



LEFATSE
Environmental Planning Services (PTY) Ltd

PHASE 1 AIA REPORT HEILBRON PEDESTRIAN BRIDGE

PROPOSED DEVELOPMENT OF A PEDESTRIAN BRIDGE OVER THE ELANDSPRUIT,
ON THE FARM RIETFONTEIN NO. 156, PARCEL 275 PORTION 0, SANDERSVILLE,
& THE FARM RIETFONTEIN NO. 156, PARCEL 156 PORTION 84, PHIRITONA,
HEILBRON TOWN, NGWATHE LOCAL MUNICIPALITY, FEZILE DABI DISTRICT
MUNICIPALITY, FREE STATE.

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IN ASSOCIATION WITH:

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04 JUNE 2021

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Declaration of independence:

We, Jan Engelbrecht and Heidi Fivaz, partners of UBIQUE Heritage Consultants, hereby confirm our independence as heritage specialists and declare that:

- we are suitably qualified and accredited to act as independent specialists in this application;
- we do not have any vested interests (either business, financial, personal or other) in the proposed development project other than remuneration for the heritage assessment and heritage management services performed;
- the work was conducted in an objective and ethical manner, in accordance with a professional code of conduct and within the framework of South African heritage legislation.



Signed:

J.A.C. Engelbrecht & H. Fivaz
UBIQUE Heritage Consultants

Date: 2021-06-04

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JAN ENGELBRECHT

CRM ARCHAEOLOGIST

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HEIDI FIVAZ

ARCHAEOLOGIST & OBJECT CONSERVATOR

Heidi Fivaz has been a part of UBIQUE Heritage Consultants since 2016 and is responsible for research and report compilation. She holds a B.Tech. Fine Arts degree (2000) from Tshwane University of Technology, a BA Culture and Arts Historical Studies degree (2012) from UNISA and attained her BA (Hons) Archaeology in 2015 (UNISA). She has received extensive training in object conservation from the South African Institute of Object Conservation and specialises in glass and ceramics conservation. She is also a skilled artefact and archaeological illustrator. Ms Fivaz has completed her MA in Archaeology (2021) at the University of South Africa (UNISA), focusing on historical and industrial archaeology. She is a professional member of the Association of South African Archaeologists and has worked on numerous archaeological excavation and surveying projects over the past ten years.



EXECUTIVE SUMMARY

Project description

UBIQUE Heritage Consultants were appointed by LEFATSE Environmental Planning Services (Pty) Ltd as independent heritage specialists in accordance with Section 38 of the NHRA and the National Environmental Management Act 107 of 1998 (NEMA), to conduct a cultural heritage assessment to determine the impact of the proposed development of a pedestrian bridge over the Elandspruit, on the Farm Rietfontein No. 156, Parcel 275 Portion 0, Sandersville, and the Farm Rietfontein No. 156, Parcel 156 Portion 84, Phiritona, Heilbron Town, Ngwathe Local Municipality, Fezile Dabi District Municipality, Free State, on any sites, features, or objects of cultural heritage significance.

Findings and Impact on Heritage Resources

No heritage resources were identified within or around the development footprint that would be negatively impacted by constructing the proposed pedestrian bridge.

Recommendations

Based on the assessment of the potential impact of the development on the identified heritage, the following recommendations are made, taking into consideration any existing or potential sustainable social and economic benefits:

1. No significant heritage sites or features were identified within the surveyed sections of the development footprint. From a heritage point of view, we recommend that the pedestrian bridge construction should continue. It will benefit the local community in desperate need of safe passage during heavy rains and floods.
2. Although all possible care has been taken to identify sites of cultural importance during the investigation of study areas, it is always possible that hidden or sub-surface sites could be overlooked during the assessment. If during construction, any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the NHRA. If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Mimi Seetelo 012 320 8490) must be alerted immediately as per section 36(6) of the NHRA. A professional archaeologist or palaeontologist, depending on the nature of the finds, must be contacted as soon as possible to inspect the findings. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA. UBIQUE Heritage Consultants and its personnel will not be held liable for such oversights or costs incurred as a result of such oversights.

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ABBREVIATIONS

AIA:	Archaeological Impact Assessment
ASAPA:	Association of South African Professional Archaeologists
BIA:	Basic Impact Assessment
CRM:	Cultural Resource Management
ECO:	Environmental Control Officer
EIA:	Environmental Impact Assessment*
EIA:	Early Iron Age*
EMP:	Environmental Management Plan
ESA:	Earlier Stone Age
GPS:	Global Positioning System
HIA:	Heritage Impact Assessment
LIA:	Late Iron Age

LSA:	Later Stone Age
MEC:	Member of the Executive Council
MIA:	Middle Iron Age
MPRDA:	Mineral and Petroleum Resources Development Act
MSA:	Middle Stone Age
NEMA:	National Environmental Management Act
NHRA:	National Heritage Resources Act
OWC:	Orange River Wine Cellars
PRHA:	Provincial Heritage Resource Agency
SADC:	Southern African Development Community
SAHRA:	South African Heritage Resources Agency
SAHRIS:	South African Heritage Resources Information System

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

GLOSSARY

Archaeological:	<p>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;</p> <ul style="list-style-type: none"> – 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 (as defined and protected by the National Heritage Resources Act (NHRA) (Act No. 25 of 1999) including any area within 10 m of such representation; – wrecks, being any vessel or aircraft, or any part thereof, which were 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.
Stone Age:	The first and longest part of human history is the Stone Age, which began with the appearance of early humans between 3-2 million years ago. Stone Age people were hunters, gatherers and scavengers who did not live in permanently settled communities. Their stone tools preserve well and are found in most places in South Africa and elsewhere.
Earlier Stone Age:	>2 000 000 - >200 000 years ago
Middle Stone Age:	<300 000 - >20 000 years ago
Later Stone Age:	<40 000 - until the historical period
Iron Age:	(Early Farming Communities). Period covering the last 1800 years, when immigrant African farmer groups brought a new way of life to southern Africa. They established settled villages, cultivated domestic crops such as

	sorghum, millet and beans, and herded cattle as well as sheep and goats. As they produced their own iron tools, archaeologists call this the Iron Age. Early Iron Age: AD 200 - AD 900 Middle Iron Age: AD 900 - AD 1300 Later Iron Age: AD 1300 - AD 1850
Historic:	Period of arrival of white settlers and colonial contact. AD 1500 to 1950
Historic building:	Structures 60 years and older.
Fossil:	Mineralised bones of animals, shellfish, plants and marine animals. A trace fossil is the track or footprint of a fossil animal that is preserved in stone or consolidated sediment.
Heritage:	That which is inherited and forms part of the National Estate (historic places, objects, fossils as defined by the National Heritage Resources Act 25 of 1999).
Heritage resources:	These mean any place or object of cultural significance, tangible or intangible.
Holocene:	The most recent geological period that commenced 10 000 years ago.
Palaeontology:	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 that contains such fossilised remains or traces
Cumulative impacts:	“Cumulative Impact”, in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity that may not be significant, but may become significant when added to existing and reasonably foreseeable impacts eventuating from similar or diverse activities.
Mitigation:	Anticipating and preventing negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.
A ‘place’:	a site, area or region; <ul style="list-style-type: none"> – 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.
‘Public monuments and memorials’:	mean all monuments and memorials— <ul style="list-style-type: none"> – erected on land belonging to any branch of central, provincial or local government, or on land belonging to any organisation funded by or established in terms of the legislation of such a branch of government; or

- which were paid for by public subscription, government funds, or a public-spirited or military organisation, and are on land belonging to any private individual;

'Structures':

any building, works, device or other facility made by people and which are fixed to land, and include any fixtures, fittings and equipment associated therewith.

1. INTRODUCTION

1.1 Scope of study

The project involves the construction of a pedestrian bridge over the Elandspruit, Heilbron, Free State. UBIQUE Heritage Consultants were appointed by LEFATSE Environmental Planning Services (Pty) Ltd as independent heritage specialists in accordance with the National Environmental Management Act 107 of 1998 (NEMA) and in compliance with Section 38 of the National Heritage Resources Act 25 of 1999 (NHRA), to conduct a cultural heritage assessment (AIA/HIA) of the development area.

The assessment aims to identify and report any heritage resources that may fall within the development footprint; to determine the impact of the proposed development on any sites, features, or objects of cultural heritage significance; to assess the significance of any identified resources; and to assist the developer in managing the documented heritage resources in an accountable manner, within the framework provided by the National Heritage Resources Act (Act 25 of 1999) (NHRA).

South Africa's heritage resources are rich and widely diverse, encompassing sites from all periods of human history. Resources may be tangible, such as buildings and archaeological artefacts, or intangible, such as landscapes and living heritage. Their significance is based upon their aesthetic, architectural, historical, scientific, social, spiritual, linguistic, economic or technological values; their representation of a time or group; their rarity; and their sphere of influence.

The integrity and significance of heritage resources can be jeopardised by natural (e.g. erosion) and human (e.g. development) activities. In the case of human activities, a range of legislation exists to ensure the timely and accurate identification and effective management of heritage resources for present and future generations.

The result of this investigation is presented within this heritage impact assessment report. It comprises the recording of heritage resources present/ absent and offers recommendations for managing these resources within the context of the proposed development.

Depending on SAHRA's acceptance of this report, the developer will receive permission to proceed with the proposed development, taking into account any proposed mitigation measures.

1.2 Assumptions and limitations

It is assumed that the description of the proposed project, as provided by the client, is accurate. Furthermore, it is assumed that the public consultation process undertaken as part of the Environmental Impact Assessment (EIA) is comprehensive and does not have to be repeated as part of the heritage impact assessment.

The significance of the sites, structures and artefacts is determined by means of their historical, social, aesthetic, technological and scientific value in relation to their uniqueness, condition of preservation and research potential. The various aspects are not mutually exclusive, and the evaluation of any site is done with reference to any number of these aspects. Cultural significance is site-specific and relates to the content and context of the site.

All possible care has been taken during the comprehensive field survey and intensive desktop study to identify sites of cultural importance within the development areas. However, it is essential to note that some heritage sites may have been missed due to their subterranean nature or dense vegetation cover. No subsurface investigation (i.e. excavations or sampling) were undertaken since a permit from SAHRA is required for such activities. Therefore, should any heritage features and/or objects such as architectural features, stone tool scatters, artefacts, human remains, or fossils be uncovered or observed during construction, operations must be stopped, and a qualified archaeologist contacted for an assessment of the find. Observed or located heritage features and/or objects may not be disturbed or removed in any way until such time that the heritage specialist has been able to assess the significance of the site (or material) in question.

2. TERMS OF REFERENCE

An HIA/ AIA must address the following key aspects:

- 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 of the 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;
- 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.

In addition, the HIA/AIA should comply with the requirements of NEMA, including providing the assumptions and limitations associated with the study; the details, qualifications and expertise of the person who prepared the report; and a statement of competency.

2.1. Statutory Requirements

2.1.1 General

The Constitution of the Republic of South Africa Act 108 of 1996 is the source of all legislation. Within the Constitution the Bill of Rights is fundamental, with the principle that the environment should be protected for present and future generations by preventing pollution, promoting conservation and practising ecologically sustainable development. With regard to spatial planning and related legislation at national and provincial levels the following legislation may be relevant:

- Physical Planning Act 125 of 1991
- Municipal Structures Act 117 of 1998
- Municipal Systems Act 32 of 2000
- Development Facilitation Act 67 of 1995 (DFA)

The identification, evaluation and management of heritage resources in South Africa are required and governed by the following legislation:

- National Environmental Management Act 107 of 1998 (NEMA)
- KwaZulu-Natal Heritage Act 4 of 2008 (KZNHA)
- National Heritage Resources Act 25 of 1999 (NHRA)
- Minerals and Petroleum Resources Development Act 28 of 2002 (MPRDA)

2.1.2 National Heritage Resources Act 25 of 1999

The NHRA established the South African Heritage Resources Agency (SAHRA) together with its Council to fulfil the following functions:

- coordinate and promote the management of heritage resources at national level;

- set norms and maintain essential national standards for the management of heritage resources in the Republic and to protect heritage resources of national significance;
- control the export of nationally significant heritage objects and the import into the Republic of cultural property illegally exported from foreign countries;
- enable the provinces to establish heritage authorities which must adopt powers to protect and manage certain categories of heritage resources; and
- provide for the protection and management of conservation-worthy places and areas by local authorities.

2.1.3 Heritage Impact Assessments/Archaeological Impact Assessments

Section 38(1) of the NHRA of 1999 requires **the responsible heritage resources authority to notify the person who intends to undertake a development that fulfils the following criteria to submit an impact assessment report if there is reason to believe that heritage resources will be affected by such event:**

- 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 50m in length;
- any development or other activity that will change the character of a site—
 - exceeding 5000m² in extent; or
 - involving three or more existing erven or subdivisions thereof; or
 - involving three or more erven or divisions thereof which have been consolidated within the past five years; or
 - the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
- the rezoning of a site exceeding 10 000m² in extent; or
- any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority.

2.1.4 Definitions of heritage resources

The NHRA 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. These include, but are 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; definition used in KwaZulu-Natal Heritage Act 2008);
- 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;
- geological sites of scientific or cultural importance;

- archaeological and palaeontological sites;
- graves and burial grounds;
- public monuments and memorials;
- sites of significance relating to the history of slavery in South Africa;
- movable objects, but excluding any object made by a living person; and
- battlefields.

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.

2.1.5 Management of Graves and Burial Grounds

- **Graves younger than 60 years** are protected in terms of Section 2(1) of the Removal of Graves and Dead Bodies Ordinance 7 of 1925 as well as the Human Tissues Act 65 of 1983.
- **Graves older than 60 years, situated outside a formal cemetery administered by a local Authority** are protected in terms of Section 36 of the NHRA as well as the Human Tissues Act of 1983. Accordingly, such graves are the jurisdiction of SAHRA. The procedure for Consultation Regarding Burial Grounds and Graves (Section 36(5) of NHRA) is applicable to graves older than 60 years that are situated outside a formal cemetery administered by a local authority. Graves in the category located inside a formal cemetery administered by a local authority will also require the same authorisation as set out for graves younger than 60 years over and above SAHRA authorisation.

The **protocol for the management of graves older than 60 years situated outside a formal cemetery administered by a local authority** is detailed in Section 36 of the NHRA:

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

(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; or

(c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.

(4) SAHRA or a provincial heritage resources authority may not issue a permit for the destruction or damage of any burial ground or grave referred to in subsection (3)(a) unless it is satisfied that the applicant has made satisfactory arrangements for the exhumation and re-interment of the contents of such graves, at the cost of the applicant and in accordance with any regulations made by the responsible heritage resources authority.

(5) SAHRA or a provincial heritage resources authority may not issue a permit for any activity under subsection (3)(b) unless it is satisfied that the applicant has, in accordance with regulations made by the responsible heritage resources authority—

(a) made a concerted effort to contact and consult communities and individuals who by tradition have an interest in such grave or burial ground; and

(b) reached agreements with such communities and individuals regarding the future of such grave or burial ground.

(6) Subject to the provision of any other law, any person who in the course of development or any other activity discovers the location of a grave, the existence of which was previously unknown, must immediately cease such activity and report the discovery to the responsible heritage resources authority which must, in cooperation with the South African Police Service and in accordance with regulations of the responsible heritage resources authority—

(a) carry out an investigation for the purpose of obtaining information on whether or not such grave is protected in terms of this Act or is of significance to any community; and

(b) if such grave is protected or is of significance, assist any person who or community which is a direct descendant to make arrangements for the exhumation and re-interment of the contents of such grave or, in the absence of such person or community, make any such arrangements as it deems fit.

3. STUDY APPROACH AND METHODOLOGY

3.1 Desktop study

The first step in the methodology was to conduct a desktop study of the heritage background of the area and the site of the proposed development. This entailed the scoping and scanning of historical texts/records as well as previous heritage studies and research around the study area.

The study area is contextualised by incorporating data from previous CRM reports done in the area and an archival search. The objective of this is to extract data and information on the area in question, looking at archaeological sites, historical sites and graves in the area.

No archaeological site data was available for the project area. A concise account of the archaeology and history of the broader study area was compiled (sources listed in the bibliography).

3.1.1 Literature review

A survey of the literature was undertaken to obtain background information regarding the area. Through researching the SAHRA APM Report Mapping Project records and the SAHRIS online database (<http://www.sahra.org.za/sahris>), it was determined that several other archaeological or historical studies had been performed within the broader vicinity of the study area. Sources consulted in this regard are indicated in the bibliography.

3.2 Field study

Phase 1 (AIA/HIA) requires the completion of a field study to establish and ensure the following:

3.2.1 Systematic survey

A systematic survey of the proposed project area to locate, identify, record, photograph, and describe archaeological, historical or cultural interest sites were completed.

UBIQUE Heritage Consultants inspected the proposed development and surrounding areas on the 24th of May 2021 and completed a controlled-exclusive, pre-planned pedestrian and vehicular survey. We conducted an inspection of the surface of the ground, wherever the surface was visible. This was done with no substantial attempt to clear brush, sand, deadfall, leaves or other material that may cover the surface and with no effort to look beneath the surface beyond the inspection of rodent burrows, cut banks and other exposures fortuitously observed.

The survey was tracked with a handheld Garmin global positioning unit (Garmin eTrex 10).

3.2.2 Recording significant areas

GPS points of identified significant areas were recorded with a handheld Garmin global positioning unit (Garmin eTrex 10). Photographs were taken with a Canon IXUS 185 20-megapixel camera. Detailed field notes were taken to describe observations. The layout of the area and plotted GPS points, tracks and coordinates, were transferred to Google Earth, and QGIS and maps were created.

3.2.3 Determining significance

Levels of significance of the various types of heritage resources observed and recorded in the project area will be determined to the following criteria:

Cultural significance:

- Low A cultural object being found out of context, not being part of a site or without any related feature/structure in its surroundings.
- Medium Any site, structure or feature being regarded less important due to several factors, such as date and frequency. Likewise, any important object found out of context.
- High Any site, structure or feature regarded as important because of its age or uniqueness. Graves are always categorised as of a high importance. Likewise, any important object found within a specific context.

Heritage significance:

- Grade I Heritage resources with exceptional qualities to the extent that they are of national significance
- Grade II Heritage resources with qualities giving it provincial or regional importance although it may form part of the national estate
- Grade III Other heritage resources of local importance and therefore worthy of Conservation

Field ratings:

- i. National Grade I significance should be managed as part of the national estate
- ii. Provincial Grade II significance should be managed as part of the provincial estate
- iii. Local Grade IIIA should be included in the heritage register and not be mitigated (high significance)

- | | | |
|------|-----------------------------|--|
| iv. | Local Grade IIIB | should be included in the heritage register and may be mitigated (high/ medium significance) |
| v. | General protection A (IV A) | site should be mitigated before destruction (high/ medium significance) |
| vi. | General protection B (IV B) | site should be recorded before destruction (medium significance) |
| vii. | General protection C (IV C) | phase 1 is seen as sufficient recording and it may be demolished (low significance) |

Heritage value, statement of significance:

- a. its importance in the community, or pattern of South Africa's history;
- b. its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- c. its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- d. its importance in demonstrating the principal characteristics of a particular class of south Africa's natural or cultural places or objects;
- e. its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- f. its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- g. its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- h. its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and
- i. sites of significance relating to the history of slavery in South Africa.

3.2.4 Assessment of development impacts

A heritage resource impact may be defined broadly as the net change, either beneficial or adverse, between the integrity of a heritage site with and without the proposed development. Beneficial impacts occur wherever a proposed development actively protects, preserves or enhances a heritage resource, by minimising natural site erosion or facilitating non-destructive public use, for example. More commonly, development impacts are of an adverse nature and can include:

- destruction or alteration of all or part of a heritage site;
- isolation of a site from its natural setting; and / or

- introduction of physical, chemical or visual elements that are out of character with the heritage resource and its setting.

Beneficial and adverse impacts can be direct or indirect, as well as cumulative, as implied by the examples. Although indirect impacts may be more difficult to foresee, assess and quantify, they must form part of the assessment process. The following assessment criteria have been used to assess the impacts of the proposed development on possible identified heritage resources:

Criteria	Rating Scales	Notes
Nature	Positive	An evaluation of the type of effect the construction, operation and management of the proposed development would have on the heritage resource.
	Negative	
	Neutral	
Extent	Low	Site-specific affects only the development footprint.
	Medium	Local (limited to the site and its immediate surroundings, including the surrounding towns and settlements within a 10 km radius);
	High	Regional (beyond a 10 km radius) to national.
Duration	Low	0-4 years (i.e. duration of construction phase).
	Medium	5-10 years.
	High	More than 10 years to permanent.
Intensity	Low	Where the impact affects the heritage resource in such a way that its significance and value are minimally affected.
	Medium	Where the heritage resource is altered, and its significance and value are measurably reduced.
	High	Where the heritage resource is altered or destroyed to the extent that its significance and value cease to exist.
Potential for impact on irreplaceable resources	Low	No irreplaceable resources will be impacted.
	Medium	Resources that will be impacted can be replaced, with effort.
	High	There is no potential for replacing a particular vulnerable resource that will be impacted.
Consequence, (a combination of extent, duration, intensity, and the potential for impact on irreplaceable resources).	Low	A combination of any of the following: - Intensity, duration, extent and impact on irreplaceable resources are all rated low. - Intensity is low and up to two of the other criteria are rated medium. - Intensity is medium and all three other criteria are rated low.
	Medium	Intensity is medium and at least two of the other criteria are rated medium.

Criteria	Rating Scales	Notes
	High	Intensity and impact on irreplaceable resources are rated high, with any combination of extent and duration. Intensity is rated high, with all the other criteria being rated medium or higher.
Probability (the likelihood of the impact occurring)	Low	It is highly unlikely or less than 50 % likely that an impact will occur.
	Medium	It is between 50 and 70 % certain that the impact will occur.
	High	It is more than 75 % certain that the impact will occur, or it is definite that the impact will occur.
Significance (all impacts including potential cumulative impacts)	Low	Low consequence and low probability. Low consequence and medium probability. Low consequence and high probability.
	Medium	Medium consequence and low probability. Medium consequence and medium probability. Medium consequence and high probability. High consequence and low probability.
	High	High consequence and medium probability. High consequence and high probability.

3.3 Oral history

Where possible, people from local communities would be interviewed to obtain information relating to the surveyed area.

3.4 Report

The results of the desktop research and field survey are compiled in this report. The identified heritage resources and anticipated direct, indirect, and cumulative impacts that the proposed project's development may have on the identified heritage resources will be presented objectively. Alternatives, should any significant sites be impacted adversely by the proposed project, are offered. All effort will be made to ensure that all studies, assessments and results comply with the relevant legislation and the code of ethics and guidelines of the Association of South African Professional Archaeologists (ASAPA). The report aims to assist the developer in managing the documented heritage resources in a responsible manner and protecting, preserving, and developing them within the framework provided by the National Heritage Resources Act of 1999 (Act 25 of 1999).

4. PROJECT OVERVIEW

UBIQUE Heritage Consultants were appointed by LEFATSE Environmental Planning Services (Pty) Ltd as independent heritage specialists in accordance with Section 38 of the NHRA and the National Environmental Management Act 107 of 1998 (NEMA), to conduct a cultural heritage assessment to determine the impact of the proposed development of a pedestrian bridge over the Elandspruit, on the Farm Rietfontein No. 156, Parcel 275 Portion 0, Sandersville, and the Farm Rietfontein No. 156, Parcel 156 Portion 84, Phiritona, Heilbron Town, Ngwathe Local Municipality, Fezile Dabi District Municipality, Free State, on any sites, features, or objects of cultural heritage significance.

The proposed pedestrian bridge structure will be located between Sandersville and Phiritona as a link over the Elandspruit stream. There are currently only two existing formal access roads linking Phiritona- Sandersville and Heilbron Town. These access roads (Steil and Heil Streets) are both on the Southern side of the dam. There are two Primary schools in Phiritona and 1 Secondary School, and there are many public services and secondary schools in Sandersville. However, lack of access to these areas is a significant problem, especially during heavy summer rains when the Elandspruit floods footpaths. Learners do not have safe passage to schools, and community members are cut off from town.

The bridge will be located at latitude 27° 16'3.60"S and longitude 27° 57'57.45"E. The alignment of the bridge will be on a straight horizontal plan, 21 m in length and a width of 3.2 m.

4.1 Technical information

Project description	
Project name	Phase 1 AIA Heilbron Pedestrian Bridge
Description	Proposed development of a pedestrian bridge over the Elandspruit, on the Farm Rietfontein No. 156, Parcel 275 Portion 0, Sandersville, and the Farm Rietfontein No. 156, Parcel 156 Portion 84, Phiritona, Heilbron Town, Ngwathe Local Municipality, Fezile Dabi District Municipality, Free State.
Developer	
Ngwathe Local Municipality	
Contact information	Tel: 056 816 2700 www.ngwathe.fs.gov.za
Development type	Municipal infrastructure: Urban Class 6 road
Landowner	
Ngwathe Local Municipality	
Consultants	
Environmental	LEFATSE Environmental Planning Services (Pty) Ltd
Heritage and archaeological	UBIQUE Heritage Consultants
Property details	
Province	Free State
District municipality	Fezile Dabi

Local municipality	Ngwathe
Topo-cadastral map	1:50 000 2727BD
Farm name	Farm Rietfontein No. 156, Parcel 275 Portion 0 Farm Rietfontein No. 156, Parcel 156 Portion 84
Closest town	Heilbron
GPS Co-ordinates	27 ° 16'3.60"S; 27 ° 57'57.45"E
Property size	N/A
Development footprint size	>70 m ²
Land use	
Previous	Urban space
Current	Urban space
Rezoning required	No
Sub-division of land	No
Development criteria in terms of Section 38(1) NHRA	
	Yes/No
Construction of a road, wall, power line, pipeline, canal or other linear form of development or barrier exceeding 300m in length.	Yes
Construction of bridge or similar structure exceeding 50m in length.	No
Construction exceeding 5000m ² .	No
Development involving three or more existing erven or subdivisions.	No
Development involving three or more erven or divisions that have been consolidated within the past five years.	No
Rezoning of site exceeding 10 000m ² .	No
Any other development category, public open space, squares, parks, recreation grounds.	No



Figure 1 Locality of the development footprint, Heilbron, Ngwathe Local Municipality indicated on Google Earth Satellite imagery.

4.2 Description of the affected environment

The proposed Elandspruit pedestrian bridge development falls predominantly within the Frankfort Highveld Grassland area (SANBI 2020). It is characterised by grasslands dominated by *Eragrostis curvula* and *Themeda triandra* and *E. capensis*, *E. plana*, *E. racemosa*, *Cymbopogon pospischilii*, *Elionurus muticus* and *Aristida junciformis*. Mudstone or shale with sandstone, is prevalent in the area.

However, the development footprint falls in a semi-urban area, with housing developments to the north-northeast and the south-southwest. The terrain in the study area is flat, with a minimal downward slope towards the river. The area is marked by anthropogenic disturbances such as horizontal waste disposal and burnt refuse dumps and building rubble and an old aggregate quarry to the south. Alluvial erosion and sediment deposits during flooding events add to the environmental disturbance of the area. Areas with stagnant water and waste effluent create a wet marshy landscape.

Figure 4 Views of the affected development area.





5. HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

5.1 Region

South Africa has a very long and varied history of human occupation (Deacon & Deacon 1999). This occupation has been dated to approximately 2mya (million years ago) (Mitchell 2002). Briefly, the archaeology of South Africa can be divided into three “major” periods, namely: the Stone Age, the Iron Age and the Historical period. Various archaeological and historical sites have been identified and documented throughout South Africa, including the Free State Province. The Free State Province has a rich and diverse history. The area was sparsely populated until the arrival of the Boers (Voortrekkers) by the end of the 18th century.

5.1.1 Stone Age

The history of the Free State is reflected in a rich archaeological landscape, with a wealth of pre-colonial archaeological sites (Mlilo 2017). Numerous sites have been identified and documented across the region. These sites have been dated to the Earlier, Middle and Later Stone Age.

In southern Africa, the Stone Age can be divided into three periods. It is, however, critical to note that dates are relative and only provide a broad framework for interpretation. The division of the Stone Age, according to Lombard et al. (2012), is as follows:

- Earlier Stone Age (ESA): >2 000 000 - >200 000 years ago
- Middle Stone Age (MSA): <300 000 - >20 000 years ago
- Later Stone Age (LSA): <40 000 - until the historical period

In short, the Stone Age refers to humans that mainly utilised stone as their technological marker. Each sub-division is formed by a group of industries where the assemblages share attributes or common traditions (Lombard et al. 2012). The ESA is characterised by flakes produced from pebbles, cobbles and percussive tools, as well as objects created later during this period, such as large hand axes, cleavers and other bifacial tools (Klein 2000). The MSA is associated with small flakes, blades and points. The aforementioned is generally suggested to have been made and utilised for hunting activities and had numerous functions (Wurz 2013). Fine-grain quartzite, quartz, silcrete, chalcedony, and hornfels are common materials used for MSA stone artefacts (Binneman et al. 2011; Tomose 2013). MSA stone artefacts, including ESA artefacts, occur in secondary contexts for various reasons, such as natural events (erosion) or animal and human disruptions (Tomose 2013). Furthermore, the LSA is characterised by microlithic stone tools, scrapers and flakes (Binneman 1995; Lombard et al. 2012). The LSA is also associated with rock art.

The wider geological region of the Free State has been inhabited since the ESA onward. This interpretation is supported by the discovery of stone tools and lithics dating from the Early, Middle,

and Late Stone Ages in various locations. According to Kruger (2018), however, these are usually found near rivers, such as the Doring Spruit north of Kroonstad, the Vals River, and the Sand River south of Ventersburg. In the Free State, the earliest known industry of the ESA is the Victoria West Industry, which also spreads into the Northern Cape. The Victoria West Stone Industry can be found in the Free State area along the Vaal River basin. It is, however, believed that the prepared cores of the Victoria West industry are indicative of a transitional period in the Stone Age industry from the Acheulian into the MSA. The Victoria West industry is often seen as an evolutionary step toward the Levallois Prepared Core Technique. This likely signifies the outwards spread of the Stone Age technology (Tomose 2013).

ESA stone artefacts and lithics in the Free State are commonly found as open-air surface scatters, either as individual occurrences or in vast numbers. ESA artefacts/occurrences can also, very rarely, be found in association with other archaeological heritage, plant, and material remains (Binneman et al. 2011). According to Binneman et al. (2011), South African exceptions include Wonderwerk in the Northern Cape near Kimberly, the Montagu Cave in the Western Cape Province, and Amanzi Springs near Uitenhage bone and plant material were discovered *in situ* associated with the stone artefacts.

The MSA artefacts eventually replaced the dominant large hand axes and cleavers that characterised the ESA. This transition or distinction in the archaeological record has been dated to around 250 000 years ago. Smaller artefacts dominate the archaeological record during this time period, with the flake and blade industry being the most prominent. This industry innovation is thought to have peaked about 120 000 years ago. Throughout southern Africa, archaeologists can generally find surface scatters from the blade and flake industries (Tomose 2013). The early MSA stone industry known as the Mangosia had a wide distribution and stretched across the Limpopo, the Qriqualand in Northern Cape, Natal, the Cape Point and the Free State (Binneman et al. 2011; Tomose 2013). Artefacts associated with the Mangosia industry in the Free State are known to have been produced from the indurate shale raw material (Binneman et al. 2011). The MSA tools include flakes, blades and points and mainly occur as surface scatters. Other industries within the MSA include are the Howieson's Poort which is known to have a wide distribution throughout southern Africa, including the Free State province, the Orangia (128 000 to 75 000 years ago) and the Florisbad (dominant in the Free State province) and Zeekoegat industries (between 64 000 and 32 000 years ago) (Tomose 2013).

The LSA archaeological record is often associated with the San hunter-gatherers. However, the LSA also included Khoekhoe pastoralists from about 2 000 years ago. In the Karoo (Northern Cape regions), the Free State Province, and Lesotho, dark or black fine-grained chalcedony would have been the preferred material. Smithfield settlement sites are more commonly found among hills and ridges. The LSA archaeology is rich and varied. Archaeologists often find stone artefacts, beads (ostrich eggshell beads are dominant), pottery, and rock art relating to the LSA. Rock art can be either in the form of paintings or engravings (Tomose 2013).

Most of the studies and surveys that have been conducted throughout the Free State have recorded Stone Age sites, and surface scatters of Stone Age artefacts (ranging from the ESA, MSA

and LSA) (e.g. Fourie 2020; Morris 2014; Orton 2015; 2016a and b). Several examples of stone tool “factory” sites have been found at, but not limited to, Ventershoek near Wepener and Mooifontein near Zastron, at Spitzkop near Smithfield, and the Smithfield Townlands (Fourie 2020). Materials associated with the MSA/LSA have also been reported around the Vredefort Dome. Some of these materials (such as scrapers, blades, cores, flakes, hammerstones, and small microlithic tools that occur as scattered finds) have been found in open-air areas, especially near the Vaal River as well as in caves. They are associated with transhumance (Mlilo 2017). Stone tool open-air sites were discovered near Rouxville at Goedemoed, Weenkop, and Wesselsdal and in the Aliwal North District at Middelplaats Melkspruit Grassridge Farm. Grinding hollows and grooves have been recorded as well as boulders with cupules ground into it (Orton 2016 a; b).

Rock engravings can be found in the South African interior, where suitable rock exists (Orton 2016). Various rock engraving/art sites have been recorded in the Free State. Numerous high-quality engravings on smooth rocks depict a wide range of figures executed in both incised line and pecking techniques (Mlilo 2017). The National Museum, Bloemfontein, lists numerous examples of rock art (Orton 2016).

5.1.2 Iron Age

The Iron Age (IA) is characterised by the use of metal (Coertze & Coertze 1996: 346). There is some controversy about the periods within the IA. Van der Ryst & Meyer (1999) have suggested that there are two phases within the IA, namely:

- Early Iron Age (EIA) 200 – 1000 A.D
- Late Iron Age (LIA) 1000 – 1850 A.D

However, Huffman (2007) suggests instead that there are three periods within the Iron Age, these periods are:

- Early Iron Age (EIA) 250 – 900 A.D
- Middle Iron Age (MIA) 900 – 1300 A.D
- Late Iron Age (LIA) 1300 – 1840 A.D

Thomas Huffman believes that the Middle Iron Age should be included within this period; his dates have been widely accepted in the IA field of archaeology.

The South African Iron Age is generally characterised by farming communities who had domesticated animals, cultivated plants, manufactured and made use of ceramics and beads, smelted iron for weapons and manufactured tools (Hall 1987). Iron Age people were often mixed farmers/agropastoralists. These agropastoralists generally chose to live in areas with sufficient water for domestic use along with arable soil that could be cultivated with an iron hoe. Most Iron Age (IA) settlements that were built by agropastoralists were permanent settlements (with a few exceptions, of course). They consisted of features such as houses, raised grain bins, storage pits and animal kraals/byres, which contrasts with the temporary camps of pastoralists and hunter-gatherers (Huffman 2007). It is evident in the archaeological record that IA groups had migrated with their material culture (Huffman 2002).

The EIA was a gradual spread or expansion of settlements of different indigenous people groups, which took place over a long period (Matenga 2019). Around 200 A.D., agriculturalist peoples arrived in southern Africa from West and East Africa, bringing with them settled agriculture, metalworking, animal husbandry, pottery production, and social stratification, all in contrast to the Stone Age lifeways (Huffman 2007; Mlilo 2017). There are very few sites ascribed to the EIA in the country's central and western areas (Matenga 2019), which could be because IA communities appear to have favoured the country's eastern regions due to rainfall patterns. The summer rainfall climates were favourable for ploughing and growing crops like sorghum and millet. The first evidence of IA communities in the Free State has been recorded in the south-eastern region. The majority of current data regarding Iron Age cultures in the Free State dates from the 16th and 18th centuries when they passed over the Vaal River and came into contact with the San hunter-gatherers (Tomose 2013).

The material and features recorded at IA sites throughout the Free State and southern Africa include stonewalled settlements, pottery, iron and metal implements, beads, rainmaking sites and features, spear sharpening grooves on rock surfaces and grindstones, among many other types of materials (Tomose 2013). The Free State's IA archaeology is distinguished by the widespread distribution of stonewalled sites over flat-topped ridges and hills. Stonewalls and stonewalled settlements are some of the many prominent features of the Iron Age people. Stonewalled settlements dating to the IA have been widely documented in parts of the Free State (Morris 2016). The Caledon River Valley, known to have been inhabited by the Fokeng (Sotho speakers), is one of the well-known and well-documented areas in the Free State region with evidence of Iron Age farmers. The Fokeng moved to Metlaeeng after living in the foothills of Ntsuana-tsatsi between Frankfort and Vrede (Tomose 2013). The site of Doornpoort in the Free State has two recent occupations that yield evidence for various usages of faunal material. The site has been associated with Sotho-Tswana speakers. Cattle dominate the faunal assemblages for the occupation, which dates back to about 1700 A.D. However, according to Badenhorst (2010: 94), few cattle remains were recovered from the late 19th to early 20th centuries, with *caprines* dominating the faunal assemblage. The Rinderpest disease, which killed large numbers of cattle herds, is most likely to blame for the shift in livestock usage and consumption. Moreover, the Afrikaner colonialism's influence in the former Orange Free State (OFS) can also be seen as a potential explanation for this change (Badenhorst 2010: 94).

The spatial organisation plays an essential role among IA communities. In general, it is characterised by the central position of the stock/cattle byres and placing the main swelling area on the perimeter of a settlement. The LIA is known for its massive stonewalled sites and the importance of livestock, personal status, kinship, social organisation, and males and females' roles within their settlement patterns. The pottery styles associated with this settlement type are generally characterised by shallow line incisions in bands and triangles below the rim and on the shoulder, combined with straight or curved lines and areas of red ochre burnish on the body of clay vessels. Batswana groups such as the Rolong and Thlaping have been associated with sites with bilobial dwellings. The Kubung people have also been linked to such sites. According to oral tradition and radiocarbon dating, several sites were inhabited from the 16th and 17th centuries to the early 19th century in Ventersburg and from the 18th century to the early 19th century in Bothaville (Kruger 2018). The Later Iron Age (LIA) is commonly associated with the Sotho and Tswana, divided into a variety of facies based on ceramic studies (Huffman 2007). In the Kroonstad

area, extensive stonewalled settlements have been discovered and possibly date from the 16th century. Elaborate LIA stonewall sites on the farm Middenspruit 151 adjacent to Bospoort have been reported by Dreyer (2006). The walls are in differing states of preservation and deterioration, few with evidence of wall-robbing, while some of the other structures are in good condition.

A single lower grinding stone was discovered next to one of the walls at one of the sites. On a southern portion of Middenspruit, he noted pottery, an upper grinding stone, and an unknown copper object (Kruger 2018). Interestingly, stonewalled sites in the Vrede Fort Dome have been associated with the Fokeng (Matenga 2019). The Askoppies site, located close to Vredefort Dome, is a large IA settlement with over 20 individual homesteads between 8 and 15 scalloped areas. Archaeological material recovered from the site includes seashells, pottery, ivory bangles, iron spears, a glass bead, hippo tusks, cuprous earrings, bone pendants, slag, smelting furnace remains, and *tuyeres* (Mlilo 2017). Researchers who have surveyed and studied the general area agree that the Vredefort Dome Conservancy area and its surroundings are rich in LIA dating from the 17th century to the early 19th century (Mlilo 2017). The Botanical Garden in the Free State is known to have been inhabited by IA Basotho dwellers. Pottery remains have been found here and are displayed in the Education Centre (SANBI 2021).

It is also believed that several IA communities north of the Vaal River (in the Limpopo Province) had practised the tradition of making rock art. Rock art is frequently connected to the later period in the IA when the farming communities had different encounters between other communities and the colonial settlers. The Makgabeng rock art is known for its depictions of conflict scenes associated with the Malebogo Wars (the war between Chief Malebogo of the Hananwa people and President Kruger of the Zuid Afrikaansche Republiek [ZAR]). In the Free State, rock art has also been linked to IA communities by association and is believed to have not been directly engraved or made by them. For instance, cattle paintings depict conflict scenes in the south-eastern Orange Free State (Tomose 2013). The figures include “hour-glass” Sotho shields, which has been argued to refer to the period of conflict and unrest known as the *Difiqane/Mfecane* (Binneman et al. 2011; Tomose 2013). Another known rock art site recorded in the Free State is on the Farm Kwartelfontein near Smithfield. Some rock art in the Free State depict cattle, sheep, and men walking with hunting dogs (Tomose 2013).

5.1.3 Historical period

The Historical/Colonial period generally refers to the last 500 years when European settlers and colonialism entered southern Africa (Binneman et al. 2011). It is believed that the historical period began with the arrival of Korana raiders in the area in the late 18th century. Soon after, in the 19th century, followed the arrival of traders, adventurers, and missionaries (Kruger 2018). The settlers were generally self-sufficient, surviving primarily on cattle/sheep farming and hunting (Van Schalkwyk 2014).

With the arrival of the Europeans, in the region north of the Orange River, by the end of the 18th century, the area was still sparsely populated. The bulk of the inhabitants seem to have been members of the Bechuana division of the Bantu speakers. There were also Koranas and Hottentots in the Orange and Vaal valleys and Bushmen in the Drakensberg and western borders. The Griquas settled north of the Orange River in the early 19th century. The nation was ravaged by chief Mosilikatze (Mzilikazi) and his Matabele between 1817 and 1831, and numerous large areas were depopulated. In 1824, Dutch farmers from the Cape Colony arrived in the country searching for pasture for their flocks. They were followed by the first parties of the Great Trek in 1836. The Voortrekkers had left Cape Colony for various reasons, but essentially to escape British sovereignty (Hillier and Cana 1911: 154).

When the Voortrekkers started on the Great Trek out of the Cape Colony, some settled just north of the Orange River, which formed the boundary between the Cape Colony and the rest of South Africa (SAHO 2019). They established several towns and farms there. However, they soon clashed with some of the indigenous groups of the country, especially the Basotho (SAHO 2019). The emigrants soon ran into Mzilikazi, who led raiding parties of Zulus (Matabele) against Boer hunters who had crossed the Vaal without first receiving permission from the chieftain. Retaliation ensued, and in November 1837, Mzilikazi was decisively defeated by the Boers and fled northward. Meanwhile, another group of emigrants had arrived at Thaba'nchu, where the Wesleyans had a mission station for the BaRolong. Chief Moroko treated the emigrants with great kindness, and the Boers maintained good ties with the BaRolong (Hillier and Cana 1911: 154).

The constitution of the Orange Free State was sanctioned on the 7th of April 1854, three weeks after the renunciation of British sovereignty. In 1853, the Boers proclaimed the region as the Orange Free State (OFS), a Boer republic. In 1854, the Bloemfontein Convention recognised the OFS as an independent territory (SAHO 2019).

The Basotho were founded by Moshoeshoe (also referred to as Moshesh) after the *Mfecane*. The Voortrekkers had fought against Moshoeshoe and his Basotho countless times. The battles were brought on by arguments about who had a claim over which land as well as where the border lies between the OFS and the Basotho kingdom (SAHO 2019). It is said that Moshoeshoe requested British protection to defend his Kingdom during the lengthy Second Basotho War, which lasted from 1864 to 1868 (SAHO 2019). In 1868, Moshoeshoe and his country were placed under British protection (Hillier and Cana 1911: 156). The Basotho kingdom was designated as a British protectorate, and the thirty years of strife between the Boers and the Basotho had ended (Hillier and Cana 1911 156; SAHO 2019). Trying to appease the Boers, the British had granted most of the Basotho's fertile land to the OFS. In turn, this created the current Lesotho borders along with the Free State (SAHO 2019).

The economy of South Africa, up until the 1860s, was primarily based on agriculture and trade. However, the discovery of diamonds led to the beginning of industrialisation in South Africa (SAHO 2019). Like their Transvaal neighbours, the Free State Boers had fallen into financial difficulties due to the conflicts with the Basothos. Paper money had been introduced, and the notes, known as "bluebacks", quickly fell to less than half their nominal value. Barter was the primary mode of

exchange for goods and services, and many cases of bankruptcy occurred in the state. Nonetheless, just as British annexation rescued the Transvaal from ruin in 1877, so did the influx of British and other settlers to the diamond fields in the early 1870s return public credit and individual wealth to the Free State's Boers. The diamond fields had a ready market for stock and agricultural products. Farmers started to make more money, and the public credit was restored. The government called in and redeemed the "bluebacks" after it regained par worth. The wealthiest diamond mine discovered in the Free State at the time was at Jagersfontein (Hillier and Cana 1911: 157).

The Anglo-Boer War broke out in 1899. The OFS helped the ZAR to fight against the British. This was a significant turning point in the history of South Africa and was the last full-scale war fought on South African soil. In 1902 the Boers had lost the war. As a consequence, their republics had become British colonies. The OFS was renamed the Orange River Colony. However, in 1910, it became one of the provinces of the new Union of South Africa and was renamed the OFS. Many years later, in 1995, after South Africa transitioned to democracy, the OFS was renamed the Free State (SAHO 2019; Britannica 2021).

Interestingly, the Vaal River played an essential role during the Anglo-Boer War, forming a physical barrier that could only be crossed in a few areas. The ZAR forces burned the majority of the bridges in an attempt to hold the British at bay (Van Schalkwyk 2014). According to Van Schalkwyk (2014), the town of Vereeniging was where the peace negotiations had taken place between the Boer and British forces. However, the treaty was signed in Pretoria (Van Schalkwyk 2014).

In the Free State, there are various monuments, buildings (and their architectural styles) on farmsteads, statues and memorials associated with the various events that occurred during the Colonial/Historical period in the region (Tomose 2013). During the South African (Anglo-Boer) War (1899-1902), British forces were stationed near the Botanical Garden. The dam was constructed to keep water for their horses, and the stone wall can still be seen today. The Monk's Head beacon and an old stone wall commemorate a British patrol path used during the battle. Piles of horseshoes discovered near the nursery complex suggest that it was once home to a farrier's shop (SANBI 2021). Moreover, the south-eastern Free State is rich in historical encounters, tales, and material culture/remains from the Boer War. Binneman et al. (2011) remark that Bloemfontein's surroundings played an essential role in Boer War history. Colesburg is well-known for its historical events. In 1845, a skirmish between the Boers and the Griquas took place near Colesburg. Moreover, at Alleman's Drift near Colesburg, Adam Kok, along with many British individuals, created a beacon proclaiming the whole nation from that point forward to be British territory, except areas in control by the Portuguese and natives tribes (Binneman et al. 2011).

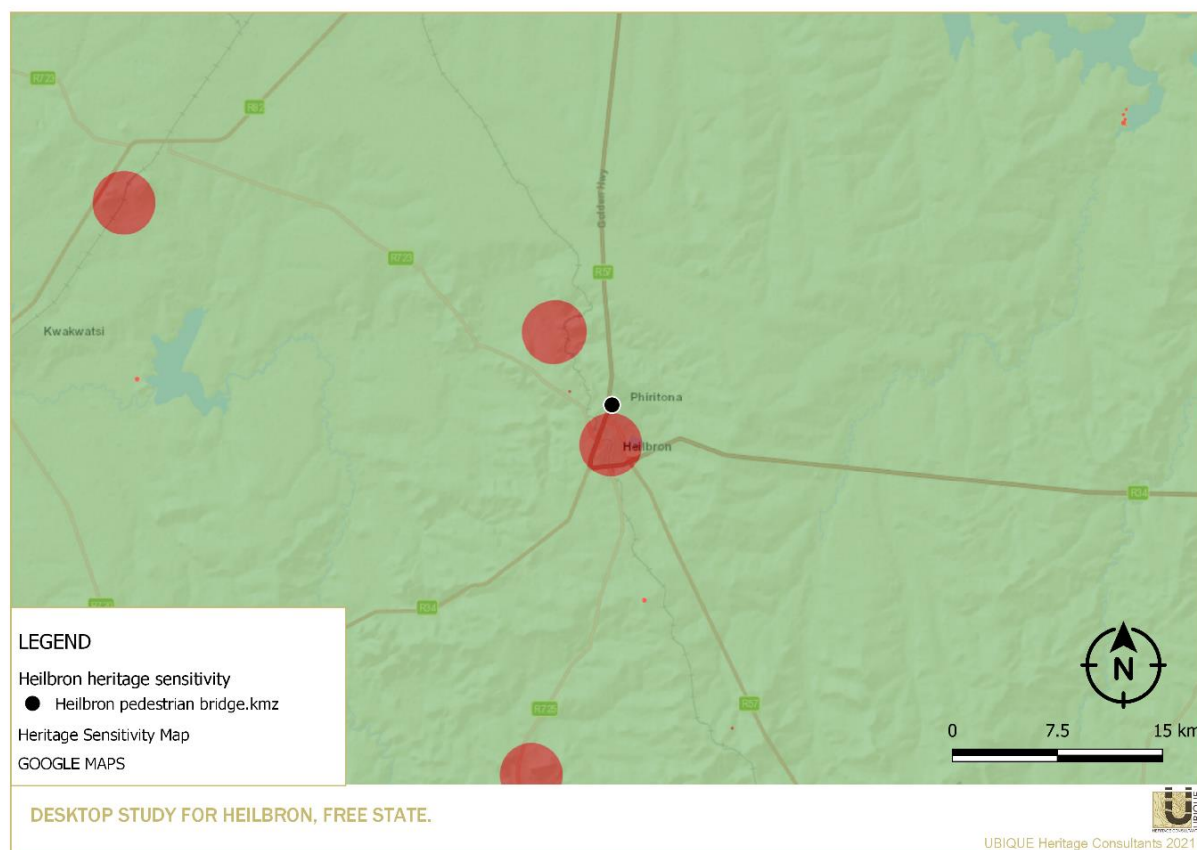


Figure 5 Heritage Screening tool (<https://screening.environment.gov.za/>) indicating projected heritage sensitivity around Heilbron.

5.2 Local

The desktop study revealed that no CRM work had been done directly on the proposed area for development. However, numerous assessment reports have been done near Heilbron and in the Fezile Dabi District in the broader area at places such as Sasolburg, Koppies, Frankfort and Petrus Steyn. The assessments reported on cultural material and features relating to the Stone Age, Iron Age and Historical/Colonial era, which appear to be consistent with the history of the Free State. It should be mentioned that several studies often encountered little to no archaeological materials/remains (e.g. Dreyer 2007a, 2008, 2013; Engedi 2021; Higgitt 2015; Kruger 2018; Nel & Khan 2013, 2018; Mliilo 2017; 2020; Pelsler 2019; Rossouw 2014, 2015, 2017; Van der Walt 2008a & b, 2009b; Van Schalkwyk 2020; Van Vollenhoven 2013).

The Heritage Screening tool (<https://screening.environment.gov.za/>) was used to complement the assessment of the study area’s heritage sensitivity.

5.2.1 Stone Age

Stone Age sites can be found in a variety of locations, most notably in open-air settings or in sediments near rivers or pans. Stone Age debris is also commonly found around drainage lines and exposed surfaces (Kruger 2018). Very little Stone Age material has been recorded around Heilbron and in the Fezile Dabi District. However, the stone scatters and implements that have been found can be ascribed to the MSA and LSA. The incidences of lithics generally have little to no context and are primarily described as poor preservation and of low heritage significance.

During the HIA survey for the Mercury Substation expansion at Zaaiploats 190/3, in Fezile Dabi district, Henderson and Koortzen (2007) recorded several undiagnostic (but possibly dating to the MSA) materials that were recovered from unknown depths in the inspection pits. NCHM (1996) found MSA and LSA stone tools and artefacts during the survey for the proposed Sigma Colliery North West Strip Mine, Sasolburg. They note that the artefacts were disturbed and entirely out of context (NCHM 1996).

5.2.1.1 Rock Art

Very few reviewed reports mention rock art sites. According to Henderson and Koortzen (2007), there is an engraving site at Bosworth, near Klerksdorp, as well as rock engravings at Doringhoek (Doornhoek). Dreyer (2005c) observed on the farm Waterval 796 that some boulders contained vague remains of etchings resembling graffiti or engravings; however, he is unsure who created them.

The following rock art (as well as archaeological sites) have been recorded in the wider region. These can all be found on the SAHRA database.

Rock Art and archaeological sites in the Free State as recorded on the SAHRA database:

Site/Object Name	Coordinates	Archive Status	Declaration Type	Site type	Site Reference	Site ID
Shelter with Rock Paintings, Tadjiesberg, Clocolan District	-29.077184; 27.613728	National monument	Provincial Heritage Site	Archaeological Rock Art	9/2/308/0001	26510
Rock paintings, Schaapplaats, Bethlehem District	-28.554152; 28.431137	National monument	Provincial Heritage Site	Archaeological	9/2/300/0022	26571
Rock-engravings, Stowlands-on-Vaal, Boshof District	-27.905482; 25.191736	National monument	Provincial Heritage Site	Archaeological	9/2/303/0002	26522
Rock Paintings, Modderpoortspruit, Ladybrand District	-29.110649; 27.443343	National monument	Provincial Heritage Site	Archaeological	9/2/325/0010	26445
Rock paintings, Ventershoek, Wepener District	-29.746241; 27.072694	National monument	Provincial Heritage Site	Archaeological	9/2/346/0003	26384

Site/Object Name	Coordinates	Archive Status	Declaration Type	Site type	Site Reference	Site ID
Beehive Stone Huts, Sedan, Lindley District	-27.896521; 27.793665	National monument	Provincial Heritage Site	Archaeological	9/2/326/0003	26441
Rose Cottage Cave, Ladybrand District	-29.216091; 27.469661	Unknown	Provincial Heritage Site	Archaeological	9/2/325/0006	32417
Archaeological site, Florisbad, Brandfort District	-28.753396; 26.142397	National monument	Provincial Heritage Site	Archaeological	9/2/306/0006	26509

5.2.2 Iron Age

According to Kruger (2018), the Northern Free State landscape holds vast amounts of Iron Age remnants. Several assessment reports mention IA sites in the Northern Free State. For example, Van der Walt (2008) found an LIA stonewalled settlement located on a small ridge. The stonewalling is well preserved and consists of several features and cultural material such as undecorated pottery (Van der Walt 2008). Henderson and Koortzen (2007), citing Maggs (1976), mention that a Type Z IA site is located in the Orkney area west of Mercury. Pelser’s (2013) survey for the proposed Frankfort Powerplant development observed two possible LIA sites. He explains that these sites appear to have been ‘robbed’ and that only sections of the original circular enclosures and foundations remain. In addition, he recorded a broken lower grindstone dating to the LIA (Pelser 2013).

Pelser (2007c) found two LIA sites during his assessment on various portions on the farms Vaaldam settlement 1777 and Uitkyk 506. Both are situated on a rocky ridge overlooking the Vaal dam. Pelser (2007c) believes that both settlements might be related. They consist of various small circular stonewalled enclosures, stone platforms, cattle enclosures (kraals) and ash middens. Pelser (2008) undertook another survey on the Farm Vaaldam Settlement 1777, where he recorded a small section of a low stone wall. He interprets it to be associated with the LIA sites he had identified during his 2007 surveys. During the same survey, he found more stonewalled structures such as circular enclosures and livestock pens dating to the LIA (Pelser 2008).

Furthermore, Dreyer (2005c) recorded an LIA stonewalled site with cultural material (e.g. potsherds and porcelain) on an ash heap during the archaeological assessment of the proposed upgrading of the R57 road (p9/2) between Reitz and Petrus Steyn. NCHM (1996) reported two IA stonewalled settlements in the area for the proposed Sigma Colliery North West Strip Mine, Sasolburg. They remark that the settlements can be dated to the last couple of centuries and are associated with Sotho-Tswana speaking people (NCHM 1996).

5.2.3 Historical/Colonial period

European farmers had settled in the area since the middle of the 19th century. They had divided the landscape into a number of farms (Kruger 2018). The name Heilbron is believed to mean “source of well being” (Free State info n.d.) or “Spring of Bliss” (Wikipedia-Heilbron 2021). The historic town of Heilbron played an important role in the Boer Settler and Boer War history (SAHO 2020) and has a rich history relating to the Anglo-Boer War and the battle of Vegkop (Jacobs 2011).

The battle of Vegkop (Vechtkop) took place near Heilbron (approximately 20km south of the town) in 1836. Briefly, the Voortrekkers had camped near the Vaal River in small groups. Mzilikazi’s Matabele disliked the close presence of the Voortrekkers. It is believed that the Voortrekkers withdrew from the river after the Liebenberg group was murdered and moved south and east. A party led by Sarel Cilliers travelled east and established a *laager* (encampment) in what is now Vegkop. In preparation for an attack, the camp was reinforced. Thorn tree branches were fastened to the wagons on the side facing the enemy, and all of the wagons were chained together so that they could not be moved or flipped over. The women and children were stationed inside a stronghold. Their duty was to reload the weapons and tend to the injured. The Matabele attacked in vast numbers, with estimates ranging from 5000 to 6000. The attackers struck in waves, but the encampment resisted the assault (RE-Vegkop n.d). In the end, the Voortrekkers were victorious (Jacobs 2011).



The Vegkop Monument (Photo: S. Fairhurst 2021)



The Vegkop sign located on the side of the hill: “Vegkop 1836”. (Photo: S. Fairhurst 2021)



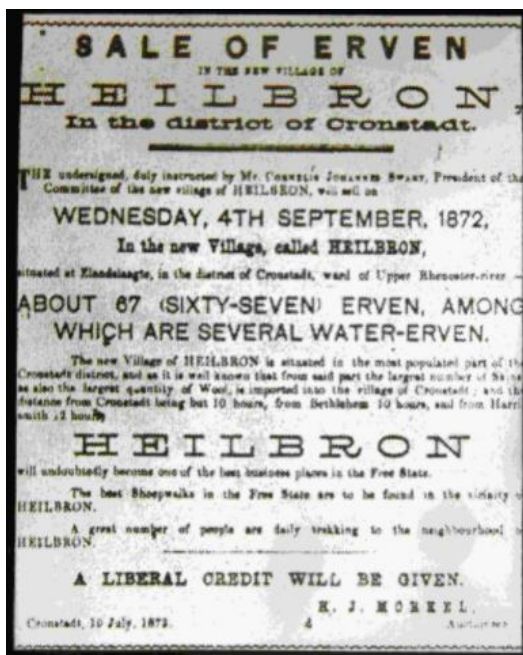
Close up of the Vegkop sign “Vegkop 1836”. (Photo: H. Fivaz 2021)



The plaque briefly describes the Vegkop battle (Photo: S. Fairhurst 2021).

The Vegkop Battlefield Monument and Museum commemorates this historical battle (SAHO 2020). The monument of the event was first erected by the Heilbron congregation of the Dutch Reformed Church in 1883 on top of Vegkop, overlooking the battle site. Following the monument's unveiling, it was thought that a monument should also be erected at the original battle site. In 1912, the monument was moved from the top of the hill down near the museum (RE-Vegkop n.d). The top of the hill is marked with "Vegkop 1836" in white stones visible on Google Earth (27°28'28.58"S; 27°54'52.65"E). The current monument provides several depictions of how the Boers prepared for the battle, the battle itself, the fleeing of the Matabele, and how the Boers got help from the BaRolong. Moreover, a plaque briefly describing the event can also be found by the Monument (Figure 5).

Heilbron's congregation was established in 1874 after it seceded from Kroonstad. The then-President of the Free State, John H. Brand, laid the cornerstone in 1880 for the Dutch Reformed church. The sandstone building was instituted in 1885 (RE-Heilbron n.d; Wikipedia-Heilbron 2021). The church was remodelled in 1963. Within the church grounds is a monument/memorial dedicated to the people of Heilbron who lost their lives during the Anglo-Boer War (RE-Heilbron n.d). The second church built during the same time period was the Methodist church. On the 28th of August 1882, the then-President laid the foundation stone. The wall paintings at the pulpit date back to the 1920s (Gouws 2016; RE-Heilbron n.d). Other churches built in Heilbron include the Wesleyan church (which pre-dates the NG church) and the old Native Presbyterian church. Since 1911, there has been a congregation of the NH (Nederduitsch Hervormde) church. This church's foundation stone was laid in 1913, but the structure was not completed until 1916. The delay is said to have been caused by the First World War and the rebellion (RE-Heilbron n.d). Moreover, the former Jewish synagogue was erected in 1912. The synagogue was later donated to the municipality to be used as a museum. It is known today as The Riemland Museum (Gouws 2016; RE-Heilbron n.d.).



An advertisement for the sale of the first *erven* in the newly established town of Heilbron dates to 1872. The town was officially established in 1873 and reached municipal status in 1890 (RE-Heilbron n.d).

Another significant historical feature of Heilbron is the railway. The railway was connected to Wolvehoek in 1899 (RE-Heilbron n.d). The railway between Wolvehoek and Heilbron was eventually expanded and became part of a more extensive route that extends further down to Petrus Steyn and Lindley, where it joins the mainline between Bethlehem and Bloemfontein at Arlington (Müller 2019). The railway line is no longer in use as it had burnt down (RE-Heilbron n.d).

During the Anglo-Boer War, the British created a concentration camp for Boer women in the town. They had done this in an attempt to prevent the women from assisting their men in the field. The Mother and Child Memorial was later erected to commemorate the approximately 780 Boer women and children who passed away in the British concentration camp at Heilbron (Jacobs 2011). It is worth noting that the town of Heilbron was for a brief period, during the Anglo-Boer War, instated as the capital of the Independent Boer Republic of the OFS after Bloemfontein was conquered by the British in 1900 (SA Venues 2021).

Various Assessment reports conducted in the Heilbron and Fezile Dabi District mention buildings and archaeological material related to the historical period. During Van Vollenhoven and Pelsers (2008) survey for the proposed township development on the farm Joffre 1172 in the Heilbron District, Van Vollenhoven and Pelsers (2008) recorded a pigsty on the northern side of the surveyed area (approximately 25 km northeast of the proposed development area) which formed part of a farmyard further to the south. This sty and farmyard is not older than 60 years of age and has low cultural significance (Van Vollenhoven and Pelsers 2008). A survey was undertaken by Pelsers and Van Vollenhoven (2009), roughly 33 km northeast of the current development area. Here they recorded the remains of a stone and clay built structure. They remark that it may be the remains of a late-19th to mid-20th century farmstead. Unfortunately, the site has been poorly preserved and thus has low cultural heritage significance. Furthermore, they recorded a small stone-built structure, possibly a farm labour dwelling of low cultural and heritage significance (Pelsers and Van Vollenhoven 2009).

Approximately 37 km northeast of the current proposed development area, Van der Walt (2008c) noted several square stone foundations of farm labour dwellings. He also found a site containing rectangular dwellings and an enclosure which he interpreted as a cattle kraal. He noticed another stonewalled site of medium significance during his survey. These structures are rectangular with several features consisting of small (possibly livestock) enclosures. He remarks that cultural material (such as mark 6 Kynoch gun shells, porcelain, undecorated ceramics and a lower grindstone) dating to the early 1900s were found in a large refuse midden. In addition, he recorded a sizeable historical settlement that consists of five structures ranging from houses to sheds. While most of the structures are dilapidated, a few are still in a high preservation state (Van der Walt 2008c).

During Pelsers's (2007a) survey on portions of the farm Vaaldam settlement 1777, Heilbron District (approximately 44km northeast of the current study area), he recorded an old farmhouse and associated features. In another assessment he had done on the Vaaldam settlement 1777 (Pelsers 2007b), he recorded a large stone-built structure, possibly an old farmhouse, consisting of about five individual rooms. Pelsers (2007c) mentions that historical structures (including a *rondavel*) had been built on top of the older (LIA) site. He remarks that these structures were built using the stones from the LIA structures. He also reports on a stone-built kraal and a refuse midden. Unfortunately, he does not provide a date for them (Pelsers 2007c). Pelsers (2008) found a site consisting of six stone heaps, which he observes as collapsed structures. Furthermore, during the survey, he found an old farm road, several rectangular features (dating to the early/mid-20th century), sandstone ruins (early/mid-20th century), as well as a large refuse midden.

Pelser (2013) surveyed Frankfort, roughly 50km west of the current development site, where he recorded a cattle enclosure. He believes that it may have been built using the older (LIA) site's stone. Additionally, he recorded three sites relating to the Anglo-Boer War. The sites consist of redoubts, gun emplacements and other related stone packed features on the ridges overlooking the area towards Frankfort. A possible mule-track was also identified. According to Pelser (2013), one site is a scatter of late 19th-century bottle glass (liquor bottles). He had also identified two other sites which yielded the foundations of square and rectangular stone build structures.

Dreyer (2005b) recorded a monument constructed from cemented natural dolerite stones during his first phase heritage assessment of the proposed residential developments at Amelia 518, Sasolburg. He further recorded a rectangular stone foundation of a single-roomed house (Dreyer 2005b). During the Mooidraai Township Establishment survey, on Portions Of Portion 1 And The Remainder Of The Farm Mooidraai 44, near Sasolburg, Van Ryneveld (2007) found several contemporary features. However, Van Ryneveld (2007) also found a farmstead dating to the 1920s-1930s roughly 25km north of the current study area. The site comprises sandstone remains of the original farmhouse, out-buildings and related farming infrastructure (Van Ryneveld 2007). Pistorius (2008) found a range of historical buildings and farmstead complexes associated with historical houses, out-buildings, enclosures for stock during the survey for Sasol's proposed gas and liquid pipelines from Sasol Synfuels in Secunda (Mpumalanga) to Sasol Infrachem and Natref in Sasolburg. Fourie (2017) found a built structure on the remainder of the farm Boschbank 12, near Sasolburg (approximately 54km northwest of the current proposed development site), which he remarks to be a residential structure. However, it is of modern origins and holds no significant heritage value (Fourie 2017).

The following heritage sites in and around Heilbron has been documented on the SAHRA database.

Declared heritage sites in and around the study area:

Site/Object Name	Coordinates	Archive Status	Declaration Type	Site type	Site Reference	Site ID
Weilbach House, Leeuwoort, Heilbron District	-27.225918; 27.929455	National monument	Provincial Heritage Site	Building	9/2/317/0001	26470
Vegkop Battlefield, Heilbron District	-27.477720; 27.913996	National monument	Provincial Heritage Site	Battlefield, Monuments & Memorials	9/2/317/0002	26471
Old farmhouse, Leeuwoort, Heilbron District	-27.226320; 27.928174	National monument	Provincial Heritage Site	Building	9/2/317/0003	26472
Railway station, Heilbron	-27.290118; 27.964969	National monument	Provincial Heritage Site	Building	9/2/317/0004	26466
Farm school, Taaiboschspruit, Sasolburg District	-27.894444; 26.891667	Register	Heritage Register	Building	9/2/3 35/0002	26408
Muller House, Wonderfontein, Sasolburg District	-26.816478; 27.916088	Provisional monument (withdrawn)	Provisional Protection	Building	9/2/3 35/0003	26409

Site/Object Name	Coordinates	Archive Status	Declaration Type	Site type	Site Reference	Site ID
Post Office, Van Reenen Street, Frankfort	-27.275906; 28.492420	National monument	Provincial Heritage Site	Building	9/2/315/0001	26483
Police Station, Van Reenen Street, Frankfort	-27.276696; 28.492231	National monument	Provincial Heritage Site	Building	9/2/315/0002	26484
Old Magistrate's Court, Van Reenen Street, Frankfort	-27.276536; 28.492260	National monument	Provincial Heritage Site	Building	9/2/315/0003	26480
Old Nederduitse Gereformeerde Church Parsonage, 33 Du Plessis Street, Petrus Steyn, Lindley District	-27.650491; 28.133535	National monument	Provincial Heritage Site	Building	9/2/326/0004	26442

5.2.4 Graves/Burials

Numerous reports mention graves/cemeteries around Heilbron and the broader area at Frankfort, Petrus Steyn, Sasolburg, and Koppies. One of the cemeteries in the town itself is a section dedicated to the British soldiers who died in the area during the Anglo Boer war and graves related to the concentration camp with a central monument and a section for the Jewish deceased (RE-Heilbron n.d).

Dreyer (2007b) recorded 25 graves (roughly 12km south-southeast of the current study area) during his survey for the proposed erection of a cell phone mast at Farm Waagstik 136. Pelser and Van Vollenhoven (2009) recorded a single grave approximately 33km northeast of the current study area on the farm Riviera. This grave is situated in a fenced-in graveyard. The grave belongs to Theunis Louis Botha and is older than 60 years. Approximately 37km northeast of the current study area, Van der Walt (2008c) found 50 graves in an informal cemetery. The graves are packed with stone; however, a few do have headstones with inscriptions (Van der Walt 2008c). Gaigher (2013) undertook an HIA for the proposed 132Kva Villiers via Frankfort to Heilbron Power Distribution Line and discovered a small informal graveyard with four graves surrounded with barbed wire. He also reports a more extensive graveyard near Frankfort in the Namahadi Township. According to Gaigher (2013), this graveyard consists of several thousand graves and is still in use. Van Ryneveld (2008) identified a new cemetery during the survey for the extension to Refengkgotso Township, portions 3 and 5 of Mooiplaats 581, Deneysville in the Fezile Dabi District.

Van Schalkwyk's (2014) assessment for the proposed resort development on a portion of the Farm Damlaagte 229 found two informal burial places. The first burial was a single grave; Van Schalkwyk (2014) presumes that it may belong to a former landowner. The second burial place was a cemetery consisting of 25 graves. He remarks that these graves belong to former farm labourers. The graves are marked with stone cairns (Van Schalkwyk 2014). Pelser (2007c) observed an informal farm cemetery during his survey on various portions on the farms Vaaldam settlement

1777 and Uityk 506. The cemetery contains about 18 graves. The graves are marked with headstones, with a few that are stone packed (Pelser 2007c).

An interesting find in the region was the “pseudo-burial”. According to Pelser (2008), the so-called “pseudo-burial” was a stone heap covering some skeletal remains of an unidentifiable animal, which he presumed to be cattle remains. Low stonewalling was located nearby (Pelser 2008).

Van der Walt (2013) recorded an informal cemetery during his survey for the proposed Heuningspruit PV 1 And PV 2 Solar Energy Facility near Koppies with four demarcated graves. In addition, Dreyer (2006a) recorded a graveyard with six graves during his survey for the proposed residential developments at plot 765 and 948 near Koppies, The gravestones date from 1913 to 1969. He remarks that these graves could be the last resting place of some farm owners and their families (Dreyer 2006a). In another survey conducted by Dreyer (2006b) at Vriendschap 772 near Petrus Steyn, he recorded a graveyard with 44 graves.

Van der Walt (2011) identified an informal cemetery site with approximately 12 visible graves during the survey for Portion 9 of the farm Rietfontein 251 Sasolburg, situated roughly 58 km northwest of the current development area. This cemetery is still in use by the local community (Van der Walt 2011). Furthermore, Pistorius’ (2008) survey for Sasol’s proposed gas and liquid pipelines from Sasol Synfuels in Secunda to Sasol Infrachem and Natref in Sasolburg revealed several graveyards in the area. Various graves belonging to the farm labourers at Amelia 518, Sasolburg was observed Dreyer (2005b). Dreyer (2005a) recorded a graveyard during his assessment for the proposed development of the Heron Banks Golf and River Estate, Sasolburg. The graveyard contains 13 graves with gravestones. He notes that there are scattered stones near the graveyard fence, which may be indicative of other unmarked graves. Van der Walt (2009a) recorded a sizeable informal cemetery that is still currently in use during the survey on a portion of the farm Bochbank 12, Sasolburg. He observed that the graves vary between stone packed graves and modern granite graves. NCHM (1996) identified two cemeteries containing about 120 graves during the survey proposed Sigma colliery North West strip mine. A cemetery of approximately 5-6 visible graves was found during the survey for the proposed transport sand mining/ integrated water use license application on the remainder of the farm Boschbank 12, near Sasolburg (Fourie 2017).

There are numerous cemeteries (urban and farm/rural) recorded on the eGISA library in the Heilbron District. One of which is the Vegkop Civilian cemetery.

Recorded graves/burials/cemeteries in the Heilbron District:

Name	Cemetery ID	Site Type	Coordinates	URL Reference link
Free State, HEILBRON, British Military Memorials	1246	Graves/Burials	N/A	https://www.graves-at-eggisa.org/main.php?g2_itemId=826339

Name	Cemetery ID	Site Type	Coordinates	URL Reference link
Free State, HEILBRON, Burgher monument, NG Kerk	2826	Graves/Burials	N/A	https://www.graves-at-eggssa.org/main.php?g2_itemId=817564
Free State, HEILBRON, Main cemetery	2874	Graves/Burials	-27 16.744, 27 58.177	https://www.graves-at-eggssa.org/main.php?g2_itemId=90569
Free State, HEILBRON district, Davidsrus, farm cemetery	2229	Graves/Burials	N/A	https://www.graves-at-eggssa.org/main.php?g2_itemId=1193283
Free State, HEILBRON district, Demilander, farm cemetery	4946	Graves/Burials	+/- -27 34.178, 28 02.101	graves-at-eggssa.org/main.php?g2_itemId=2652067
Free State, HEILBRON district, Deneysville, Groenpunt gevangenis begraafplaas_1	2104	Graves/Burials	N/A	https://www.graves-at-eggssa.org/main.php?g2_itemId=848010
Free State, HEILBRON district, Deneysville, Groenpunt gevangenis begraafplaas_2	2104	Graves/Burials	N/A	https://www.graves-at-eggssa.org/main.php?g2_itemId=848011
Free State, HEILBRON district, Deneysville, Groenpunt gevangenis begraafplaas_3	2104	Graves/Burials	N/A	https://www.graves-at-eggssa.org/main.php?g2_itemId=848009
Free State, HEILBRON district, Deneysville, Vaaldam, Submerged Cemetery on Grooteiland	2033	Graves/Burials	-26 51.382 28 10.000	https://www.graves-at-eggssa.org/main.php?g2_itemId=1301940
Free State, HEILBRON district, Deneysville, Vaaldam, Submerged grave	6947	Graves/Burials	-26 53.254, 28 06.517	https://www.graves-at-eggssa.org/main.php?g2_itemId=4700156
Free State, HEILBRON district, Deneysville, Veekraal 762, farm cemetery	5640	Graves/Burials	-26 50.824, 28 06.370	https://www.graves-at-eggssa.org/main.php?g2_itemId=3478835
Free State, HEILBRON district, Driefontein 40, farm cemetery	2838	Graves/Burials	-27 26.168, 27 59.912	https://www.graves-at-eggssa.org/main.php?g2_itemId=2849717
Free State, HEILBRON district, Droogtefontein, farm cemetery	2230	Graves/Burials	N/A	https://www.graves-at-eggssa.org/main.php?g2_itemId=1193285
Free State, HEILBRON district, Eensaam, farm cemetery	1808	Graves/Burials	N/A	https://www.graves-at-eggssa.org/main.php?g2_itemId=1089046
Free State, HEILBRON district,	5498	Graves/Burials	+/- -27 10.153, 28 01.566	https://www.graves-at-eggssa.org/main.php?g2_itemId=3322043

Name	Cemetery ID	Site Type	Coordinates	URL Reference link
Goede Hoop 91, farm cemetery				
Free State, HEILBRON district, Goedgedacht, farm cemetery	1809	Graves/Burials	N/A	https://www.graves-at-eggssa.org/main.php?g2_itemId=2983205
Free State, HEILBRON district, Groenvley 65, Groenvlei German Lutheran Church, cemetery	6526	Graves/Burials	-27 08.277, 27 46.470	https://www.graves-at-eggssa.org/main.php?g2_itemId=4199674
Free State, HEILBRON district, Heilbron, R723 Road, Roadside Memorial	6527	Graves/Burials	+/- -27 16.145, 27 56.835	https://www.graves-at-eggssa.org/main.php?g2_itemId=4199675
Free State, HEILBRON district, Henningskraal 46, farm cemetery	5003	Graves/Burials	+/- -26 57.046, 27 33.611	https://www.graves-at-eggssa.org/main.php?g2_itemId=2634670
Free State, HEILBRON district, Jakalskop 315, Jakkalskop farm cemetery	4115	Graves/Burials	-27 22.055, 28 11.843	https://www.graves-at-eggssa.org/main.php?g2_itemId=1683624
Free State, HEILBRON district, Lange Laagte 114, Langlaagte farm cemetery	4658	Graves/Burials	+/- -27 25.081, 27 52.547	https://www.graves-at-eggssa.org/main.php?g2_itemId=1696228
Free State, HEILBRON district, Langverwag, farm cemetery	2231	Graves/Burials	N/A	https://www.graves-at-eggssa.org/main.php?g2_itemId=1193287
Free State, HEILBRON district, Modderkuil, farm cemetery	2227	Graves/Burials	N/A	https://www.graves-at-eggssa.org/main.php?g2_itemId=1193289
Free State, HEILBRON district, Mooifontein 1042, farm cemetery	4168	Graves/Burials	-27 30.243, 28 12.350	https://www.graves-at-eggssa.org/main.php?g2_itemId=1997690
Free State, HEILBRON district, Oranjeville, Vaalplaat, farm cemetery	5854	Graves/Burials	N/A	https://www.graves-at-eggssa.org/main.php?g2_itemId=3599949
Free State, HEILBRON district, Palmietfontein 138, farm cemetery	1332	Graves/Burials	+/- -27 28.522, 28 02.450	https://www.graves-at-eggssa.org/main.php?g2_itemId=2652080
Free State, HEILBRON district, Rietfontein 346, farm cemetery	3781	Graves/Burials	+/- -27 23.001, 28 14.397	https://www.graves-at-eggssa.org/main.php?g2_itemId=403152
Free State, HEILBRON district, Roodekraal 410, farm cemetery	3029	Graves/Burials	-27 09.285, 28 10.463	https://www.graves-at-eggssa.org/main.php?g2_itemId=2849746

Name	Cemetery ID	Site Type	Coordinates	URL Reference link
Free State, HEILBRON district, Tweede Geluk A 206, farm cemetery	4823	Graves/Burials	+/- -27 09.054, 27 58.442	https://www.graves-at-eggssa.org/main.php?g2_itemId=2281138
Free State, HEILBRON district, Vechtkop Zuid 738_1, Voortrekker cemetery	3950	Graves/Burials	-27 28.730, 27 54.805	https://www.graves-at-eggssa.org/main.php?g2_itemId=476448
Free State, HEILBRON district, Vechtkop Zuid 738_2, Vegkop Civilian cemetery	3950	Graves/Burials	-27 28.649, 27 54.767	https://www.graves-at-eggssa.org/main.php?g2_itemId=2355347
Free State, HEILBRON district, Viljoens Rust 1520, Marksfontein farm cemetery	4126	Graves/Burials	+/- -27 31.479, 27 56.386	https://www.graves-at-eggssa.org/main.php?g2_itemId=1696214
Free State, HEILBRON district, Volmoed, farm cemetery	2223	Graves/Burials	N/A	https://www.graves-at-eggssa.org/main.php?g2_itemId=1193295
Free State, HEILBRON district, Vyandsvlei, farm cemetery	2222	Graves/Burials	N/A	https://www.graves-at-eggssa.org/main.php?g2_itemId=1193296
Free State, HEILBRON district, Vyandsvlei-Noord, farm cemetery	2220	Graves/Burials	N/A	https://www.graves-at-eggssa.org/main.php?g2_itemId=1193281

6. IDENTIFIED RESOURCES AND HERITAGE ASSESSMENT

6.1 Surveyed area

The area surveyed for the impact assessment was dictated by the Google Earth map of the development footprints provided by the client.

The pedestrian survey was conducted in transects as far as possible. Areas that have been severely disturbed were surveyed in wider transects or only scoped. The survey extended beyond the development footprints to consider the development's full impact by investigating probable areas on the landscape adjacent to the development footprints possibly containing heritage.



Figure 6 Survey tracks across the development footprint.

6.2 Identified heritage resources

HERITAGE RESOURCES RECORDING

Stone Age Resources Identified

No Stone Age Resources like isolated or scattered lithic material or knapping sites were recorded within the development footprint.

Iron Age/ Agri-pastoral Early Farming Communities Resources Identified

No cultural material, structures or features associated with Early Farming Communities were recorded within the development footprint.

Historical Period Resources Identified

No cultural material, features or structures dating from the colonial or historical period was recorded within the development footprint.

Graves Identified

No formal or informal isolated graves, graveyards, or cemeteries were found within the vicinity of the development footprint.

6.3 Discussion

6.3.1 Archaeological features

There were no archaeological features, material or structures identified within the development footprint. The area is anthropogenically very disturbed, with horizontal refuse discard, building rubble and waste effluent. The Elandspruit River is very polluted. During flooding, natural erosion and alluvial soil and refuse deposits may have washed away or covered any significant archaeological sites or material.

7. ASSESSMENT OF THE IMPACT OF THE DEVELOPMENT

Description	Development Impact	Mitigation	Field rating/ Significance
Archaeological			
1. No heritage resources were recorded on the Farm Rietfontein No. 156, Parcel 275 Portion 0, Sandersville, and the Farm Rietfontein No. 156, Parcel 156 Portion 84, Phiritona.	Nature	Neutral	No mitigation required.
	Extent	Low	
	Duration	Low	
	Intensity	Low	
	Potential of impact on irreplaceable resource	Low	
	Consequence	Low	
	Probability of impact	Low	
	Significance	Low	
			N/A

There will not be any impact on heritage resources with the construction of the pedestrian bridge over the Elandspruit River. The social benefits and impact on the community will be advantageous for the people of Sandersville and Phiritona.

8. RECOMMENDATIONS

Based on the assessment of the potential impact of the development on the identified heritage, the following recommendations are made, taking into consideration any existing or potential sustainable social and economic benefits:

1. No significant heritage sites or features were identified within the surveyed sections of the development footprint. From a heritage point of view, we recommend that the pedestrian bridge construction should continue. It will benefit the local community in desperate need of safe passage during heavy rains and floods.
2. Although all possible care has been taken to identify sites of cultural importance during the investigation of study areas, it is always possible that hidden or sub-surface sites could be overlooked during the assessment. If during construction, any evidence of

archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the NHRA. If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Mimi Seetelo 012 320 8490) must be alerted immediately as per section 36(6) of the NHRA. A professional archaeologist or palaeontologist, depending on the nature of the finds, must be contacted as soon as possible to inspect the findings. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA. UBIQUE Heritage Consultants and its personnel will not be held liable for such oversights or costs incurred as a result of such oversights.

9. CONCLUSION

This AIA has identified no heritage resources that will be impacted negatively by the proposed development. The proposed pedestrian bridge construction on the Farm Rietfontein No. 156, Parcel 275 Portion 0, Sandersville, and the Farm Rietfontein No. 156, Parcel 156 Portion 84, Phiritona, Heilbron Town, Ngwathe Local Municipality, Fezile Dabi District Municipality, Free State, may continue, provided the recommendations stipulated within this report, and the subsequent decision by SAHRA, are followed.

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