



## Heritage Impact Assessment Report

### Construction of a pipeline between the Baviaanspoort Correctional Services Pump Station and the Baviaanspoort Municipal Waste Water Treatment Works on Baviaanspoort 330-JS

**Prepared by:** Enterprises University of Pretoria (Pty) Ltd – Research Solutions

**Prepared for:** SRK Consulting

**Date:** 29 November 2019

**Peer Reviewer:** N. Kruger

*Shifting knowledge to insight*



## DECLARATION

I, **Alexander Antonites**, declare that:

- I am conducting any work and activity relating to the proposed construction of a pipeline between the Baviaanspoort Correctional Services Pump Station and the Baviaanspoort Municipal Waste Water Treatment Works, in an objective manner, even if this results in views and findings that are not favourable to the client;

- I declare that there are no circumstances that may compromise my objectivity in performing such work;

- I have the required expertise in conducting the specialist report and I will comply with legislation, including the relevant Heritage Legislation (National Heritage Resources Act no. 25 of 1999, Human Tissue Act 65 of 1983 as amended, Removal of Graves and Dead Bodies Ordinance no. 7 of 1925, Excavations Ordinance no. 12 of 1980), the Minimum Standards: Archaeological and Palaeontological Components of Impact Assessment (SAHRA and the CRM section of ASAPA), regulations and any guidelines that have relevance to the proposed activity;

- I have not, and will not engage in, conflicting interests in the undertaking of the activity;

- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;

- All the particulars furnished by me in this declaration are true and correct.



Signature of specialist

29 November 2019

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## Abbreviations and Acronyms

Abbreviation/Acronym	Description
ASAPA	Association for South African Professional Archaeologists
AIA	Archaeological Impact Assessment
BP	Before Present
BCE	Before Common Era
BGG	Burial Grounds and Graves
CSF	Correctional Services Facility
CRM	Culture Resources Management
DPW	Department of Public Works
DWS	Department of Water and Sanitation
ECO	Environmental Control Officer
EIA	Early Iron Age (also Early Farmer Period)
EIA	Environmental Impact Assessment
EFP	Early Farmer Period (also Early Iron Age)
ESA	Earlier Stone Age
GDS	Green Drop System
GIS	Geographic Information Systems
HIA	Heritage Impact Assessment
ICOMOS	International Council on Monuments and Sites
K2/Map	K2/Mapungubwe Period
LFP	Later Farmer Period (also Later Iron Age)
LIA	Later Iron Age (also Later Farmer Period)
LSA	Later Stone Age
MIA	Middle Iron Age (also Early later Farmer Period)
MSA	Middle Stone Age
NHRA	National Heritage Resources Act No.25 of 1999, Section 35
PFS	Pre-Feasibility Study
PHRA	Provincial Heritage Resources Authority
SAHRA	South African Heritage Resources Association
YCE	Years before Common Era (Present)
WPS	Waste Pump Station
WWTW	Waste Water Treatment Works

## Executive Summary

This report is the result of a Heritage Impact Assessment (HIA) conducted by the University of Pretoria Enterprises for SRK Consulting for the upgrade of a pipeline between the Baviaanspoort Correctional Services Pump Station and the Baviaanspoort Municipal Waste Water Treatment Works. The Baviaanspoort CSF is situated in Pretoria on the northern side of the Mamelodi community and the R513 on the farm Baviaanspoort 330-JR. The project area was surveyed on 11 November 2019.

Project Title	Baviaanspoort Pipeline WUA (498454)
Project Location:	S-25.670269° E28.364443° Baviaanspoort CSF
	S25.690438° E28.363724° Baviaanspoort WWTW
1:50 000 Map Sheet	2528CB Silverton
Farm Portion / Parcel	Baviaanspoort 330-JR
Magisterial District / Municipal Area	City of Tshwane Metropolitan Municipality
Province	Gauteng

Two sites dating to the mid-20<sup>th</sup> century were identified during a survey of the project area. Both of these sites are the ruins of square stone wall and clay structures. Site UP-BAV-2528-01 is rated as medium significance but direct impacts on the site is regarded as low. A 20m conservation buffer around the site is proposed. If this is not feasible, the site should be adequately documented by means of further Phase 2 Specialist Analysis (mapped, photographed and documented, described and contextualised by means of a desktop study, possible site sampling subject to the necessary excavation permits) and the necessary destruction permits should be obtained from the relevant Heritage Resources Authorities. The site UP-BAV-2528-02 is of low significance and is heavily disturbed. A conservation buffer of 10m is proposed to avoid damage to the features as a result of development impacts. It is advised that the sites be monitored during all stages of the development in order to avoid the destruction of previously undetected heritage remains.

Heritage site locations:

Table 1: Summary of Heritage sites

Site Code	Coordinates	Short Description	Mitigation Action
UP-BAV-2528-01	-25.685763 28.364875	Historical Period Ruins	Site monitoring, avoidance, 20m conservation buffer. Alternatively, Phase 2 assessment if impact cannot be avoided.
UP-BAV-2528-01	-25.687049 28.365385	Historical Period Ruins	Site monitoring, avoidance, 10m conservation buffer.

A copy of the report will be supplied to the Gauteng Provincial Heritage Resources Authority (Gauteng-PHRA) and recommendations contained in this document will be reviewed.



## Heritage Impact Assessment Report

# Construction of a pipeline between the Baviaanspoort Correctional Services Pump Station and the Baviaanspoort Municipal Waste Water Treatment Works

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## 1 Project Background

SRK Consulting (hereinafter SRK), appointed the University of Pretoria Enterprises to undertake a heritage assessments of a proposed pipeline between the Baviaanspoort Correctional Services Pump Station and the Baviaanspoort Municipal Waste Water Treatment Works (WWTW).

The Department of Public Works (DPW) owns and operates several Water Care Works with associated pump stations and reservoirs in the Gauteng and Mpumalanga Provinces. Over the past few years some of the Water Care Works owned by the DPW have scored poorly on the Department of Water and Sanitation (DWS) Green Drop System (GDS), which has compelled the DPW to prioritise these identified works for upgrading and to ensure that they have adequate capacity to service present and future requirements.

The Baviaanspoort CSF is situated in Pretoria on the northern side of the Mamelodi community and the R513 on the farm Baviaanspoort 330-JR. The Baviaanspoort Correctional Facility (CSF) domestic

and piggery wastewater is pumped to the Tshwane Municipal Baviaanspoort WWTW via a main Waste Pump Station (WPS). The main WPS and the piggery pre-treatment facilities are located at the north-western perimeter fence of the prison complex, next to the Pienaars River, on the eastern bank of Pienaars River.

The pipeline is located in the Gauteng Province, under the jurisdiction of the City of Tshwane Metropolitan Municipality. The pipeline will run from the Baviaanspoort WPS, which is located on the western bank of the Pienaars River and will cross the Pienaars River and run on the eastern bank of Pienaars River to the Baviaanspoort WWTW. The project is located approximately 1 km north of Mamelodi Township and about 4.89 km south of Roodeplaat Dam. The major land uses surrounding the project area vary from agriculture, Baviaanspoort CSF north of the R513 and scattered human habitation. The total length of the pipeline is approximately 2.9 km and necessitates a heritage impact assessment (HIA) in terms of section 38(1) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999)(NHRA).

Table 2: The affected properties and details of the property owners

Farm Name	Portion Number	Title Deed	21-SG Code	Property Owner
Baviaanspoort 330 JR	1	T9753/1984	TOJR0000000003300 0001	Government National Government of the Republic of South Africa Colin Cloete: Manager: Gauteng: Provincial State Land
Baviaanspoort 330 JR	2	T1451/1888	TOJR0000000003300 0002	Government National Government of the Republic of South Africa Colin Cloete: Manager: Gauteng: Provincial State Land

## 2 Terms of Reference

The heritage component of the EIA is set out in the National Environmental Management Act, (Act 107 of 1998) and section 38 of the National Heritage Resources Act (NHRA - Act 25 of 1999).

The NHRA protects all structures and features older than 60 years, archaeological sites and material and graves as well as burial sites. This legislation is to ensure that developers implement measures to limit the potentially negative effects that the development could have on heritage resources.

Legislation determines that the terms of reference for heritage specialist are:

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

## 3 CRM: Legislation, Conservation and Heritage Management

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

traditional importance to specific individuals or groups, traditional systems of cultural practice, belief or social interaction.

### **3.1 Legislation regarding archaeology and heritage sites**

The South African Heritage Resources Agency (SAHRA) and its provincial offices aim to conserve and control the management, research, alteration and destruction of cultural resources of South Africa. The following Acts has direct bearing on Heritage resource protection and management process:

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

The National Heritage Resources Act No 25 of 1999 (section 35) defines protected cultural heritage resources as:

- Archaeological artifacts, structures and sites older than 100 years
- Ethnographic art objects (e.g. prehistoric rock art) and ethnography
- Objects of decorative and visual arts
- Military objects, structures and sites older than 75 years
- Historical objects, structures and sites older than 60 years
- Proclaimed heritage sites g. Grave yards and graves older than 60 years
- Meteorites and fossils
- Objects, structures and sites of scientific or technological value.

The national estate includes the following:

- Places, buildings, structures and equipment of cultural significance
- Places to which oral traditions are attached or which are associated with living heritage
- Historical settlements and townscapes
- Landscapes and features of cultural significance
- Geological sites of scientific or cultural importance
- Archaeological and paleontological importance

- Graves and burial grounds
- Sites of significance relating to the history of slavery
- Movable objects (e.g. archaeological, paleontological, meteorites, geological specimens, military, ethnographic, books etc.)

In terms of activities carried out on archaeological and heritage sites the Act states that:

1. “No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit by the relevant provincial heritage resources authority.” (34. [1] 1999:58)
2. “No person may, without a permit issued by the responsible heritage resources authority-
  - a) (a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;
  - b) (b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;
  - c) (c) trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or
  - d) (d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites. (35. [4] 1999:58).”
3. “No person may, without a permit issued by SAHRA or a provincial heritage resources agency-
  - e) (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;
  - f) (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;
  - g) (c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) and excavation equipment, or any equipment which assists in the detection or recovery of metals (36. [3] 1999:60).”

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

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

- h) (a) ancestral graves
- i) (b) royal graves and graves of traditional leaders
- j) (c) graves of victims of conflict d. graves designated by the Minister
- k) (e) historical graves and cemeteries
- l) (f) human remains

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

*c. National Environmental Management Act No 107 of 1998*

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

## 4 Rating of Significance

The National Heritage Resources Act (Act no 25 of 1999) also stipulates the assessment criteria and grading of archaeological sites. The following categories are distinguished in Section 7 of the Act:

- **Grade I:** Heritage resources with qualities so exceptional that they are of special national significance;
- **Grade II:** Heritage resources which, although forming part of the national estate, can be considered to have special qualities which make them significant within the context of a province or a region;
- **Grade III:** Other heritage resources worthy of conservation, and which prescribes heritage resources assessment criteria, as set out in section 3(3) of the act.

Significance is influenced by the context and state of the archaeological site. Six criteria were considered following Kruger (2019):

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

The categories of significance were based on the above criteria the above and the grading system outlined in NHRA and summarised in 3.

Table 3: Field rating of significance

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

## 5 Project area

The site of proposed construction is located on the property Baviaanspoort 330-JR, situated just north of the eastern extent of the Magaliesberg mountain range. The Magaliesberg is an east/west running quartzite ridge that is intersected by a number of poorts eroded from intrusive diabase sheets (Mason 1962:169). The Magaliesberg uplifts the interface between the Transvaal supergroup to the south and the Bushveld igneous complex which lies to the north. As a result of this upliftment dolomites and cherts of the Transvaal supergroup are exposed, bearing the sources of numerous springs which support the fertility of the greater Tshwane area (Van Vollenhoven 2006:179).

The immediate environment around the proposed pipeline can be described as a mixed wooded riparian zone situated in the transitional zone between highveld and middleveld (van Vollenhoven 2006: 180), also known as the Bankeveld - (Acocks, 1975: 99). The transitional nature of the environment gives rise to a highly diverse range of plant, bird and animal life (van Vollenhoven



2006:180) with dominant tree species including *Senegalia caffra* and *Celtis Africana* (Acocks 1975:99). Historic aerial imagery shows that the area was, at one time, used for agriculture. More recently the land has seen an encroachment of various dumping activities ranging from household waste to construction rubble.

The pipeline will run for approximately 2.9km in a general north/south direction linking the Baviaanspoort CSF with the WWTW crossing both the Pienaars River and the R513 about halfway through its course.

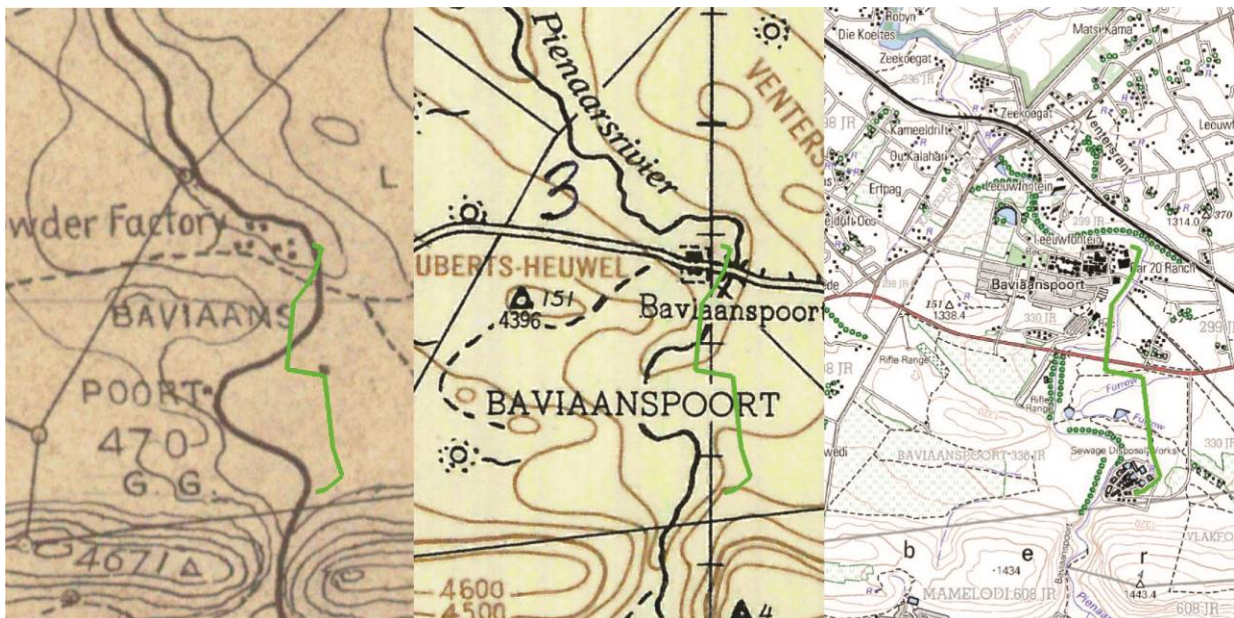


Figure 2: Pipeline indicated on topographic maps from 1902 (left), 1952 (centre) and 2001 (right).

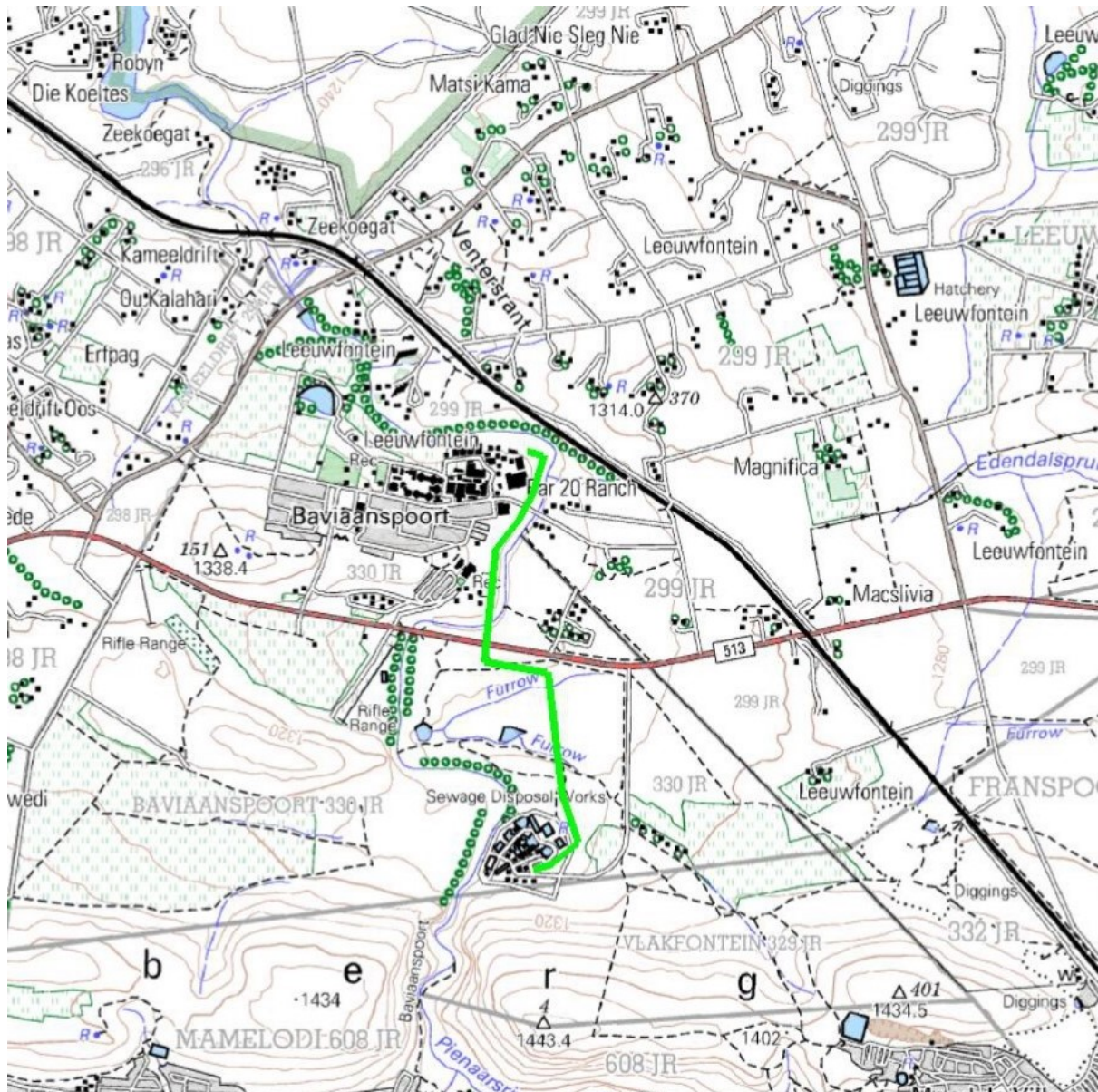


Figure 3: Project alignment indicated on 2010 map (2428CB Silverton)

## 6 Method of enquiry

Desktop and field-based research were conducted in order to ensure a high probability of recording heritage sites in the project area.

### 6.1 Desktop Study

#### 6.1.1 Heritage Reports

The desktop study focussed on the relevant previous research conducted in the area based on previous reports, published material, aerial photographs, remote sensing data that has bearing on the immediate project area.

The following Archaeological and Heritage Impact Reports and academic publications were consulted:

- Horn, A.C., 1996. Okkupasie van die Bankeveld voor 1840 n.C.: 'n sintese. *South African Journal of Ethnology* 19, 11.
- Huffman, T.N., 1993. Broederstroom and the Central Cattle Pattern. *South African Journal of Science* 89, 220–226.
- Kusel, D.U.S., 2015. Phase I Cultural Heritage Resources Impact Assessment for the Expansion of the Existing Cemetery Site on the Remainder Extent of the Farm Hatherley 331 Jr Mamelodi Tshwane Gauteng Province (Heritage Impact Assessment).
- Lombard, M., Wadley, L., Deacon, J., Wurz, S., Parsons, I., Mohapi, M., Swart, J., Mitchell, P., 2012. South African and Lesotho Stone Age Sequence Updated (i). *South African Archaeological Bulletin* 67: 123-144.
- Mason, R.J., 1962. Prehistory of the Transvaal: A Record of Human Activity. Witwatersrand University Press.
- National Cultural History Museum, 2002. A survey of cultural resources in the proposed Nellmapius X5 development, Pretoria District, Gauteng (No. 2002KH16).



- Nienaber, W.C., Prinsloo, H.P. & Pistorius, J.C.C. 1997. Derdepoort: 'n Vroeë Ystertydperkterrein noord van die Magaliesberg. *South African Journal of Ethnology* 20, 15–22.
- Pelsler, A.J., van Vollenhoven, A.C., 2009. A Final Report on the Archaeological Investigation of a Late Iron Age (Ndebele) Stone Walled Settlement on the Remainder of Hatherley 331 Jr, Near Mamelodi, Gauteng (Heritage Impact Assessment).
- Van Schalkwyk, J.A., 2011. Proposed Upgrade of the Baviaanspoort Waste Water Treatment Works, North of Mamelodi, Gauteng Province (Heritage Impact Assessment).
- Van Vollenhoven, A.C., 2012. A Cultural Heritage Management Plan for the Moretele Resort, City of Tshwane (Heritage Impact Assessment).
- Van Vollenhoven, A.C., 2006. Die prehistoriese en vroeë historiese tydvak in Pretoria. *South African Journal of Cultural History* 20, 176–200

#### 6.1.2 Map data

Historical and current topographical maps were consulted as sources of information on potential areas of significance. These were georeferenced in ArcGIS and Google earth with the project area superimposed.

#### 6.1.3 Remote Sensing Survey

Historical and modern aerial and satellite imagery of the project area was studied in order to identify any heritage sites. This complements traditional foot survey methods. Historical imagery of the project area are available for 1939, 1948, 1958 and 1979.

### 6.2 Field Survey

Antonites and members of the Department and Anthropology and Archaeology conducted an archaeological foot survey of the project area on 11 November 2019. The survey process encompassed field surveys in accordance with standard archaeological practice. An arbitrary 20m

impact area around the pipeline alignments were also observed during the survey. The survey team used real time positioning in relation to the project by means of a hand-held tablet-based Google Earth application. Sites of interest and of the project area were photographed and recorded with a handheld GPS (Garmin e-Trex) recorded using Datum WGS 84.

#### 6.2.1 Limitations

##### *Access*

The project was accessed via access roads from the R513 to the Baviaanspoort Correctional Facility and the Baviaanspoort WWTW. No access restrictions were encountered.

##### *Visibility*

The surrounding vegetation in the study area is with trees with wetland and riparian vegetation in places. Generally, the visibility at the time of the AIA site inspection (11 November 2019) varied from low to high (Figures 3-7). Low visibility was encountered on the flood terrace of the Pienaars River, but due to the alluvial processes at work here, this area has a very low probability of any sites. South of the R513 large amounts of building rubble dumped. North of the WWTW and large mounds of soil related have been dumped (Figure 6-7) In several instanced sub-surface inspection was possible and these were inspected for archaeological deposits.



Figure 4: Pre-treatment facilities on the Grounds of the Baviaanspoort CSF.

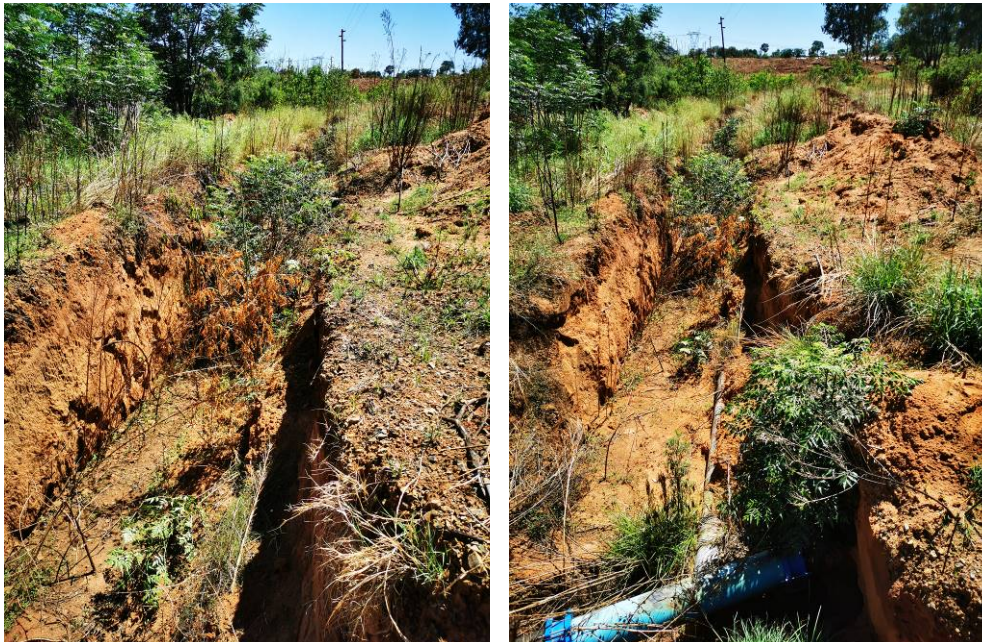


Figure 5 a & b: Disturbed areas associated with maintenance of the present pipeline.





Figure 6 a & b: Project area on the Baviaanspoort CSF grounds.



Figure 7: Pienaars River with dense riparian vegetation.





Figure 8: Building rubble dumped in the site area.



Figure 9: Informal dirt roads and building rubble in project area.



## 7 Archaeological and historical context

### 7.1 Overview of the South African Archaeological and Historical Context

#### 7.1.1 Stone Age

In Southern Africa, the Stone Age is defined by the use of stone cobbles and flakes that have been modified into tools such as scrapers, points and hand axes. Our early ancestors such as *Homo ergaster* and early *Homo sapiens* first used these tools as much as 1.4 million years ago (Mitchell 2002:59). Stone technology would persist throughout the human species development right up to the arrival of iron using farming people in southern Africa some 2000 years ago. Changes in the stone tool technology over time allows different stone tool industries to be chronologically separated based on trends in tool design. This provides the useful partitioning of the entire Stone Age sequence into three broad phases outlined by Lombard et. al. (2012:125) below:

**Early Stone Age:** 2 Million – 200 000 years ago

**Middle Stone Age:** 300 000 – 20 000 years ago

**Later Stone Age:** 40 000 – <2 000 years ago

The overlap in dates is due to regional variations in the timing of the evolutionary steps that signal a change from one phase to the next.

#### 7.1.2 Iron Age

The Iron Age also derives its name from the ubiquitous use of smelted iron implements, however it must be noted that tools made from other materials such as bone and stone were still regularly used. The advent of the Iron Age in southern Africa was not simply a new form of technology introduced to the landscape but rather signalled a new way of life with the concomitant arrival of Bantu language speaking agropastoral farming communities from north of the Limpopo river at around AD 350 (Huffman 2007:xii). These farmers would form semi-permanent stone walled

settlements that range in size from small villages/outposts to much larger urban complexes with settlement location being consistently guided by the need to access water, wood for fuel, and fertile soils for grazing and crops (Mitchell 2002:273).

In order to mark developments in complexity within the near 2000-year sequence of iron using farmers in southern Africa the Iron Age has also been divided into distinct periods. These periods, however, do not mark changes in technology (as is the case with the Stone Age) but rather signify changes in the social and political organisation of the Iron Age farmers. The three periods of the Iron Age are presented by Huffman (2007:xi) as follows:

**Early Iron Age:** AD 200 – 900

**Middle Iron Age:** AD 900 – 1300

**Late Iron Age:** AD 1300 – 1840

The Iron Age is thus considered the period, which covers the unwritten history of precolonial farming communities and, as a chronological unit, ends with the contact between the Bantu farmers and European settlers.

### 7.1.3 Historical Period

The historical period is best regarded as a phase where historical sources can be reliably used to reconstruct past events. The earliest sources of historical data found in southern Africa take the form of oral accounts that were recorded by travellers and missionaries as they explored the interior of the country while later sources tend to be more formally constructed as literacy rates increased with more European settlers entering the region (Van Vollenhoven 2006:189).

## **7.2 Archaeological and historical context of Baviaanspoort and surrounding area**

### **7.2.1 Stone Age**

That the greater Tshwane region is rich in cultural heritage comes as no surprise owing to the favourable topographic and environmental factors which have, throughout the last ca. 2 million years, made the area an ideal place to live. From the ESA right up to the present day, this region has fostered events from every phase of our shared history.

Early Stone Age sites have been recorded all along the Magaliesberg range where they tend toward a location near one of the six poorts which act as north/south thoroughfares through the mountains. These landscape features were exploited as funnel traps for hunting large game as they migrated toward the northern bushveld. An example of this is found on the southern slopes of Wonderboompoort where a large accumulation of Acheulian stone tools were excavated by Revil Mason and Peter Beaumont in 1959/60 (Mason 1962: 171).

The MSA phase is represented in the greater Tshwane region at three shelter sites located to the south of the study area at Bronberg and in the Erasmusrand. MSA type stone tools have been picked up in the Groenkloof Nature reserve in the south to Akasia in the north, as well as in an area west of Wonderboomnek (van Vollenhoven 2006:183). Further west, near Hartebeespoort dam in the Magaliesberg two notable sites known as Jubilee shelter and James Cave have yielded continuous MSA to LSA occupational sequences (Horn 1996:20).

The distribution of LSA sites in the greater Tshwane region closely mirrors that of the MSA with the above-mentioned sites at Erasmusrand and west of Wonderboompoort also yielding LSA occupation layers. LSA stone tools have also been found scattered across the greater Tshwane region in areas closely aligned to those mentioned for the MSA above, with the inclusion of areas around Donkerhoek and Pienaarspoort to the east of the city (van Vollenhoven 2006:184). A unique feature of the LSA is the occurrence of rock art sites in the Magaliesberg both in a westward and eastward direction from the city (van Vollenhoven 2006:185).

### 7.2.2 Iron Age

As mentioned above the Iron Age can be divided into three phases namely the early, middle, and late Iron Age, however it is important to note that the middle Iron Age is used to designate specific developments in socio-political complexity which manifested in the region of Mapungubwe Hill between AD 900 – 1300. Therefore, it is only the Early and Late periods of the Iron Age which have relevance in this region.

The EIA is generally less well represented in terms of number of sites nationally and there has only been one EIA site documented in the city of Tshwane, this site is located in Derdepoort just west of the study area (Nienaber et al. 1997). Further west, near Hartebeespoort dam, four EIA sites have been recorded (van Vollenhoven 2006:186) – notable of these is a site known as Broederstoom, where the earliest evidence of domesticated stock and crop agriculture in the region has been reported (Huffman 1993:226).

The LIA is well represented in the greater Tshwane region where it has been estimated that at least 125 LIA sites occur in the greater Tshwane region, however the reality is that this estimation probably falls short of the true number (Van Vollenhoven 2012:15). The earliest LIA site in the region is located west of Wonderboompoort, while further west of the city a high number of sites dating to the Moloko (proto Sotho-Tswana) period (AD 1100 – 1500) can be found all the way to Olifantspoort in the Magaliesberg (van Vollenhoven 2006:186).

A major influx of LIA communities into the region took place at around AD 1600 with various LIA sites being located in the Tshwane portion of the Magaliesberg at Wonderboompoort, Derdepoort, as well as in the Akasia area. North of the Magaliesberg LIA sites have been recorded near Rosslyn, on the farm Onderstepoort, as well as sites in Garankuwa and Pyramid Koppies which date to around AD 1750 (Van Vollenhoven 2006:187). Three sites dating between 1550 and 1900 have been recorded on the farm Hatherley which is found on the southern slopes of the Magaliesberg, to the immediate south of the study area (Van Vollenhoven 2006:187).

In 2011, van Schalkwyk conducted an HIA on the proposed expansion of the Baviaanspoort WWTW where he reported that no heritage resources were encountered in his study. Van Vollenhoven (2012) identified several cultural heritage sites in the management plan for the Moretele Resort which are located on portions of the farms Mamelodi 608 JR, Vlakfontein 329 JR, Derdepoort 326 JR and Baviaanspoort 330 JR which lie on the ridge to the immediate south of the area designated for the proposed pipeline. Five sites identified by Van Vollenhoven are located on the ridge to the south of the farm Baviaanspoort 330 JR and consisted of 4 stone walled sites described as recently/actively used initiation spaces, while the fifth site is a large industrial site in the form of a historic sewerage tunnel bored through the mountain (van Vollenhoven 2012: 18 – 29).

### 7.2.3 Historical period

According to oral history one of the earliest Bantu language speaking farmers in the area were a group known as Transvaal Ndebele who swore fealty to the lineage of chief Msi (a.k.a. Tshwane) who was settled north of Wonderboompoort on the banks of the Mbibana (aka Apies) River (Horn 1996:23). The largest population of Bantu language speaking people is the so-called Sotho-Tswana groups who are formed by the Northern and Southern Sotho as well as the Tswana and are the major group responsible for the large stone walled complexes, or towns, that dot the area (van Vollenhoven 2012:16).

The above reconstructions are based largely on oral histories of the groups that were able to re-establish themselves after the major upheaval caused by Mzilikazi's arrival in 1827 during the Difaquane/Mfecane period (van Vollenhoven 2012:16).

The earliest European travellers to visit the northern Gauteng region were the two traders Robert Schoon and William McLuckie who arrived in the August of 1829 while the esteemed missionary Dr. Robert Moffat visited the area in the same year (van Vollenhoven 2012:16). In 1839 the first European settler, a Mr. JGS Bronkhorst, sowed roots on the farm Elandspoort, making him and his family the first permanent European settlers in the area (*ibid.*).

Below is a table with information on the old farm registers for the farm Baviaanspoort 330-JR from the Deeds Office in Pretoria (adapted from van Vollenhoven 2012:17):

Table 4: Deed transfers for Baviaanspoort 330-JR

Date	From	To	Remarks
18 October 1859	Government	Francois Alwyn Smit	Whole
8 August 1883	MJ de Beer	Samuel Marks	No information is available for the period between 1859 and 1883. Remaining portion.
5 April 1888	The SA Pioneer Powder Factory	ZAR Government	Information for the period between 1883 and 1888 not available. Remaining portion
30 October 1861	S Marks	City Council of Pretoria	Eastern portion

The Baviaanspoort Map data shows that the area where the Baviaanspoort Correctional Facility is now located used to be the site for a powder factory for the ZAR. This facility dates as far back as 1886 (Cartwright 1964). This In 1894 the Zuid-Afrikaansche Fabrieken voor Ontploffbare Stoffen Beperkt (Z.A.F.O.S) was awarded the sole rights from the Zuid-Afrikaansche Republiek (ZAR or Transvaal Republic) for the manufacture and sale of dynamite and ammunition of the at Baviaanspoort powder factory.

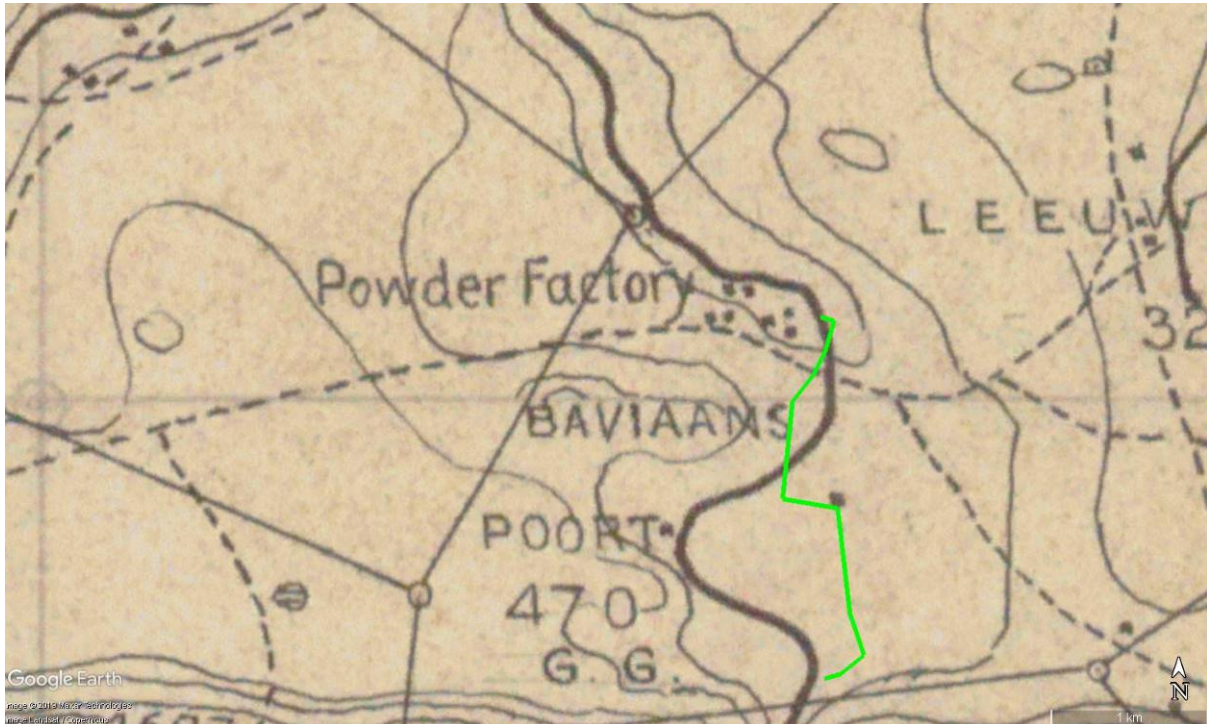


Figure 10: 1902 topographic map with Powder factory indicated where the Baviaanspoort CSF is now located. Pipeline in green.

The Baviaanspoort CSF was initially established as an internment camp during World War I for civilians “considered a potential threat to the safety of the Union and classified ‘enemy subjects’” (Manz and Dederling 2016, 1). It served the same function during World War II when it mainly housed civilians of German descent and German nationals.

After WWII it was transformed into a prison facility with several periods of expansion and upgrades as seen in historical imagery. Part of these upgrades are vegetable gardens, which date to the 1970s and is in close proximity to the proposed development, but outside the immediate project footprint and falls outside the Heritage Legislation (Figure 9).





Figure 11: Garden terraces on the grounds of the Baviaanspoort CSF



Figure 12: Dry stone terracing of CSF garden systems dating to 1970s and located outside project area.



## **8 Results: Archaeological Survey**

### **8.1 Stone Age**

No Stone Age material was found during survey of the project area.

Note that Stone Age a number of sites have been recorded in the Pretoria-North area and the wider Magaliesberg region as a whole. These are typically associated with fluvial exposures and erosion gullies. Isolated stone tools and scatters are common surface finds.

### **8.2 Iron Age**

No Iron Age sites were recorded during the survey or on the survey of aerial imagery.

Note that several Iron Age settlements have are known in the area. These include EIA sites that are typically covered by later farming and urban developments. Several LIA stone walled sites are also recorded in the area. These sites are typically visible in historical aerial imagery and on Google Earth but none have been identified within the project footprint.

### **8.3 Historical Sites**

Two historical sites were recorded during the foot survey of the proposed project area (these were not visible in the remote sensed imagery). However, both of these sites are located outside the pipeline footprint.

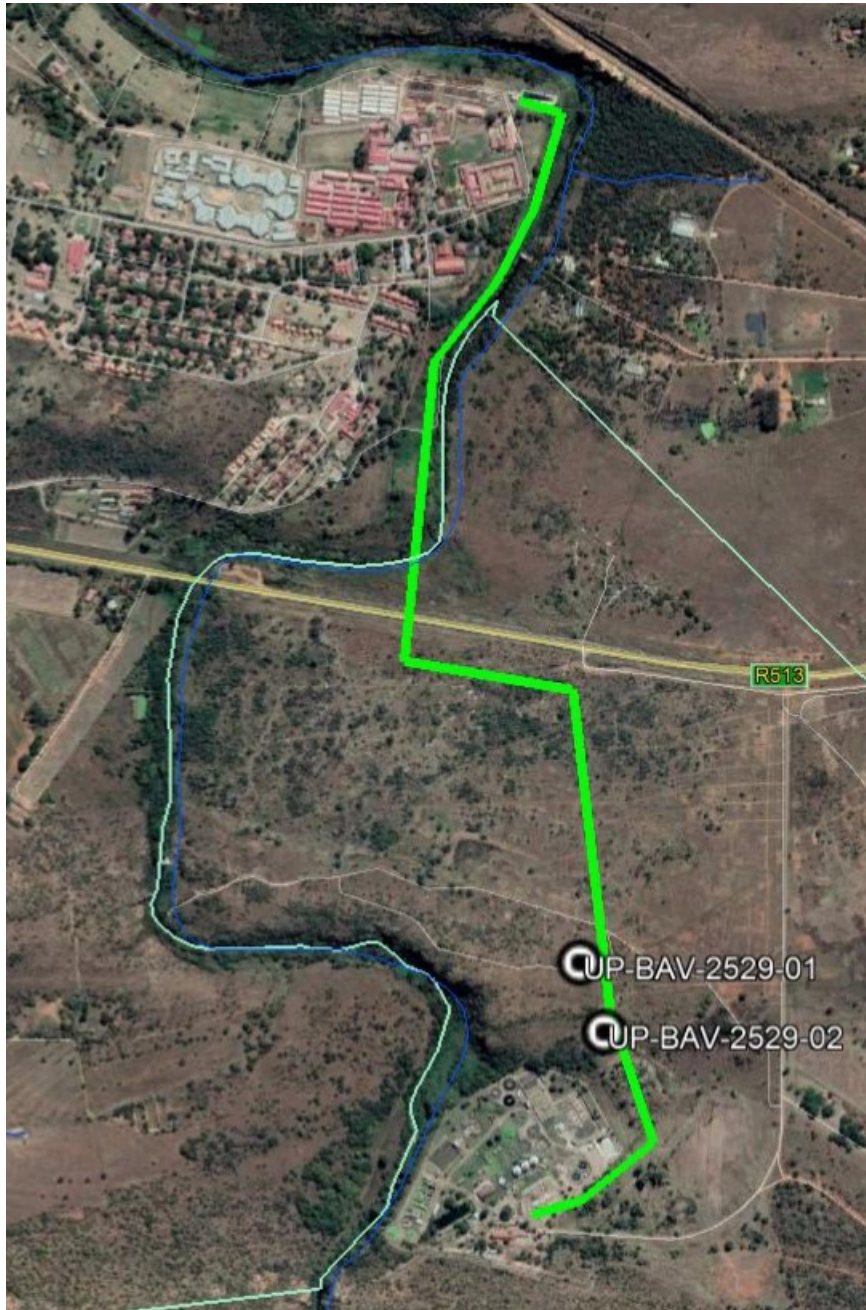


Figure 13: Historical Period Sites identified during survey



Figure 14: Aerial imagery series dating to 1948 (top), 1958 (middle) and 1979 (bottom). Note foot paths to and from sites in earlier images, but absent in 1979.

### 8.3.1 UP-BAV-2528-01

- Coordinates: S25.685759° E 28.364876°
- Farm: Baviaanspoort 330-JR
- 50K Map Series: 2528CB Silverton
- Type: Historical Period Ruins

This site is the remains of several stone and mud buildings. The original structures were constructed with dry stone walls and likely had a clay plastering. The buildings are poorly preserved and the original layout is difficult to determine. However, it seems as though the main architectural feature was a series rectangular structures, spaced around the north, west and southern perimeters of a courtyard. A low stone perimeter wall is visible on the western side of the buildings and a small circular feature (c. 1.5m in diameter and 0.3m high) is located to the north of the main structures. The latter may have been a small stock pen.

Porcelain fragments, decorated with a floral transfer print, were noted on the surface at the site. The small size of the site meant that the walls were not visible in historical aerial photos. However, imagery from 1948 and 1958, faint pathways leading to and from the general areas of the site is visible, which would suggest that it was likely occupied during at the time the images were recorded. These pathways are not visible on 1939 photos, nor on the 1979 images. This suggests an estimated age of approximately 70 years for these structures (i.e. mid 20<sup>th</sup> century).

The layout does conform to the extended U-shape settlement with square buildings which typifies Ndebele homesteads from the 1950s onwards (Vuuren 1987, 106; van Vuuren 1993, 46) and therefore could be one of the numerous dispersed Ndebele homesteads that occurred in the area as tenant farmers and labourers. Most Ndebele communities north of Pretoria were forcibly relocated in the 1950s-1960s to Vlakfontein (now Mamelodi) and other locations further afield (Kusel 2000).

The site is rated as **Medium significance** at a local level since: (a) it relates to an important but largely untold part of Pretoria's history, (b) similar sites are increasingly under threat of urban encroachment and (c) that the site has the potential to answer important future research questions about a rarely studied segment of 20<sup>th</sup> century South Africa's population (c.f. van Schalkwyk 2014).

The site is approximately 40m west of the proposed pipeline alignment and is therefore unlikely to be directly impacted. Should there be any impact on the site by the proposed project activities, a permit for the alteration or destruction of the site is required subject to the NHRA.

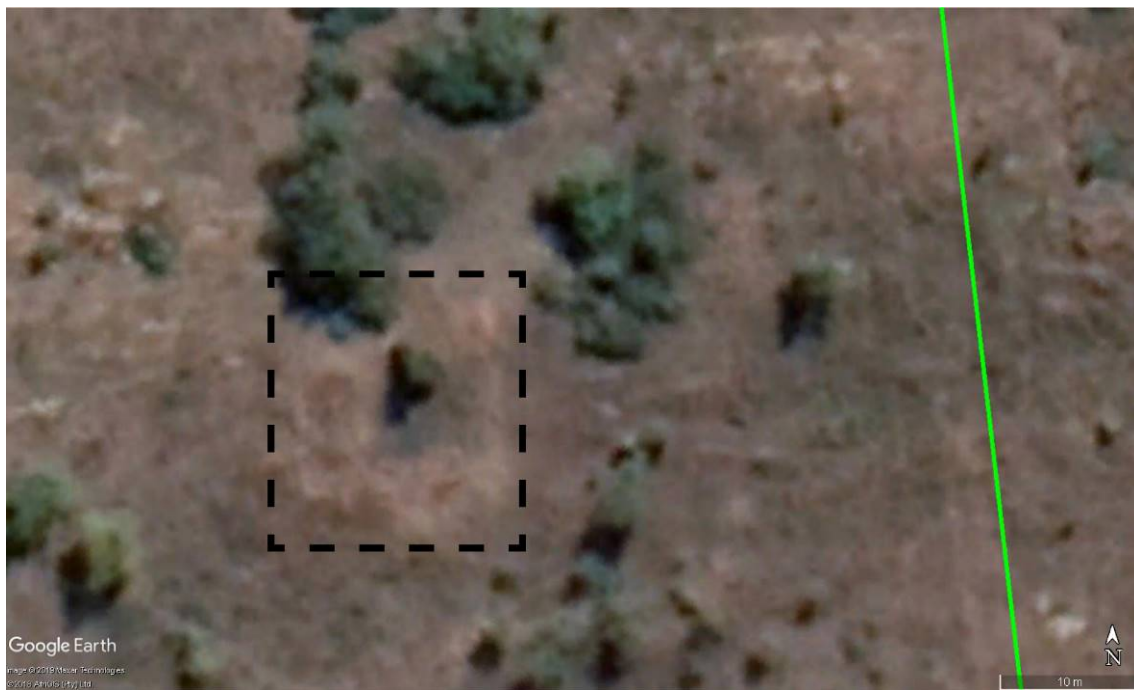


Figure 15: Outline of rectangular structures (Site UP-BAV-2528-01). Pipeline in green.





Figure 16: View of Site UP-BAV-2528-01 from the north facing the Magaliesberg.



Figure 17: UP-BAV-2528-01 viewed from the east.





Figure 18: Extant walling on UP-BAV-2528-01.



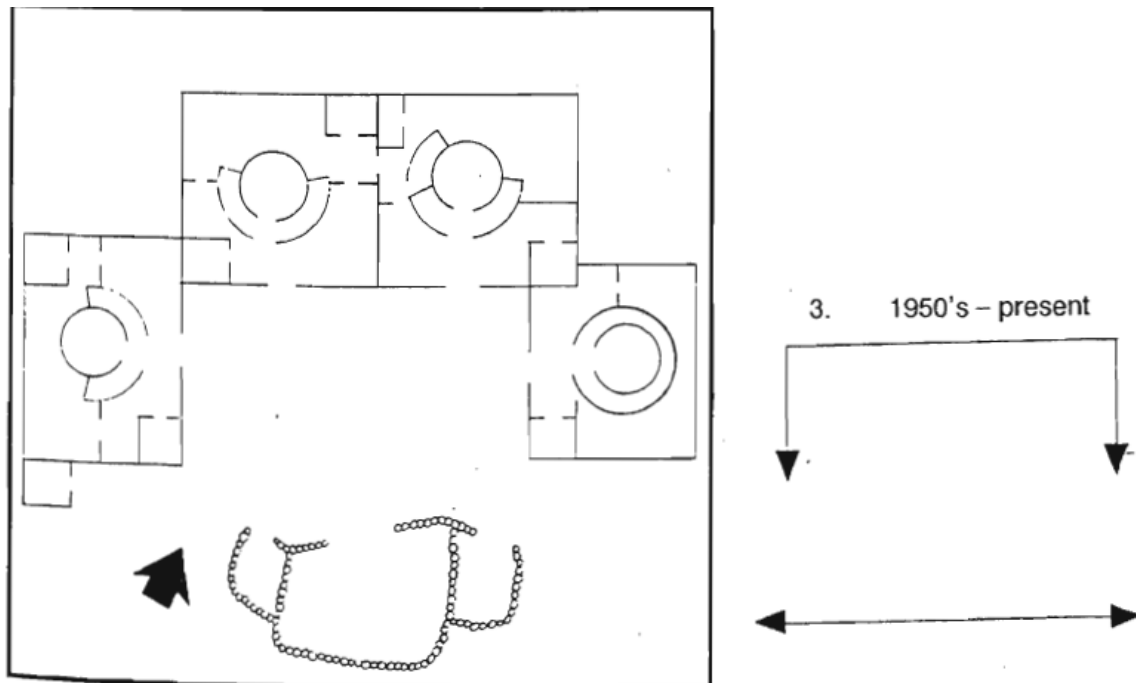


Figure 19: Post-1950's Ndebele settlement, layout taken from Van Vuuren (1993: 46), suggestive of a similar layout of UP-BAV-2528-01





Figure 20: Photograph taken by the architect Norman Eaton (1902-1966) of "Mapogga kraals', Baviaanspoort" from Fisher (2009, 81).

### 8.3.2 UP-BAV-2528-02

- Coordinates: S25.687057° E 28.365356°
- Farm: Baviaanspoort 330-JR
- 50K Map Series: 2528CB Silverton
- Site Type: Historical Period Ruins

This site is located against the southern slope where the terrain dips down to the Pienaars River and WWTW. The site is comprised of poorly preserved, square dry stone-walls. The structures seem to be rectangular and organised around a courtyard area, but the general layout could not be defined but the original stone wall foundations likely had clay plastering. No surface material or artefacts were identified. A dirt road cuts through the eastern edge of the site and likely destroyed some of the features on the site.

No visible material culture was found on the site. The ephemeral nature of the site means that it was not possible to identify the site on historical imagery. However, as with UP-BAV-2528-01, the 1958 aerial imagery indicates pathways to and from the site area suggests a mid-20<sup>th</sup> century date and likely has a similar date and archaeological identity as UP-BAV-2528-02.

The site is rated as **Low significance** since (a) large parts of the site has already been destroyed by a road and (b) very little surface deposits remain due to slope erosion.

The site is approximately 20m west of the proposed pipeline alignment and is therefore unlikely to be directly impacted. Should there be any impact on the site by the proposed project activities, a permit for the alteration or destruction of the site is required subject to the NHRA.



Figure 21: UP-BAV-2528-02 with road cutting across the eastern edge of the site visible. Pipeline in green.



Figure 22: Collapsed walling at UP-BAV-2528-02





Figure 23: Walling on UP-BAV-2528-02 with road cut through the site in the foreground.

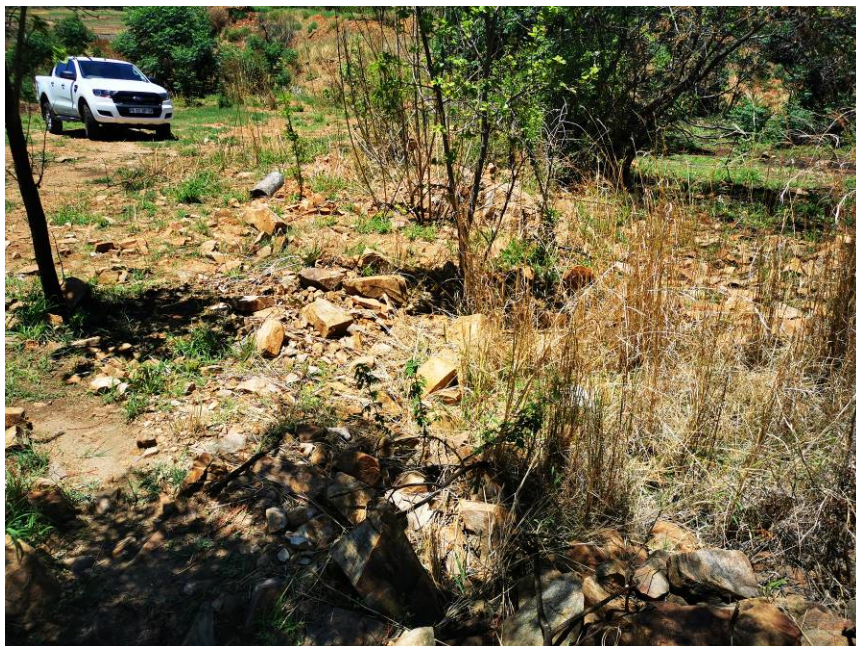


Figure 24: Building rubble and road east of UP-BAV-2528-02

## 9 Palaeontological Sensitivity

The project area falls outside a paleontological sensitive area according to the SAHRIS database and therefore does not require desktop or field assessment will probably not be required. This is ultimately subject to review and recommendations by the relevant heritage authorities.

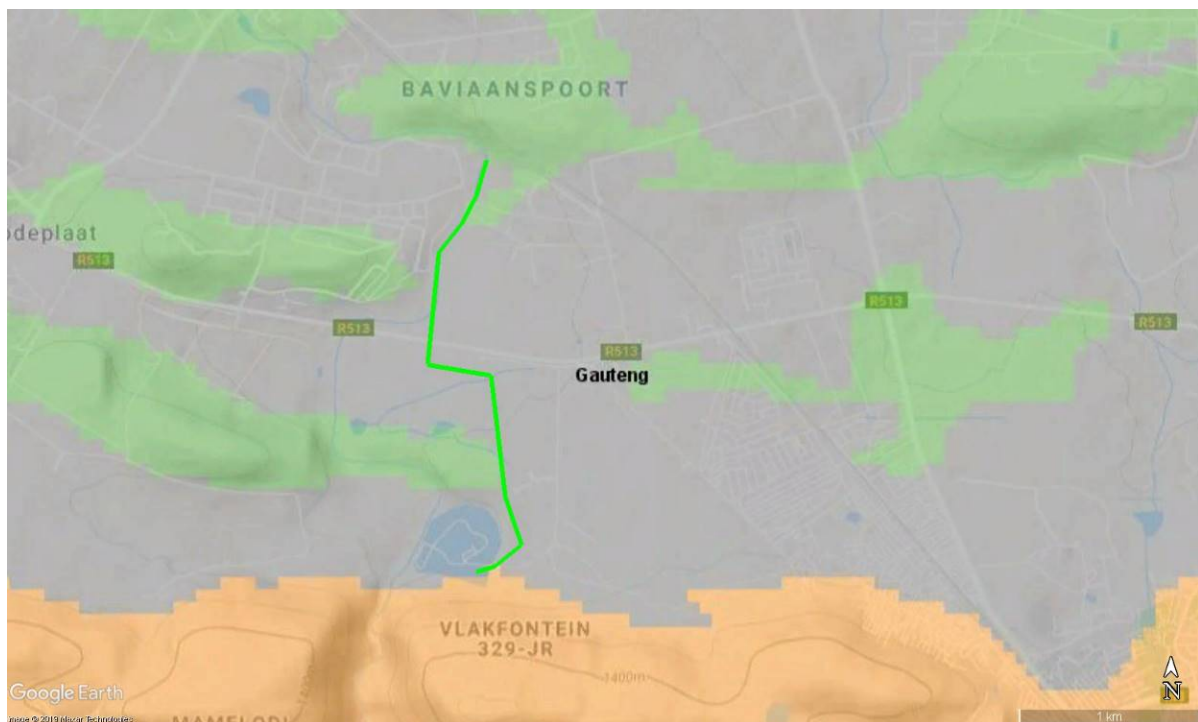


Figure 25: SAHRIS paleo-sensitivity map with from with project area indicated.

## 10 Statement of Significance and Impact Rating

This section outlines the potential impact of risk situations and scenarios commonly associated with heritage resources management. Refer to Annexure 1 or guideline of the rating of impacts and recommendation of management actions for areas of heritage potential within the study area.



## 10.1 Direct, indirect and cumulative effects

Beyond the initial direct or primary impact, the HIA should also consider the potential indirect and cumulative impacts. Winter and Baumann (2005) define **direct or primary impacts** as those that occur at the same time and in the same space as the proposed activity. **Indirect effects** occur at a later stage or at a different place from the causal activity, or may be impacts that occur as through a “complex pathway” (Winter and Baumann 2005, 24). **Cumulative effects** are a constellation of processes that are seemingly insignificant in isolation, but have a significant cumulative effect on heritage resources (ibid.).

## 10.2 Direct Impact Rating Criteria

The criteria used for assessment of impacts is based on the guidelines set out by Winter and Baumann (2005) and Department of Environmental Affairs and Tourism (1998):

### 10.2.1 Extent

Local	extend only as far as the footprint of the proposed activity/development
Site	Impact extends beyond the site footprint to immediate surrounds
Regional	within which development takes place, i.e. farm, suburb, town, community
National	Impact is on a national level

### 10.2.2 Duration

Short term	The impact will disappear with through mitigation or through natural processes
Medium term	The impact will last up to the end of the phases, where after it will be negated
Long term	impact will persist indefinitely, possibly beyond the operational life of the activity, either because of natural processes or by human intervention
Permanent	Permanent where mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient

### 10.2.3 Magnitude severity

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

#### 10.2.4 Probability

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

#### 10.2.5 Impact Significance

Low	negligible effect on heritage – no effect on decision
Medium	where it would have a moderate effect on heritage and – influences the decision
High	high risk of, a big effect on heritage. Impacts of high significance should have a major influence on the decision
Very high	high risk of, an irreversible and possibly irreplaceable impact on heritage – central factor in decision-making

### 10.3 Direct Impact Weighting Matrix

Aspect	Description	Weight
<b>Extent</b>		
	Local	1
	Site	2
	Regional	3
<b>Duration</b>		
	Short term	1
	Medium term	3
	Long term	4
	Permanent	5
<b>Magnitude/Severity</b>		
	Low	2
	Medium	6
	High	8
<b>Probability</b>		
	Improbable	1
	Probable	2
	Highly Probable	4
	Definite	5
<b>Significance</b>	<b>Sum (Duration, Scale, Magnitude) x Probability</b>	
Negligible	<20	
Low	<40	
Moderate	<60	
High	>60	

## 10.4 Evaluation of Impact

### 10.4.1 Archaeology

The study identified two archaeological sites which outside the immediate project footprint and impact can be minimised.

### 10.4.2 Built Environment

A number of Historical Period buildings occur on the general Baviaanspoort Correctional Facility property. However, no impact on these buildings will occur.

### 10.4.3 Cultural Landscape

The larger area forms part of a rich cultural landscape Iron Age to Historical Period farmsteads and buildings. Part of this is the terraced gardens and orchards associated with the Baviaanspoort CFS. South of the R513 the open veld is has been significantly impacted by dumping of building rubble, bush clearing and informal dirt roads through the veld. In addition, given that the proposed project is an upgrade of an existing pipeline, impact on the cultural landscape of this area will be minimal.

### 10.4.4 Graves / Human Burials Sites

No indication of graves or burials were found during the survey.

Given that the project is an upgrade of an existing subterranean pipeline, the prospect of discovering new graves during construction remains low. However, because historical homesteads have been identified near the project footprint, caution should be applied. Mitigation measures (avoidance, site management, site monitoring / grave relocation) **must be implemented** if any burials are encountered.

Table 5: Summary direct impact on heritage finds

Site	Impact	Mitigation*	Extent		Duration		Magnitude		Probability		Significance		Mitigation Measures
			Scale	Score	Scale	Score	Scale	Score	Scale	Score	Scale	Score	

UP-BAV-2528-01	Potential damage to historical site	WM	Local	1	Short term	1	Low	2	Improbable	1	Negligible	4	Site monitoring, avoidance, 20m conservation buffer.
		WoM	Local	1	Short term	1	Low	2	Probable	2	Negligible	8	
UP-BAV-2528-01	Potential damage to historical site	WM	Local	1	Short term	1	Low	2	Improbable	1	Negligible	4	Site monitoring, avoidance, 10m conservation buffer.
		WoM	Local	1	Short term	1	Low	2	Probable	2	Negligible	8	

\*WM = with mitigation; W/O = without mitigation

## 10.5 Management actions

The HIA identified heritage resources within close proximity to the pipeline between the Baviaanspoort Correctional Services Pump Station and the Baviaanspoort Municipal Waste Water Treatment Works. However, no peripheral impacts are envisaged and direct impacts can be mitigated. Therefore, it is the opinion of this author that the Construction of a pipeline between the Baviaanspoort Correctional Services Pump Station and the Baviaanspoort Municipal Waste Water Treatment Works may proceed from a culture resources management perspective on the condition that mitigation measures are implemented where applicable, and provided that no subsurface heritage remains are encountered during construction.

The following management measures should be considered during implementation of the proposed Nigel Bulk Water Pipeline Phase 2 Project.

10.5.1 UP-BAV-2528-01

<b>PROJECT COMPONENT/S</b>	All phases of construction and operation.	
<b>POTENTIAL IMPACT</b>	Damage/destruction of sites.	
<b>ACTIVITY RISK/SOURCE</b>	Digging foundations and trenches into sensitive deposits/ earthmoving/ damage from heavy machinery during construction	
<b>MITIGATION: TARGET/OBJECTIVE</b>	To conserve the historical fabric of the sites and to locate undetected heritage remains as soon as possible after disturbance to maximize the chances of successful rescue/mitigation work.	
<b>MITIGATION: ACTION/CONTROL</b>	<b>RESPONSIBILITY</b>	<b>TIMEFRAME</b>
Fixed Mitigation Procedure ( <b>required</b> )		
<b>Site Monitoring:</b> Regular examination of trenches and excavations.	ECO, HERITAGE PRACTITIONER	Monitor as frequently as practically possible.
<b>Preferred Mitigation</b>		
<b>Avoidance:</b> Implement a heritage conservation buffer of at least 20m around the heritage resource	DEVELOPER	Prior to the commencement of construction and earth-moving.
Alternative Mitigation ( <b>if preferred mitigation not feasible</b> )		
<b>Phase 2</b> Specialist Analysis and documentation of sites (mapping, desktop study), site sampling (if required). Permitting required.	HERITAGE PRACTITIONER	Prior to the commencement of construction and earth-moving.
<b>PERFORMANCE INDICATOR</b>	Archaeological site context is preserved and mitigated with the minimum amount of unnecessary disturbance. Discovery of previously undetected deposits.	
<b>MONITORING</b>	Successful preservation of sites by person/s monitoring.	



### 10.5.2 UP-BAV-2528-02

<b>PROJECT COMPONENT/S</b>	All phases of construction and operation.	
<b>POTENTIAL IMPACT</b>	Damage/destruction of sites.	
<b>ACTIVITY RISK/SOURCE</b>	Digging foundations and trenches into sensitive deposits/ earthmoving/ damage from heavy machinery during construction	
<b>MITIGATION: TARGET/OBJECTIVE</b>	To conserve the historical fabric of the sites and to locate undetected heritage remains as soon as possible after disturbance to maximize the chances of successful rescue/mitigation work.	
<b>MITIGATION: ACTION/CONTROL</b>	<b>RESPONSIBILITY</b>	<b>TIMEFRAME</b>
Fixed Mitigation Procedure ( <b>required</b> )		
<b>Site Monitoring:</b> Regular examination of trenches and excavations.	ECO, HERITAGE PRACTITIONER	Monitor as frequently as practically possible.
<b>Avoidance:</b> Implement a heritage conservation buffer of at least 10m around the heritage resource	DEVELOPER	Prior to the commencement of construction and earth-moving.
<b>PERFORMANCE INDICATOR</b>	Archaeological site context is preserved and mitigated with the minimum amount of unnecessary disturbance. Discovery of previously undetected deposits.	
<b>MONITORING</b>	Successful preservation of sites by person/s monitoring.	

## 11 Recommendation

The following general recommendations are made based the impact assessment process:

1. The remains of Historical Period structures and related artefacts were located immediately adjacent to the project footprint at **UP-BAV-2528-01** and **UP-BAV-2528-02**. These sites are rated with a medium and low heritage significance respectively. Legislation requires that

alteration permits be obtained from the relevant heritage resources authority (SAHRA, SAHRA Built Environment Unit) prior to the alteration of the structures, should the structure be altered.

2. Although site **UP-BAV-2528-01** is rated as **medium significance**, direct impact on the site is rated as **low**. However, a 20m conservation buffer and close monitoring of the during development must be implemented in order to avoid the destruction of previously undetected heritage remains. If this is not feasible, and impact is inevitable, the site should be adequately documented by means of further Phase 2 Specialist Analysis (mapped, photographed and documented, described and contextualised by means of a desktop study, possible site sampling subject to the necessary excavation permits) and the necessary destruction permits should be obtained from the relevant Heritage Resources Authorities.
3. The heavily disturbed site **UP-BAV-2528-02**, is rated as low significance. Direct impact on the site is also regarded as low. As a result, a 10m conservation buffer is recommended, as well as monitoring of the site during development in order to avoid the destruction of previously undetected heritage remains.
4. The historically significant Baviaanspoort CSF occurs in close proximity of the proposed development and it is advised that the complex be sporadically monitored in order to detect any potential impact emanating from the development at the soonest opportunity.

## 12 Conclusion

The larger landscape on and below the northern slopes of the Magaliesberg at Pretoria have been inhabited, developed and exploited continuously for millennia. In terms of heritage resources, the area is primarily well known for the occurrence of Iron Age farmer sites and a historical expansion of Pretoria. The two sites identified in during the HIA relates to the latter. The urban periphery is

however, a landscape under immense pressure from development and measures should be taken to manage and monitor impact on the identified sites by means of suitable mitigation measures.

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## 14 Annexure 1: Heritage Legislation Background

### 14.1 National Heritage Resources Act No 25 of 1999, section 35

According to the National Heritage Resources Act of 1999 a historical site is any identifiable building or part thereof, marker, milestone, gravestone, landmark or tell older than 60 years.

The Act identifies heritage objects as:

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

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

- “No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit by the relevant provincial heritage resources authority.” (34. [1] 1999:58)
- “No person may, without a permit issued by the responsible heritage resources authority-
  - a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;

- b) (e) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;
  - c) (f) trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or
  - d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites. (35. [4] 1999:58).”
- “No person may, without a permit issued by SAHRA or a provincial heritage resources agency may -
- a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;
  - b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority;
  - c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) and excavation equipment, or any equipment which assists in the detection or recovery of metals (36. [3] 1999:60).”

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

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

## 15 Annexure 2: Management and Mitigation Actions

### 15.1 Categories of significance

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

- Aesthetic value:

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

- Historic value:

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

- Scientific value:

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

- Social value

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

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

Formally protected sites:

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

Generally protected sites:

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

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

## **15.2 Mitigation Categories**

The following provides a guideline of relevant heritage resources management actions in the conservation of heritage resources:

### **1. No further action / Monitoring**

Where no heritage resources have been documented, heritage resources occur well outside the impact zone of any development or the primary context of the surroundings at a development footprint has been largely destroyed or altered, no further immediate action is required. Site monitoring during development, by an ECO or the heritage specialist are often added to this recommendation in order to ensure that no undetected heritage\ remains are destroyed.

### **2. Avoidance**

This is appropriate where any type of development occurs within a formally protected or significant or sensitive heritage context and is likely to have a high negative impact. Mitigation is not acceptable or not possible. This measure often includes the change / alteration of development planning and therefore impact zones in order not to impact on resources.

### **3. Mitigation**

This is appropriate where development occurs in a context of heritage significance and where the impact is such that it can be mitigated to a degree of medium to low significance, e.g. the high to medium impact of a development on an archaeological site could be mitigated through sampling/excavation of the remains. Not all negative impacts can be mitigated.



#### 4. Compensation

Compensation is generally not an appropriate heritage management action. The main function of management actions should be to conserve the resource for the benefit of future generations. Once lost it cannot be renewed. The circumstances around the potential public or heritage benefits would need to be exceptional to warrant this type of action, especially in the case of where the impact was high.

#### 5. Rehabilitation

Rehabilitation is considered in heritage management terms as a intervention typically involving the adding of a new heritage layer to enable a new sustainable use. It is not appropriate when the process necessitates the removal of previous historical layers, i.e. restoration of a building or place to the previous state/period. It is an appropriate heritage management action in the following cases:

- The heritage resource is degraded or in the process of degradation and would benefit from rehabilitation.
- Where rehabilitation implies appropriate conservation interventions, i.e. adaptive reuse, repair and maintenance, consolidation and minimal loss of historical fabric.
- Where the rehabilitation process will not result in a negative impact on the intrinsic value of the resource.

#### 6. Enhancement

Enhancement is appropriate where the overall heritage significance and its public appreciation value are improved. It does not imply creation of a condition that might never have occurred during the evolution of a place, e.g. the tendency to sanitize the past. This management action might result from the removal of previous layers where these layers are culturally of low significance and detract from the significance of the resource. It would be appropriate in a range of heritage contexts and applicable to a range of resources. In the case of formally protected or significant resources,

appropriate enhancement action should be encouraged. Care should, however, be taken to ensure that the process does not have a negative impact on the character and context of the resource. It would thus have to be carefully monitored