert and hornfels, and include segments, backed blades and trapezoids in the stone toolkit which were sometimes hafted (set or glued) onto handles. In addition to stone artefacts, bone was worked into points, possibly hafted, and used as tools for hunting (Deacon & Deacon 1999). Other types of artefacts that have been encountered in archaeological excavations include tick shell beads, the rim pieces of ostrich eggshell (OES) water flasks, ochre-stained pieces of ostrich eggshell and engraved and scratched ochre pieces, as well as the collection of materials for purely aesthetic reasons. The majority of MSA sites occur on flood plains and sometimes in caves and rock shelters. Sites usually consist of large concentrations of knapped stone flakes such as scrapers, points and blades and associated manufacturing debris. Tools may have been hafted but organic materials, such as those used in hafting, seldom remain preserved in the archaeological record. Limited drive-hunting activities are associated with the MSA.

- **The Later Stone Age (LSA)**

The Later Stone Age (LSA) spans the period from about 20 000 years ago until the colonial era, although some communities continue making stone tools today. The period between 30 000 and 20 000 years ago is referred to as the transition from the MSA to LSA; although there is a lack of crucial sites and evidence that represent this change. By the time of the Later Stone Age the genus *Homo*, in southern Africa, had developed into *Homo sapiens sapiens*, and in Europe, had already replaced *Homo neanderthalensis*. The LSA is marked by a series of technological innovations, new tools and artefacts, the development of economic, political and social systems, and core symbolic beliefs and rituals. The stone toolkits changed over time according to time-specific needs and raw material availability, from smaller microlithic Robberg, Wilton Industries and in between, the larger Albany/Oakhurst and the Kabeljous Industries. Bored stones used as part of digging sticks, grooved stones for sharpening and grinding and stone tools fixed to handles with mastic also become more common. Fishing equipment such as hooks, gorges and sinkers also appear within archaeological excavations. Polished bone tools such as eyed needles, awls, linkshafts and arrowheads also become a more common occurrence. Most importantly bows and arrows revolutionized the hunting economy. It was only within the last 2000 years that earthenware pottery was introduced. Before then tortoiseshell bowls were used for cooking and

ostrich eggshell (OES) flasks were used for storing water. Decorative items like ostrich eggshell and marine/fresh water shell beads and pendants were made. Hunting and gathering made up the economic way of life of these communities; therefore, they are normally referred to as hunter-gatherers. Hunter-gatherers hunted both small and large game and gathered edible plant foods from the veld. For those that lived at or close to the coast, marine shellfish and seals and other edible marine resources were available for the gathering. The political system was mainly egalitarian, and socially hunter-gatherers lived in bands of up to twenty people during the scarce resource availability dispersal seasons and aggregated according to kinship relations during the abundant resource availability seasons. Symbolic beliefs and rituals are evidenced by the deliberate burial of the dead and in the rock art paintings and engravings scattered across the Southern African landscape. Sites dating to the LSA are better preserved in rock shelters, although open sites with scatters of mainly stone tools can occur. Well-protected deposits in shelters allow for stable conditions that result in the preservation of organic materials such as wood, bone, hearths, ostrich eggshell beads and even bedding material. By using San (Bushman) ethnographic data a better understanding of this period is possible. South African rock art is also associated with the LSA.

4.1.2 The Iron Age Farmer Period

- Early Iron Age (Early Farming Communities)

The Early Iron Age (also Early Farmer Period) marks the movement of Bantu speaking farming communities into South Africa at around 200 A.D. These groups were agro-pastoralists that settled in the vicinity of water in order to provide subsistence for their cattle and crops. Artefact evidence from Early Farmer Period sites is mostly found in the form of ceramic assemblages and the origins and archaeological identities of this period are largely based upon ceramic typologies and sequences, where diagnostic pottery assemblages can be used to infer group identities and to trace movements across the landscape. Early Farmer Period ceramic traditions are classified by some scholars into different “streams” or trends in pot types and decoration that over time emerged in Southern Africa. These “streams” are identified as the Kwale Branch (east), the Nkope Branch (central) and the Kalundu Branch (west). More specifically, in the northern regions of South Africa at least three settlement phases have been distinguished for prehistoric Bantu-speaking agro-pastoralists. The first phase of the Early Iron Age, known as Happy Rest (named after the site where the ceramics were first identified), is representative of the Western Stream of migrations, and dates to AD 400-AD 600. The second phase of Diamant is dated to AD 600-AD 900 and was first recognized at the eponymous site of Diamant in the western Waterberg. The third phase, characterised by herringbone-decorated pottery of the Eiland tradition, is regarded as the final expression of the Early Iron Age (EIA) and occurs over large parts of the North West Province, Northern Province, Gauteng and Mpumalanga. This phase has been dated to about AD 900-AD 1200. Early Farmer Period ceramics typically display features such as large and prominent inverted rims, large neck areas and fine elaborate decorations. The Early Iron Age continued up to the end of the first millennium AD.

- Middle Iron Age / K2 Mapungubwe Period (early Later Farming Communities)

The onset of the middle Iron Age dates back to ±900 AD, a period more commonly known as the Mapungubwe / K2 phase. These names refer to the well-known archaeological sites that are today the pinnacle of South Africa’s Iron Age heritage. The inhabitants of K2 and Mapungubwe, situated on the banks of the Mpumalanga, were agriculturalists and pastoralists and were engaged in extensive trade activities with local and foreign traders. Although the identity of this Bantu-speaking group remains a point of contestation, the Mapungubwe people were the first state-organized society Southern Africa has known. A considerable amount of golden objects, ivory, beads (glass and gold), trade goods and clay figurines as well as large amounts of potsherds were found at these sites and also appear in sites dating back to this phase of the Iron Age. Ceramics of this tradition take the form of beakers with upright sides and decorations around the base (K2) and shallow-shouldered bowls with decorations as well as globular pots with long necks. (Mapungubwe). The site of Mapungubwe was deserted at around 1250 AD and this also marks the

relative conclusion of this phase of the Iron Age.

- **Later Iron Age (Later Farming Communities)**

The late Iron Age of Southern Africa marks the grouping of Bantu speaking groups into different cultural units. It also signals one of the most influential events of the second millennium AD in Southern Africa, the difaqane. The difaqane (also known as “the scattering”) brought about a dramatic and sudden ending to centuries of stable society in Southern Africa. Reasons for this change was essentially the first penetration of the Southern African interior by Portuguese traders, military conquests by various Bantu speaking groups primarily the ambitious Zulu King Shaka and the beginning of industrial developments in South Africa. Different cultural groups were scattered over large areas of the interior. These groups conveyed with them their customs that in the archaeological record manifest in ceramics, beads and other artefacts. This means that distinct pottery typologies can be found in the different late Iron Age groups of South Africa.

- **Bantu Speaking Groups in the South African interior**

It should be noted that terms such as “Nguni”, “Sotho”, “Venda” and others refer to broad and comprehensive language groups that demonstrated similarities in their origins and language. It does not imply that these Nguni / Sotho groups were homogeneous and static; they rather moved through the landscape and influenced each other in continuous processes marked by cultural fluidity.

Ethnographers generally divide major Bantu-speaking groups of Southern Africa into two broad linguistic groups, the Nguni and the Sotho with smaller subdivisions under these two main groups. Nguni groups were found in the eastern parts of the interior of South Africa and can be divided into the northern Nguni and the southern Nguni. The various Zulu and Swazi groups were generally associated with the northern Nguni whereas the southern Nguni comprised the Xhosa, Mpondo, Thembu and Mpondomise groups. The same geographically based divisions exist among Sotho groups where, under the western Sotho (or Tswana), groups such as the Rolong, Hurutshe, Kwena, Fokeng and Kgatla are found. The northern Sotho included the Pedi and amalgamation of smaller groups united to become the southern Sotho group or the Basutho. Other smaller language groups such as the Venda, Lemba and Tshonga Shangana transpired outside these major entities but as time progressed they were, however to lesser or greater extent influenced and absorbed by neighbouring groups.

4.1.3 Pastoralism and the last 2000 years

Until 2000 years ago hunter-gatherer communities traded, exchanged goods, encountered and interacted with other hunter-gatherer communities. From about 2000 years ago the social dynamics of the Southern African landscape started changing with the immigration of two 'other' groups of people, different in physique, political, economic and social systems, beliefs and rituals. One of these groups, the Khoekhoe pastoralists or herders entered Southern Africa with domestic animals, namely fat-tailed sheep and goats, travelling through the south towards the coast. They also introduced thin-walled pottery common in the interior and along the coastal regions of Southern Africa. Their economic systems were directed by the accumulation of wealth in domestic stock numbers and their political make-up was more hierarchical than that of the hunter-gatherers.

4.1.4 Historical and Colonial Times and Recent History

The Historical period in Southern Africa encompass the course of Europe's discovery of South Africa and the spreading of European settlements along the East Coast and subsequently into the interior. In addition, the formation stages of this period are marked by the large scale movements of various Bantu-speaking groups in the interior of South Africa, which profoundly influenced the course of European settlement. Finally, the final retreat of the San and Khoekhoen groups into their present-day living areas also occurred in the Historical period in Southern Africa.

4.2 The Limpopo Heritage Landscape: Specific Themes.

The landscape north of the Soutpansberg has always played an important ecological and cultural role in the history of South Africa. This section of the Limpopo valley, presenting the most important time periods in the history of South Africa, have been utilised and cultivated from the beginning of mankind, the signs of which are still visible today in the hundreds of archaeological sites scattered across the landscape. These signs range from 300 000 year old handaxes from the Earlier Stone Age, microlithic tools from the Later Stone Age, pot sherds, grinding stones and walling of previous Venda inhabitants to rock paintings and engravings.

4.2.1 Previous research

The Limpopo Valley was first formally documented by early travellers, explorer and missionaries that moved through areas surrounding the Limpopo River. Possibly the most valuable historical sources of information on the 19th century Limpopo Valley are maps of the Soutpansberg and surrounding, such as those compiled by Bertoud in 1903 (see Figure 4-1), Raddatz in 1870 (see Figure 4-2), Merensky in 1880 (see Figure 4-3) and Troye in 1892.

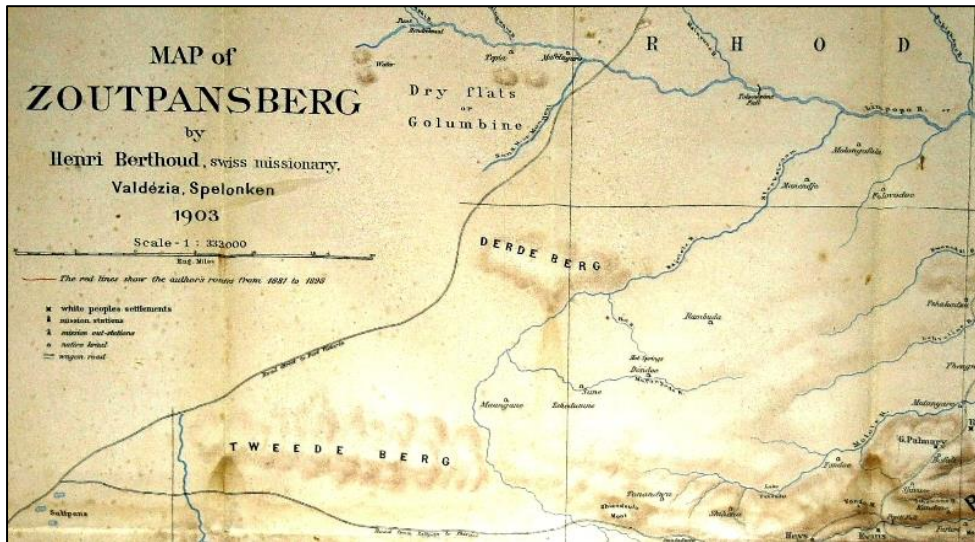


Figure 4-1: “Map of the Zoutpansberg”, compiled by the Swiss Missionary Henri Bertou c.1903.

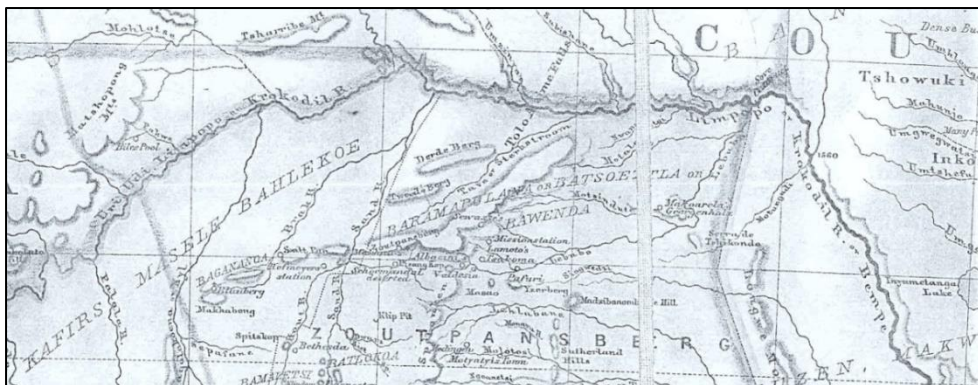


Figure 4-2: “Map of the Transvaal”, compiled by Alexander Merensky c.1880.

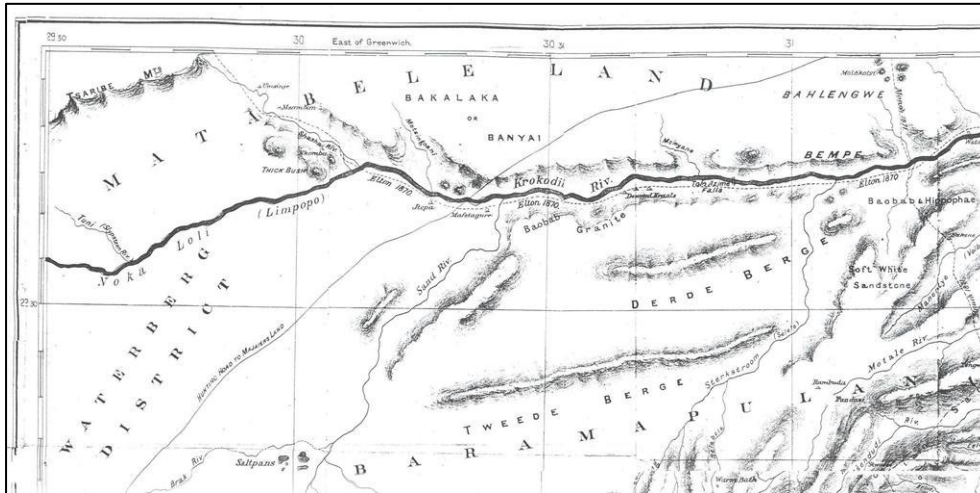


Figure 4-3: “Map of the Transvaal Goldfields, Zoutpansberg District”, compiled by H. Raddatz c1870.

Later research in the area includes important work by Government Ethnologist N.J van Warmelo in the first part of the 20th century. It is also during this period that the first academic research commenced at Mapungubwe and other Iron Age sites in the Limpopo valley. Central to these studies were Guy Gardner, Neville Jones and Leo Fouché who not only conducted systematic archaeological excavations at Mapungubwe, but also recorded Iron Age sites along the Limpopo River Basin. In recent years, the Limpopo Valley has been the subject of frequent archaeological and historical studies. Dr Cathy Kuman (University of the Witwatersrand) is currently conducting seminal research on the Earlier Stone Age of the Limpopo Valley. However, the Middle Stone Age has not been studied in detail and research by Francis Thakeray (Transvaal Museum) proves to be unique in terms of the Limpopo Valley MSA. In contrast to the MSA, Later Stone Age occurrences dating to the last two millennia, particularly Rock Art and stone implements have been extensively investigated. In past years, Ed Eastwood, Sven Ouzman and Ben Smith, amongst others addressed the rock art of the Limpopo Basin and Bronwyn van Doornum and Lynn Wadley looked at LSA assemblages. John Calabrese, Simon Hall, Ben Smith, Karim Sadr, Alex Schoeman and Tom Huffman informed on the interaction between Hunter-gatherers and farming communities during the first and early second millennia AD in their research. Central to the Iron Age cultural landscape of the Limpopo Valley is the Mapungubwe Iron Age Horizon, an area which has been intensively studied by researchers such as Guy Gardner, Leo Fouche, Andrie Meyer, John Calabrese, Tom Huffman, Alex Schoeman, Edwin Hanisch and MacEdward Murumbika have contributed significantly to our understanding of the Mapungubwe Cultural landscape.

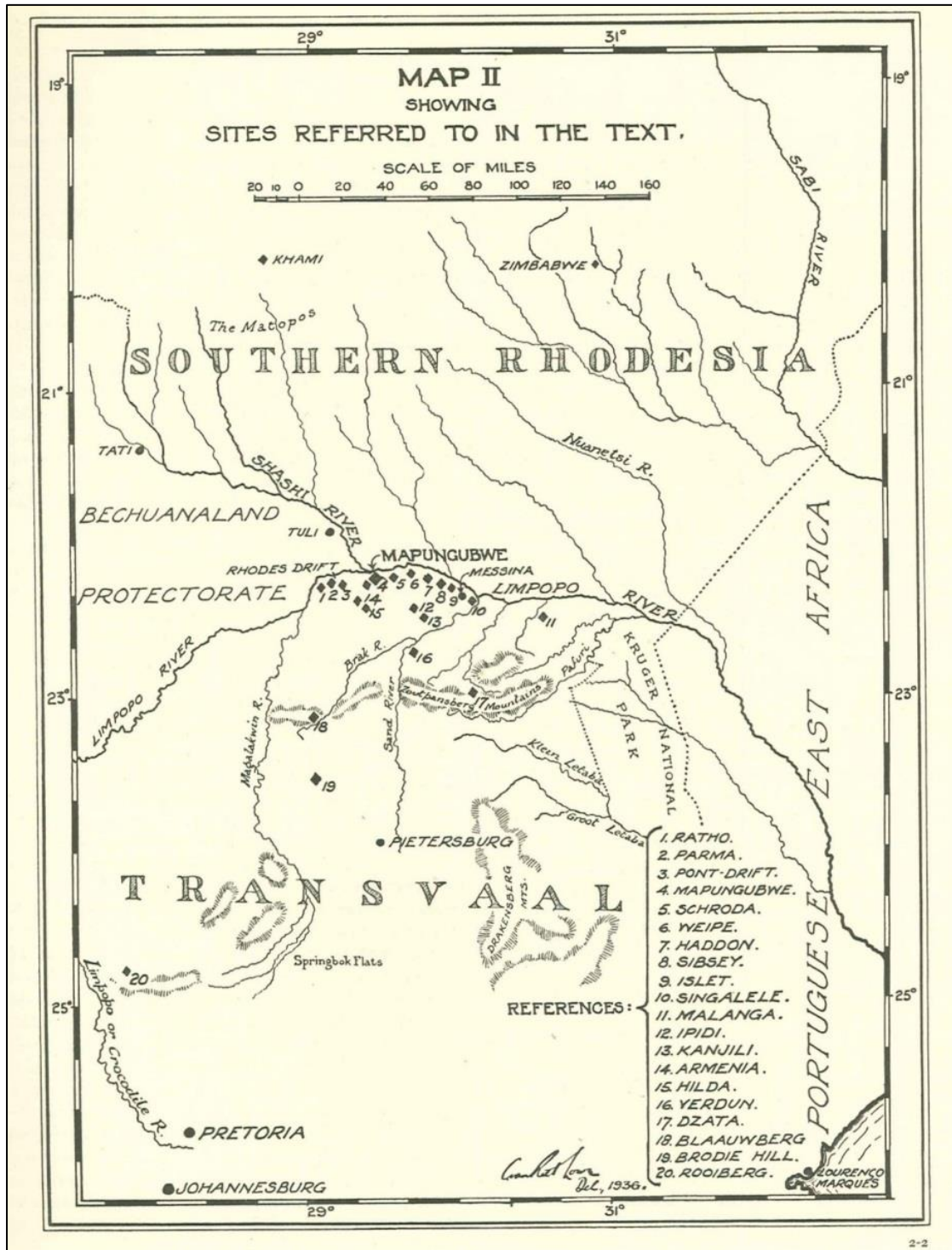


Figure 4-4: Map of archaeological sites around Mapungubwe, compiled by Neville Jones in 1935.

4.2.2 The Earlier, Middle and Later Stone Ages

The Earlier Stone Age of the Limpopo Valley has been extensively researched. Results from these research projects show that earlier Stone Age areas, dating back to 2.5 million years ago occur in areas around Musina and sites have been identified in riverbank deposits at many of the larger rivers and tributaries in the area. Specifically, areas around Mapungubwe, Tshipise and the Sand River are known to hold rich early Stone Age deposits where formal stone tools such as specialized hand axes typical of the Acheulian

industry of the early Stone Age were found. Similar to the distribution of ESA material, middle Stone Age sites occur widely in the Limpopo Valley near streams or other sources of water in the vicinity of source material used for the manufacture of stone tools. Artefacts such as stone points, blades and scrapers which date to more or less 125 000 years before present occur in large scatters around Musina and the Limpopo Valley. In the last two millennia the valley was occupied by the San hunter gatherers and Khoe herders/hunter gatherers and the later Stone Age is abundantly represented in the Limpopo River horizon in the form of rock shelters containing microlithic stone tools such as bladelets, scrapers, points and cores as well as rock markings and art. In addition a rich Hunter-Gathered legacy, LSA groups such as the San displayed intricate relationships with herders and farming communities in the area in the past centuries LSA sites occur across the Limpopo Valley in hills and around farmer-period settlements. Material from the earlier, middle and later Stone Age occur in areas around Musina on the farms Skirbeek, Framton, Dawn, Bosbokpoort and Njelele’s Drift as well as to the west of the town on the farm Newmark (Roodt 2008). Rock Art sites also occur in areas on these farms.

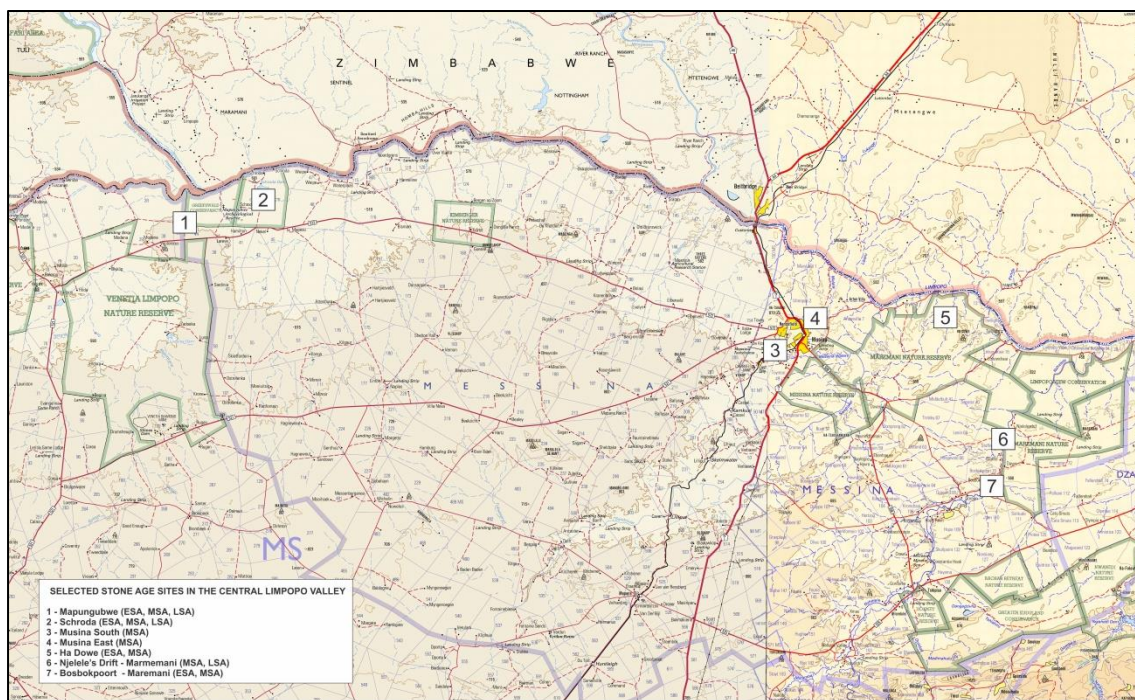


Figure 4-5: Map detailing the occurrence of Stone Age sites in the Limpopo Basin

4.2.3 Rock Markings

Rock paintings are mainly known from the mountainous areas of Botswana, Namibia, Zimbabwe and South Africa, while rock engravings are mainly confined to the Kalahari-fringe areas of Namibia, Botswana, Zimbabwe and the central and northern interior of South Africa. In the Limpopo Valley and Soutpansberg areas alone over 800 sites with paintings and engravings are known, and more are still being re-discovered. Most engravings were made by pecking, a technique that made use of a hammer stone and stone punch, or by direct percussion. Three painting traditions are present in the Limpopo Valley and Vhembe District; Hunter-Gatherer, Khoenkhoen and Bantu-speaker art.

- Hunter-Gatherer rock paintings

The delicate and frequently detailed San fine-line paintings were made using brushes made from twigs, quills, sticks or feathers. Red and yellow pigments applied in this way were made from various shades of ferric oxides or ochres; black pigments were prepared from charcoal and minerals like specularite, and white pigments from silicas and various riverine clays. The paintings of Vhembe-Dongola area are dominated by images of men and women. The most painted animal is the kudu, followed by giraffe,

tsessebe, impala and elephant. There are also images of San loincloths and aprons. In contrast, in Eastern Vhembe, human images are rare, and the main animals depicted are the giraffe and the zebra.

The Kaoxa Shelter, situated west of Mapungubwe on the farm Machete is regarded as one of the most significant Rock Art sites in the Limpopo Valley. Paintings of at least 16 animal species are found in this shelter. This diversity suggests that many species of animals were important in the belief system of the Limpopo-Shashi San hunter-gatherers. There are 13 images of locusts painted - an unusual and unique subject for the San artists. These are the only known rock paintings of locusts in southern Africa. At least 5 San painting 'styles' occur here. In addition there are geometric finger paintings. There are 4 complex panels in this site, an unusual feature in the LSCA. Explanatory lecterns have been set up below each set of paintings.

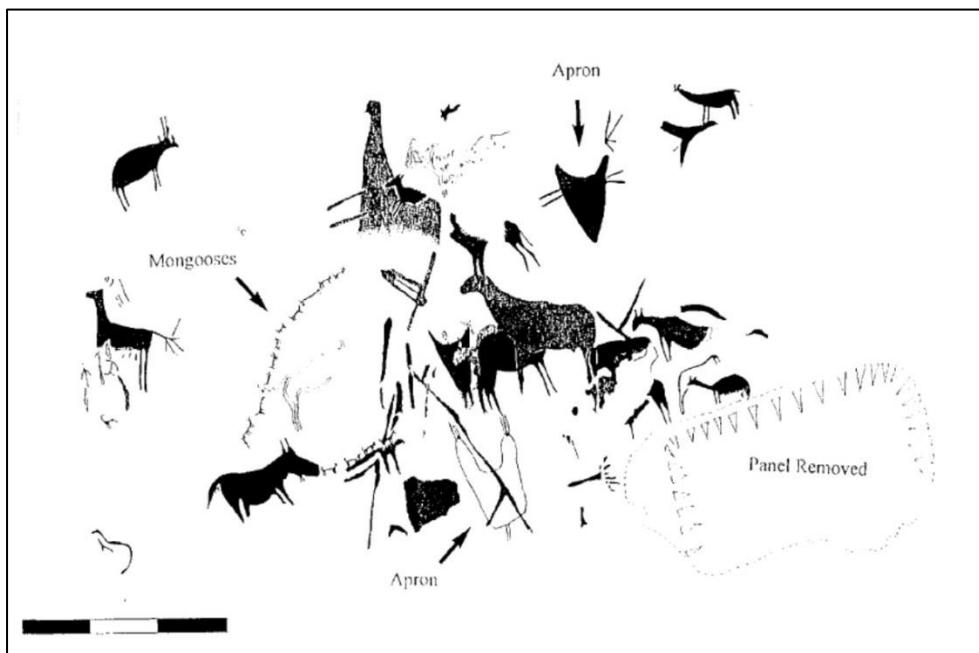


Figure 4-6: Tracing of a complex painted panel at Koaxa Shelter.

- **Khoekhoe rock paintings**

Khoekhoe rock art mainly comprises red and white finger paintings of dots, strokes, geometric forms, handprints and a component of representational motifs. This painting tradition extends from Central Africa to the southern parts of South Africa. In the Limpopo River Valley and its environs, Khoekhoe art comprises handprints, finger dots and strokes, variations of the circle motif, and images of fringed and unfringed women’s aprons. The accompanying chart illustrates the image classes found in the Limpopo region. The paintings are large and bold, and were painted in red or white, applied by human fingers, unlike the more familiar San paintings which are fine and delicate, painted with sticks and bristles in a variety of colours, and depict things we can recognise: animals and people. Like the San paintings, however, Geometric Tradition pigments were carefully applied, albeit by finger, as evidenced by the crisp clear outlines and with no sign of splashing — images clearly made without haste and without a mess. Again, like the San paintings, Khoekhoe paintings are made with colourants like red ochres and white minerals that were finely ground and mixed with binders, judging from the way the paints penetrate and adhere to the rock and are not easily washed off by water seepage. Although the art is sometimes found in the same rock shelters as engravings, San paintings, or Northern Sotho paintings, or various combinations of these techniques and traditions the Khoekhoe paintings are often found in small low-ceilinged shelters high up

on the sides of hills or between tumbled rocks on the summits of hills — one has to bend down or even crawl in order to view the art where it is frequently placed on the ceiling. They are also frequently found in huge shelters with sharply sloping floors. All these locations are in stark contrast to San preferences for painting sites. The San generally used comfortable rock shelters at ground level, with horizontal, usually sandy floors — and preferred to paint on vertical rock faces.

- **The rock paintings of Bantu-speakers**

Another tradition of painting known as “Late Whites” is found in the Soutpansberg and the Limpopo Valley. These finger-paintings consist of anthropomorphic, zoomorphic and geometric designs. These paintings were often daubed in several colours, but generally speaking the imagery is predominantly white. Recent research in south-central Africa suggests that the Late White tradition is at least partially explicable. Because the art is fairly recent; and the people who live near the sites are only a few generations removed from the painters, it has been possible to relate the symbolism depicted in the art to modern forms of ritual and the use of symbolism. In the Limpopo Province, at least some of the Late White tradition paintings can be linked to Sotho-speakers. It is likely that the imagery was linked to rites of passage.

- **Rock engravings: Utilitarian hollows, Mafuvha and Cupules**

Utilitarian hollows are small pecked depressions usually about the size of a bottle cap and roughly 20 millimetres deep. These hollows are typically found on horizontal surfaces: pavements in the open, or on stone floors and on loose rocks within shelters. They may have been used as anvils for cracking open the seeds of the Marula or Sour Plum, for example, which both contain edible nuts, or as receptacles for holding ostrich-eggshell ‘blanks’ or ‘roughouts’ whilst the central hole was being drilled. Although the San may have made some of the hollows that were used as work surfaces, others were possibly also made and/or used by Khoekhoen and Bantu-speakers. Another type of hollow is that of the mafuvha board game. Used mainly as a form of recreation, the game also has a ritual function and is linked to rain and fertility throughout Africa. Although mainly associated with Khoekhoen and Bantu-speakers, this game, generally known as mankala, is also played by San people so it is quite possible that at least some of the game boards on stone pavements in the Limpopo River Valley were also made by San hunter-gatherers.

A final category of small hollows, called ‘cupules’, comprises groups of apparently randomly distributed depressions situated on sloping or vertical rock faces or on large boulders within rock shelters. In some shelters up to 1000 cupules are found on rounded free-standing boulders, and to a lesser extent, on vertical rock faces. Some of these rows or random arrangements of cupules are situated up to 3,5 metres above ground level, suggesting that the engravers built some sort of scaffold to laboriously peck some of these marks into the relatively hard and durable sandstone rock faces. Their situation on the rock also suggests that they were made for a specific ritual rather than a mundane purpose. Their position and planar orientation on big boulders similarly suggest a ritual and symbolic function. Some of the cupules, in contrast to the utilitarian hollows, have a silica skin over them, the result of a process of salt deposition that must have occurred over a very long period of time. The apparent age of these cupules alone suggests that they were probably made by hunter-gatherers.

- **Rock engravings: Grooves**

Grooves are elongated, usually parallel, marks incised or abraded into the rock face. They generally range from the length of a matchstick to the length of an outstretched hand. Some have rounded profiles, while others are V-shaped. Grooves, like cupules discussed in the previous section, are divided into the utilitarian: those found on open, horizontal pavements or on loose rocks within shelters and the symbolic, those occurring on vertical or sloping rock faces in shelters. The utilitarian grooves may have been used for sharpening iron, bone or wooden points. They are situated in places in which it would have been comfortable to sit at ease while executing such a task. These grooves might have been made by anyone, however, not necessarily the San. Symbolic grooves are situated on rock faces up to four metres above ground level. Their great height suggests that they also served some symbolic function. Like the symbolic

cupules, some of the grooves are covered in a silica skin, a phenomenon that suggests some antiquity. More often than not, cupules and grooves are associated — their co-occurrence hints at a related, symbolic function.

- Rock engravings: Engraved animals

San peoples or their ancestors undoubtedly made the engravings of animals, because similar engravings all over southern Africa have been shown to have San authorship. Like San paintings, these engravings have been shown to have their roots in a shamanistic cosmology. In most areas of the subcontinent engravings were associated with ideas about rainmaking or depict elements of the medicine dance and the supernaturally potent animals.

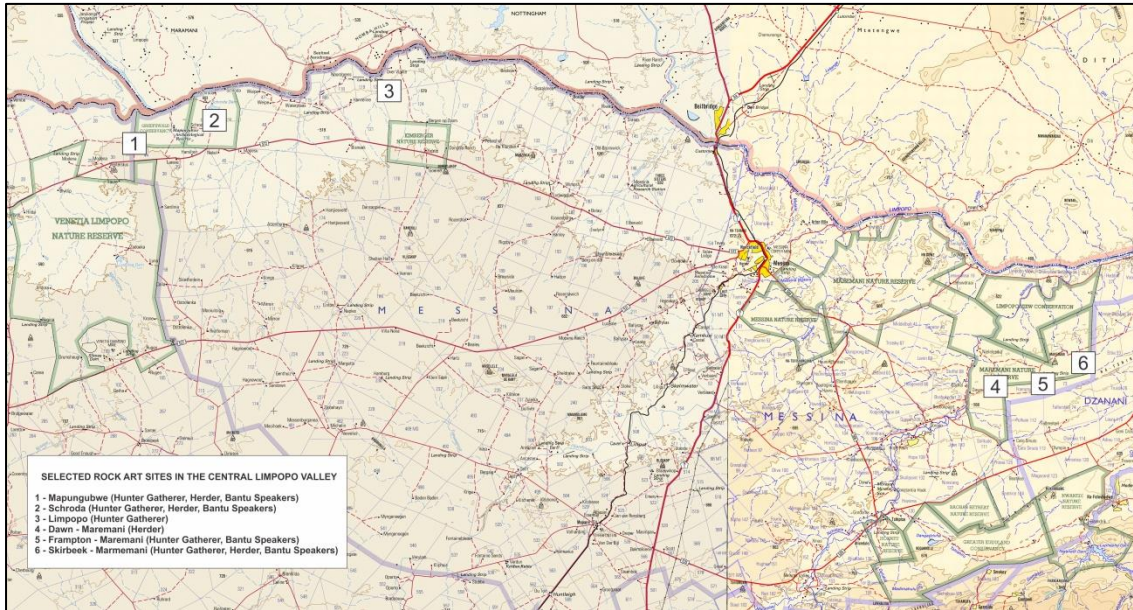


Figure 4-7: Map detailing the occurrence of Rock Art sites in the Limpopo Basin.

4.2.4 The Iron Age / Farmer Period

The Iron Age of the Limpopo Province is dominated by the Mapungubwe Cultural Landscape around the Shashe-Limpopo confluence. At the core of this horizon lay the Middle Iron Age sites of Mapungubwe and K2. However, early Iron Age farmers moved into the Limpopo valley centuries before the advent of the Mapungubwe Kingdom. These early Iron Age farmers, which formed part of the Kalundu Ceramic Tradition (the western stream of migration into South Africa); regionally known as Happy Rest, settled on the southern foot of the Soutpansberg between in the 5th century AD. Later, at around AD 900 the Zhizo capital at Schroda near the Limpopo Shashe confluence came into existence. Through this group, the Limpopo Valley interior was first integrated directly with the Indian Ocean trade network. According to the archaeological record, Schroda lost control of the interior portion of the trade network at about AD 1000 to a new group of people known as Leopard’s Kopje. They established their capital at K2 on the present day farm Greefswald, while commoner K2 sites were established throughout the Basin. Large amounts of trade goods from K2 show that trade had enhanced the leader of K2’s status which added to the intensification of social ranking. In turn, this contributed to the development of a bureaucratic class which materialized during the onset of the Mapungubwe period. At AD 1220 the K2 leader shifted the capital to the flat hill called Mapungubwe about 2 km from K2. Here the king moved to the hilltop while the majority of his people lived below. It is now known that the Zimbabwe culture evolved in the Shashe-Limpopo basin and that Mapungubwe was the first Zimbabwe capital. Consequently, archaeologists divide the culture into three chronological periods named after the important capitals:

- Mapungubwe (AD 1220-1290)
- Great Zimbabwe (AD 1290-1450)
- Khami (AD 1450-1820)

At the end of the 13th century the climate throughout Southern Africa appears to have been affected by the spread of the Little Ice Age and it became colder and drier in the interior. In some areas it was no longer possible to cultivate traditional grain crops. As a consequence, Mapungubwe was abandoned; the entire basin depopulated which resulted in the disintegration of the Mapungubwe State. Great Zimbabwe became Mapungubwe's economic, cultural and political successor. Shortly after the demise of Mapungubwe, the first Sotho/Tswana people moved into this part of the interior from East Africa. Khami, a later expression of the Great Zimbabwe culture occurred after AD 1450. Khami sites, during the Middle Iron Age followed the elite Zimbabwe pattern which incorporated stone walling within the settlement organisation. A large portion of early stone walled sites in the Limpopo Valley area dates to this period. Other identifiable features are ceramic scatters on the surface and visible kraals.

Venda-speaking communities belong to the most prevalent cultural entity in the Limpopo Valley and the Soutpansberg areas today. According to oral tradition, Venda history occurred in three layers of occupation. The first was Ngoni, followed by Lembethu, Mbedzi, Thavhastindi and others, and lastly Singo. The Lembethu, Mbedzi and Thavhastindi groups comprises various chiefdoms from Zimbabwe, each ruling Zimbabwe type settlements with typical stone walled palaces (Huffman 2008). We know that Shona-speaking chiefdoms (identified by the Khami facies) moved south of the Limpopo between AD 1400 and 1450, incorporating earlier Sotho-Tswana people. After approximately 100 years of cohabitation, these two independent groups created the Venda language, which is known to be associated with Letaba pottery (Huffman 2005). At present, the ruling Singo, are the descendents of the final occupation. Oral tradition indicate that the Singo moved south across the Limpopo river around AD 1690. They conquered the independent chiefdoms and united the Venda nation for the first time. Dzata, in the Nzhelele Valley, was the capital of Singo but was later abandoned during the reign of the legendary Thoho-ya-Ndou. As a result the Venda nation fragmented, and the present day three competing dynasties were established (Steyn 1968; Loubser 1991; Huffman 2008). A number of Iron Age (Farmer period) sites occur in the larger Musina area. During a survey of the Limpopo Valley 1935, Leo Fouche identified a number of K2/Mapungubwe type sites at Mapungubwe, Bambambandyalo and the farm Sibsey. He further documented Khami (or "Dhlo-Dhlo" as he terms it) stone-walled structures on the farms Maryland, Haddon, and Schroda. Finally he noted Venda (or "Dzata") type sites on the farms Verdun, Shirbeek, Beitbridge, Weipe, Haddon, Sibsey, Islet, Singalele, Ipidi, Kanjili, Armenia, and Verdun (Fouche 1935). Huffman and Hanisch also identified Later Iron Age stone walled sites on the farms Evelyn, Toynton, Verulam, Prinzenhagen, Machemma and again at Verdun (Huffman & Hanish).

- **The Mapungubwe Cultural Landscape**

The Mapungubwe Cultural Landscape demonstrates the rise and fall of the first indigenous kingdom in Southern Africa between 900 and 1,300 AD. The core area covers nearly 30,000 ha and is supported by a suggested buffer zone of around 100,000 ha. Within the collectively known Zhizo sites are the remains of three capitals - Schroda; Leopard's Kopje; and the final one located around Mapungubwe hill - and their satellite settlements and lands around the confluence of the Limpopo and the Shashe rivers whose fertility supported a large population within the kingdom. Mapungubwe's position at the crossing of the north/south and east/west routes in southern Africa also enabled it to control trade, through the East African ports to India and China, and throughout southern Africa. From its hinterland it harvested gold and

ivory - commodities in scarce supply elsewhere – and this brought it great wealth as displayed through imports such as Chinese porcelain and Persian glass beads. This international trade also created a society that was closely linked to ideological adjustments, and changes in architecture and settlement planning. Until its demise at the end of the 13th century AD, Mapungubwe was the most important inland settlement in the African subcontinent and the cultural landscape contains a wealth of information in archaeological sites that records its development. The evidence reveals how trade increased and developed in a pattern influenced by an elite class with a sacred leadership where the king was secluded from the commoners located in the surrounding settlements.



Figure 4-8: View of Mapungubwe Hill.



Figure 4-9: Examples of typical K2 type ceramics (Huffman 2007:238).

Mapungubwe's demise was brought about by climatic change. During its final two millennia, periods of warmer and wetter conditions suitable for agriculture in the Limpopo/Shashe valley were interspersed with cooler and drier pulses. When rainfall decreased after 1300 AD, the land could no longer sustain a high population using traditional farming methods, and the inhabitants were obliged to disperse. Mapungubwe's position as a power base shifted north to Great Zimbabwe and, later, Khami.

After the discovery of Mapungubwe in 1932, the University of Pretoria established an Archaeological Committee, which from 1933 to 1947 oversaw research and excavations. Rev. Neville Jones from Zimbabwe and J.F. Schofield were appointed to undertake the first fieldwork in 1934 and 1935 and they were advised by Professor C van Riet Lowe, Director of the Bureau of Archaeology. Their work focused on Mapungubwe Hill, the southern terrace and the midden there. They briefly surveyed other similar sites in the vicinity. From 1935-1940 six excavation seasons at K2 and Mapungubwe Hill were directed by Guy A. Gardner. The results of his work were published nearly 25 years later. Meyer (1998) describes the excavations on Greefswald between 1933 and 1940 as 'rapid, large scale excavations resulting in the recovery of valuable artefacts'. Research was hampered by 'the lack of professional archaeologists in South Africa, the lack of full-time supervision of the excavations by efficient, trained staff, the fact that adequate scientific methods for Iron Age research had not yet been developed and that the Iron Age in South Africa was virtually unknown to archaeologists. Consequently, many of the deposits on the sites were removed without the meticulous excavation and recording required. These problems inevitably resulted in a loss of irreplaceable deposits and eventually also of excavated materials and a lack of scientific data.



Figure 4-10: A plated golden rhino, one of many gold objects excavated from Mapungubwe Hill.

The next phase of archaeological investigation, in 1953- 1954 and in 1968-1970, under the direction initially of the Department of Anthropology, and then of Professor J F Eloff who was appointed as Head of the newly-formed Department of Archaeology at the University of Pretoria in 1970, was more systematic and focused mainly on the southern terrace. Over the next 25 years from 1970 to 1995, the Department of Archaeology at the University of Pretoria recognised that their first priority was to establish a firm database by testing, correcting and supplementing the earlier research, and concentrating on reconstructing the way of life of the site inhabitants. Between 1979 and 2002 reports have been published on the human and faunal remains, Chinese porcelain, gold objects, glass beads and radiocarbon dating. In addition, sites on

neighbouring farms have been investigated by students of the University of Pretoria during the 1970s and 1980s. Greefswald has remained the property of the State since the 1930s. Management of the farm was taken over by the provincial Department of Nature Conservation in 1992, and control was transferred to SANParks in 1999. Since the 1990s, Wits archaeologists have worked in the Mapungubwe landscape investigating Stone Age, Rock Art and Iron Age sites. They concentrated on the last 2000 years. The systematic survey of the National Park and buffer zone, including Little Muck, Schroda and Venetia, has now recorded some 1000 Iron Age sites. Using this data, various graduate students have investigated ethnic stratification (Calabrese PhD 2005), glass beads and international trade (Wood MA 2005), the ethno-archaeology (Murimbika PhD 2006) and archaeology (Schoeman PhD 2006) of rainmaking, the relationship of settlements to the landscape (du Piesanie MSc 2008), faunal remains (Fatherley MSc 2009), agricultural production (Chandler Honours 2009) and spherulites in cattle dung. Current research includes settlements during the Khami Period (du Piesanie PhD) and herding strategies.

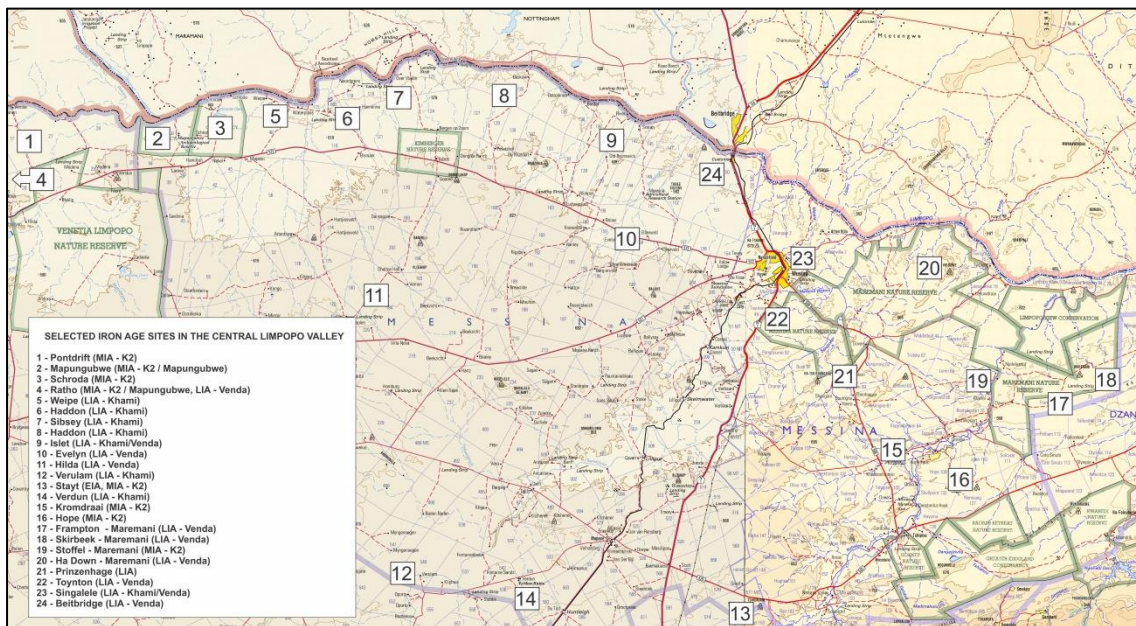


Figure 4-11: Map detailing the occurrence of Iron Age sites in the Limpopo Basin



Figure 4-12: Venda-type stone walled site east of Musina at Maremani.

4.2.5 Later History: Trade, Exploration and Colonial Times

The historic timeframe sometimes intermingles with the later parts of the Stone and Iron Age, and can loosely be regarded as times when written and oral recounts of incidents became available. The first Europeans to trek through the interior of South Africa north of the Vaal River were the expedition party of Dr. Andrew Cowan who travelled from the Cape to the border of Botswana and from there eastwards to Delagoa Bay. The party however disappeared and was never heard of after a final report written by Cowan in 1808. The Voortrekkers crossed the Vaal River in 1836, and within a few years, began to spread north. Much of the Limpopo Province contained tsetse fly, and so early Boer farmers didn't settle immediately in the area. Rather the area was used primarily for hunting. The first contact between Venda-speaking groups and white pioneers occurred during 1836 when the trek of Louis Trichardt entered the Soutpansberg.

In 1850 the town of Schoemansdal was founded, which led to increased contact between the two groups. At this time European traders also entered the area, which led to the circulation of western goods in the Limpopo Valley. After the establishment of the Zuid-Afrikaansche Republiek (ZAR) in 1857, White farmers settled throughout the Soutpansberg area. Missionary activity also increased during this period, which affected and changed many indigenous customs. The town of Messina was only founded in the beginning of the 20th century where after mines and mainly cattle farms emerged around the town. The town soon became a bustling copper mining and agricultural centre in the Limpopo Valley. The magisterial district known as Messina was proclaimed in 1963 and after recent name changes the town is now also known as Musina, a name given to the area by pre-historic copper miners.

The farm Hamilton was initialled registered as Nekel in 1906 but it was reregistered soon thereafter to its current name.

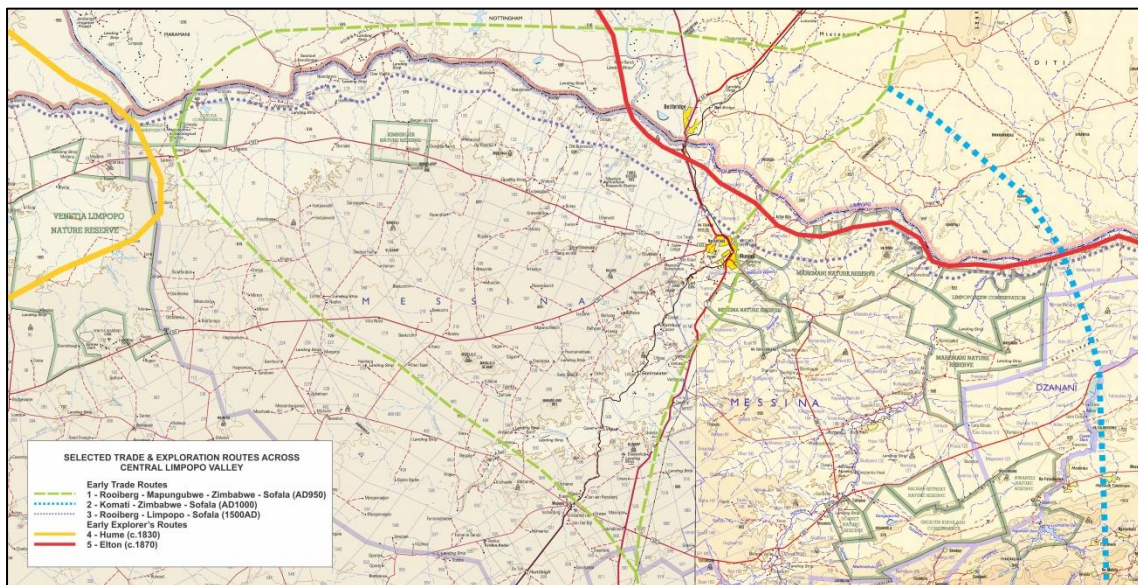


Figure 4-13: Map detailing the movement of traders and explorers in the Limpopo Basin.

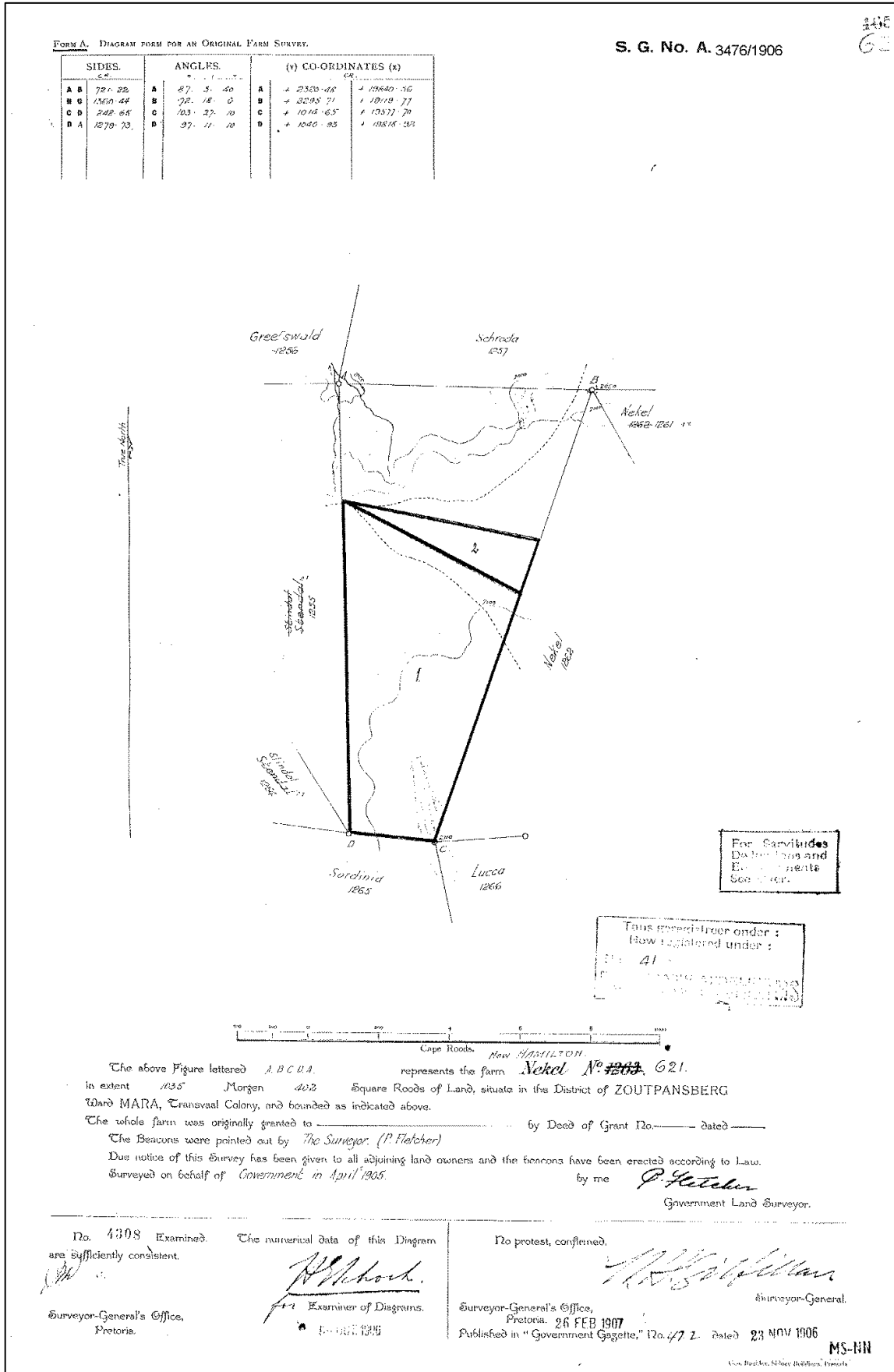


Figure 4-14: The original title deed for the farm Hamilton (initially Nettel) c.1906.

4.2.6 Archaeo-metallurgy

Musina owes its origin and development to the presence of rich copper deposits in the area. The largest copper deposits in South African can be found here, as well as at Phalaborwa and in the Dwarsberge. According to archaeological and ethnographical indications large amounts of copper were mined around the Musina area in previous centuries. During the late Iron Age copper was a valuable and relatively easily workable commodity. After it was mined and worked it was distributed via intercontinental trade routes and also used as local article of trade for buying, bartering and lobola (compensation to a family for marrying a female member of that family). Venda ethnography suggests that the Lemba, a Venda-speaking group with clear Semitic associations although no clear cultural affiliation, were in many cases responsible for iron and copper working.

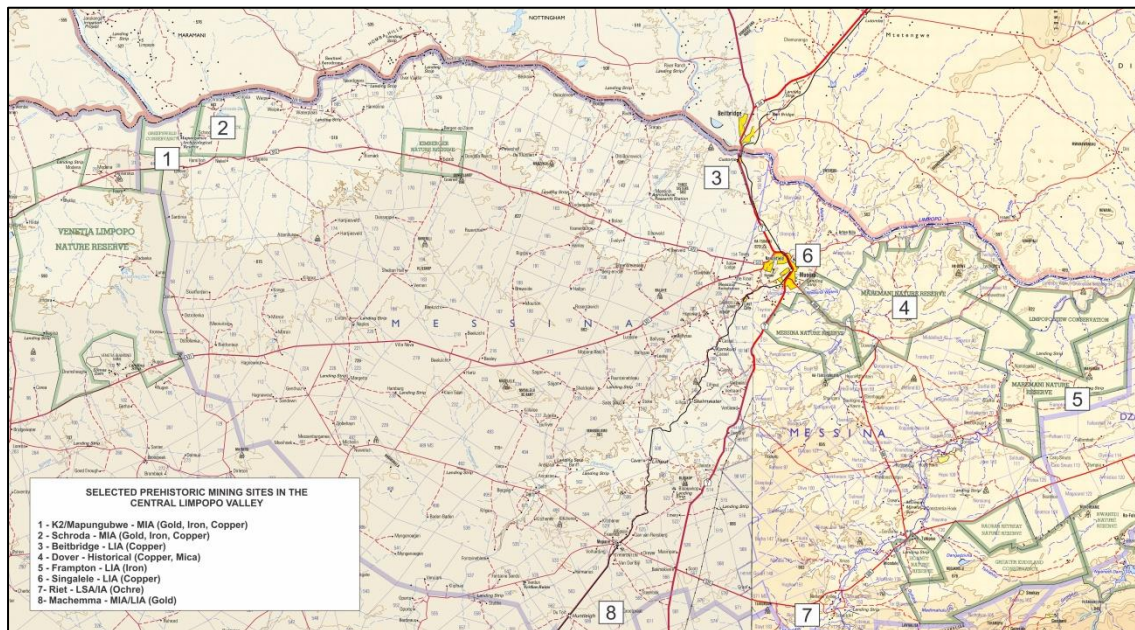


Figure 4-15: Map detailing archaeo- metallurgy sites in the Limpopo Basin.

5 RESULTS: ARCHAEOLOGICAL SURVEY

In terms of heritage resources, the SLCA landscape is well known for the occurrence of Stone Age and Iron Age occupation and Colonial Period heritage remnants. Similarly, archaeological artefacts and signs of prehistorical human occupation were observed on surfaces directly surrounding the SanPARKS Mapungubwe Section 24G project. These areas have previously been disturbed and transformed by intensive historical agriculture and farming.

5.1 The Stone Age

Stone Age remains associated with caves, outcrops/hills and river courses are known to exist throughout the SLCA. Two Earlier Stone Age cleavers were observed along a small drainage line east of the project area. A number of Middle Stone Age tools were found scattered across surrounding areas east and south of the project area. Artefacts observed in this area include both residue and debris, and formal MSA tools such as scrapers, points, blades, prepared cores and residue flakes. The artefacts were manufactured from banded ironstone and fine-grained dolerite. Finally, a probable Later Stone Age side scraper, manufactured out of a Cryptocrystalline Silica (CCS) material was noted in an area surrounding the project zone. As these lithics were found in areas previously cultivated, their primary context has in all probability been lost compromising their scientific value. However, it is highly likely that related Stone Age occurrences will occur in the larger landscape in previously undisturbed areas, specifically along drainage lines.



Figure 5-1: Dorsal and ventral views of an ESA chopper from areas surrounding the project area.

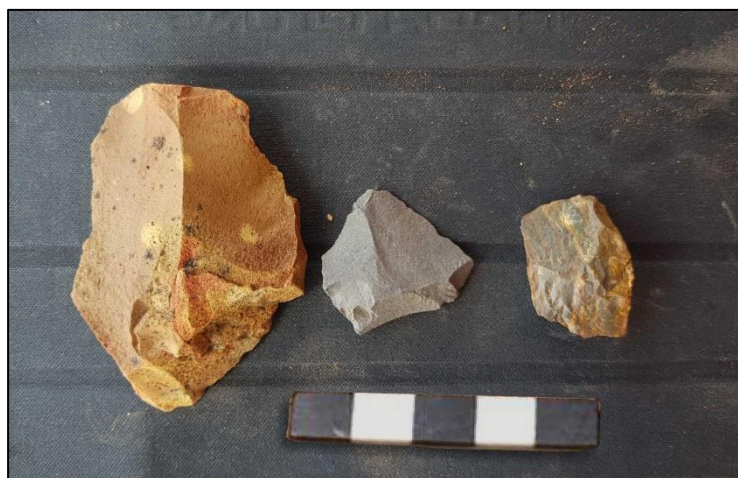


Figure 5-2: MSA flake tools and debris from areas surrounding the project area.

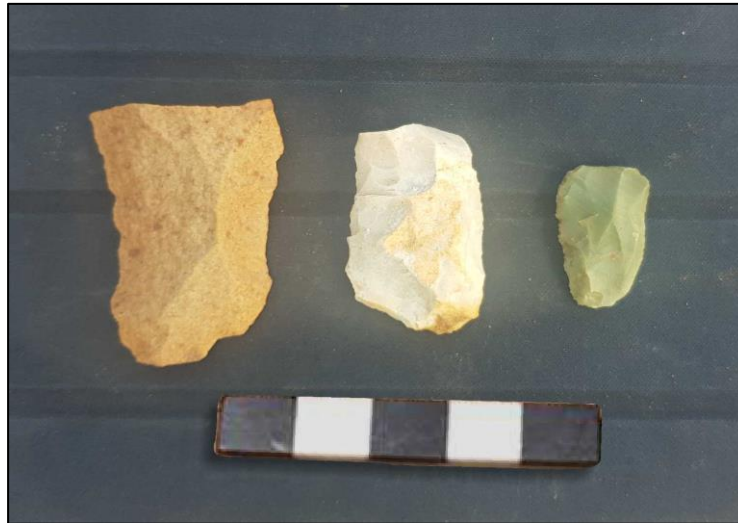


Figure 5-3: MSA blades (left and centre) and an LSA scraper from areas surrounding the project area,

5.2 The Iron Age Farmer Period

The SLCA is immensely rich in precolonial Iron Age Farmer Period remnants. A few Iron Age Farmer artefacts such as decorated and undecorated potsherds and a lower grindstone were observed on the surface north, east and south of the project area. The potsherds are highly fragmented and cannot provide conclusive diagnostic information in terms of temporality, stylistic classification or cultural context. However, deep stamp imprints and dark burnishing on one of the shards, as well as the partially visible diagonal band of incisions on another shard might indicate K2/Mapungubwe ceramics common this this area. The presence of the lower grindstone indicates the processing of prehistoric crops which, in turn suggests that this area was an occupation site where some kind of pre-contact agriculture was practised. In later years and moving into the Historical Period, intensive agriculture at the site continued and the artefacts discussed above were found in old farming fields, devoid of archaeological context. However, it is highly likely that related iron Age Farming remnants will occur in the larger landscape in previously undisturbed areas, specifically along drainage lines.



Figure 5-4: Ceramic shards from areas surrounding the project area. Note the diagonal band of incisions on the shard to the left.



Figure 5-5: Ceramic shards from areas surrounding the project area. Note the dark burnishing and stamp imprints on the shard to the top left



Figure 5-6: A lower grindstone observed in an area adjacent to the project area.

5.3 Colonial Period and recent times

European and local farming communities settled in the Limpopo Valley and the SLCA during the Colonial Period in the last century. Archival maps and historical aerial photos of the areas directly surrounding the project area indicate historical agricultural lands but no features or structures dating to this time period are visible. Similarly, no Colonial Period occurrences were observed in the project area or its surrounds.

5.4 Graves

No human burials or graves were noted in the project area or its surrounds.

6 RESULTS: STATEMENT OF SIGNIFICANCE AND IMPACT RATING

6.1 Potential Impacts and Significance Ratings²

The following section provides a background to the identification and assessment of possible impacts and alternatives, as well as a range of risk situations and scenarios commonly associated with heritage resources management. A guideline for the rating of impacts and recommendation of management actions for areas of heritage potential within the study area is supplied in Section 10.2 of the Addendum.

6.1.1 General assessment of impacts on resources

Generally, the value and significance of archaeological and other heritage sites might be impacted on by any activity that would result immediately or in the future in the destruction, damage, excavation, alteration, removal or collection from its original position, any archaeological material or object (as indicated in the National Heritage Resources Act (No 25 of 1999)). Thus, the destructive impacts that are possible in terms of heritage resources would tend to be direct, once-off events occurring during the initial construction period. However, in the long run, the proximity of operations in any given area could result in secondary indirect impacts. The EIA process therefore specifies impact assessment criteria which can be utilised from the perspective of a heritage specialist study which elucidates the overall extent of impacts.

6.1.2 Direct impact rating

Direct or primary effects on heritage resources occur at the same time and in the same space as the activity, e.g. loss of historical fabric through demolition work. **Indirect effects or secondary effects** on heritage resources occur later in time or at a different place from the causal activity, or as a result of a complex pathway, e.g. restriction of access to a heritage resource resulting in the gradual erosion of its significance, which is dependent on ritual patterns of access (refer to Section 10.3 in the Addendum for an outline of the relationship between the significance of a heritage context, the intensity of development and the significance of heritage impacts to be expected).

Cognisant of known site distribution patterns in this section of the Limpopo Province, and based on general on-site observations and off-site assessments and, notably the fact that the project site and its immediate surrounds have previously been transformed by intensive historical agriculture and farming, the author of this report is of the opinion that the construction of the SanParks Office Complex, had a minimal (if any) impact on archaeological artefacts, features or structures surviving in primary context at the time of construction.

6.2 Management actions

Recommendations for relevant heritage resources management actions are vital to the conservation of heritage resources. A general guideline for recommended management actions is included in Section 10.4 of the Addendum. The following management measures would be required during implementation of the proposed SanPARKS Mapungubwe Section 24G Project.

OBJECTIVE: prevent unnecessary disturbance and/or destruction of previously undetected heritage receptors.

No specific action in terms of mitigation is required for the footprint areas of the SanPARKS Mapungubwe Section 24G Project. However, the following general procedure is required for the site:

² Based on: Winter, S. & Baumann, N. 2005. *Guideline for involving heritage specialists in EIA processes: Edition 1.*

PROJECT COMPONENT/S	All phases of construction and operation.		
POTENTIAL IMPACT	Damage/destruction of sites.		
ACTIVITY RISK/SOURCE	Digging foundations and trenches into sensitive deposits that are not visible at the surface.		
MITIGATION: TARGET/OBJECTIVE	To locate previously undetected heritage remains / graves as soon as possible after disturbance so as to maximize the chances of successful rescue/mitigation work.		
MITIGATION: ACTION/CONTROL	RESPONSIBILITY	TIMEFRAME	
Fixed Mitigation Procedure (required)			
Site Monitoring: Regular examination of trenches and excavations.	ECO	Monitor as frequently as practically possible.	
PERFORMANCE INDICATOR	Archaeological sites are discovered and mitigated with the minimum amount of unnecessary disturbance.		
MONITORING	Successful location of sites by person/s monitoring.		

7 RECOMMENDATIONS

Previous heritage studies conducted in the Limpopo Province region and the SLCA suggest a rich and diverse archaeological landscape but the surroundings of the proposed SanPARKS Mapungubwe Section 24G Project have been transformed by historical farming. Cognisance should nonetheless be taken of archaeological material that might be present in surface and sub-surface deposits along drainage lines and in pristine areas. The following recommendations are made based on general observations in the proposed SanPARKS Mapungubwe Section 24G Project area:

- Considering the localised nature of heritage remains and the sensitivity of the surrounding heritage landscape, the general monitoring of further development progress by an ECO or by the heritage specialist is recommended for all stages of the project. Should any subsurface palaeontological, archaeological or historical material, or burials be exposed during construction activities, all activities should be suspended and the archaeological specialist should be notified immediately
- Should, at any stage, the development extend beyond the footprint denoted in this report, further detailed site inspections as part of additional Heritage Impact Assessment (HIA) processes for these areas should be conducted, subject to section 38 of the National Heritage Resources Act (NHRA - Act 25 of 1999).
- It is essential that cognisance be taken of the larger archaeological landscape of the area in order to avoid the destruction of previously undetected heritage sites. It should be stated that it is likely that further undetected archaeological remains might occur elsewhere in the project landscape along water sources and drainage lines, fountains and pans would often have attracted human activity in the past. Also, since Stone Age material seems to originate from below present soil surfaces in eroded areas, the larger landscape should be regarded as potentially sensitive in terms of possible subsurface deposits. Burials and historically significant structures dating to the Colonial Period occur on farms in the area and these resources should be avoided during all phases of construction and development, including the operational phases of the development.

In addition to these site-specific recommendations, careful cognizance should be taken of the following:

- As Palaeontological remains occur where bedrock has been exposed, all geological features should be regarded as sensitive.
- Water sources such as drainage lines, fountains and pans would often have attracted human activity in the past. As Stone Age material the larger landscape should be regarded as potentially sensitive in terms of possible subsurface deposits.

8 GENERAL COMMENTS AND CONDITIONS

This AIA report serves to confirm the extent and significance of the heritage landscape of the proposed SanPARKS Mapungubwe Section 24G Project area. The larger heritage horizon encompasses rich and diverse archaeological landscapes and cognisance should be taken of heritage resources and archaeological material that might be present in surface and sub-surface deposits. If, during construction, any possible archaeological material culture discoveries are made, the operations must be stopped and a qualified archaeologist be contacted for an assessment of the find. Such material culture might include:

- Formal Earlier Stone Age stone tools.
- Formal MSA stone tools.
- Formal LSA stone tools.
- Potsherds
- Iron objects.
- Beads made from ostrich eggshell and glass.
- Ash middens and cattle dung deposits and accumulations.
- Faunal remains.
- Human remains/graves.
- Stone walling or any sub-surface structures.
- Historical glass, tin or ceramics.
- Fossils.

If such sites were to be encountered or impacted by any proposed developments, recommendations contained in this report, as well as endorsement of mitigation measures as set out by Limpopo-PHRA, SAHRA, the National Resources Act and the CRM section of ASAPA will be required.

It must be emphasised that the conclusions and recommendations expressed in this archaeological heritage sensitivity investigation are based on the visibility of archaeological sites/features and may not therefore, represent the area's complete archaeological legacy. Many sites/features may be covered by soil and vegetation and might only be located during sub-surface investigations. If subsurface archaeological deposits, artefacts or skeletal material were to be recovered in the area during construction activities, all activities should be suspended and the archaeological specialist should be notified immediately (*cf.* **NHRA (Act No. 25 of 1999)**, Section 36 (6)). It must also be clear that Archaeological Specialist Reports will be assessed by the relevant heritage resources authority (SAHRA).

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10 ADDENDUM 1: HERITAGE LEGISLATION BACKGROUND

10.1 CRM: Legislation, Conservation and Heritage Management

The broad generic term *Cultural Heritage Resources* refers to any physical and spiritual property associated with past and present human use or occupation of the environment, cultural activities and history. The term includes sites, structures, places, natural features and material of palaeontological, archaeological, historical, aesthetic, scientific, architectural, religious, symbolic or traditional importance to specific individuals or groups, traditional systems of cultural practice, belief or social interaction.

10.1.1 Legislation regarding archaeology and heritage sites

The South African Heritage Resources Agency (SAHRA) and their provincial offices aim to conserve and control the management, research, alteration and destruction of cultural resources of South Africa. It is therefore vitally important to adhere to heritage resource legislation at all times.

d. National Heritage Resources Act No 25 of 1999, section 35

According to the National Heritage Resources Act of 1999 a historical site is any identifiable building or part thereof, marker, milestone, gravestone, landmark or tell older than 60 years. This clause is commonly known as the "60-years clause". Buildings are amongst the most enduring features of human occupation, and this definition therefore includes all buildings older than 60 years, modern architecture as well as ruins, fortifications and Iron Age settlements. "Tell" refers to the evidence of human existence which is no longer above ground level, such as building foundations and buried remains of settlements (including artefacts).

The Act identifies heritage objects as:

- objects recovered from the soil or waters of South Africa including archaeological and palaeontological objects, meteorites and rare geological specimens
- visual art objects
- military objects
- numismatic objects
- objects of cultural and historical significance
- objects to which oral traditions are attached and which are associated with living heritage
- objects of scientific or technological interest
- any other prescribed category

With regards to activities and work on archaeological and heritage sites this Act states that:

"No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit by the relevant provincial heritage resources authority." (34. [1] 1999:58)

and

"No person may, without a permit issued by the responsible heritage resources authority-

- (d) *destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;*
- (e) *destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;*

- (f) *trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or*
- (g) *bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites. (35. [4] 1999:58)."*

and

"No person may, without a permit issued by SAHRA or a provincial heritage resources agency-

- (h) *destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;*
- (i) *destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority;*
- (j) *bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) and excavation equipment, or any equipment which assists in the detection or recovery of metals (36. [3] 1999:60)."*

e. Human Tissue Act of 1983 and Ordinance on the Removal of Graves and Dead Bodies of 1925

Graves 60 years or older are heritage resources and fall under the jurisdiction of both the National Heritage Resources Act and the Human Tissues Act of 1983. However, graves younger than 60 years are specifically protected by the Human Tissues Act (Act 65 of 1983) and the Ordinance on the Removal of Graves and Dead Bodies (Ordinance 7 of 1925) as well as any local and regional provisions, laws and by-laws. Such burial places also fall under the jurisdiction of the National Department of Health and the Provincial Health Departments. Approval for the exhumation and re-burial must be obtained from the relevant Provincial MEC as well as the relevant Local Authorities.

10.1.2 Background to HIA and AIA Studies

South Africa's unique and non-renewable archaeological and palaeontological heritage sites are 'generally' protected in terms of the National Heritage Resources Act (Act No 25 of 1999, section 35) and may not be disturbed at all without a permit from the relevant heritage resources authority. Heritage sites are frequently threatened by development projects and both the environmental and heritage legislation require impact assessments (HIAs & AIAs) that identify all heritage resources in areas to be developed. Particularly, these assessments are required to make recommendations for protection or mitigation of the impact of the sites. HIAs and AIAs should be done by qualified professionals with adequate knowledge to (a) identify all heritage resources including archaeological and palaeontological sites that might occur in areas of developed and (b) make recommendations for protection or mitigation of the impact on the sites.

The National Heritage Resources Act (Act No. 25 of 1999, section 38) provides guidelines for Cultural Resources Management and prospective developments:

"38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a

development categorised as:

- (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;*
- (b) the construction of a bridge or similar structure exceeding 50m in length;*
- (c) any development or other activity which will change the character of a site:*
 - (i) exceeding 5 000 m² in extent; or*
 - (ii) involving three or more existing erven or subdivisions thereof; or*
 - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or*
 - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;*
- (d) the re-zoning of a site exceeding 10 000 m² in extent; or*
- (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority,*

must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development."

And:

"The responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection (2)(a): Provided that the following must be included:

- (k) The identification and mapping of all heritage resources in the area affected;*
- (l) an assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6(2) or prescribed under section 7;*
- (m) an assessment of the impact of the development on such heritage resources;*
- (n) an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;*
- (o) the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;*
- (p) if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and*
- (q) plans for mitigation of any adverse effects during and after the completion of the proposed development (38. [3] 1999:64)."*

Consequently, section 35 of the Act requires Heritage Impact Assessments (HIAs) or Archaeological Impact Assessments (AIAs) to be done for such developments in order for all heritage resources, that is, all places or objects of aesthetics, architectural, historic, scientific, social, spiritual, linguistic or technological value or significance to be protected. Thus any assessment should make provision for the

protection of all these heritage components, including archaeology, shipwrecks, battlefields, graves, and structures older than 60 years, living heritage, historical settlements, landscapes, geological sites, palaeontological sites and objects. Heritage resources management and conservation

10.2 Assessing the Significance of Heritage Resources

Archaeological sites, as previously defined in the National Heritage Resources Act (Act 25 of 1999) are places in the landscape where people have lived in the past – generally more than 60 years ago – and have left traces of their presence behind. In South Africa, archaeological sites include hominid fossil sites, places where people of the Earlier, Middle and Later Stone Age lived in open sites, river gravels, rock shelters and caves, Iron Age sites, graves, and a variety of historical sites and structures in rural areas, towns and cities. Palaeontological sites are those with fossil remains of plants and animals where people were not involved in the accumulation of the deposits. The basic principle of cultural heritage conservation is that archaeological and other heritage sites are valuable, scarce and *non-renewable*. Many such sites are unfortunately lost on a daily basis through development for housing, roads and infrastructure and once archaeological sites are damaged, they cannot be re-created as site integrity and authenticity is permanently lost. Archaeological sites have the potential to contribute to our understanding of the history of the region and of our country and continent. By preserving links with our past, we may not be able to revive lost cultural traditions, but it enables us to appreciate the role they have played in the history of our country.

- Categories of significance

Rating the significance of archaeological sites, and consequently grading the potential impact on the resources is linked to the significance of the site itself. The significance of an archaeological site is based on the amount of deposit, the integrity of the context, the kind of deposit and the potential to help answer present research questions. Historical structures are defined by Section 34 of the National Heritage Resources Act, 1999, while other historical and cultural significant sites, places and features, are generally determined by community preferences. The guidelines as provided by the NHRA (Act No. 25 of 1999) in Section 3, with special reference to subsection 3 are used when determining the cultural significance or other special value of archaeological or historical sites. In addition, ICOMOS (the Australian Committee of the International Council on Monuments and Sites) highlights four cultural attributes, which are valuable to any given culture:

- *Aesthetic value:*

Aesthetic value includes aspects of sensory perception for which criteria can and should be stated. Such criteria include consideration of the form, scale, colour, texture and material of the fabric, the general atmosphere associated with the place and its uses and also the aesthetic values commonly assessed in the analysis of landscapes and townscape.

- *Historic value:*

Historic value encompasses the history of aesthetics, science and society and therefore to a large extent underlies all of the attributes discussed here. Usually a place has historical value because of some kind of influence by an event, person, phase or activity.

- *Scientific value:*

The scientific or research value of a place will depend upon the importance of the data involved, on its rarity, quality and on the degree to which the place may contribute further substantial information.

- *Social value:*

Social value includes the qualities for which a place has become a focus of spiritual, political, national or other cultural sentiment to a certain group.

It is important for heritage specialist input in the EIA process to take into account the heritage management structure set up by the NHR Act. It makes provision for a 3-tier system of management including the South Africa Heritage Resources Agency (SAHRA) at a national level, Provincial Heritage Resources Authorities (PHRAs) at a provincial and the local authority. The Act makes provision for two types or forms of protection of heritage resources; i.e. formally protected and generally protected sites:

Formally protected sites:

- Grade 1 or national heritage sites, which are managed by SAHRA
- Grade 2 or provincial heritage sites, which are managed by the provincial HRA (MP-PHRA).
- Grade 3 or local heritage sites.

Generally protected sites:

- Human burials older than 60 years.
- Archaeological and palaeontological sites.
- Shipwrecks and associated remains older than 60 years.
- Structures older than 60 years.

With reference to the evaluation of sites, the certainty of prediction is definite, unless stated otherwise and if the significance of the site is rated high, the significance of the impact will also result in a high rating. The same rule applies if the significance rating of the site is low. The significance of archaeological sites is generally ranked into the following categories.

Significance	Rating Action
No significance: sites that do not require mitigation.	None
Low significance: sites, which may require mitigation.	2a. Recording and documentation (Phase 1) of site; no further action required 2b. Controlled sampling (shovel test pits, augering), mapping and documentation (Phase 2 investigation); permit required for sampling and destruction
Medium significance: sites, which require mitigation.	3. Excavation of representative sample, C14 dating, mapping and documentation (Phase 2 investigation); permit required for sampling and destruction [including 2a & 2b]
High significance: sites, where disturbance should be avoided.	4a. Nomination for listing on Heritage Register (National, Provincial or Local) (Phase 2 & 3 investigation); site management plan; permit required if utilised for education or tourism
High significance: Graves and burial places	4b. Locate demonstrable descendants through social consulting; obtain permits from applicable legislation, ordinances and regional by-laws; exhumation and reinterment [including 2a, 2b & 3]

Furthermore, the significance of archaeological sites was based on six main criteria:

- Site integrity (i.e. primary vs. secondary context),
- Amount of deposit, range of features (e.g., stonewalling, stone tools and enclosures),
- Density of scatter (dispersed scatter),
- Social value,
- Uniqueness, and
- Potential to answer current and future research questions.

A fundamental aspect in assessing the significance and protection status of a heritage resource is often whether or not the sustainable social and economic benefits of a proposed development outweigh the conservation issues at stake. When, for whatever reason the protection of a heritage site is not deemed necessary or practical, its research potential must be assessed and mitigated in order to gain data / information, which would otherwise be lost.

11 ADDENDUM 2: CONVENTIONS USED TO ASSESS THE SIGNIFICANCE OF HERITAGE

11.1 Site Significance Matrix

According to the NHRA, Section 2(vi) the **significance** of heritage sites and artefacts is determined by its aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technical value in relation to the uniqueness, condition of preservation and research potential. It must be kept in mind that the various aspects are not mutually exclusive, and that the evaluation of any site is done with reference to any number of these. The following matrix is used for assessing the significance of each identified site/feature.

2. SITE EVALUATION			
2.1 Heritage Value (NHRA, section 2 [3])	High	Medium	Low
It has importance to the community or pattern of South Africa's history or pre-colonial history.			
It possesses unique, uncommon, rare or endangered aspects of South Africa's natural or cultural heritage.			
It has potential to yield information that will contribute to an understanding of South Africa's natural and cultural heritage.			
It is of importance in demonstrating the principle characteristics of a particular class of South Africa's natural or cultural places or objects.			
It has importance in exhibiting particular aesthetic characteristics valued by a particular community or cultural group.			
It has importance in demonstrating a high degree of creative or technical achievement at a particular period.			
It has marked or special association with a particular community or cultural group for social, cultural or spiritual reasons (sense of place).			
It has strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa.			
It has significance through contributing towards the promotion of a local sociocultural identity and can be developed as a tourist destination.			
It has significance relating to the history of slavery in South Africa.			
It has importance to the wider understanding of temporal changes within cultural landscapes, settlement patterns and human occupation.			
2.2 Field Register Rating			
National/Grade 1 [should be registered, retained]			
Provincial/Grade 2 [should be registered, retained]			
Local/Grade 3A [should be registered, mitigation not advised]			
Local/Grade 3B [High significance; mitigation, partly retained]			
Generally Protected A [High/Medium significance, mitigation]			
Generally protected B [Medium significance, to be recorded]			
Generally Protected C [Low significance, no further action]			
2.3 Sphere of Significance	High	Medium	Low
International			
National			
Provincial			
Local			
Specific community			

11.2 Impact Assessment Criteria

The following table provides a guideline for the rating of impacts and recommendation of management actions for sites of heritage potential.

Significance of the heritage resource

This is a statement of the nature and degree of significance of the heritage resource being affected by the activity. From a heritage management perspective it is useful to distinguish between whether the significance is embedded in the physical fabric or in associations with events or persons or in the experience of a place; i.e. its visual and non-visual qualities. This statement is a primary informant to the nature and degree of significance of an impact and thus needs to be thoroughly considered. Consideration needs to be given to the significance of a heritage resource at different scales (i.e. sitespecific, local, regional, national or international) and the relationship between the heritage resource, its setting and its associations.

Nature of the impact

This is an assessment of the nature of the impact of the activity on a heritage resource, with some indication of its positive and/or negative effect/s. It is strongly informed by the statement of resource significance. In other words, the nature of the impact may be historical, aesthetic, social, scientific, linguistic or architectural, intrinsic, associational or contextual (visual or non-visual). In many cases, the nature of the impact will include more than one value.

Extent

Here it should be indicated whether the impact will be experienced:

- On a site scale, i.e. extend only as far as the activity;
- Within the immediate context of a heritage resource;
- On a local scale, e.g. town or suburb
- On a metropolitan or regional scale; or
- On a national/international scale.

Duration

Here it should be indicated whether the lifespan of the impact will be:

- Short term, (needs to be defined in context)
- Medium term, (needs to be defined in context)
- Long term where the impact will persist indefinitely, possibly beyond the operational life of the activity, either because of natural processes or by human intervention; or
- Permanent where mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient.

Of relevance to the duration of an impact are the following considerations:

- Reversibility of the impact; and
- Renewability of the heritage resource.

Intensity

Here it should be established whether the impact should be indicated as:

- Low, where the impact affects the resource in such a way that its heritage value is not affected;
- Medium, where the affected resource is altered but its heritage value continues to exist albeit in a modified way; and
- High, where heritage value is altered to the extent that it will temporarily or permanently be damaged or destroyed.

Probability

This should describe the likelihood of the impact actually occurring indicated as:

- Improbable, where the possibility of the impact to materialize is very low either because of design or historic experience;
- Probable, where there is a distinct possibility that the impact will occur;
- Highly probable, where it is most likely that the impact will occur; or
- Definite, where the impact will definitely occur regardless of any mitigation measures

Confidence

This should relate to the level of confidence that the specialist has in establishing the nature and degree of impacts. It relates to the level and reliability of information, the nature and degree of consultation with I&AP's and the dynamic of the broader socio-political context.

- High, where the information is comprehensive and accurate, where there has been a high degree of consultation and the socio-political context is relatively stable.

- Medium, where the information is sufficient but is based mainly on secondary sources, where there has been a limited targeted consultation and socio-political context is fluid.
- Low, where the information is poor, a high degree of contestation is evident and there is a state of socio-political flux.

Impact Significance

The significance of impacts can be determined through a synthesis of the aspects produced in terms of the nature and degree of heritage significance and the nature, duration, intensity, extent, probability and confidence of impacts and can be described as:

- Low; where it would have a negligible effect on heritage and on the decision
- Medium, where it would have a moderate effect on heritage and should influence the decision.
- High, where it would have, or there would be a high risk of, a big effect on heritage. Impacts of high significance should have a major influence on the decision;
- Very high, where it would have, or there would be high risk of, an irreversible and possibly irreplaceable negative impact on heritage. Impacts of very high significance should be a central factor in decision-making.

11.3 Direct Impact Assessment Criteria

The following table provides an outline of the relationship between the significance of a heritage context, the intensity of development and the significance of heritage impacts to be expected

HERITAGE CONTEXT	TYPE OF DEVELOPMENT			
	CATEGORY A	CATEGORY B	CATEGORY C	CATEGORY D
CONTEXT 1 High heritage Value	Moderate heritage impact expected	High heritage impact expected	Very high heritage impact expected	Very high heritage impact expected
CONTEXT 2 Medium to high heritage value	Minimal heritage impact expected	Moderate heritage impact expected	High heritage impact expected	Very high heritage impact expected
CONTEXT 3 Medium to low heritage value	Little or no heritage impact expected	Minimal heritage impact expected	Moderate heritage impact expected	High heritage impact expected
CONTEXT 4 Low to no heritage value	Little or no heritage impact expected	Little or no heritage impact expected	Minimal heritage value expected	Moderate heritage impact expected

NOTE: A DEFAULT "LITTLE OR NO HERITAGE IMPACT EXPECTED" VALUE APPLIES WHERE A HERITAGE RESOURCE OCCURS OUTSIDE THE IMPACT ZONE OF THE DEVELOPMENT.

HERITAGE CONTEXTS	CATEGORIES OF DEVELOPMENT
<p>Context 1: Of high intrinsic, associational and contextual heritage value within a national, provincial and local context, i.e. formally declared or potential Grade 1, 2 or 3A heritage resources</p> <p>Context 2: Of moderate to high intrinsic, associational and contextual value within a local context, i.e. potential Grade 3B heritage resources.</p> <p>Context 3: Of medium to low intrinsic, associational or contextual heritage value within a national, provincial and local context, i.e. potential Grade 3C heritage resources</p> <p>Context 4: Of little or no intrinsic, associational or contextual heritage value due to disturbed, degraded conditions or extent of irreversible damage.</p>	<p>Category A: Minimal intensity development</p> <ul style="list-style-type: none"> - No rezoning involved; within existing use rights. - No subdivision involved. - Upgrading of existing infrastructure within existing envelopes - Minor internal changes to existing structures - New building footprints limited to less than 1000m2. <p>Category B: Low-key intensity development</p> <ul style="list-style-type: none"> - Spot rezoning with no change to overall zoning of a site. - Linear development less than 100m - Building footprints between 1000m2-2000m2 - Minor changes to external envelop of existing structures (less than 25%) - Minor changes in relation to bulk and height of immediately adjacent structures (less than 25%). <p>Category C: Moderate intensity development</p> <ul style="list-style-type: none"> - Rezoning of a site between 5000m2-10 000m2.

	<ul style="list-style-type: none"> - Linear development between 100m and 300m. - Building footprints between 2000m2 and 5000m2 - Substantial changes to external envelop of existing structures (more than 50%) - Substantial increase in bulk and height in relation to immediately adjacent buildings (more than 50%) <p>Category D: High intensity development</p> <ul style="list-style-type: none"> - Rezoning of a site in excess of 10 000m2 - Linear development in excess of 300m. - Any development changing the character of a site exceeding 5000m2 or involving the subdivision of a site into three or more erven. - Substantial increase in bulk and height in relation to immediately adjacent buildings (more than 100%)
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11.4 Management and Mitigation Actions

The following table provides a guideline of relevant heritage resources management actions is vital to the conservation of heritage resources.

<p>No further action / Monitoring</p> <p>Where no heritage resources have been documented, heritage resources occur well outside the impact zone of any development or the primary context of the surroundings at a development footprint has been largely destroyed or altered, no further immediate action is required. Site monitoring during development, by an ECO or the heritage specialist are often added to this recommendation in order to ensure that no undetected heritage\ remains are destroyed.</p> <p>Avoidance</p> <p>This is appropriate where any type of development occurs within a formally protected or significant or sensitive heritage context and is likely to have a high negative impact. Mitigation is not acceptable or not possible. This measure often includes the change / alteration of development planning and therefore impact zones in order not to impact on resources.</p> <p>Mitigation</p> <p>This is appropriate where development occurs in a context of heritage significance and where the impact is such that it can be mitigated to a degree of medium to low significance, e.g. the high to medium impact of a development on an archaeological site could be mitigated through sampling/excavation of the remains. Not all negative impacts can be mitigated.</p> <p>Compensation</p> <p>Compensation is generally not an appropriate heritage management action. The main function of management actions should be to conserve the resource for the benefit of future generations. Once lost it cannot be renewed. The circumstances around the potential public or heritage benefits would need to be exceptional to warrant this type of action, especially in the case of where the impact was high.</p> <p>Rehabilitation</p> <p>Rehabilitation is considered in heritage management terms as a intervention typically involving the adding of a new heritage layer to enable a new sustainable use. It is not appropriate when the process necessitates the removal of previous historical layers, i.e. restoration of a building or place to the previous state/period. It is an appropriate heritage management action in the following cases:</p> <ul style="list-style-type: none"> - The heritage resource is degraded or in the process of degradation and would benefit from rehabilitation. - Where rehabilitation implies appropriate conservation interventions, i.e. adaptive reuse, repair and maintenance, consolidation and minimal loss of historical fabric. - Where the rehabilitation process will not result in a negative impact on the intrinsic value of the resource. <p>Enhancement</p> <p>Enhancement is appropriate where the overall heritage significance and its public appreciation value are improved. It does not imply creation of a condition that might never have occurred during the evolution of a place, e.g. the tendency to sanitize the past. This management action might result from the removal of previous layers where these layers are culturally of low significance and detract from the significance of the resource. It would be appropriate in a range of heritage contexts and applicable to a range of resources. In the case of formally protected or significant resources, appropriate enhancement action should be encouraged. Care should, however, be taken to ensure that the process does not have a negative impact on the character and context of the resource. It would thus have to be carefully monitored</p>
