TSIMBA

ARCHAEOLOGICAL
FOOTPRINTS (PTY) LTD

PHASE 1 Cultural Heritage Impact Assessment

Proposed Polokwane Emergency

Replacement of Specon bypass pumping main within Lebowakgomo, and refurbishment/rehabilitation of Megoring and Thakgalang river crossings within Thakgalang, Capricorn District, Limpopo Province

MARCH 2022

EMVELO CONSULTANT

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⊕ Master of Arts	⇔ University of Witwatersrand
⊕ B.A. Archaeology, Cultural Heritage and Museum Studies Honours Degree	⇔ Midlands State University
⊕ NQF 5 Shot Course in Applied Anatomy and Biological Anthropology	⇔ University of Cape-Town

ACCREDITATIONS AND MEMBERSHIPS

⊕ Association of Southern African Professional Archaeologists (ASAPA)
⊕ Association of Professional Heritage Professionals (APHP)
⊕ International Association of Impact Assessment South Africa (IAIAsa)
⊕ KwaZulu-Natal Amafa and Research Institute (KZN -AMAFA)
⊕ Society of Black Archaeologist (SBA)

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Ngoni Mangoro	Cultural Landscape Specialist	
PHD Candidate - Archaeology		University of Witwatersrand
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MSc Archaeology		University of Witwatersrand
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I, ____Roy Muroyi_____, declare that –

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the Specialist

DISCLAIMER

Assumptions

- Our Heritage Impact Assessment accurately determine the nature of a site's cultural heritage resources and recommend workable solutions for managing cultural heritage resources in support of planning applications.
- We assumed that the public consultation process undertaken as part of the Environmental Impact Assessment is sufficient and adequate and does not require repetition as part of the heritage impact assessment
- The investigation was influenced by the unpredictability of buried archaeological remains (absence of evidence does not mean evidence of absence) and the difficulty in establishing intangible heritage values. It should be remembered that archaeological deposits (including graves and traces of mining heritage) usually occur below the ground level.
- Should artefacts or skeletal material be revealed at the site during mining phase, such activities should be halted immediately, and a competent heritage practitioner, SAHRA must be notified in order for an investigation and evaluation of the find(s) to take place (see NHRA (Act No. 25 of 1999), Section 36 (6)
- Recommendations contained in this document do not exempt the developer from complying with any national, provincial, and municipal legislation or other regulatory requirements, including any protection or management or general provision in terms of the NHRA.
- The author assumes no responsibility for compliance with conditions that may be required by SAHRA in terms of this report.

MANAGEMENT SUMMARY

HERITAGE CONSULTANT

Tsimba Archaeological Footprints (Pty) Ltd is the heritage consultant appointed by Emvelo Quality and Environmental Consultant (Pty) Ltd to conduct a heritage impact assessment for the proposed replacement of Specon bypass pumping main within Lebowakgomo, and refurbishment/rehabilitation of Megoring and Thakgalang River Crossings within Thakgalang, Capricorn District, Limpopo Province.

Tsimba Archaeological Footprints (Pty) Ltd is a young black owned entity founded for the purposes of bridging the gap that exists in the Cultural Heritage Resources Management industry between young black heritage professionals and older heritage professionals. In this regard Tsimba came as an effort to create a platform for formerly marginalised black heritage professionals to showcase their talents and develop themselves into internationally recognized professionals. Tsimba has conducted close to a hundred heritage impact assessment reports over the past three to four years. The specialists carrying out work under Tsimba are accredited to do work by a number of bodies including the Association of Southern African Professional Archaeologists (ASAPA) which is the main accreditation body in Southern Africa.

The aim of the survey was to identify and document archaeological sites, cultural resources, sites associated with oral histories (intangible heritage), graves, cultural landscapes, and any structures of historical significance (tangible heritage) that may be affected within the footprint of the proposed development. This document will further review the consequence of the project and threats on cultural heritage properties. Subsequently, the Heritage Impact Assessment will work as a conflict solving tool to enhance the cultural heritage conservation.

The appointment of Tsimba Archaeological Footprints (Pty) Ltd is in terms of the National Heritage Resources Act (NHRA), No. 25 of 1999 read together with the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA). The HIA is completed in accordance to requirements of Section 38 (1) (a) of the NHRA, No. 25 of 1999. The size of the application area is approximately 2776.5ha hence Section 38 (1) of the NHRA is triggered:

- *The construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;*

The development may also impact on Cultural Heritage Resources such as graves, structures, archaeological and paleontological resources that are protected in terms of sections 34, 35, and 36 of the NHRA. The field assessment followed a systematic survey of the proposed development area as well as its neighbouring features. The aim of the survey was to locate, identify, evaluate and document sites, objects and structures of cultural significance found within the proposed project area. The Phase I Archaeological and Cultural Heritage Impact Assessment field survey for the proposed project.

ENVIRONMENTAL CONSULATNT

Emvelo Quality and Environmental Consultant (PTY) Ltd was appointed as an independent Environmental Assessment Practitioner must be appointed to conduct the EIA in terms of the Environmental Impact Assessment (EIA) regulations. As the EAP, Emvelo will be tasked with identify and assess the potential environmental impacts associated with the proposed activity by conducting an objective and independent EIA in which all the relevant information and opinions of Interested and Affected Parties (IAPs) will be collected and passed on to the Department of Forestry, Fisheries and the Environment (DFFE) In this way, an informed decision-making process can take place.

Emvelo is an environmental consulting company situated in Richards Bay and owned entirely by black women. Construction businesses, municipalities, agriculture, industries, mining, and private developers are just some few of the organizations that Emvelo Consultant provides specialized Environmental and Quality Solutions to.

Emvelo is inspired by South Africa's great growth and development, which they believe must be affected by environmental concerns in order to achieve Sustainable Development. Emvelo has the opportunity to contribute to the delivery of community services while also ensuring that the environment is preserved throughout construction. Their scientists are accredited by the South African Council for Natural Scientific Professionals (SACNASP) and other environmental boards.

- **Conclusions:**

From a heritage perspective, the proposed project is acceptable. This report concludes that the impacts of the proposed development on the cultural environmental values are not likely to be significant on the entire development site if the EMP includes recommended safeguards and mitigation measures identified in this report. However archaeological deposits usually occur below ground level. Should archaeological artefacts or skeletal material be revealed in the area during development activities, such activities should be halted, and a heritage specialist or Limpopo Provincial Heritage Resources Authority (LIHRA) must be notified in order for an investigation and evaluation of the find(s) to take place (NHRA (Act No. 25 of 1999), Section 36 (6).

- **Recommendations:**

The following conditions must however be observed;

- The construction teams must be inducted on the possibility of encountering archaeological resources that may be accidentally exposed during clearance and construction at the mining site prior to commencement of work on the site in order to ensure appropriate mitigation measures and that course of action is afforded to any chance finds in accordance with the Chance Find Procedure.

- Strict and clear reporting procedures for chance finds must be followed by the client and contractors throughout the construction period.
- Periodic archaeological watching briefs should be submitted to the Limpopo Provincial Heritage Resources Authority (LIHRA).

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ABBREVIATIONS

Acronyms	Description
AIA	Archaeological Impact Assessment
ASAPA	Association of South African Professional Archaeologists
CRM	Cultural Resource Management
DEA	Department of Environmental Affairs
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
ESA	Early Stone Age
GIS	Geographic Information System
GPS	Global Positioning System
HIA	Heritage Impact Assessment
LSA	Late Stone Age
LIA	Late Iron Age
LIHRA	Limpopo Provincial Heritage Resources Authority
MIA	Middle Iron Age
MSA	Middle Stone Age
SAHRA	South African Heritage Resources Agency

1st. INTRODUCTION

1.1 Project Description

- *Information provided by Emvelo*

The Lepelle Northen Water (SOC) proposes the replacement of Specon bypass pumping main within Lebowakgomo, and refurbishment/rehabilitation of Megoring and Thakgalang River Crossings within Thakgalang, Capricorn District, Limpopo Province.

The proposed development will comprise of the following components:

i. Olifantspoort Water Scheme: Construction of new 7.1km(1200mmø) bypass pipeline connecting at Chamber OL45 VB to replace the existing section of the pumping from the Olifantspoort WTW to Specon reservoirs complex;
   Refurbishment of the pipework and valves at the Specon reservoirs complex.
ii. Ebenezer Water Scheme: The refurbishment/ rehabilitation of three (3X) 50m(600mmø) pipeline crossing within Megoring stream. The refurbishment/ rehabilitation of two (2x) 50m(600mmø) pipeline crossing within Thakgalang River.

Both of the proposed pipeline upgrades and refurbishment between Olifantspoort and Ebenezer Schemes' water conveyance and storage infrastructure merge to supply the Polokwane Municipal Area

1.2 Proposed project activities and locations

The proposal will entail the following construction of the following

- *This section was provided by Emvelo*:

i. Olifantspoort Scheme:

The proposed Polokwane Emergency Bypass- Replacement will take place along the following localities: Mmaolo Erf 90, portion 0; Locatie Van M`Phatlele Farm 457 portion 0 & 1; Voorspoed Farm 458 portion 0, 15 &19; Lebowakgomo-S public space 437, 1010, & 1683.

Bypass pumping main (Start) Chamber OL45 VB Co-ordinates 24°18'59.18"S, 29°34'2.15"E Stream Crossing (nonperennial stream) Co-ordinates 24°18'58.63"S, 29°33'59.14"E Bypass Pumping Main (End) Specon Reservoirs Co-ordinates 24°18'14.46"S,

ii. Ebenezer:

The refurbishment/ rehabilitation of pipeline within the Megoring River Crossing, will take place in the following locality: Veerfontein Farm, Farm 1004, portion 0. The refurbishment/ rehabilitation of pipeline within the Thakgalang River, will take place in the following locality: Majebas Kraal, Farm 1005, Portion 0.

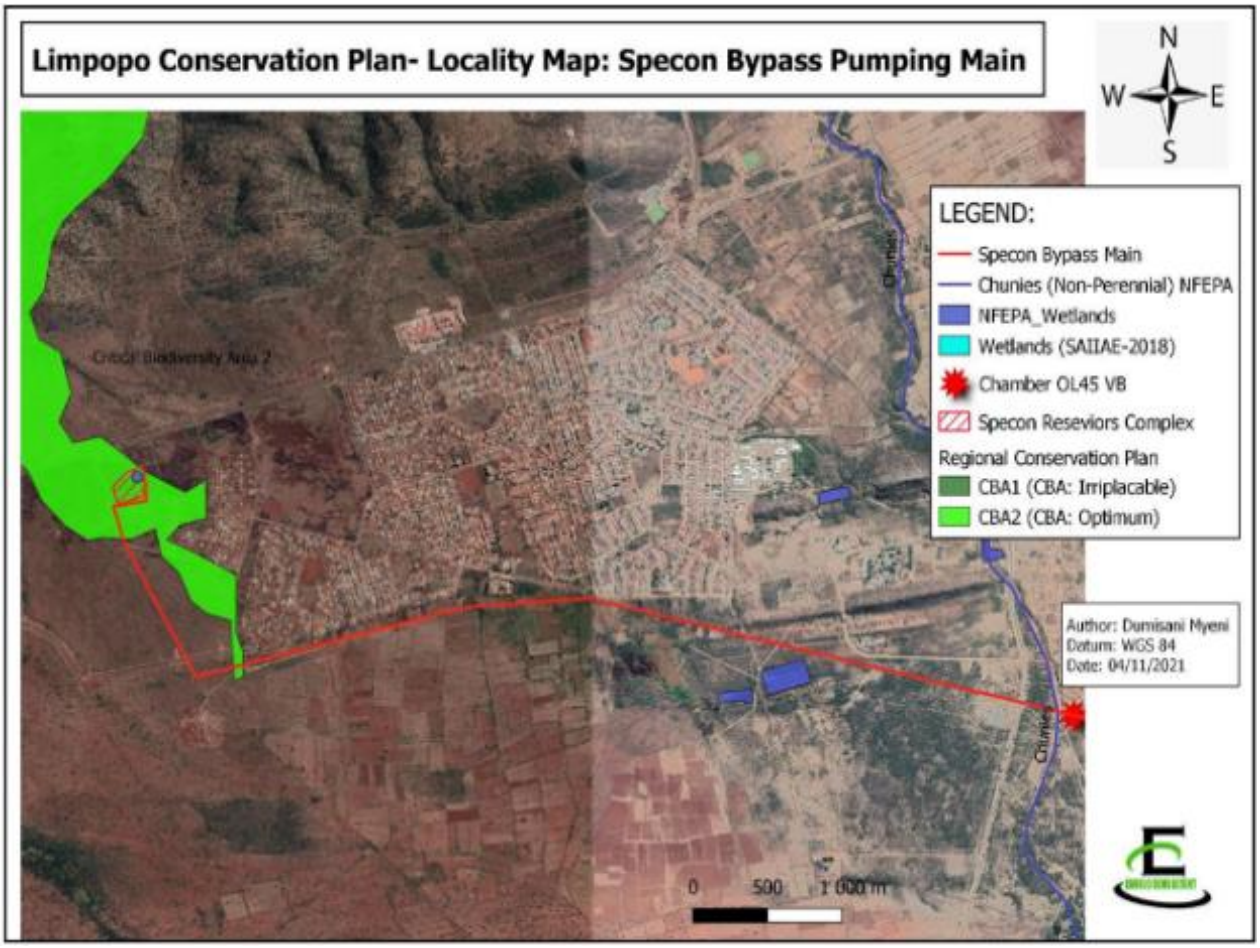


Figure 1: Map showing the Specon bypass pumping main (Emvelo)

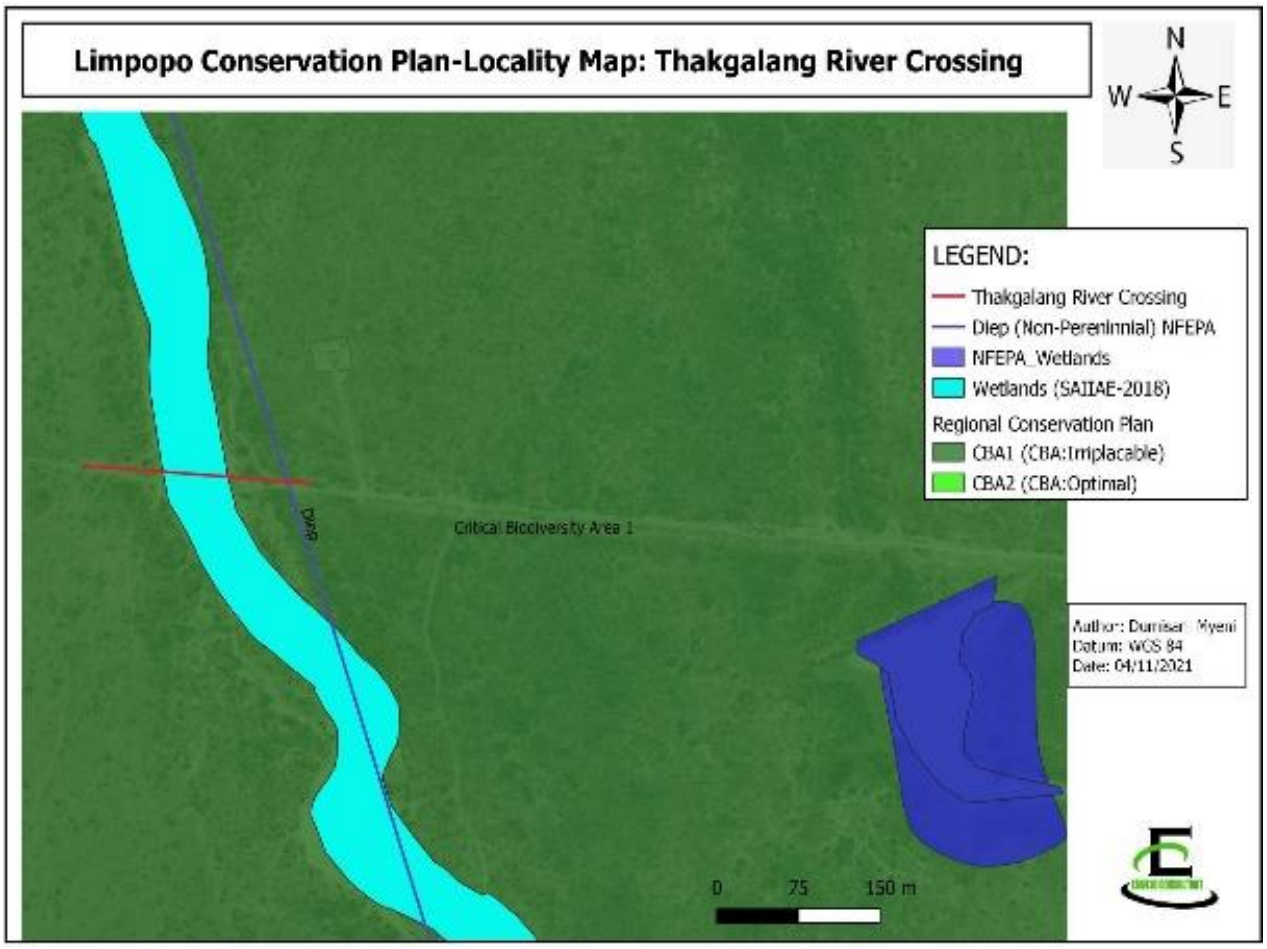


Figure 2: Map showing the Thakgalang River Crossing - Coordinates 23°54'4.84"S, 29°37'54.94"E- (Emvelo)

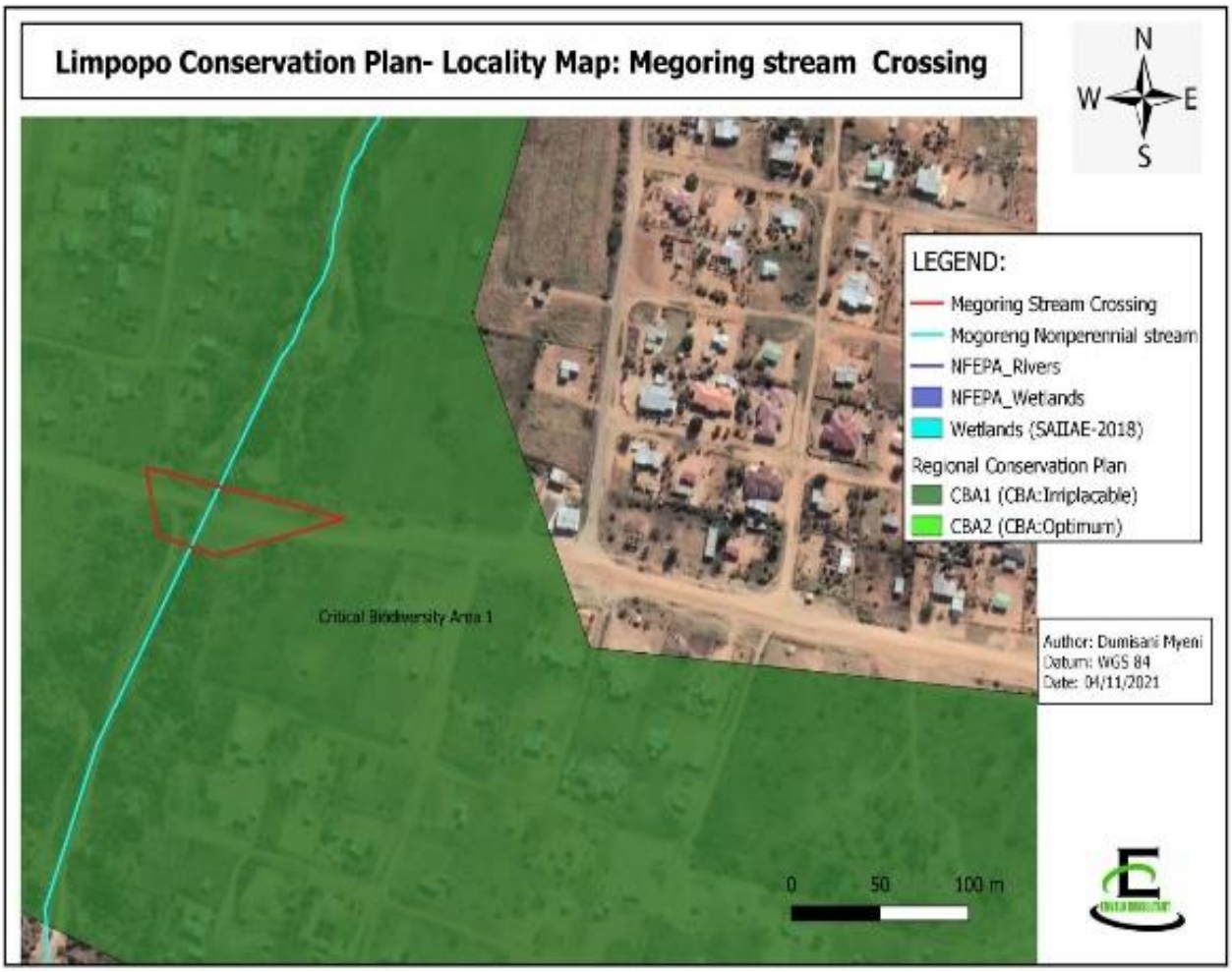


Figure 3: Map showing the Megoring stream crossing Coordinates 23°54'58.12"S. 29°44'51.13"E - (Emvelo)

1.3 Terms of reference

The impacts of the proposed development on heritage resources have been assessed within the framework of Environmental Impact Assessment (EIA). This Heritage Impact Assessment must address the following key components:

- The identification and mapping of all heritage resources in the area affected;
- An assessment of the significance of such resources in terms of heritage assessment criteria set out in regulations; − an assessment of the impact development on heritage resources;
- 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;
- The results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;

- If heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and
- Plans for mitigation of any adverse effects during and after completion of the proposed development.

2 AND RISK ASSESSMENT OF THE PROPOSED PROJECT ACTIVITIES

Cultural heritage resources are valuable assets, and this underlying value can be a threat to conservation. Development at all scales exerts direct pressure on heritage places. The proposed development involves making changes to existing infrastructures. This may affect land, require removal of existing ecosystems or cultural sites, or introduce uses that are incompatible with heritage values. The proposed development may result in total destruction or removal of heritage resources. Pressures also arise where developments have an adverse effect on the heritage setting, or restrict access or use.

Heritage Impact Assessment is a statutory requirement in a project of this nature. The National Heritage Resources Act (No 25: 1999) applies, the relevant regulations of which are Section 38 (Heritage Impact Assessment process), Section 34 (Buildings and Structures older than 60 years) Section 35 (Archaeological and Palaeontological sites) and Section 36 (Graves and Burial Grounds). The ranking system below uses a four-colour code to highlight sites that are expected before or during the construction phase of the project. The ranking system shows the importance assigned to each of the resources expected for this project site and the degree of importance they should be dealt with;

	Ranking	Explanation	Colour Code
1	Very High	**Grade I**: Sites (Section 7 of NHRA), graves and burial grounds (Section 36 of NHRA). They must be protected. Stakeholder consultations required before graves can be relocated or other mitigation measures considered.	
2	High	**Grade II**: Sites (Section 7 of NHRA), Iron Age Archaeological Sites	
3	Medium	**Grade II**: Sites (Section 7 of NHRA), Historic Buildings and substantial archaeological deposits. They require mitigation	
4	Low	**Grade III**: Sites (Section 7 of NHRA), Other heritage typologies	

Table 1: Table showing the expected heritage resources before or during the construction phase of the project

The table below assesses and evaluates some of the risks associated with the proposed projects on cultural heritage resources within the proposed development footprint.

Risk assessment/ evaluation

EVALUATION CRITERIA	RISK ASSESSMENT
Description of potential impact	Negative impacts range from partial to total destruction of surface and under-surface movable/immovable relics.
Nature of Impact	Negative impacts can both be direct or indirect.
Legal Requirements	Sections 34, 35, 36, 38 of National Heritage Resources Act (No. 25 1999).
Stage/Phase	Construction phase (Excavations)
Nature of Impact	Negative, both direct & indirect impacts.
Extent of Impact	Excavations and ground clearing has potential to damage archaeological resources above and below the surface not seen during the survey.
Duration of Impact	Any accidental destruction of surface or subsurface relics is not reversible, but can be mitigated.

Table 2: Table showing the risks associated with the proposed development

3RD METHODOLOGY

3.1 Cultural Resources Management Process

The Heritage Impact Assessment was conducted as part of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) requirements and it also follows the requirements of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA). International conventions regarding the protection of cultural resources have also been followed. The ICOMOS Burra Charter (1979) was also consulted for international heritage principles and policies applicable to this project. This Heritage Impact Assessment (HIA) was developed to identify and evaluate human induced impacts on cultural heritage resources with the aim of maintaining a balance between heritage protection and the needs of development towards sustainability.

The underlying argument is that heritage resources constitute invaluable and extraordinary assets which need to be protected for future generations. There is only limited literature dedicated to the procedure and methodology of HIA. A need to develop impact assessment methodologies has been admitted by scholars and organizations engaged in this area. Even though EIA as a backbone of HIA benefits considerably from various impact assessment methods, such methodological options have not been adequately addressed within the HIA-related literature. Therefore, further research is needed to explore the specific impact assessment methods applicable to the cultural heritage resources and to address the multiple impacts

The methodology given below is guided by the need to acknowledge different readings of heritage significance over time, i.e. heritage significance as a dynamic concept which includes the following ***(see Figure 1 below)***

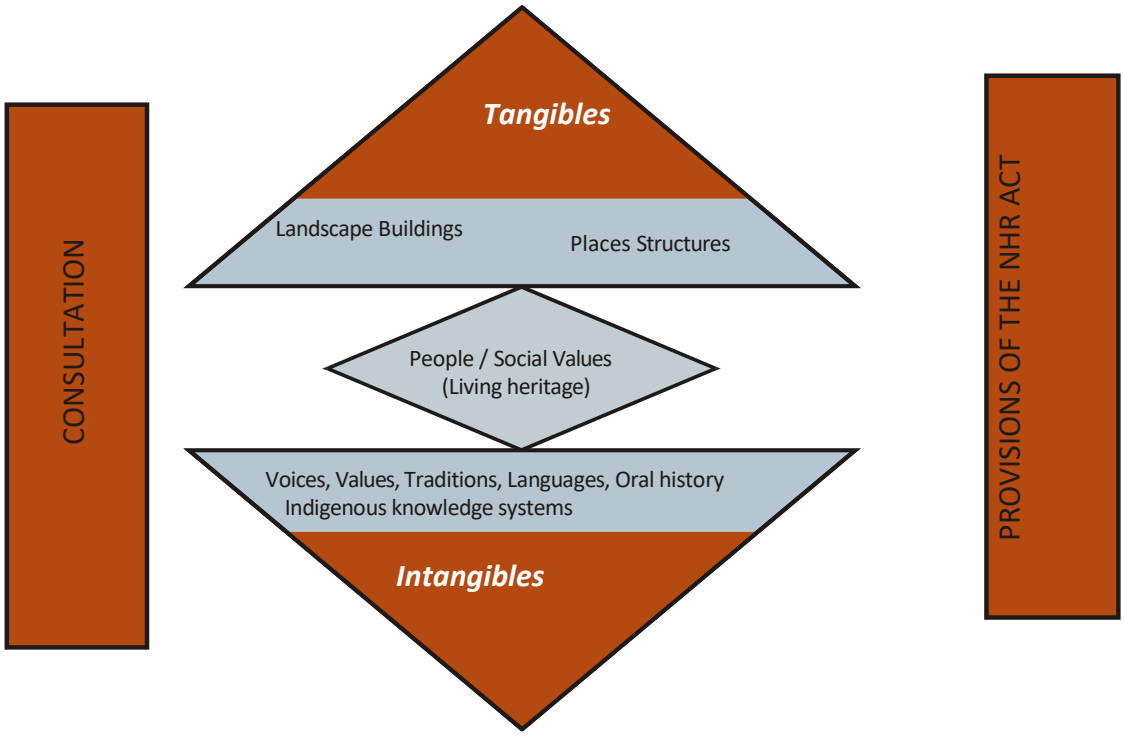


Figure 5: The heritage concept

3.2 Literature review

The background information search of the proposed development area was conducted following the site maps from the client. Sources used in this study included:

- Published academic papers and HIA studies conducted in and around the region where the proposed infrastructure development will take place;
- Available archaeological literature covering the broader study area was also consulted;
- The SAHRIS website and the National Data Base was consulted to obtain background information on previous heritage surveys and assessments in the area; and
- Map Archives - Historical maps of the proposed area of development and its surrounds were assessed to aid information gathering of the proposed area of development and its surrounds.
- Some of the consulted CRM reports conducted in and around the proposed development footprint include;

  - *Heritage Impact Assessment for the proposed construction of a 132 KV power line from Rampheri to Syferkuil, Capricorn District, Limpopo Province.*
  - *Heritage Impact Assessment of the Groothoek Regional Water Scheme: Lebowakgomo Bulk Water Supply.*

- *Phase 1 Heritage Impact Assessment to determine the presence of natural and cultural resources and the impact of the proposed project on these resources within the area demarcated for the Musina-Makhado Special Economic at the portions of 8 Farms, namely Dreyer 526 MS, Joffre 584 MS, Lekkerlag 580 MS, Somme 611 MS, Steenbok 565 MS, Van der Bijl 528 MS, Antrobus 566 MS, and Battle 585 MS.*
- *Heritage Impact Assessment for the proposed relocation of the original Devon landfill site located in the Lesedi Local Municipality.*
- *Archaeological and cultural heritage impact assessment for the proposed development of new tomato farming and processing facilities in the region of Lebowakgomo, Limpopo Province*
- *Heritage Impact Assessment for the proposed development of the Limpopo Central Hospital, situated on the Remaining Extent of Erf no. 6861 – Extension 30 in the Polokwane Local Municipality area, Capricorn District, Limpopo Province.*

3.3 Field survey

The field survey lasted for a day on the 16th of February 2022. It was conducted by archaeologists from Tsimba Archaeological Footprint through driving and walking. A ground survey, following standard and accepted archaeological procedures, was conducted. We completed a controlled exclusive surface survey, in which sufficient information exists on an area to make solid and defensible assumptions and judgments about where cultural heritage resource sites may and may not be,' and 'an inspection of the surface of the ground, wherever this surface is visible, is made, with no substantial attempt to clear brush, turf, deadfall, leaves, or other material that may cover the surface, and with no attempt to look beneath the surface beyond the visible surface' (King 19891).

The survey paid special attention to disturbed and exposed layers of soils such as eroded and disturbed surfaces. These areas are likely to exposed or yield archaeological and other heritage resources that may be buried underneath the soil and be brought to the surface by animal and human activities including animal barrow pits and human excavated grounds. The surface was also inspected for possible Iron Age scatters as we were guided by our literature review that noted the existence of Later Iron Age sites within the broader study area.

The survey followed investigated the cultural resources onsite using the best possible technologies for archaeological field surveys. The general project area was documented through photographs using a Nikon Camera (with built in GPS). A Samsung GPS Logger (2018) was used to record the archaeological finds on site.

3.4 Data Consolidation and Report Writing

Data captured on the development area (during the field survey) by means of a desktop study and physical survey is used as a basis for this HIA. This data is also used to establish assessment for any possible current and future impacts within the development footprint. This includes the following:

- Assessment of the significance of the cultural resources in terms of their archaeological, built environment and landscape, historical, scientific, social, religious, aesthetic and tourism value.
- A description of possible impacts of the proposed development, especially during the construction phase, in accordance with the standards and conventions for the management of cultural environments;
- Proposal of suitable mitigation measures to minimize possible negative impacts on the cultural environment and resources that may result during construction;
- Review of applicable legislative requirements that is the NEMA (together with the 2014 EIA Regulations), the NHRA of 1999.
- The consolidation of the data collected using the various sources as described above;
- Acknowledgement of impacts on heritage resources (such as unearthed graves) predicted to occur during construction; and
- Geological Information Systems mapping of known archaeological sites and maps in the region
- A discussion of the results of this study with conclusions and recommendations based on the available data and study findings.

4TH STATUTORY REQUIREMENTS

Section 38(1) of the National Heritage Resources Act No 25 of 1999 requires a heritage impact assessment in case of:

- The construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- The construction of a bridge or similar structure exceeding 50 m in length;
- Any development or other activity which will change the character of a site—

  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; − the re-zoning of a site exceeding 10 000 m² in extent; or − any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority.

- The Act defines a heritage resource as any place or object of cultural significance i.e. of aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. This includes, but is not limited to, the following wide range of places and objects:
  - Living heritage as defined in the National Heritage Council Act No 11 of 1999 (cultural tradition; oral history; performance; ritual; popular memory; skills and techniques; indigenous knowledge systems; and the holistic approach to nature, society and social relationships);
  - Ecofacts (non-artefactual organic or environmental remains that may reveal aspects of past human activity; − places, buildings, structures and equipment;
  - Places to which oral traditions are attached or which are associated with living heritage; − historical settlements and townscapes;
  - Landscapes and natural features;
  - Eological sites of scientific or cultural importance;
  - Archaeological and palaeontological sites;
  - Graves and burial grounds;
  - Sites of significance relating to the history of slavery in South Africa;
  - Movable objects, but excluding any object made by a living person;
  - Battlefields; and − traditional building techniques.

Furthermore, a place or object is to be considered part of the national estate if it has cultural significance or other special value because of;

- its importance in the community, or pattern of South Africa's history;

- its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage; − its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage; − its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons; and –
- its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa. A 'place' is defined as:
- a site, area or region; −
- a building or other structure which may include equipment, furniture, fittings and articles associated with or connected with such building or other structure; − a group of buildings or other structures which may include equipment, furniture, fittings and articles associated with or connected with such group of buildings or other structures; −
- an open space, including a public square, street or park; and − in relation to the management of a place, includes the immediate surroundings of a place. 'Structures' means any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith. 'Archaeological' means –
- material remains resulting from human activity which are in a state of disuse and are in or on land and are older than 100 years, including artefacts, human and hominid remains and artificial features and structures; −
- rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and is older than 100 years including any area within 10 m of such representation; −
- wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the culture zone of the Republic, as defined respectively in sections 3, 4 and 6 of the Maritime Zones Act, 1994 (Act No. 15 of 1994), and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation; −
- features, structures and artefacts associated with military history which are older than 75 years and the sites on which they are found.

'Palaeontological' means any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace. 'Grave' means a place of interment and includes the contents, headstone or other marker of and any other structures on or associated with such place. Amafa aKwaZulu-Natali and / or the South

African Heritage Resources Agency will only issue a permit for the alteration of a grave if they are satisfied that every reasonable effort has been made to contact and obtain permission from the families concerned.

Tsimba Archaeological footprint (Pty) Ltd team adheres to the following procedures:

- Notification of the impending removals (using appropriate language media and notices at the grave site);
- Consultation with individuals or communities related or known to the deceased;
- Satisfactory arrangements for the curation of human remains and / or headstones in a museum, where applicable;
- Procurement of a permit from LIHRA and / or the South African Heritage Resources Agency;
- Appropriate arrangements for the exhumation (preferably by a suitably trained archaeologist) and re-interment (sometimes by a registered undertaker, in a formally proclaimed cemetery);
- Observation of rituals or ceremonies required by the families.

5TH. DESCRIPTION AND DOCUMENTATION OF THE CULTURAL HERITAGE RESOURCES

- ***In terms of the national estate as defined by the NHRA no sites of significance were found during the survey as described below.***

This section includes a description of the baseline cultural heritage aspects of the environment that may be affected by the proposed activities as well as a description of the environmental issues that were identified and assessed during the impact assessment process. The proposed development area falls within an urban setting and a bush area. Ground visibility was very good and bad during the field survey. Some of the areas are dominated by overgrown vegetation while some sections are cleared during the construction phase of the previous developments. The two bridges/ crossings are however in a bad shape, some sections of the bridges have been washed away by water and some have just been destroyed due to human conduct. The proposed development site has been altered a number of times either during construction of the road, the properties closest to it and other water works along the road reserve.

These activities may possibly have cleared off archaeological remains along the road (if any existed). Therefore, at the time of the archaeological survey, archaeological sustainability and visibility would have been compromised. During the site inspection no archaeological or any other cultural heritage resources were discovered within the proposed development footprint and its environs. It is however important to note that lack archaeological sites / artefacts on the ground does not necessarily mean lack of archaeological find underground. Archaeological resources may still be discovered during excavations or any ground breaking activities during the construction phase.

Figure 6: View of the road leading to the Thakgalang river crossings

Figure 7: Disturbed layers accessed for possible archaeological artefacts

Figure 8: Some of the existing infrastructure at the Thakgalang river crossings

Figure 9: View of the dilapidated state of the river crossing

Figure 10: View of the washed away soil along the river crossing

Figure 11: Existing water works along the proposed development site

Figure 13: Rubbish dumping at the Megoring river crossing

Figure 12: Dilapidated infrastructure at Megoring river crossing	

Figure 14: A view of the Polokwane bypass emergency replacement route

Figure 15: Some of the water supply infrastructure at the Bypass Pumping Main Specon Reservoirs

5.1 Built Environment

Section 34(1) of National Heritage Resources Act of 1999 protects these structures against any altering.

- No standing structures older than 60 years occur in the study area.

5.2 Paleontological resources

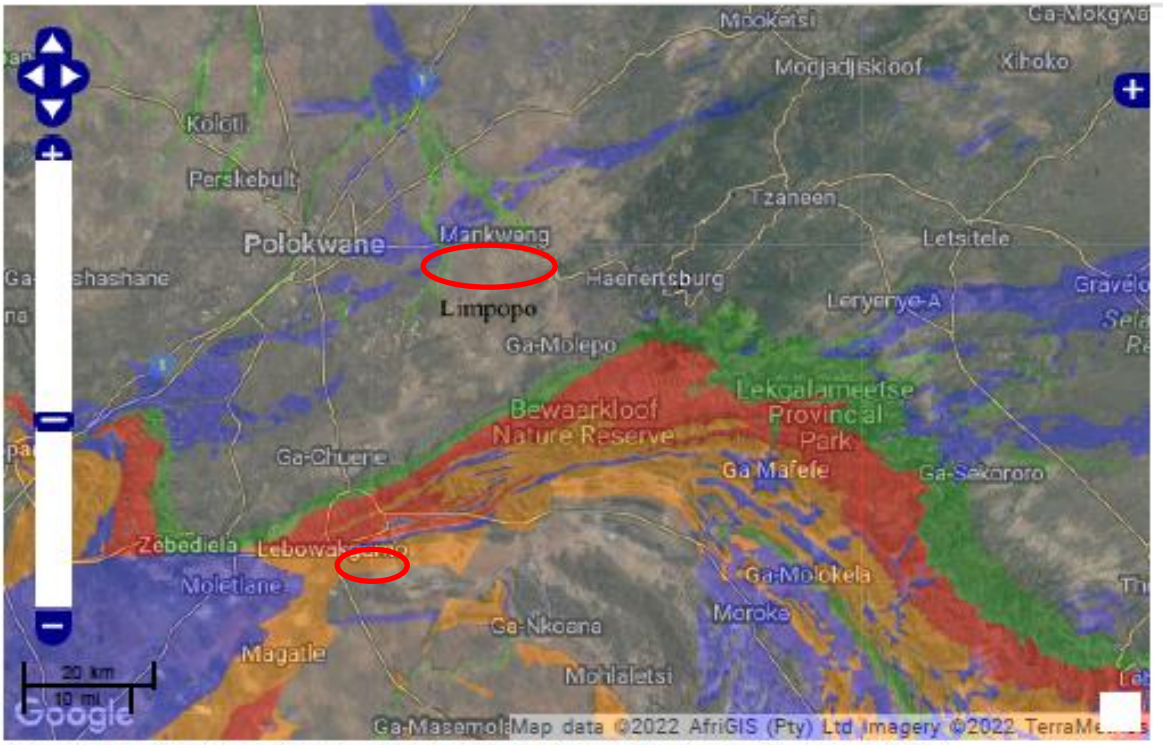
Section 3((i) (i) objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens

Fossils in South Africa mainly occur in rocks of sedimentary nature and not in rocks from igneous or metamorphic nature. Therefore, if there is the presence of Karoo Supergroup strata the palaeontological sensitivity can generally be **LOW** to **VERY HIGH** (Almond, 2013). In this case the proposed development area is marked as a zero paleontological sensitivity area.

Paleontological Assessmentes are undertaken in compliance with The Minimum Standards for Palaeontological Components of Heritage Impact Assessment Reports, SAHRA APMHOB, Guidelines 2012. The development is underlain by the rocks Cleremont Formation arenites, sandstones and quartzites that were probably laid down in a relatively high energy, tidally influenced, distal subaqueous setting, along a shoreline (Barker et al., 2006).

While in some sections Paleontological resources range from high to very low paleontological sensitivity. The proposed development sites are however disturbed making it almost impossible for paleontological resources to be still in existence. Some sections area fall within the Bushveld Complex, Hout River Gneiss and Matlala Granite; Mokolian, Vaalian and Randian in age respectively, with a **VERY LOW** Palaeontological Sensitivity (Groenewald and Groenewald 2014*). This development will take place on igneous rocks, therefore, the impact will be **VERY LOW.**

PalaeoSensitivity Map



1 in 250 000 geological formation layers are courtesy of the **Council for GeoScience**

For more information, go to **How to Use the Palaeontological (fossil) Sensitivity Map**

Colour	Sensitivity	Required Action
RED	VERY HIGH	field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	desktop study is required and based on the outcome of the desktop study, a field assessment is likely
GREEN	MODERATE	desktop study is required
BLUE	LOW	no palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	no palaeontological studies are required
WHITE/CLEAR	UNKNOWN	these areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

Figure 16: Palaeontology Sensitivity Map

Recommendation

That Exemption from a Desktop Study for the proposed replacement of Specon bypass pumping main within Lebowakgomo, and refurbishment/rehabilitation of Megoring and Thakgalang River Crossings within Thakgalang, Capricorn District, Limpopo Province be granted to the applicant taking into consideration all the above stated information.

Protocol for Chance Finds and Management plan

This section covers the recommended protocol for a Phase 2 Mitigation process as well as for reports where the Palaeontological Sensitivity is **LOW**; this process guides the palaeontologist / palaeobotanist / ECO on site and should not be attempted by the layman / developer.

- As part of the Environmental Authorisation conditions, an Environmental Control Officer (ECO) will be appointed to oversee the construction/prospecting/mining activities in line with the legally binding Environmental Management Programme (EMPr) so that when a fossil is unearthed they can notify the relevant department and specialist to further investigate.
- All fossil finds must be placed in a safe place for further investigation.
- The ECO should familiarise him- or herself with the applicable formations and its fossils.
- Most Universities and Museums have good examples of fossils.
- The EMPr already covers the conservation of heritage and palaeontological material that may be exposed during construction/prospecting/mining activities. For a chance fossil find, the protocol is to cease all construction activities, construct a 30 m no-go barrier, and contact SAHRA for further investigation.
- It is recommended that the EMPr be updated to include the involvement of a palaeontologist when necessary, either for pre-construction training of ECO or for pre-determined site visits. The ECO must visit the site after clearing, drilling, excavations and blasting and keep a photographic record.
- The developer may be asked to survey the areas affected by the development and indicate on plan where the construction / development / mining will take place. Trenches may have to be dug to ascertain how deep the sediments are above the bedrock (can be a few hundred metres). This will give an indication of the depth of the topsoil, subsoil, and overburden, if need be trenches should be dug deeper to expose the interburden.

The palaeontological impact assessment process presents an opportunity for identification, access and possibly salvage of fossils and add to the few good localities. Mitigation can provide valuable onsite research that can benefit both the community and the palaeontological fraternity. A Phase 2 study is very often the last opportunity we will ever have to record the fossil heritage within the development area. Fossils excavated will be stored at a National Repository.

5.3 Archaeological and resources

Section 35 (4) No person may, without a permit issued by the responsible heritage resources authority

- The survey did not record any archaeological sites. Ground visibility was very clear during the field survey making it easy to identify any archaeological sites that might occur within the proposed development footprint.

5.4 Intangible and Living Heritage.

Section 3 (3) of the National Heritage Resources Act, No. 25 of 1999 makes provisions of such places of spiritual significance to individuals

- Long term impact on the cultural landscape is considered to be negligible as the surrounding area consists of relatively new buildings. Visual impacts to scenic routes and sense of place are also considered to be low due to the nonexistence of any heritage resources within the study area.

5.5 Burial Grounds and Graves

36(3) No person may, without a permit issued by SAHRA or a provincial heritage resources authority

- No graves or burial grounds were recorded in along the proposed project area. A community cemetery exists some 1.7kms away from the proposed development site. This cemetery falls out of the proposed development footprint and will not be affected by the proposed development in any way.

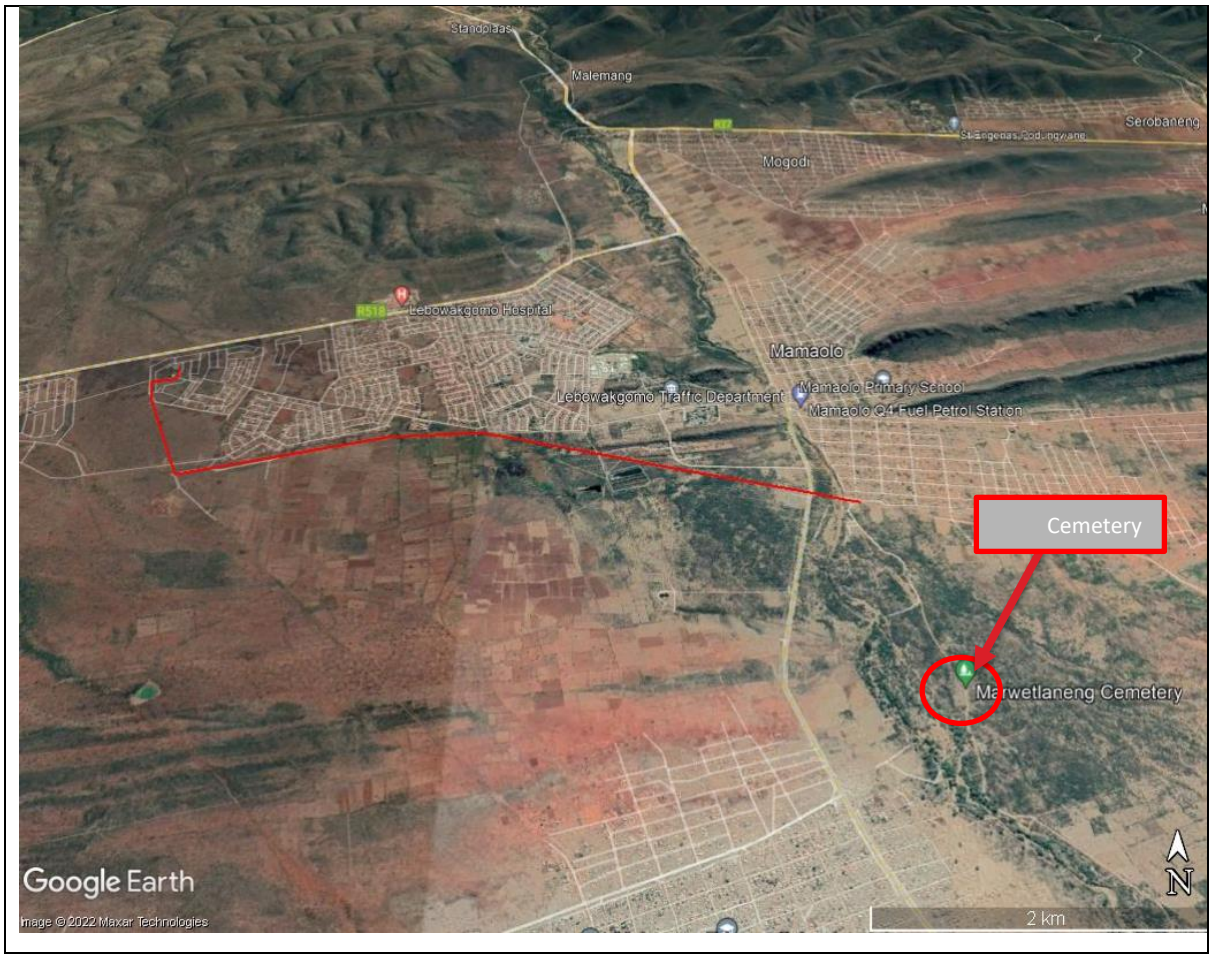


Figure 17: Marwetlaneng cemetery

5.6 Public monuments and memorials

37. Public monuments and memorials must, without the need to publish a notice to this effect be protected in the same manner as places which are entered in a heritage register referred to in section 30.

- There are no public monuments and memorials in the study area.

5th SITE CULTURAL LANDSCAPE ANALYSIS

The European Landscape Convention (ELC) (Council of Europe 2000) gives the first formal definition addressing all landscapes. Formal definitions are based on a consensus between contributing parties and formulated in a convention that engage the parties signing it. Only one older formal definition of landscape exist: the one by the UNESCO World Heritage Convention (UNESCO 1992) defining however only "cultural landscapes" and only if they have a "universal value". Three main categories are recognised:

- Designed landscapes have been created intentionally by man, such as gardens and parkland landscapes. They are constructed for aesthetic (and sometimes political) reasons and are often associated with monumental ensembles.
- Organically evolved landscapes are the result of and have developed from the interactive process between a specific culture and in response to its natural environment. They fall into two sub- categories: elict (or fossil) landscapes are the ones that still show characteristic material features resulting from the processes that made them but came to an end continuing landscapes are the ones that are sustained by a still active traditional way of life in the contemporary society;
- Associative cultural landscapes refer symbolically to powerful religious, artistic or cultural associations of the natural element rather than material cultural evidence.

Virtually all landscapes have cultural associations, because virtually all landscapes have been affected in some way by human action or perception. Therefore, the use of the phrase "cultural landscape" is to mean a special type of landscape. Instead, we use "cultural landscape" to mean a way of seeing landscapes that emphasizes the interaction between human beings and nature over time.

Proposed development site Cultural Landscape: A geographic area (including both cultural and natural resources and the wildlife or domestic animals therein), associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values. Historic landscapes, unlike works of art, have to function as contemporary environments heritage practitioners literally have to enter and become involved with them. Managing cultural landscapes thus involves planning for positive change as well as preventing negative change. Emvelo Environmental Consultant afforded us the opportunity to briefly interact with the landscape and the local community

while we placed site notices on their behalf, this was essential in taking our team out of the proposed development footprint and observe the landscape from a broader perspective.

The broader region is associated with developing tourism venues as well as a semi-rural community slowly developing into an urban setting. Within this region exists the Megoring is the name of the mountain to the south of the school, which is actually cattle pathways in between the mountains. There exists the Megoring Primary school with the first block having been built in 1955. The block is dilapidated, it forms part of the historical landscape as it is older than 6o years old[1]. The histography of the proposed development landscape is incomplete without mentioning that the Capricorn District Municipality is called after the Latitudinal Tropic of Capricorn, which runs through the district's northern half. It is one of the five districts in South Africa's Limpopo province, with its administrative centre and that of the province in Polokwane. The town was once known as Pietersburg and was named after the Voortrekker leader Petrus Jacobus Joubert. In 2005, it was renamed Polokwane, which means 'place of peace.'

The Bakone ba Matla a Thaba clan of the Northern Sotho/Pedi tribe, who lived in the area in the 17th century, used to call the city and district their capital. The skilful clan successfully defended their area, resulting in the abandoning of the Voortrekkers' settlement of Zoutpansbergdorp, which was originally known as Zoutpansbergdorp and was located 100 kilometres north of Polokwane. In favour of laagering in Polokwane, the Boers abandoned the town with Lebowakgomo laying southeast of Polokwane. The town, which had only 115 residents when it was founded in 1974, was expanded and developed in the early 1980s. Bakeries, bottle stores, wood and coal yards, and butchering facilities were among the commercial establishments. Many people from Lebowakgomo[2] work in nearby Polokwane, Mokopane, Tzaneen, and Phalaborwa industries. The settlement of Chuniespoortdam, which is connected to Polokwane by road, receives water from the Chuniespoortdam lake. The population was 26,189 in 2001.

The Bakone Malapa Northern Sotho Open-Air Museum in Polokwane is located in the district and shows the Bakone people's traditional and modern lifestyles. The museum is built around a traditional hamlet that is still inhabited by tribe members who sell various items to tourists. Archaeological sites containing remains of iron and copper smelting installations, as well as rock drawings dating back to roughly 1000 B.C., may be found within the museum complex. The Eersteling Monuments in Pietersburg/Polokwane commemorate the first gold crushing site and the first gold power plant in South Africa. Polokwane was crowned "South Africa's Greenest Municipality" in 2017.

[1] The community came together to make the clay bricks, which were then burned to strengthen them. Those bricks were used to construct the original structure, which is currently crumbling (Oral history).

[2] The Lebowa area has been occupied by a mostly Northern Sotho population for centuries. This group is a part of a larger Northern Sotho-speaking community occupying a large area between the Limpopo River in the north, the Drakensberg in the east and the Sekhukhune Mountains in the west (Pistorius 2012)

The proposed development site is situated within a cultural landscape dominated by Later Iron Age sites. The archaeological survey carried out by Hutten (2019) shows that the landscape carries a number of Later Iron Age sites of High Significance. While this study did not encounter any archaeological sites, this study can however reinforce the availability of late farming communities from the literature encountered while compiling this report. The Hutten (2019) heritage impact assessment report noted the existence of (7) seven heritage sites have been documented West of the proposed development footprint. All of them *(documented as LIM 003 through LIM 009)* were shown to be associated to Iron Age occupancy. These cultural sites were most likely part of a village that Roodt (2001) found directly to the south of the Edupark Complex. The earliest occupation in the Edupark Complex can be related to the Eiland phase, while the Moloko (Sotho-Tswana) and Letaba (Ndebele) Late Iron Age sites are dated between 1000AD and 1650AD.

Archaeologists have combined oral histories, archaeological evidence and ethnography to study the history of the Ndebele in the old Pietersburg area which is now called Polokwane (Loubser, 1994). This Ndebele community is also known the Northern Transvaal Ndebele, following the colonial terminology used in ethnology (Loubser, 1994). Following oral history accounts, it is argued that the Pietersburg area was occupied by at least six groups in the period extending from AD1600 to AD1900. Following this, archaeological prospection of the Pietersburg area has revealed three distinctive typologies of Stone Walled Structures (Loubser, 1994). It follows that these distinctive stone walled structures also had three distinctive ceramic typologies suggesting three distinctive groups to have occupied these sites (Loubser, 1994). Following the classificatory scheme highlighted above, Loubser (1994) associated Group 1 type sites with the Eiland communities because the sites contained Eiland pottery. It is highlighted that these sites are geographically located on hilltops, and in the true tradition of colonial interpretation, this suggests that these sites were built in response to political upheaval (e.g. Boeyens, 2003). Although no scientific dating was conducted on these sites, they have been tentatively dated to around AD 1000 (Loubser, 1994).

It is argued that the Group II type sites mentioned above were authored by the Ndebele speaking communities, while some of them were built by the Koni communities. One of the sites falling under this group was radio-carbon dates to the 17th century (AD1600s). These settlements are located at the base of hills or on the slopes of valleys, and they all curiously face north. Lastly, researchers associate Group III sites with the Ndebele, Koni and Shangaan communities. Two of the sites falling under this group were radio-carbon dated between AD1850 – 1900(Loubser, 1994) suggesting contact with Europeans at some point. These settlements share some characteristics with Group II sites in terms of location and physical attributes. However, these settlements contained scalloped walling common among the Sotho Tswana (Pistorius, 1992; Fredriksen, 2007; Jordan, 2016). Additionally, two of the sites in the class are located on hilltops which could suggest royalty (see Boeyens, 2003; Mangoro, 2018). Loubser (1994) highlights that Group II and Group III sites contain similar pottery assemblages belonging to two distinctive styles namely; Sotho Tswana (Moloko) and Venda and North Eastern Sotho archaeologically known as Letaba

(Loubser, 1994). Through analysis, the settlements in the three groups follow a chronological sequence of old to recent in the above order revealing successive occupation of the region for about a millennium.

Oral histories of the so-called Northern Ndebele suggest multiple origins of these communities, and the archaeological record of the old Pietersburg area appears to corroborate this. Loubser (1994) argues that the above ceramic styles reflect the distinctive origins of the Ndebele in the oral histories. Oral histories are replete with weaknesses which may render them unreliable. However, when they are corroborated with archaeological evidence such as in this scenario, they can be a formidable source of historical evidence.

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- **Conclusions:**

From a heritage perspective, the proposed project is acceptable. This report concludes that the impacts of the proposed development on the cultural environmental values are not likely to be significant on the entire development site if the EMP includes recommended safeguards and mitigation measures identified in this report. However archaeological deposits usually occur below ground level. Should archaeological artefacts or skeletal material be revealed in the area during development activities, such activities should be halted, and a heritage specialist or Limpopo Provincial Heritage Resources Authority (LIHRA) must be notified in order for an investigation and evaluation of the find(s) to take place (NHRA (Act No. 25 of 1999), Section 36 (6).

- **Recommendations:**

The following conditions must however be observed;

- The construction teams must be inducted on the possibility of encountering archaeological resources that may be accidentally exposed during clearance and construction at the mining site prior to commencement of work on the site in order to ensure appropriate mitigation measures and that course of action is afforded to any chance finds in accordance with the Chance Find Procedure.
- Strict and clear reporting procedures for chance finds must be followed by the client and contractors throughout the construction period.
- Periodic archaeological watching briefs should be submitted to the Limpopo Provincial Heritage Resources Authority (LIHRA).

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APPENDIX A: ARCHAEOLOGICAL AND HISTORICAL BACKGROUND OF THE STUDY AREA

- **Archaeological Background**

Several Cultural Resources Management studies have been carried out in the vicinity of the proposed development. Mlilo 2018, Tomose 2018, Muroyi, 2021, Steyn 2017, Van Schalkwyk 2013, Murombika , 2006 and Pelser 2013 are among the most recent HIA reports. Some of these authors are familiar with the area and have published on the region's Iron Age archaeology and the spatial organization of Iron Age sites in terms of settlements and burials.

Because of the numerous Iron Age civilizations and practices present in this area, the province of Limpopo is one of the most widely investigated regions in terms of Iron Age archaeology. The EIA (Early Iron Age), MIA (Middle Iron Age), and LIA [Late Iron Age] of Limpopo Province can be classified into three chronological divisions (e.g. Huffman, 2007). Many Iron Age sites are found near flood plains and along and near major rivers; however, some have been discovered on defensive slopes along Limpopo hill slopes and/or hilly locations (e.g. Huffman 2007).

The Limpopo Confluence and the East Coast of Africa had a lot of trade throughout the Middle Iron Age (AD 900–1300). Other researchers argue that the time should be limited to the Shashe-Limpopo Confluence, however this has been contested. Bantu-speaking peoples such as the Sotho-Tswana lived in the area before Europeans arrived. Farming was important in the region throughout the Late Iron Age (Murimbika 2006).

During the Late Iron Age, farming was of significance in the region. These farming communities built numerous stone walled settlements throughout the Free State from the 17th century onwards around the Capricorn District. These sites are associated with the predecessors of the Sotho-Tswana, and are linked with the so-called N-, V-, R- and Z-Type of settlements which are respectively associated with Fokeng, Kwena, Kgatla and Rolong clans. LSA in this district is represented by the presence of rock art paintings and engravings are found in abundance in the Mohlapitse River valley in the Wolkberg, Steelpoort valley and Olifants River (Changuion,2012). Studies in the Kruger National Park to the east have documented numerous Middle and Late Stone Age sites and it can be expected that all phases of the Stone Age are represented in the area (Pistorius, 2014).

Historical records combined with 'Type Z' walling and archaeological evidence from areas around the Capricorn District to show that Bantu-speaking farmers occupied the area from around AD 1650 to AD 1700. The typical archaeology that is associated with these Iron Age farmers are the well-known stone-walled settlements (or 'Kraals') and their thick-walled, decorated ceramics. However there is not much

evidence of farmers or herders in the Capricorn District , with the evidence showing that most of this land was left unoccupied possibly because of its characteristically arid conditions.

Many of the Limpopo Province Iron Age sites are located near flood plains, along and near some of the major rivers, hill slopes and/or mountain areas (Huffman, 2007). The Iron Age of Limpopo Province region dates back to the 5 the century AD when the Early Iron Age proto-Bantu-speaking farming communities began arriving in the area, which was then occupied by Stone Age people. The region is well known for the famous golden rhino that was recovered from Iron Age settlement site of Mapungubwe in the Limpopo Shashi Valley, now a UNESCO World Heritage Site. The first people in Mapungubwe were early Iron Age settlers. They lived there from about 1000 AD to 1300 AD, and around 1500 Iron Age subsistence farmers also settled there. Their existence is confirmed by the discovery by archaeologists of a few potsherds identified as Early Iron Age pottery. This means that they manufactured their own pottery and metal tools.

- **Historical Background**

Historically the Capricorn District was inhabited by the Bakone ba Matla a Thaba clan of the Northern Sotho/Pedi tribe, who lived in the area in the 17th century. The Capricorn District was their their capital. This clan was known to be strong militarily. The skillful clan successfully defended their area, resulting in the abandoning of the Voortrekkers' settlement of Zoutpansbergdorp, which was originally known as Zoutpansbergdorp and was located 150 kilometers north of the study area. In favour of laagering in Polokwane, the Boers abandoned the town. They decided to settle in Polokwane.

The Capricorn District boasts of heritage sites including relics of iron and copper smelting complexes, as well as rock art dating from circa 1000 B.C. The Eersteling Monuments in South West of the study site commemorates the first gold crushing site and the first gold power plant in South Africa. Polokwane was crowned "South Africa's Greenest Municipality" in 2017.

The Capricorn District was also home to liberation war Icon Peter Mokaba , born in 1959 Peter died in 2002. He was a member of the South African parliament, a deputy minister in Nelson Mandela's government, and the president of the ANC Youth League, the country's youth wing. He was honored with the Peter Mokaba Stadium in Polokwane, which hosted the 2010 FIFA World Cup. In 1977 and 1982, he was arrested under the Terrorism Act and convicted of a number of his underground actions as a member of Umkhonto we Sizwe. He completed his sentence on Robben Island. In 1984, his sentence was commuted, and he proceeded to work for the United Democratic Front (UDF). In 1987, he became

the first president of the South African Youth Congress (see note below), which later renamed itself the ANC Youth League following the ANC's unbanning in 1990.

The study area also occurs around the township of Lebowakgomo which is synonymous with the Bantustan history. The township was founded in the early 1970s to serve as Lebowa's capital, and it was expanded and developed in the 1980s. The name Lebowa ("north") and Kgomo ("south") are derived from two Northern Sotho words ("cow"). Chief Mmutle Mphahlele of the Bakgaga ba gaMphahlele donated the area where Lebowakgomo is located to the previous Lebowa Government. In Seleteng village, 10 kilometers southeast of the municipality, is the chief's palace.

Mahwelereng, Seego, Mankweng, Lenyenye, Namakgale, Praktiseer, Maiing, and Senwabarwana were the other seven townships in the former Bantustan, the others being Mahwelereng, Seego, Mankweng, Lenyenye, Namakgale, Namakgale, Praktiseer, Maiing, and Senwabarwana. The Great Kamza Mbathero was also born in Lebowakgomo. These were all township created by the aprthied system as a way of separating black Africans from the white populace.

The township of Lebowakgomo is surrounded by small to medium-sized villages that contribute the vast majority of day dwellers in its business district, each with their own characteristics. Makotse, Ga-Ledwaba, home of the Traditional Authority of Ga-Ledwaba, Ga-Rakgoatha, Ga-Mphahlele, Sepanapudi, Ga Masemola, and Zebediela, home of the Zebediela Citrus Farm, which exported citrus to international and local markets in its prime prior to land redistribution and whose oranges were famous among locals[3]. The previous headquarters of the Zion Christian Church, which was located in Podingwane from 1937 to 1942 before moving to Moria, is located just 13 kilometers from Lebowakgomo. The old Zion Christian Church is considered a heritage site since it is more than 60years old (Gitlin 1950).

Mfeqane influence in the Capricorn Region

After expanding north on route to the area now called Bulawayo in Zimbabwe, Mzilikazi's Ndebele clan passed through the Capricorn District. These Ndebele speakers allegedly split so that one group settled in the Mokopane area of Polokwane (Pietersburg) and another. The Capricorn District. Was also inhabited by these groups. The curious absence of Nguni like pottery assemblages in the region however persuaded researchers to speculate that the Northern Ndebele had a long history with the Venda and Northern Sotho rather than the Nguni speakers in the KwaZulu Natal region (Loubser, 1994).

[3] Traditional Leaders Capricorn District Municipality :Accessed 15 March 2022

The decision to occupy the Pietersburg Plateau (Polokwane) and the surrounding areas by the Ndebele would have been influenced by several reasons. Since agriculture was an integral component of the Ndebele economy in the so-called Iron Age period, the choice of location would have been influenced by suitability of the biophysical qualities of the area. According to Loubser (1994), the Pietersburg Plateau is suitable for subsistence agriculture, and to date, the agricultural footprint is still visible on the landscape. In addition, Loubser notes that two ridges to the south of Pietersburg were used as grazing lands by the Ndebele farmers (Loubser 1994).

Loubser (1994) excavated one site each from the three classes discussed above. The excavations in a Group 1 site produced human remains, hut floors, ceramics, floor smothers, upper grindstones and bone pendants (Loubser, 1994). Group II excavations produced hut floors, floor smothers, stone milk strainers, pottery discs among other material culture. Finally, Group III sites yielded among other things upper grindstones, faunal remains (e.g. of cattle) iron ring, soap-stone slabs etc. In the analysis of these findings, Loubser spotted Eiland pottery which was excavated in the Old Eastern Transvaal (Evers, 1975). He argues that this pottery predates the oral histories of the Pietersburg Ndebele following tentative dating of between AD850 – 1200 (Loubser, 1994: 138).

In addition to the Eiland ceramics, Moloko pottery of the Sotho Tswana speakers (Evers, 1981) tentatively dating to the 14th century (Loubser, 1991) was also excavated. Interestingly, Moloko pottery appears at the same time as the Letaba pottery in areas south of Pietersburg and discontinues when Mzilikazi ravaged the area during the Mfecane, on his way to modern day Zimbabwe. Although the Letaba pottery has been strongly linked to the Ndebele, Loubser (1991) convincingly linked the same pottery to Venda speaking communities. Loubser argues that the Letaba pottery was a mixture of Moloko pottery of the Sotho Tswana and the Khami pottery of the Shona in the Soutpansberg area. In addition, Loubser (1991) articulated that only the Letaba pottery occurs at Soutpansberg during mid-16th century and early 20th century, a period in which Venda speaking peoples are known to have occupied the area (Mangoro 2018).

The long Iron Age occupation sequence of the Pietersburg area is further discussed by Roodt (2010) who discovered archaeological resources at the Edupark complex. In their unpublished report, Roodt discovered human remains dating to 991 AD. They also discovered cow dung dating to the late 1600s while a midden dated to 1018AD. These findings fit into the common narrative that the Pietersburg area has an extensive history of occupation by African communities long before the Europeans arrived.

❖ **Palaeontological Sensitivity**

The Capricorn District is home to the Bushveld Complex (surrounding area), this is a massive body of igneous origin and it is intrusive in the Transvaal Supergroup (Kent, 1980). The Bushveld Complex extends over 440 km east-west, from Burgersfort to Nietverdiend; and for nearly 350 km north-south from Villa Nora to Bethal. It covers an area of 65 000 km² and is chrome and platinum rich (Visser, 1989). The age is Vaalian (2,100 – 1,920 Ma). The layered rocks of the Bushveld Complex are generally believed to be the result of crystals settling out of magma during slow cooling. The magmatic events petrogenetically related to and generally considered part of the whole magmatic evolution of the Complex are, the diabase sills and the Rooiberg Group

Rashoop Granophyre Suite and Lebowa Granite Suite: The other two are the Rashoop Granophyre Suite and Lebowa Granite Suite (Visser, 1989). Compositionally, the granites of the Lebowa Suite are predominantly alkali feldspar granites with ironrich ferromagnesian minerals and silica contents. The region is covered by 'Bushveld' vegetation. The weathering product is known as 'black turf' (Kent, 1980; Visser, 1989). There is a presence of mining past and present with iron ore and the Merensky Reef. Magnesite mines provide magnesium carbonate for making heat-resistant bricks (Norman and Whitfield 2006). The Layered Suite, the source of an immense wealth of platinum, chrome and vanadium, comprises six quite distinct zones. Granophyric rocks of the Bushveld Complex occur widely between the RLS beneath and the Rooiberg Volcanics above although they are never voluminous. Little work has been completed on the granophyric rocks since a memoir by Walraven in 1987. It is unfortunate in some ways that these texturally similar rocks have been grouped together because of the diversity of origin within the group.

APPENDIX B: ASSESSMENT OF SIGNIFICANCE

Article 26(2) of the Burra Charter emphasises that written statements of cultural significance for heritage resources should be prepared, justified and accompanied by supporting evidence. Site significance classification standards prescribed by SAHRA (2006), and acknowledged by ASAPA for the SADC region, were used for the purposes of this report.

Table 3: Site Significance classification

SAHRA's Site significance minimum standards			
Filed Rating	**Grade**	**Classification**	**Recommendation**
National Significance (NS)	Grade 1		Conservation; National Site nomination
Provincial Significance (PS)	Grade 2		Conservation; Provincial Site nomination
Local Significance (LS)	Grade 3A	High Significance	Conservation; Mitigation not advised
Local Significance (LS)	Grade 3B	High Significance	Mitigation (Part of site should be retained)
Generally Protected A (GP.A)		High/ Medium Significance	Mitigation before destruction
Generally Protected B (GP.B)		Medium Significance	Recording before destruction
Generally Protected C (GP.A)		Low Significance	Destruction

Table 4:Site Significance calculation formula

Site significance is calculated by combining the following concepts in the given formula.

S= (E+D+M) P

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The significance weightings for each potential impact are as follows:

The significance weightings for each potential impact are as follows:

Aspect	Description	Weight
Probability	Improbable	1
	Probable	2
	Highly Probable	4
	Definite	5
Duration	Short term	1
	Medium term	3
	Long term	4
	Permanent	5
Scale	Local	1
	Site	2
	Regional	3
Magnitude/Severity	Low	2
	Medium	6
	High	8

Table 5: Impact Significance

Significance		
It provides an indication of the importance of the impact in terms of both tangible and intangible characteristics. (S) is formulated by adding the sum of numbers assigned to Extent (E), Duration (D), and Intensity (I) and multiplying the sum by the Probability. S= (E+D+M) P		
<30	Low	Mitigation of impacts is easily achieved where this impact would not have a direct influence on the decision to develop in the area.
30-60	Medium	Mitigation of impact is both feasible and fairly easy. The impact could influence the decision to develop in the area unless it is effectively mitigated.
>60	High	Significant impacts where there is difficult. The impact must have an

		influence on the decision process to develop in the area.

Table 6: Impact Assessment table

Nature: During the construction phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological material or objects.		
	Without Mitigation	With Mitigation
Extent	Site (2)	Local (1)
Duration	Permanent (5)	Permanent (5)
Magnitude	Low (8)	Low(6)
Probability	Not Probable (4)	Not probable (2)
Significance	Medium(39)	Low(18)
Status	Negative	Negative
Reversibility	Not irreversible	Not irreversible
Irreversible loss of resources	No resources were recorded	No resources were recorded
Can impacts be mitigated?	Yes, a chance find procedure should be implemented.	Yes
⇔ Mitigation: Chance Finds Procedure recomended		

APPENDIX G: VALUES CONTAINED IN THE REPORT

Table 7: Definitions of Values

Value	Definition
Historic value	Important in the community or pattern of history or has an association with the life or work of a person, group or organization of importance in history.
Scientific value	Potential to yield information that will contribute to an understanding of natural or cultural history or is important in demonstrating a high degree of creative or technical achievement of a particular period
Aesthetic value	Important in exhibiting particular aesthetic characteristics valued by a community or cultural group.
Social value	Have a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons
Rarity	Does it possess uncommon, rare or endangered aspects of natural or cultural heritage
Representivity	Important in demonstrating the principal characteristics of a particular class of natural or cultural places or object or a range of landscapes or environments characteristic of its class or of human activities (including way of life, philosophy, custom, process, land-use function, design or technique) in the environment of the nation, province region

APPENDIX C: TERMINOLOGY USED

- ***The terminology adopted in this document is mainly influenced by the NHRA of South Africa (1999) and the Burra Charter (1979).***

Adaptation: Changes made to a place so that it can have different but reconcilable uses.

Artefact: Cultural object (made by humans).

Buffer Zone: Means an area surrounding a cultural heritage which has restrictions placed on its use or where collaborative projects and programs are undertaken to afford additional protection to the site.

Co-management: Managing in such a way as to take into account the needs and desires of stakeholders, neighbours and partners, and incorporating these into decision making through, amongst others, the promulgation of a local board.

Conservation: In relation to heritage resources, includes protection, maintenance, preservation and sustainable use of places or objects so as to safeguard their cultural significance as defined. These processes include, but are not necessarily restricted to preservation, restoration, reconstruction and adaptation.

Contextual Paradigm: A scientific approach which places importance on the total context as catalyst for cultural change and which specifically studies the symbolic role of the individual and immediate historical context.

Cultural Resource: Any place or object of cultural significance

Cultural Significance: Means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance of a place or object for past, present and future generations.

Feature: A coincidental find of movable cultural objects (also see Knudson 1978: 20).

Grading: The South African heritage resource management system is based on a grading system, which provides for assigning the appropriate level of management responsibility to a heritage resource.

Heritage Resources Management: The utilization of management techniques to protect and develop cultural resources so that these become long term cultural heritage which are of value to the general public.

Heritage Resources Management Paradigm: A scientific approach based on the Contextual paradigm, but placing the emphasis on the cultural importance of archaeological (and historical) sites for the community.

Heritage Site Management: The control of the elements that make up the physical and social environment of a site, its physical condition, land use, human visitors, interpretation etc. Management may be aimed at preservation or, if necessary at minimizing damage or destruction or at presentation of the site to the public.

Historic: Means significant in history, belonging to the past; of what is important or famous in the past.

Historical: Means belonging to the past, or relating to the study of history.

Maintenance: Means the continuous protective care of the fabric, contents and setting of a place. It does not involve physical alteration.

Object: Artefact (cultural object)

Paradigm: Theories, laws, models, analogies, metaphors and the epistimatological and methodological values used by researchers to solve a scientific problem.

Preservation: Refers to protecting and maintaining the fabric of a place in its existing state and retarding deterioration or change, and may include stabilization where necessary. Preservation is appropriate where the existing state of the fabric itself constitutes evidence of specific cultural significance, or where insufficient evidence is available to allow other conservation processes to be carried out.

Protection: With reference to cultural heritage resources this includes the conservation, maintenance, preservation and sustainable utilization of places or objects in order to maintain the cultural significance thereof.

Place: means a geographically defined area. It may include elements, objects, spaces and views. Place may have tangible and intangible dimensions.

Reconstruction: To bring a place or object as close as possible to a specific known state by using old and new materials.

Rehabilitation: The repairing and/ or changing of a structure without necessarily taking the historical correctness thereof into account.

Restoration: To bring a place or object back as close as possible to a known state, without using any new materials.

Site: A large place with extensive structures and related cultural objects. It can also be a large assemblage of cultural artefacts, found on a single location.

Sustainable: Means the use of such resource in a way and at a rate that would not lead to its long-term decline, would not decrease its historical integrity or cultural significance and would ensure its continued use to meet the needs and aspirations of present and future generations of people.