

HERITAGE IMPACT ASSESSMENT

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

FOR THE PROPOSED POLOKWANE URBAN GROUNDWATER PROJECT, LIMPOPO PROVINCE

Type of development:

Pipeline Development

Client:

Tekplan

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APPROVAL PAGE

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Report Title	Heritage Impact Assessment Polokwane Urban Ground Water Project, Limpopo Province
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REPORT OUTLINE

Appendix 6 of the GNR 326 EIA Regulations published on 7 April 2017 provides the requirements for specialist reports undertaken as part of the environmental authorisation process. In line with this, Table 1 provides an overview of Appendix 6 together with information on how these requirements have been met.

Table 1. Specialist Report Requirements.

Requirement from Appendix 6 of GN 326 EIA Regulation 2017	Chapter
(a) Details of - (i) the specialist who prepared the report; and (ii) the expertise of that specialist to compile a specialist report including a curriculum vitae	Section a Section 12
(b) Declaration that the specialist is independent in a form as may be specified by the competent authority	<i>Declaration of Independence</i>
(c) Indication of the scope of, and the purpose for which, the report was prepared	Section 1
(cA) an indication of the quality and age of base data used for the specialist report	Section 3.4 and 7.1.
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	8
(d) Duration, Date and season of the site investigation and the relevance of the season to the outcome of the assessment	Section 3.4
(e) Description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used	Section 3
(f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 8 and 9
(g) Identification of any areas to be avoided, including buffers	Section 9
(h) Map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers	Section 8
(l) Description of any assumptions made and any uncertainties or gaps in knowledge	Section 3.7
(j) a description of the findings and potential implications of such findings on the impact of the proposed activity including identified alternatives on the environment or activities;	Section 8
(k) Mitigation measures for inclusion in the EMPr	Section 9
(l) Conditions for inclusion in the environmental authorisation	Section 9
(m) Monitoring requirements for inclusion in the EMPr or environmental authorisation	Section 9
(n) Reasoned opinion - (i) as to whether the proposed activity, activities or portions thereof should be authorised; (iA) regarding the acceptability of the proposed activity or activities; and (ii) if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan	Section 9.2
(o) Description of any consultation process that was undertaken during the course of preparing the specialist report	Section 6
(p) A summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Refer to EIA report
(q) Any other information requested by the competent authority	Section 9

Executive Summary

Tekplan Environmental was appointed to conduct an Environmental Impact Assessment for the proposed Polokwane Urban Groundwater Project, Limpopo Province. HCAC was appointed to conduct a Heritage Impact Assessment of the proposed project to determine the presence of cultural heritage sites and the impact of the proposed development on these non-renewable resources. The study area was assessed both on desktop level and by a field survey. The field survey was conducted as a non-intrusive pedestrian survey to cover the extent of the proposed pipeline alignment. During the survey two heritage features was recorded.


The first is a large municipal cemetery (Feature 1) that will be retained *in-situ* and **not directly impacted** on by the proposed pipeline. If any additional graves are located in future they should ideally be preserved in-situ or alternatively relocated according to existing legislation.

The second is a partially demolished Late Iron Age stone walled site (Feature 2). The feature is situated on the summit of a hill that also holds several large reservoirs that possibly impacted and destroyed surface indicators of such features in the area of the existing reservoirs. The proposed pipeline will have **no impact** on the recorded feature but there is a possibility that subsurface features might be exposed in this area during construction. An independent paleontological desktop study (Bamford 2019) found that the impact on the fossil heritage is extremely unlikely, and recommended that the proposed project may proceed without further pre construction work.

During the public participation process conducted for the project no heritage concerns were raised and due to the lack of significant impacts on heritage resources, it is recommended that the proposed project can commence on the condition that the following recommendations are implemented as part of the EMPr and based on approval from SAHRA:

- The cemetery (Feature 1) should be retained *in-situ*;
- The Late Iron Age stone walled site (Feature 2) will not be impacted on by the pipelines, but construction in the area of the site should be monitored;
- Implementation of a chance find procedure;
- Compilation of a Heritage Management Plan for the project.

Declaration of Independence

Specialist Name	Jaco van der Walt
Declaration of Independence	<p>I declare, as a specialist appointed in terms of the National Environmental Management Act (Act No 108 of 1998) and the associated 2014 Environmental Impact Assessment (EIA) Regulations, that I:</p> <ul style="list-style-type: none"> • I act as the independent specialist in this application; • I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant; • I declare that there are no circumstances that may compromise my objectivity in performing such work; • I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity; • I will comply with the Act, Regulations and all other applicable legislation; • I have no, and will not engage in, conflicting interests in the undertaking of the activity; • I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority; • All the particulars furnished by me in this form are true and correct; and • I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.
Signature	
Date	10/05/2019

a) Expertise of the specialist

Jaco van der Walt has been practising as a CRM archaeologist for 15 years. He obtained an MA degree in Archaeology from the University of the Witwatersrand focussing on the Iron Age in 2012 and is a PhD candidate at the University of Johannesburg focussing on Stone Age Archaeology with specific interest in the Middle Stone Age (MSA) and Later Stone Age (LSA). Jaco is an accredited member of ASAPA (#159) and have conducted more than 500 impact assessments in Limpopo, Mpumalanga, North West, Free State, Gauteng, KZN as well as he Northern and Eastern Cape Provinces in South Africa.

Jaco has worked on various international projects in Zimbabwe, Botswana, Mozambique, Lesotho, DRC Zambia and Tanzania. Through this he has a sound understanding of the IFC Performance Standard requirements, with specific reference to Performance Standard 8 – Cultural Heritage.

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ABBREVIATIONS

AIA: Archaeological Impact Assessment
ASAPA: Association of South African Professional Archaeologists
BGG Burial Ground and Graves
BIA: Basic Impact Assessment
CFPs: Chance Find Procedures
CMP: Conservation Management Plan
CRR: Comments and Response Report
CRM: Cultural Resource Management
DEA: Department of Environmental Affairs
EA: Environmental Authorisation
EAP: Environmental Assessment Practitioner
ECO: Environmental Control Officer
EIA: Environmental Impact Assessment*
EIA: Early Iron Age*
EIA Practitioner: Environmental Impact Assessment Practitioner
EMP: Environmental Management Programme
ESA: Early Stone Age
ESIA: Environmental and Social Impact Assessment
GIS Geographical Information System
GPS: Global Positioning System
GRP Grave Relocation Plan
HIA: Heritage Impact Assessment
LIA: Late Iron Age
LSA: Late Stone Age
MEC: Member of the Executive Council
MIA: Middle Iron Age
MPRDA: Mineral and Petroleum Resources Development Act
MSA: Middle Stone Age
NEMA National Environmental Management Act, 1998 (Act No. 107 of 1998)
NHRA National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NID Notification of Intent to Develop
NoK Next-of-Kin
PRHA: Provincial Heritage Resource Agency
SADC: Southern African Development Community
SAHRA: South African Heritage Resources Agency

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

GLOSSARY

Archaeological site (remains of human activity over 100 years old)

Early Stone Age (~ 2.6 million to 250 000 years ago)

Middle Stone Age (~ 250 000 to 40-25 000 years ago)

Later Stone Age (~ 40-25 000, to recently, 100 years ago)

The Iron Age (~ AD 400 to 1840)

Historic (~ AD 1840 to 1950)

Historic building (over 60 years old)

1 Introduction and Terms of Reference:

HCAC is contracted by Tekplan Environmental to conduct a heritage impact assessment of the proposed Polokwane Urban Groundwater development. The report forms part of the Environmental Impact Assessment Report (EIA) and Environmental Management Programme Report (EMPR) for the project.

The aim of the study is to survey the proposed development footprint to identify cultural heritage sites, document, and assess their importance within local, provincial and national context. It serves to assess the impact of the proposed project on non-renewable heritage resources, and to submit appropriate recommendations with regard to the responsible cultural resources management measures that might be required to assist the developer in managing the discovered heritage resources in a responsible manner. It is also conducted to protect, preserve, and develop such resources within the framework provided by the National Heritage Resources Act of 1999 (Act No 25 of 1999). The report outlines the approach and methodology utilized before and during the survey, which includes: Phase 1, review of relevant literature; Phase 2, the physical surveying of the area on foot and by vehicle; Phase 3, reporting the outcome of the study.

During the survey, 2 heritage sites were identified consisting of a cemetery and a partly demolished Iron Age stone walled site. General site conditions and features on sites were recorded by means of photographs, GPS locations, and site descriptions. Possible impacts were identified and mitigation measures are proposed in the following report. SAHRA as a commenting authority under section 38(8) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) require all environmental documents, compiled in support of an Environmental Authorisation application as defined by NEMA EIA Regs section 40 (1) and (2), to be submitted to SAHRA. As such the Basic Assessment report and its appendices must be submitted to the case as well as the EMPr, once it's completed by the Environmental Assessment Practitioner (EAP).

1.1 Terms of Reference

Field study

Conduct a field study to: (a) locate, identify, record, photograph and describe sites of archaeological, historical or cultural interest; b) record GPS points of sites/areas identified as significant areas; c) determine the levels of significance of the various types of heritage resources affected by the proposed development.

Reporting

Report on the identification of anticipated and cumulative impacts the operational units of the proposed project activity may have on the identified heritage resources for all 3 phases of the project; i.e., construction, operation and decommissioning phases. Consider alternatives, should any significant sites be impacted adversely by the proposed project. Ensure that all studies and results comply with the relevant legislation, SAHRA minimum standards and the code of ethics and guidelines of ASAPA.

To assist the developer in managing the discovered heritage resources in a responsible manner, and to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act of 1999 (Act No 25 of 1999).

Table 2: Project Description

Extent of Pipelines	The pipe lines will be running westwards from the Polokwane Nature Reserve in the south-east along the southern boundary of the Polokwane Golf Club and along the Sterkloop Stream and several roads through the southern parts of the Polokwane CBD. It will then follow the Nelson Mandela Drive towards Seshego where it will connect Westenburg and several neighbourhoods of Seshego to the existing water supply system.
Magisterial District	Polokwane Local Municipality in the Capricorn District Municipality within the Limpopo Province.
1: 50 000 map sheet number	2329 CD

Table 3: Infrastructure and project activities

Type of development	Urban Groundwater Pipeline Development
Project Components	3 Phased project comprising of pipelines to supply water.

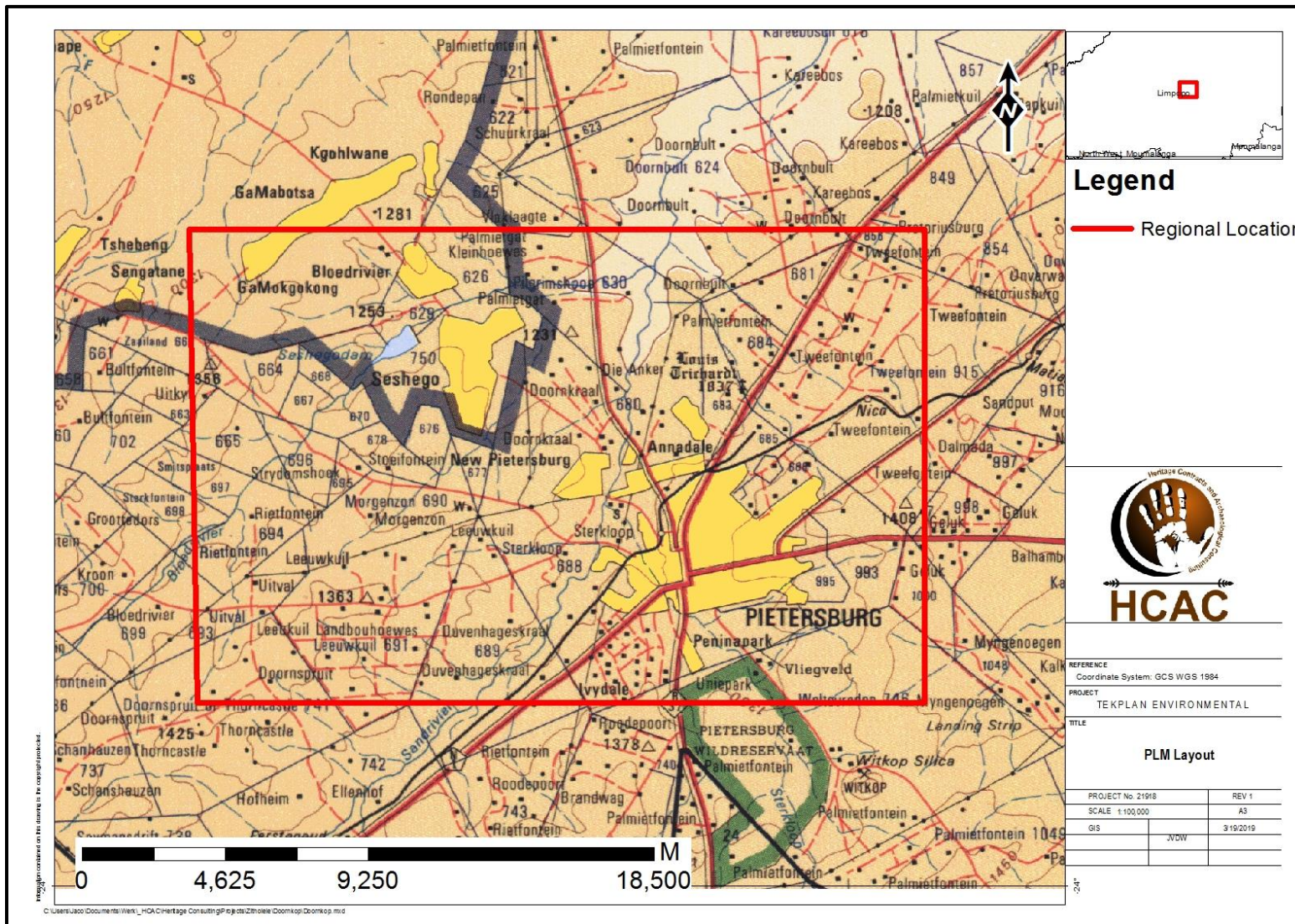


Figure 1. Provincial locality map (1: 250 000 topographical map)

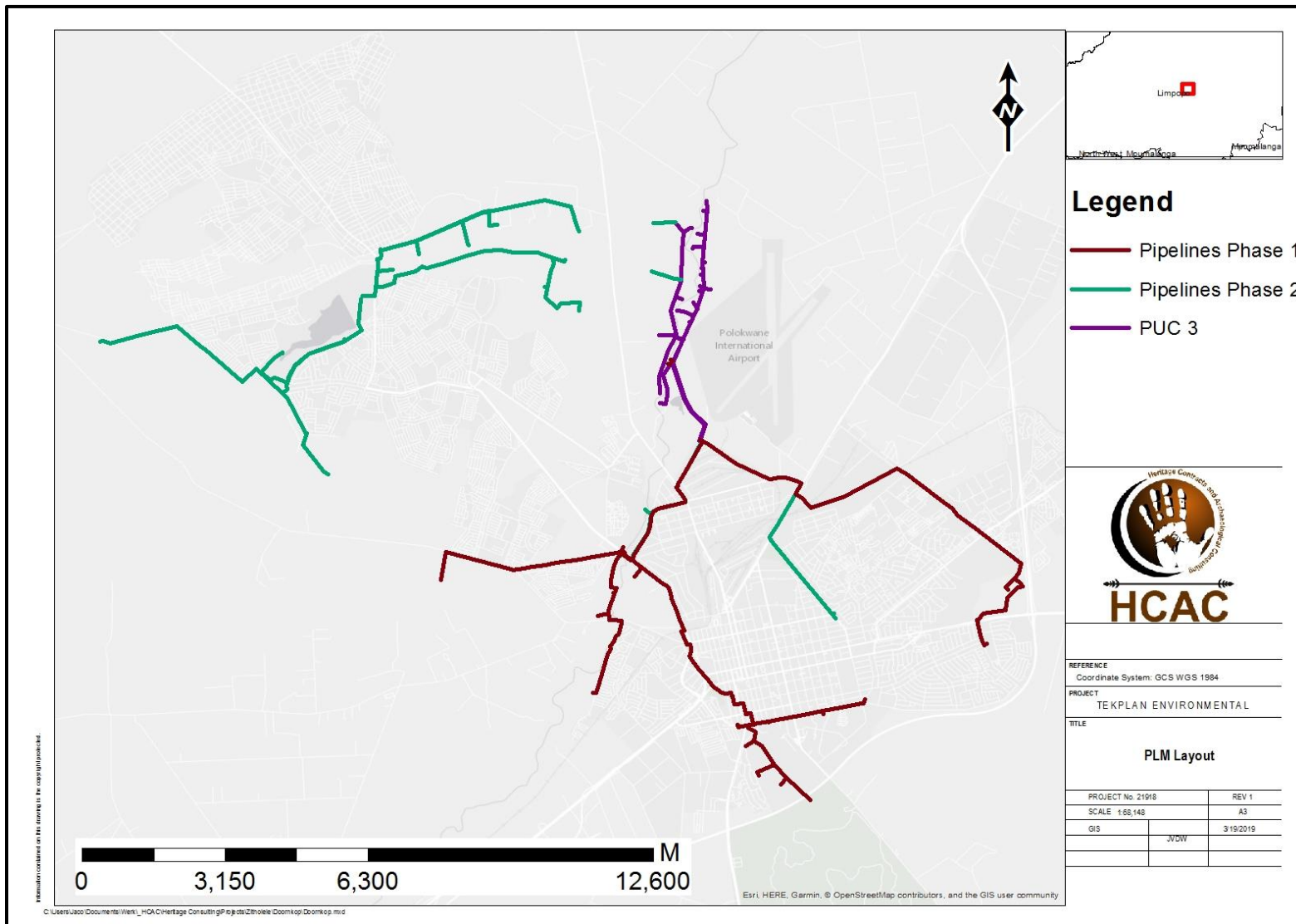


Figure 2: Regional locality map (1:50 000 topographical map).

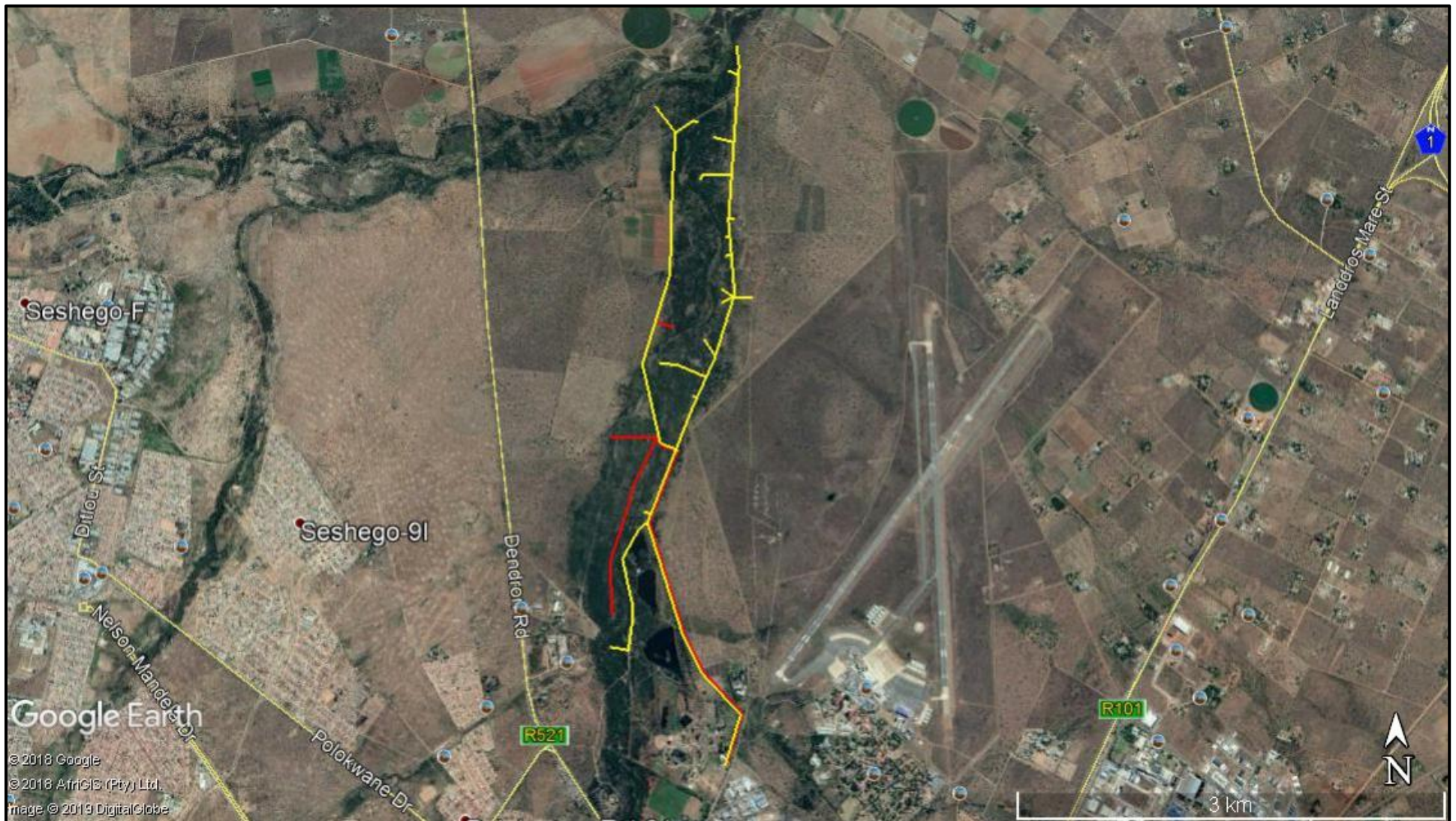


Figure 3. Satellite image indicating the northern portion of the proposed pipelines (Google Earth 2019).



Figure 4. Satellite image indicating the central portion of the proposed pipelines (Google Earth 2019).

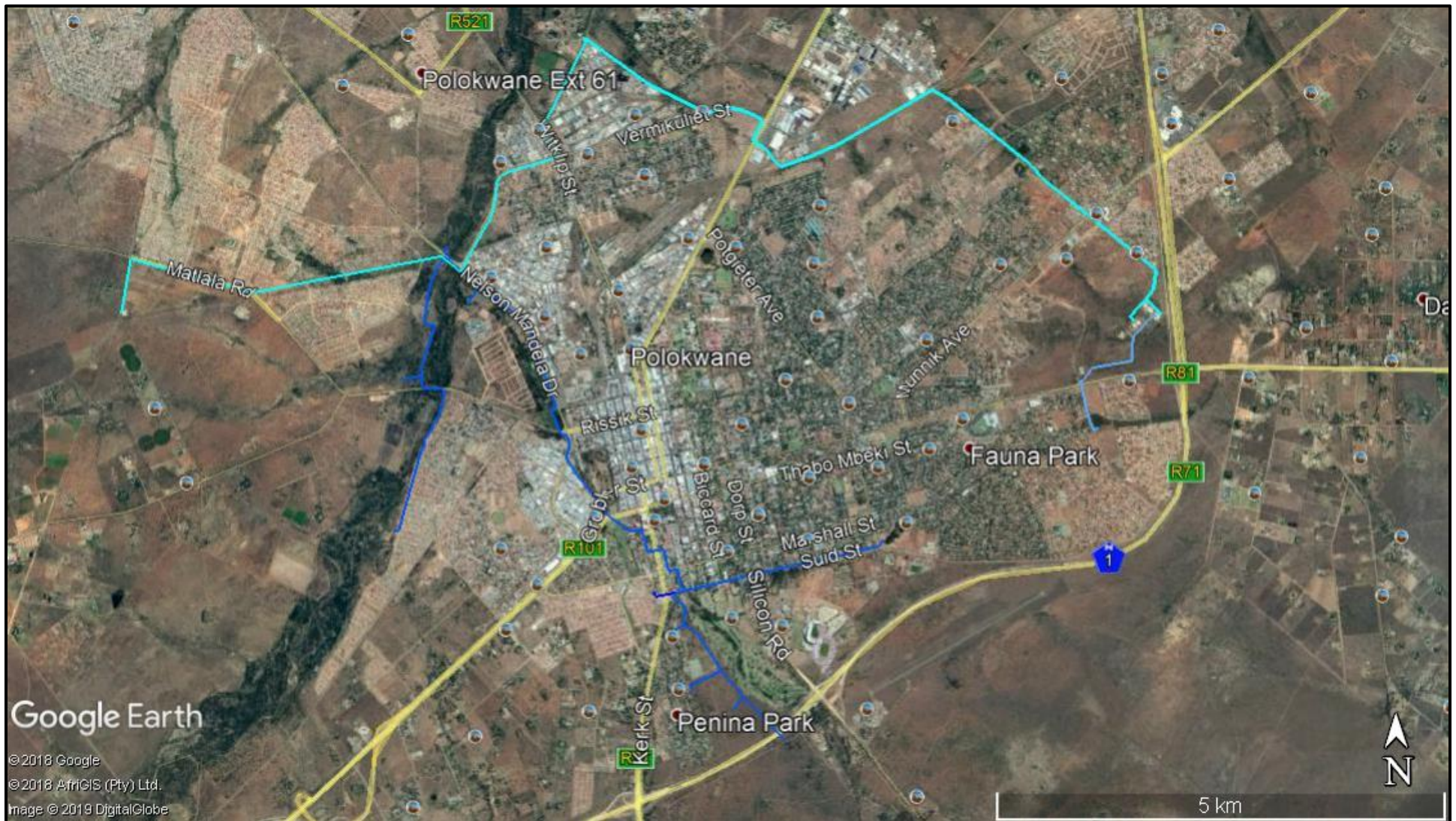


Figure 5. Satellite image indicating the southern portion of the proposed pipelines (Google Earth 2019).

2 Legislative Requirements

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

- National Heritage Resources Act (NHRA), Act No. 25 of 1999)
- National Environmental Management Act (NEMA), Act No. 107 of 1998 - Section 23(2)(b)
- Mineral and Petroleum Resources Development Act (MPRDA), Act No. 28 of 2002 - Section 39(3)(b)(iii)

A Phase 1 HIA is a pre-requisite for development in South Africa as prescribed by SAHRA and stipulated by legislation. The overall purpose of heritage specialist input is to:

- Identify any heritage resources, which may be affected;
- Assess the nature and degree of significance of such resources;
- Establish heritage informants/constraints to guide the development process through establishing thresholds of impact significance;
- Assess the negative and positive impact of the development on these resources; and
- Make recommendations for the appropriate heritage management of these impacts.

The HIA should be submitted, as part of the impact assessment report or EMPr, to the PHRA if established in the province or to SAHRA. SAHRA will ultimately be responsible for the professional evaluation of Phase 1 AIA reports upon which review comments will be issued. 'Best practice' requires Phase 1 AIA reports and additional development information, as per the impact assessment report and/or EMPr, to be submitted in duplicate to SAHRA after completion of the study. SAHRA accepts Phase 1 AIA reports authored by professional archaeologists, accredited with ASAPA or with a proven ability to do archaeological work.

Minimum accreditation requirements include an Honours degree in archaeology or related discipline and 3 years post-university CRM experience (field supervisor level). Minimum standards for reports, site documentation and descriptions are set by ASAPA in collaboration with SAHRA. ASAPA is based in South Africa, representing professional archaeology in the SADC region. ASAPA is primarily involved in the overseeing of ethical practice and standards regarding the archaeological profession. Membership is based on proposal and secondment by other professional members.

Phase 1 AIA's are primarily concerned with the location and identification of heritage sites situated within a proposed development area. Identified sites should be assessed according to their significance. Relevant conservation or Phase 2 mitigation recommendations should be made. Recommendations are subject to evaluation by SAHRA.

Conservation or Phase 2 mitigation recommendations, as approved by SAHRA, are to be used as guidelines in the developer's decision making process.

Phase 2 archaeological projects are primarily based on salvage/mitigation excavations preceding development destruction or impact on a site. Phase 2 excavations can only be conducted with a permit, issued by SAHRA to the appointed archaeologist. Permit conditions are prescribed by SAHRA and includes (as minimum requirements) reporting back strategies to SAHRA and deposition of excavated material at an accredited repository.

In the event of a site conservation option being preferred by the developer, a site management plan, prepared by a professional archaeologist and approved by SAHRA, will suffice as minimum requirement.

After mitigation of a site, a destruction permit must be applied for with SAHRA by the applicant before development may proceed.

Human remains older than 60 years are protected by the National Heritage Resources Act, with reference to Section 36. Graves older than 60 years, but younger than 100 years fall under Section 36 of Act 25 of 1999 (National Heritage Resources Act), as well as the Human Tissues Act (Act 65 of 1983), and are the jurisdiction of SAHRA. The procedure for Consultation Regarding Burial Grounds and Graves (Section 36[5]) of Act 25 of 1999) is applicable to graves older than 60 years that are situated outside a formal cemetery administrated by a local authority. Graves in this age category, located inside a formal cemetery administrated by a local authority, require the same authorisation as set out for graves younger than 60 years, in addition to SAHRA authorisation. If the grave is not situated inside a formal cemetery, but is to be relocated to one, permission from the local authority is required and all regulations, laws and by-laws, set by the cemetery authority, must be adhered to.

Human remains that are less than 60 years old are protected under Section 2(1) of the Removal of Graves and Dead Bodies Ordinance (Ordinance No. 7 of 1925), as well as the Human Tissues Act (Act 65 of 1983), and are the jurisdiction of the National Department of Health and the relevant Provincial Department of Health and must be submitted for final approval to the office of the relevant Provincial Premier. This function is usually delegated to the Provincial MEC for Local Government and Planning; or in some cases, the MEC for Housing and Welfare. Authorisation for exhumation and reinternment must also be obtained from the relevant local or regional council where the grave is situated, as well as the relevant local or regional council to where the grave is being relocated. All local and regional provisions, laws and by-laws must also be adhered to. To handle and transport human remains, the institution conducting the relocation should be authorised under Section 24 of Act 65 of 1983 (Human Tissues Act).

3 METHODOLOGY

3.1 Literature Review

A brief survey of available literature was conducted to extract data and information on the area in question to provide general heritage context into which the development would be set. This literature search included published material, unpublished commercial reports and online material, including reports sourced from the South African Heritage Resources Information System (SAHRIS).

3.2 Genealogical Society and Google Earth Monuments

Google Earth and 1:50 000 maps of the area were utilised to identify possible places where sites of heritage significance might be located; these locations were marked and visited during the field work phase. The database of the Genealogical Society was consulted to collect data on any known graves in the area.

3.3 Public Consultation and Stakeholder Engagement:

Stakeholder engagement is a key component of any BAR process, it involves stakeholders interested in, or affected by the proposed development. Stakeholders are provided with an opportunity to raise issues of concern (for the purposes of this report only heritage related issues will be included). The aim of the public consultation process was to capture and address any issues raised by community members and other stakeholders during key stakeholder and public meetings. The process involved:

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

3.4 Site Investigation

Conduct a field study to: a) systematically survey the proposed project area to locate, identify, record, photograph and describe sites of archaeological, historical or cultural interest; b) record GPS points of sites/areas identified as significant areas; c) determine the levels of significance of the various types of heritage resources recorded in the project area.

Table 4: Site Investigation Details

	Site Investigation
Date	Week of 22 Feb 2019
Season	Summer –vegetation in the study area is reasonably low with good archaeological visibility. The impact area was sufficiently covered (Figure 6) to adequately record the presence of heritage resources.

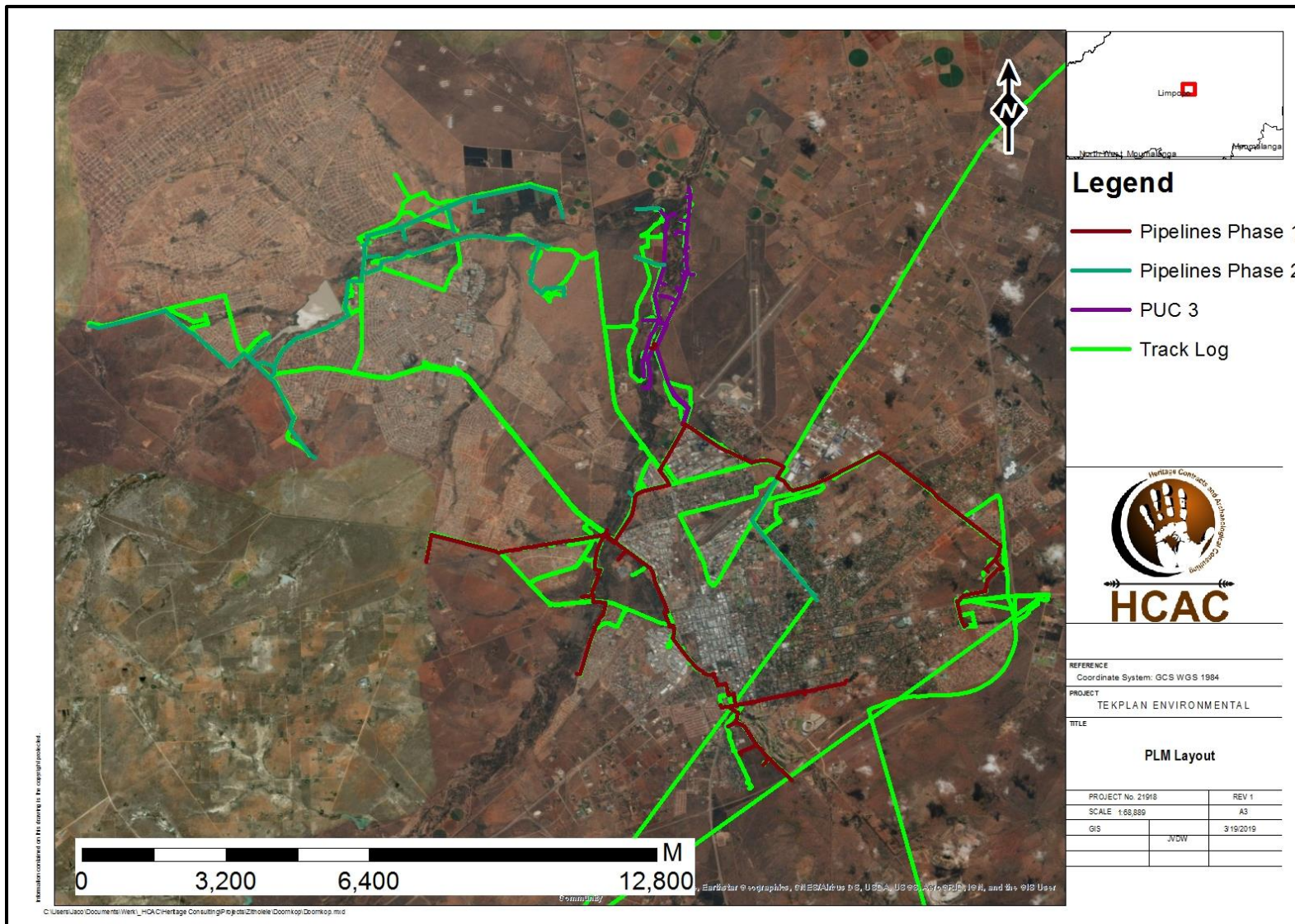


Figure 6: Track logs of the survey in green

3.5 Site Significance and Field Rating

Section 3 of the NHRA distinguishes nine criteria for places and objects to qualify as 'part of the national estate' if they have cultural significance or other special value. These criteria are:

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

The presence and distribution of heritage resources define a 'heritage landscape'. In this landscape, every site is relevant. In addition, because heritage resources are non-renewable, heritage surveys need to investigate an entire project area, or a representative sample, depending on the nature of the project. In the case of the proposed project the local extent of its impact necessitates a representative sample and only the footprint of the areas demarcated for development were surveyed. In all initial investigations, however, the specialists are responsible only for the identification of resources visible on the surface. This section describes the evaluation criteria used for determining the significance of archaeological and heritage sites. The following criteria were used to establish site significance with cognisance of Section 3 of the NHRA:

- The unique nature of a site;
- The integrity of the archaeological/cultural heritage deposits;
- The wider historic, archaeological and geographic context of the site;
- The location of the site in relation to other similar sites or features;
- The depth of the archaeological deposit (when it can be determined/is known);
- The preservation condition of the sites; and
- Potential to answer present research questions.

In addition to this criteria field ratings prescribed by SAHRA (2006), and acknowledged by ASAPA for the SADC region, were used for the purpose of this report. The recommendations for each site should be read in conjunction with section 10 of this report.

FIELD RATING	GRADE	SIGNIFICANCE	RECOMMENDED MITIGATION
National Significance (NS)	Grade 1	-	Conservation; national site nomination
Provincial Significance (PS)	Grade 2	-	Conservation; provincial site nomination
Local Significance (LS)	Grade 3A	High significance	Conservation; mitigation not advised
Local Significance (LS)	Grade 3B	High significance	Mitigation (part of site should be retained)
Generally Protected A (GP.A)	-	High/medium significance	Mitigation before destruction
Generally Protected B (GP.B)	-	Medium significance	Recording before destruction
Generally Protected C (GP.C)	-	Low significance	Destruction

3.6 Impact Assessment Methodology

The criteria below are used to establish the impact rating on sites:

- The **nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- The **extent**, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional, and a value between 1 and 5 will be assigned as appropriate (with 1 being low and 5 being high):
- The **duration**, wherein it will be indicated whether:
 - * the lifetime of the impact will be of a very short duration (0-1 years), assigned a score of 1;
 - * the lifetime of the impact will be of a short duration (2-5 years), assigned a score of 2;
 - * medium-term (5-15 years), assigned a score of 3;
 - * long term (> 15 years), assigned a score of 4; or
 - * permanent, assigned a score of 5;
- The **magnitude**, quantified on a scale from 0-10 where; 0 is small and will have no effect on the environment, 2 is minor and will not result in an impact on processes, 4 is low and will cause a slight impact on processes, 6 is moderate and will result in processes continuing but in a modified way, 8 is high (processes are altered to the extent that they temporarily cease), and 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- The **probability of occurrence**, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale of 1-5 where; 1 is very improbable (probably will not happen), 2 is improbable (some possibility, but low likelihood), 3 is probable (distinct possibility), 4 is highly probable (most likely) and 5 is definite (impact will occur regardless of any prevention measures).
- The **significance**, which shall be determined through a synthesis of the characteristics described above and can be assessed as low, medium or high; and
- the **status**, which will be described as either positive, negative or neutral.
- the degree to which the impact can be reversed.
- the degree to which the impact may cause irreplaceable loss of resources.
- the *degree* to which the impact can be mitigated.

The **significance** is calculated by combining the criteria in the following formula:

$$S=(E+D+M) P$$

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The **significance weightings** for each potential impact are as follows:

- < 30 points: Low (i.e., where this impact would not have a direct influence on the decision to develop in the area),
- 30-60 points: Medium (i.e., where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- 60 points: High (i.e., where the impact must have an influence on the decision process to develop in the area).

3.7 Limitations and Constraints of the study

The authors acknowledge that the brief literature review is not exhaustive on the literature of the area. Due to the subsurface nature of archaeological artefacts, the possibility exists that some features or artefacts may not have been discovered/recorded during the survey and the possible occurrence of unmarked graves and other cultural material cannot be excluded. Similarly, the depth of the deposit of heritage sites cannot be accurately determined due to its subsurface nature. This report only deals with the footprint area of the proposed development and consisted of non-intrusive surface surveys. This study did not assess the impact on medicinal plants and intangible heritage as it is assumed that these components would have been highlighted through the public consultation process if relevant. It is possible that new information could come to light in future, which might change the results of this Impact Assessment.

4 Description of Socio Economic Environmental

The Polokwane Municipality IDP 2017 -2018 indicated that: The average strict unemployment rate for the Municipality was 32.4% in 2011, which was better than the provincial unemployment rate of 39%. Most of the people in Polokwane Municipality fall within the middle-income groups, which is a reflection of the developing economy. The incidence of household in income categories between R600 and R30000 per year has decreased. These households have moved up the income spectrum with increases recorded in all the income categories above R30000 per year.

5 Description of the Physical Environment:

The proposed pipe lines will be situated in several areas within the Polokwane Municipality. The pipe lines will traverse a wide variety of environments which range from the central CBD of Polokwane town to the township streets of Seshego to the thick riverine forests along the Sand River. They will also cross open stretches of un-spoilt land as well as old farm lands.

The pipe lines will be running westwards from the Polokwane Nature Reserve in the south-east along the southern boundary of the Polokwane Golf Club and along the Sterkloop Stream and several roads through the southern parts of the Polokwane CBD. It will then follow the Nelson Mandela Drive towards Seshego where it will connect Westenburg and several neighbourhoods of Seshego to the existing water supply system.

A proposed extensive pipe line system along both banks of the Sand River to the north-west of Polokwane town will link numerous new and existing boreholes. These boreholes will supply the existing reservoirs on the eastern extent of Polokwane town as well as the Seshego reservoirs and Perskebult reservoirs to the west of Seshego through new and existing pipe lines.

Some of these pipe lines traverse through the townships of Seshego and Westenburg. Other pipe lines traverse in open veld along the Bloed River (Figure 8) as well as through areas that were previously ploughed and planted (Figure 7) to the north of Polokwane town. The proposed pipe lines will connect an improved and extended water supply system to serve the various communities within the Polokwane Municipality.



Figure 7. General site conditions – old fields



Figure 8. General site conditions – Bloed River.



Figure 9. General site conditions – road reserve



Figure 10. General site conditions – Existing infrastructure

6 Results of Public Consultation and Stakeholder Engagement:

Adjacent landowners and the public at large were informed of the proposed activity as part of the EIA process. Site notices and advertisements notifying interested and affected parties were placed at strategic points and in local newspapers as part of the process.

7 Literature / Background Study

7.1 Literature Review

The following CRM reports were conducted in the greater area and were consulted for this report:

Author	Year	Project	Findings
Van der Walt, J.	2018	Heritage Impact Assessment Polokwane Ext 107, Limpopo Province	No sites
Van der Walt, J.	2017	Mogalakwena Municipality Water Master Plan: Phase 2A Bulk Water Supply Zone 1, Waterberg District Municipality, Limpopo Province	Historical structure
Van Vollenhoven, A. J.	2008	A Report on Two Grave Sites on The Farm Doornkraal 680 LS, Polokwane In the Limpopo Province	Graves
Van Schalkwyk, J.	2007	Heritage Impact Assessment for The Planned Tabor Witkop Powerline, Limpopo Province	No sites were identified.
Van Schalkwyk, J.	2007	Phase 1 Heritage Resource Impact Assessment (Scoping & Evaluation) Doornkraal, Portion 76 Polokwane, Limpopo Statement with Regard To Heritage Resources Management	Graves.
Birkholtz, P. D.	2006	Phase 1 Heritage Impact Assessment for the proposed development portion 13, 23, 52 and 75 of the farm Doornkraal 680 LS Polokwane, Limpopo Province.	Graves

7.1.1 Genealogical Society and Google Earth Monuments

No known grave sites are indicated close to the study area.

7.2 General History of the area

7.2.1 Archaeology of the area

7.2.1.1 Early Stone Age

Hominids began to make stone tools about 2.6 million years ago. Known as the Oldowan industry, most of the earliest tools were rough cobble cores and simple flakes. The flakes were used for such activities as skinning and cutting meat from scavenged animals. These early artefacts are difficult to recognize and have so far only been found in rock shelters such as the Sterkfontein Caves (Kuman, 1998); they are unlikely to occur in the study area.

At about 1.4 million years ago hominids started producing more recognizable stone artefacts such as hand axes, cleavers and core tools (Deacon & Deacon, 1999). Among other things these Acheulian tools were probably used to butcher large animals such as elephants, rhinoceros and hippopotamus that had died from natural causes. Acheulian artefacts are usually found near the raw material from where they were quarried, at butchering sites, or as isolated finds. However, isolated finds have little value. Therefore, the project is unlikely to disturb a significant site.

7.2.1.2 Middle Stone Age

By the beginning of the Middle Stone Age (MSA), tool kits included prepared cores, parallel-sided blades and triangular points hafted to make spears (Volman, 1984). MSA people had become accomplished hunters by this time, especially of large grazing animals such as wildebeest, hartebeest and eland.

These hunters are classified as early humans, but by 100,000 years ago, they were anatomically fully modern. The oldest evidence for this change has been found in South Africa, and it is an important point in debates about the origins of modern humanity. In particular, the degree to which behaviour was fully modern is still a matter of debate. The repeated use of caves indicates that MSA people had developed the concept of a home base and that they could make fire. These were two important steps in cultural evolution (Deacon & Deacon, 1999). As there are no caves in the study area, there is a low possibility of finding sites of high significance in the area.

7.2.1.3 Later Stone Age

By the beginning of the Later Stone Age (LSA), human behaviour was undoubtedly modern. Uniquely human traits, such as rock art and purposeful burials with ornaments, became a regular practice. These people were the ancestors of the San (or Bushmen).

San rock art has a well-earned reputation for aesthetic appeal and symbolic complexity (Lewis-Williams, 1981). In addition to art, LSA sites contain diagnostic artefacts, including microlithic scrapers and segments made from very fine-grained rock (Wadley, 1987). Spear hunting probably continued, but LSA people also hunted small game with bows and poisoned arrows. Important LSA deposits have been excavated in Oliboompoort Cave (Mason, 1962) and other sites in the Waterberg to the north west (Van der Ryst, 1998). According to Bergh (1999) no Stone Age sites or occurrences are known in the direct area, although some MSA sites, including rock paintings, are known in the larger geographical area around Polokwane (Bergh 1999:4-5). This includes a site called Grace Dieu and another called Mwulu's Cave. Sites in the open are usually poorly preserved and therefore have less value than sites in caves or rock shelters. As there are no caves in the study area, there is a low possibility of finding sites of high significance in the area.

7.2.2 The Iron Age (AD 400 to 1840)

Bantu-speaking people moved into Eastern and Southern Africa about 2,000 years ago (Mitchell, 2002). These people cultivated sorghum and millets, herded cattle and small stock and manufactured iron tools and copper ornaments. Because metalworking represents a new technology, archaeologists call this period the Iron Age. Characteristic ceramic styles help archaeologists to separate the sites into different groups and time periods. The first 1,000 years is called the Early Iron Age.

As mixed farmers, Iron Age people usually lived in semi-permanent settlements consisting of pole-and-daga (mud mixed with dung) houses and grain bins arranged around a central area for cattle (Huffman, 1982). Usually, these settlements with the 'Central Cattle Pattern' (CCP) were sited near water and good soils that could be cultivated with an iron hoe. For the project area, archaeological sites such as these may occur.

According to the most recent archaeological cultural distribution sequences by Huffman (2007), the study area falls within the distribution area of various cultural groupings originating out of both the Urewe Tradition (eastern stream of migration) and the Kalundu Tradition (western stream of migration). The facies that may be present are:

The Mzonjani facies of the Urewe Tradition, dating to between AD450 and AD750 (Huffman 2007); the Doornkop facies of the Kalundu Tradition (AD750 to AD1000); the Eiland facies of the same tradition dating between AD1000 and AD1300; the Icon facies of the Urewe Tradition (AD1300-1500), as well as the Letaba facies of Kalundu, dating to between AD1600 – AD1840.

Changiuon (1986) describes mainly 5 groups who resided in the area where the town of Pietersburg would later be established, namely Maletzie, Maraba, Zebediela, Ramagoepoe and Chuenie. Bergh (1999) also indicates a number of tribes who resided in the Polokwane area in the 1800's namely the Moletsi/ Kwena, Koni of Matlala, Koni of Dikgale, Koni of Mmamabolo, Koni of Mothiba and also the Ndebele of Langa and Kgaga of Mothapo.

7.3 Historical Information

Few Afrikaner people visited the Zoutpansberg Region before the first Voortrekker Leaders, Louis Tregardt (1783–1838) and Lang Hans van Rensburg crossed the Pietersburg Plateau during 1836. They were merely travelling through the area and only during 1848 did Andries Hendrik Potgieter (1792-1852) arrive to establish a permanent Afrikaner settlement in this part of the world. This was agreed with Tregardt ten years earlier.

Andries Hendrik Potgieter set up the first Afrikaner settlement in Ohrigstad in 1845, some distance from Pietersburg. Later some Voortrekkers moved with Potgieter late in 1848 and settled in a town they called Zoutpansberg-dorp, about 100 km North West of the current town of Polokwane. This was later changed to Schoemansdal.

“Swart” Barend Vorster and some other families settled to the north of the present town during the winter of 1847 in anticipation to the arrival of Potgieter. Potgieter moved to the Zoutpansberg but many Voortrekkers chose farmland on the plateau. Amongst those were ancestors of present day community leaders, including the Vorster, Duvenhage, Snyman, Vercueil and Grobler-families.

Meanwhile, the Volksraad, acting on a request from Potgieter, founded a town in Makapanspoort called Vredenburg. Later renamed Potgietersrus, it became the neighbour of Pietersburg, a town of similar size some 60km to the south, and part of the ZAR.

The constitution of the Republic excluded Black, Indian and Coloured people from exercising equal rights in both Church and State, and the official language was Dutch. The Transvaal tended to rely on Holland for guidance in religious and educational matters, and many teachers and ministers migrated to the ZAR from Holland.

Potgieter died in December 1852, and his son Piet Potgieter succeeded him. In 1854 Hermanus Potgieter, brother of Piet, was killed during clashes with Chief Makapaan. Piet mobilised a command and drove Makapaan into hiding in a cave, where he was besieged. Both Makapaan and Piet Potgieter were killed in the episode, and Vredenburg was renamed Pietpotgietersrus in honour of the leader.

Potgieter’s widow married Stephanus Schoeman, who became Acting Commandant General of the Zoutpansberg in 1855. He renamed the area Schoemansdal, after himself.

The Venda under Magato challenged the Boers’ over grazing and hunting territory and Paul Kruger and his troops were forced to abandon Schoemansdal, which was razed to the ground in 1867.

Many living in Pietpotgietersrus died of malaria, and by April 1870 the town had to be abandoned. They returned in 1890, and made Marabastad, the northernmost point of the ZAR, the seat of the landdrost.

When gold was discovered on the farm Eersteling in 1871, the first gold rush in the Transvaal followed. An influx of uitlanders (foreigners) began to pose a political problem. President Burgers sought to end the isolation of the Transvaal by developing relations with non-English colonial powers, and in 1875 began a round of negotiations with Portugal to secure access to the sea via a rail link to Delagoa Bay.

The British annexed the Transvaal in 1877, rendering the Boers British subjects. The increasingly hostile relations with the Zulu and Pedi became a problem for both the Boers and the British. A bloody war between the Boers, British and Pedi broke out on 28 November 1879, lasting until 2 December of the same year. A white army in alliance with a 12000-strong Swazi contingent defeated the Pedi standing army of 10000, with King Sekhukhune I losing his brothers and sons.

The Boers, unhappy with British domination, rallied and the first Anglo-Boer War broke out from 1880 to 1881. The victory of the Boers, sealed after the Battle of Majuba, led to the granting of self-government – under the suzerainty of the Queen. The victory was celebrated in the Zoutpansberg district on 16 December 1881 initiated a renewed gold rush, with prospectors converging on the village of Marabastad.

With Potgietersrus and Schoemansdal abandoned, the Boers had to decide where to establish a new capital. In 1883 General Petrus Jacobus (Piet) Joubert was appointed to find a site to compensate the Boers who had been forced to leave Schoemansdal 16 years earlier, and the farm Sterkloop was chosen as an appropriate site. Joubert presented his findings to the Executive Council in Pretoria and a land surveyor was appointed to map out the new town, which was called Pietersburg.

The site, the property of BJ Vorster and Gert Emmenis, was bought by the government on 29 January 1884, and land surveyor GR von Wielligh set out 150 plots, 94 of which were given free of charge to people who had lost land in Schoemansdal. The remainder was sold for six pounds each.

According to most records Pietersburg was named after a well-known General, Petrus (Piet) Jacobus Joubert. According to www.sahistory.co.za, however the town was named after of a respected pioneer and elder, one P.J.L. (Pieter) Venter (1811–1894). He was appointed the first Elder of the Hervormde Church, the then State Church of the Z.A.R., in the Ward Zoutpansberg, two years before the Church inaugurated him.

The secretary to the Executive recorded that the new town was to be called Pietersburg, and wrote in the records that it was the Commandant General who had been honoured in this way. Up to today the official records still claim Piet Joubert to be the one whose name was given to this frontier town.

Regarding names of the area and settlement, some more information is available - On the banks of the Sand River, about eight kilometers west of the present-day town, the Pedi people practiced an initiation school, named Polokwane. When ox wagons started moving along the Sand River regularly as from 1848, this institution was moved to maintain the required cloistral placement, but the name for the area was kept alive up to the present day. In February 2002, the city was renamed Polokwane – the Northern Sotho word which means “Place of Safety.” (http://www.polokwane.gov.za/index.php?view_page+493)

The name Upsala (from *Opsaal*, meaning “Saddle Up”) was also used, due to the fact that, just north of the present-day town on the banks of the Sand River the farm Doornkraal was used as gathering point for the Commando when they were needed for military operations. Fred Jeppe, the Government cartographer, wrote in the Journal of the Royal Geographic Society that this place was formerly called Upsala by a landowner who was of Swedish descent. This might have been a reflection on the well-known Oscar Dahl, who originated from Scandinavia, Upsala being a well-known Swedish university town. However, the name Pietersburg was given and as such the village became a town and grew to a city, at present the capital of the Limpopo Province (www.sahistory.co.za).

On the 31st of July 1886 Landdros (Magistrate) Dietlof Siegfred Mare wrote his first official letter from the magistrate’s court and the town was officially recognized. The main street through the city centre is known as “Landdros Mare Street” to this day (www.polokwane.gov.za). He died during 1890 and was laid to rest on his nearby farm at Marabastad. His descendants still farm here. The very next day G.G. Munnik, the later Senator, was named his successor but was only inaugurated on 30 May 1892 *inter alia* as a result of the remoteness of the northern region of the old Transvaal.

By 1888, the railway from Pietersburg to Pretoria was completed.

The inhabitants of New Smitsdorp moved en masse to Pietersburg in 1888, and the population began to increase at a faster rate. In 1889 there were 200 whites, and by 1893 the white population quadrupled to 800.

Of the 52 male land owners in the new town of Pietersburg during 1889, many successors still fill important positions in the present-day city. Anderson was a painter, Basson a farmer, De Bont a land surveyor, Van der Burg a carpenter, Celliers, a teacher, Devenish the land surveyor, Erlank the postmaster, Groenewald a baker and butcher, Jorisson the magistrate clerk, Maré the magistrate, Van der Merwe the policeman, De Waal, a storekeeper as well as Byleveld, Hattingh, Prinsloo, Schuster, Viljoen and De Villiers.

Most of the original inhabitants of the new town came from the Afrikaner Cultural Community, but due to the finding of gold at Eersteling, and the influx of gold diggers and traders, a substantial portion of Pietersburgers were English speaking before the end of the century. Even so music evenings and dance parties, debating and picnics became popular within the Afrikaner community. The Review Circulating Library, founded during the first ten years, was the forerunner of the present day public library.

To many Voortrekkers the Statenbijbel, the old High Dutch version of the Bible, was not only their compass in life, but also the only means to become literate. Therefore, to the people of Pietersburg the education of their children was paramount. After the evacuation of Schoemansdal, the reverend Van Warmelo appointed Mr. Cornelius van Boeschoten as full-time teacher.

This gentleman had to teach without pay for many months, as the community was too poor to remunerate him. Various schools came into being and during 1889 the Dutch (Afrikaans) school in the new town already had 50 scholars, with ward schools at Kalkbank, Marabastad, Rhenosterpoort, Nooitgedacht and Houtboschdorp.

The organised religious life of the Afrikaner had a definite influence on the development of Pietersburg, as in most towns in South Africa where the church played a major role in their establishment. The official church in the Transvaal had been the Hervormde Church, which founded a formal congregation at Schoemansdal in 1853. When the town was evacuated, the then reverend, Reverend Van Warmelo evacuated the church as the community moved south. A corrugated iron church was later erected at Marabastad, some ten kilometers west of where Pietersburg is situated at present. The Cape based Dutch Reformed Church sent a missionary to the north, Stephanus Johannes Gerhardus Hofmeyr (1839-1905). He started working amongst the Buys people, but soon delivered sermons to the Afrikaner people as well (www.sahistory.co.za).

The leadership of these two sister churches rubbed shoulders from the start. The Hervormers being strict Calvinists, were closely linked to the Hervormde Church in the Netherlands. The Dutch Reformed Church had the same origin, but was influenced by the Scottish preachers due to the British annexation of the Cape Colony in 1806. At the time of the establishment of the new town, a movement was launched to unify the Church throughout South Africa. This unification was driven by ministers from the Cape based Dutch Reformed Church and was strongly opposed by many Hervormers. In Pietersburg this nearly led to bloodshed as the United faction (the NG people) under leadership of Commandant “Swart” Barend Vorster, wanted the corrugated iron church to be moved to the new town for their use, but the Hervormers with the magistrates clerk Jorrisen in the lead, refused to let go of their property and threatened to protect same with firearms if the need arose. Due to the discord, the Reverend L.G.F. Biccard, who succeeded Reverend N.J. van Warmelo resigned and became Mine Commissioner, initially in the digger’s town of Nuwe Smitsdorp, and as from 1892 in Pietersburg.

A tense ceasefire was upheld until, following various court cases and discussions, the corrugated iron church was re-erected by the Hervormers in the new town and Reverend M.J. Goddefroy opened the new church for the Hervormers during 1891, situated in Church Street. During 1889 Reverend P.J.J. Boshoff became the first full-time minister of the Dutch Reformed Church, and the congregation built their own church which, today, serves as the photographic museum of the town.

Travelling to Pietersburg and the Zoutpansberg region was a time-consuming activity. From Pretoria to the new town by ox wagon could take up to two weeks. Thus, the trade was slow and development suffered accordingly. To assist with development and upgrade roads, a district council was formed in 1884, taxing all male citizens 2/6 (twenty-five cents) per year Road Tax. In this council people such as P.J. du Preez, J.F. Grobler and Joao Albasini served.

During March 1889, stage coaches came to town. These 18 passenger coaches then took over the weekly postal delivery from the ox wagon from Pretoria. George Heys and the Zeederberg brothers operated the two competing stage lines. A journey by stage coach took two days, from two in the morning till ten at night. During 1891 the need was identified for a railroad to be built. The next year it was reported in the local newspaper that an average of twelve fully laden ox wagons arrived in town daily. “Klein” Barend Vorster, the local Member of the Volksraad (Parliament) supported this new development and on 30 October 1895 the tender of H.J. Schoeman was accepted.

As the new town developed, so did organised sport. The magistrate G.G. Munnik (later to be senator) chaired the Zoutpansberg Turf Club founded in 1892. The same year a billiard club was founded, as well as the Pietersburg Wanderers Club promoting athletics and cycling. Tug of War was also a popular sport. Cricket was played since 1892 and during 1894 the tennis club was founded. On 12 May 1895, the

Pietersburg Football Club played its first game of soccer. (<http://www.sahistory.org.za/polokwane/afrikaans-community-1883-1899?page=8>)

The Pretoria-Pietersburg Railway Company was founded on 13 May 1896 in London, and on 31 May 1899 the official opening of the railroad was celebrated as the first locomotive steamed into the newly developed Pietersburg Station. Daily service, leaving Pietersburg at 6:50 every morning to arrive at Pretoria at 17:50 the afternoon was installed on 2 June and became so popular that on 13 October the same year the Company declared that they were profitable.

The discovery of gold on the Witwatersrand proved to be the undoing of the Boer Republic. It intensified the influx of uitlanders and the subsequent political problems of the Republic. The homogeneity of the Boers was destroyed by the influx, and British influence increased, not least with the influx of foreign capital and a new class of British capitalists. President Kruger was greatly threatened by this development, and refused to make concessions to the British in his midst. The Volksraad tightened the franchise qualifications to limit the number of British voters, while the British Colonial Office began to sponsor the uitlanders, the tensions resulting in the abortive Jameson Raid in 1895.

The development of rail links to Cape Town, Durban and Delagoa Bay also saw a heightening of tensions, bringing tariff and customs rivalries.

When Alfred Milner met Kruger at a June 1899 conference in Bloemfontein, his terms were so uncompromising that no agreement could be reached, and war became inevitable. The South African War broke out in October 1899. Sadly, the outbreak of the Anglo Boer War brought to an end the first chapter of the history of the bastion of the north, the frontier town, Pietersburg. The British built a concentration camp at Pietersburg during the Boer War to house almost 4,000 Boer women and children. The capitulation of the Boers came on 31 May 1902. Sixty representatives of the two Boer states had met to discuss the terms of surrender offered by Britain. (<http://www.sahistory.org.za/pietersburg/colonial-history-polokwane>)

7.3.1 Anglo-Boer War

The Anglo-Boer War was the greatest conflict that had taken place in South Africa up to date, and also affected the Polokwane district. The British built a concentration camp at the then called Pietersburg during the Boer War to house almost 4,000 Boer women and children. Pietersburg was the northernmost camp in the Transvaal system, isolated and difficult to service (www2.lib.uct.ac.za/mss/bccd/Histories/Pietersburg/).

8 Findings of the Survey

It is important to note that only the impact areas of proposed pipeline alignment were surveyed. The pipe lines will traverse a wide variety of environments which range from the central CBD of Polokwane town to the township streets of Seshego as well as old farm lands. This resulted that most of the proposed study area was disturbed and damaged from a heritage point of view. However two Features were recorded that is in close proximity to the pipelines but will not be directly impacted on (Figure 11). These features consist of a formal municipal cemetery (Feature 1) located at 23° 53' 44.6351" S, 29° 26' 16.7028" E and a Late Iron Age stone walled site located at 23° 53' 29.5259" S, 29° 30' 19.0153" E (Feature 2).

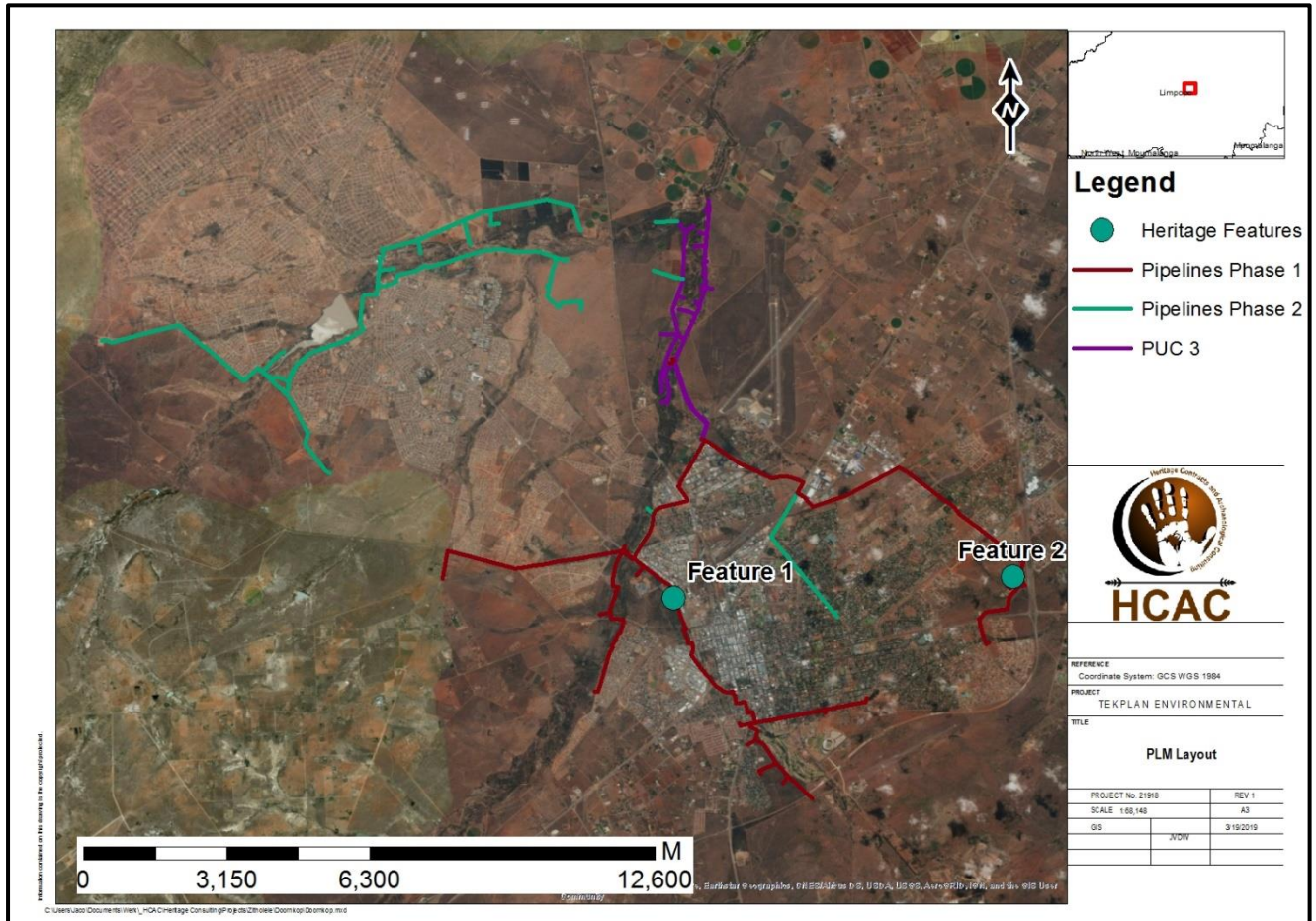


Figure 11: Site distribution map

The findings of the survey are described in terms of Section 34, 35 and 36 of the NHRA (Act 25 of 1999) below.

8.1 Built Environment (Section 34 of the NHRA)

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

8.2 Archaeological resources (Section 35 of the NHRA)

Feature 2:

A partially demolished Late Iron Age stone walled site was identified at this location (Figure 13 – 16). The feature is situated on the summit of a hill that also holds several large reservoirs that possibly impacted and destroyed surface indicators of such features in the area of the existing reservoirs. The stone walled site and the reservoirs are situated on the eastern extent of Polokwane town and are adjacent and on the western side of the N1 highway. The proposed pipe line will pass right in between the identified site and the existing reservoirs and will not impact directly on the recorded feature (Figure 12).

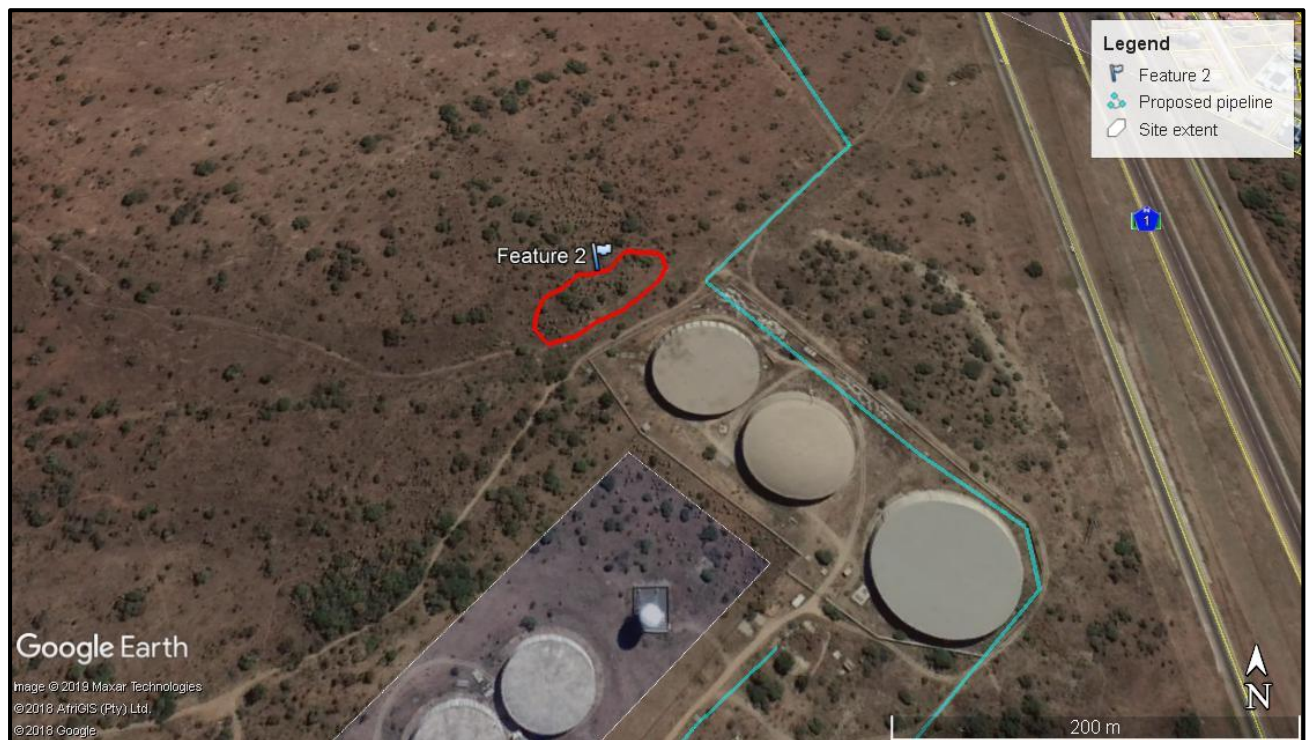


Figure 12: Feature 2 in relation to the proposed pipeline

The identified site consists of numerous sections of low stone packed walling (Figure 13, 15 and 16) which forms enclosures, terraces, scallops and other demarcated areas. The stone walling is low and only serves as an indicator for the demarcation of the different living areas of the settlement identified here. The site covers an area of approximately 70m x 40m, although parts of it were most probably damaged during the construction of the reservoirs and the connecting pipe lines.

The area is overgrown with grass and other vegetation and it was difficult to identify specific features or the exact extent of the site.



Figure 13. Feature 2



Figure 14. Feature 2 – General site conditions



Figure 15. Feature 2



Figure 16. Feature 2

Site significance: Low - Medium Significance
Field Rating: GP B

8.3 Burial Grounds and Graves (Section 36 of the NHRA)

Feature 1

The Polokwane Municipal Cemetery is situated at this location (Figure 18 - 20). The cemetery is situated to the south and west of Nelson Mandela Drive and to the north of Harris Street. It is also situated to the east of Zebediela Street which is situated in the New Pietersburg Extension.



Figure 17: Feature 1 in relation to the proposed pipeline

The proposed pipe line will follow Nelson Mandela Drive on the eastern and northern boundaries of the cemetery. The proposed pipe line is located in the road reserve at this point and will not impact the cemetery directly (Figure 17). The cemetery is very big and large areas are not yet occupied. Smaller areas however have numerous graves within them within the larger cemetery.

Site size: Approximately 1km x 500m in size.



Figure 18. Feature 1 General site conditions



Figure 19. Walled cemetery



Figure 20. Graves in cemetery.

Site Significance: High Social Significance
Field Rating: GP A

8.4 Cultural Landscapes, Intangible and Living Heritage.

Long term impact on the cultural landscape is considered to be negligible as the surrounding area consists of densely developed residential zone. Visual impacts to scenic routes and sense of place are also considered to be low due to the extensive developments in the area.

8.5 Palaeontological Resources (Section 35 of the NHRA)

An independent study was conducted for this aspect. The study conducted by Bamford (2019) concluded that: *The routes are mostly on ancient igneous rocks, granites and granodiorites of the Cleremont Formation, Waterberg Group and these do not have fossils. The pipelines may cross the Sand and Bloed Rivers where Quaternary Kalahari sands are present. These sands however, are fluvially deposited and the rivers are still active so it is extremely unlikely that trace fossils of roots and burrows would be preserved. Since the impact on the fossil heritage is extremely unlikely, the project may proceed as far as the palaeontology is concerned and no site visit is necessary*". Kindly refer to the full report (Bamford 2019)

8.6 Battlefields and Concentration Camps

The British built a concentration camp at Pietersburg during the Boer War to house almost 4,000 Boer women and children. The camp cemetery is located to the south and well away from the study area

8.7 Potential Impact

The chances of impacting unknown archaeological sites in the study area is considered to be low. The possibility of exposing unmarked graves is considered a higher risk. Graves are of high social significance and the impact would be high. Any direct impacts on archaeological resources and unmarked graves that did occur would be during the construction phase only. Cumulative impacts occur from the combination of effects of various impacts on heritage resources. The importance of identifying and assessing cumulative impacts is that the whole is greater than the sum of its parts. In the case of the development, it will, with the recommended mitigation measures and management actions, not impact any heritage resources directly. However, this and other projects in the area could have an indirect impact on the heritage landscape. The lack of any heritage resources in the immediate area minimises additional impact on the landscape.

8.7.1 Pre-Construction phase

It is assumed that the pre-construction phase involves the removal of topsoil and vegetation as well as the establishment of infrastructure needed for the construction phase. These activities can have a negative and irreversible impact on heritage sites. Impacts include destruction or partial destruction of non-renewable heritage resources.

8.7.2 Construction Phase

During this phase, the impacts and effects are similar in nature but more extensive than the pre-construction phase. These activities can have a negative and irreversible impact on heritage sites. Impacts include destruction or partial destruction of non-renewable heritage resources.

8.7.3 Operation Phase:

No impact is envisaged for the recorded heritage resources during this phase.

Nature: During the construction phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological material or objects.		
	Without mitigation	With mitigation (Preservation/ excavation of site)
Extent	Local (3)	Local (3)
Duration	Permanent (5)	Permanent (5)
Magnitude	Moderate (6)	Low (4)
Probability	Probable (3)	Not probable (2)
Significance	42 (Medium)	24 (Low)
Status (positive or negative)	Negative	Negative
Reversibility	Not reversible	Not reversible
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes	Yes
Mitigation: Graves and cemeteries are of high social significance, it is recommended that the cemetery (Feature 1) should be preserved <i>in situ</i> . Construction activities relating to the pipeline at Feature 2 must be monitored. It is further recommended that a management plan and chance find procedure is implemented for the project.		
Cumulative impacts: Due to the lack of significant heritage resources that will be impacted on in the study area cumulative impacts are considered to be low.		
Residual Impacts: Although surface sites can be avoided or mitigated, there is a chance that completely buried sites would still be impacted but this cannot be quantified.		

9 Conclusion and recommendations

Tekplan Environmental was appointed to conduct an Environmental Impact Assessment for the proposed Polokwane Urban Groundwater Project, Limpopo Province. HCAC was appointed to conduct a Heritage Impact Assessment of the proposed project to determine the presence of cultural heritage sites and the impact of the proposed development on these non-renewable resources. The study area was assessed both on desktop level and by a field survey. The field survey was conducted as a non-intrusive pedestrian survey to cover the extent of the development footprint.

The pipe lines will traverse a wide variety of environments which range from the central CBD of Polokwane town to the township streets of Seshego as well as old farm lands. This resulted that most of the proposed study area was disturbed and damaged from a heritage point of view. However two Features were recorded that is in close proximity to the pipelines but **will not be directly impacted on**. These features consist of a formal municipal cemetery (Feature 1) and a Late Iron Age stone walled site (Feature 2).

The municipal cemetery (Feature 1) will be retained *in-situ* and **not directly impacted on** by the proposed pipeline. If any additional graves are located in future they should ideally be preserved in-situ or alternatively relocated according to existing legislation.

The partially demolished Late Iron Age stone walled site (Feature 2) is situated on the summit of a hill that also holds several large reservoirs that possibly impacted and destroyed surface indicators of such features in the area of the existing reservoirs. The proposed pipeline will have **no impact** on the recorded feature but there is a possibility that subsurface features might be exposed in this area during construction and earthworks in this area will require archaeological monitoring. An independent paleontological desktop study (Bamford 2019) found that the impact on the fossil heritage is extremely unlikely, and recommended that the proposed project may proceed without further pre construction work.

During the public participation process conducted for the project no heritage concerns were raised and due to the lack of significant impacts on heritage resources, it is recommended that the proposed project can commence on the condition that the following recommendations are implemented as part of the EMPr and based on approval from SAHRA:

- The cemetery (Feature 1) should be retained *in-situ*;
- The Late Iron Age stone walled site (Feature 2) will not be impacted on by the pipelines, but construction in the area of the site should be monitored by an archaeologist;
- Implementation of a chance find procedure as outlined under Section 9.1 of this report;
- Compilation of a Heritage Management Plan for the project.

9.1 Chance Find Procedures

The possibility of the occurrence of subsurface finds cannot be excluded. Therefore, if during construction any possible finds such as stone tool scatters, artefacts or bone and fossil remains are made, the operations must be stopped and a qualified archaeologist must be contacted for an assessment of the find and therefor chance find procedures should be put in place as part of the EMP. A short summary of chance find procedures is discussed below.

This procedure applies to the developer's permanent employees, its subsidiaries, contractors and subcontractors, and service providers. The aim of this procedure is to establish monitoring and reporting procedures to ensure compliance with this policy and its associated procedures. Construction crews must be properly inducted to ensure they are fully aware of the procedures regarding chance finds as discussed below.

- If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.
- It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area.
- The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify the SAHRA.

9.2 Reasoned Opinion

From a heritage perspective, the proposed project can continue as the impacts of this project on non-renewable heritage resources are considered acceptable. The socio-economic benefits also outweigh the negative impacts of the development

If during the pre-construction phase or during construction, any archaeological finds are made (e.g. graves, stone tools, and skeletal material), the operations must be stopped, and the archaeologist must be contacted for an assessment of the finds. Due to the subsurface nature of archaeological material and graves the possibility of the occurrence of unmarked or informal graves and subsurface finds cannot be excluded, but can be easily mitigated by preserving the sites *in-situ* within the development.

10 References

- Archaeological Database Wits University 2009
- Berg, J.S. (Ed)., *Geskiedenisatlas van Suid-Afrika. Die vier noordelike provinsies*. Edited by J. S. Bergh. 1999. Pretoria: J. L. van Schaik Uitgewers.
- Birkholtz, P. D. 2006 Phase 1 Heritage Impact Assessment for the proposed development portion 13, 23, 52 and 75 of the farm Doornkraal 680 LS Polokwane, Limpopo Province.
- Bulpin, T.V., 1989: *Lost Trails of the Transvaal*. Books of Africa (Pty) Ltd, Johannesburg.
- Deacon, H.J. & Deacon, J. 1999. *Human Beginnings in South Africa: Uncovering the Secrets of the Stone Age*. Cape Town: David Phillips Publishers.
- Changuion, Louis. *Pietersburg: Die eerste eeu 1886-1986*. V & R Printers Pty Ltd: Pretoria, 1986.
- De Vaal, J.B. *Ou Handelsvoetpaaie deur die Laeveld in U. De V. Pienaar, 1990: Neem uit die Verlede*. Nasionale Parkeraad van Suid-Afrika, Pretoria.
- De Vaal, J.B. *Coenraad de Buys – renegaat en baanbreker van Soutpansberg in U. De V. Pienaar, 1990: Neem uit die Verlede*. Nasionale Parkeraad van Suid-Afrika, Pretoria.
- Huffman, T.N. 1982. *Archaeology and ethnohistory of the African Iron Age*. *Annual Review of Anthropology* 11: 133-50.
- Huffman, T.N. 2008. *Historic Impact Assessment for the Noodhulp Caravan Park, Bela Bela, Limpopo*. An unpublished report by Archaeological Resources Management
- Huffman, T.N. 2007. *Handbook to the Iron Age: The Archaeology of Pre-Colonial Farming Societies in Southern Africa*. University of KwaZulu-Natal Press, Scottsville.
- Kuman, K., 1998. *The earliest South African Industries*. In: *Lower Palaeolithic Settlement of the Old World*. Eds by M.D. Petraglia and R. Korisetter, pp 151-186. Routledge Press, London.
- Lewis-Williams, J.D., 1981. *Believing and Seeing: Symbolic Meanings in southern San Rock Paintings*. Academic Press, London.
- Loubser, J.N. 1991. *The Ethnoarchaeology of Venda-speakers in Southern Africa (Navorsing van die Nasionale Museum Bloemfontein 7 (8))*
- Mason, J.R. 1962. *The Prehistory of the Transvaal*. Johannesburg: Witwatersrand University Press.
- Mitchell, P. 2002. *The Archaeology of Southern Africa*. Cambridge: Cambridge University Press.
- Mucina, L. & Rutherford, M.C. 2006. *The vegetation map of South Africa, Lesotho and Swaziland*. SANBI, Pretoria.
- National Heritage Resources Act NHRA of 1999 (Act 25 of 1999)
- Roodt, F. 2001. *Proposed New Powerline from the Witkop Substation to the Proposed New Platinum Smelter in the Pietersburg Area, Northern Province*. An unpublished report by R & R Cultural Resource Consultants
- SAHRA Report Mapping Project Version 1.0, 2009
- Van der Ryst, M.M., 1998. *The Waterburg Plateau in the Northern Province, Republic of South Africa, in the Later Stone Age*. BAR International Series 715, Oxford.
- Van der Ryst, M.M., 2006. *Seeking Shelter: Later Stone Age Hunters, Gatherers and Fishers of Oliboompoot in the western Waterberg south of the Limpopo*. Unpublished doctoral thesis, University of the Witwatersrand, Johannesburg
- Van Schalkwyk, J.A. 2007. *Heritage Impact Assessment for the Planned Tabor-Witkop Power Line, Limpopo Province*. An unpublished report by the National Cultural History Museum
- Van Schalkwyk, J. 2007 *Phase 1 Heritage Resource Impact Assessment (Scoping & Evaluation) Doornkraal, Portion 76 Polokwane, Limpopo Statement With Regard To Heritage Resources Management*.
- Van Vollenhoven, A. J. 2008 *A Report On Two Grave Sites On The Farm Doornkraal 680 LS, Polokwane In The Limpopo Province*.
- Volman, T.P. 1984. *Early prehistory of southern Africa*. In: Klein, R.G. (ed.) *Southern African Prehistory and Palaeoenvironments: 169-220*. Rotterdam: Balkema

Electronic Sources:

<http://www.polokwane.info/about.html>

http://www.polokwane.gov.za/index.php?view_page+493

<http://www.sahistory.org.za/pietersburg/colonial-history-polokwane>

Maps

Topographical Map. 1968. *South Africa. 1:50 000 Sheet. 2329CD Pietersburg, First Edition.* Pretoria: Government Printer.

Topographical Map. 1997. *South Africa. 1:50 000 Sheet. 2329CD Pietersburg, Second Edition.* Pretoria: Government Printer.

Topographical Map. 2008. *South Africa. 1:50 000 Sheet. 2329CD Polokwane, Third Edition.* Pretoria: Government Printer.

11 Appendices:

Curriculum Vitae of Specialist

Jaco van der Walt
Archaeologist

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Education:

Particulars of degrees/diplomas and/or other qualifications:

Name of University or Institution: University of Pretoria
Degree obtained : BA Heritage Tourism & Archaeology
Year of graduation : 2001

Name of University or Institution: University of the Witwatersrand
Degree obtained : BA Hons Archaeology
Year of graduation : 2002

Name of University or Institution : University of the Witwatersrand
Degree Obtained : MA (Archaeology)
Year of Graduation : 2012

Name of University or Institution : University of Johannesburg
Degree : PhD
Year : Currently Enrolled

EMPLOYMENT HISTORY:

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

Countries of work experience include:

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

SELECTED PROJECTS INCLUDE:

Archaeological Impact Assessments (Phase 1)

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

Linear Developments

Archaeological Impact Assessment Link Northern Waterline Project At The Suikerbosrand Nature Reserve
 Archaeological Impact Assessment Medupi – Spitskop Power Line,
 Archaeological Impact Assessment Nelspruit Road Development

Renewable Energy developments

Archaeological Impact Assessment Karoshoek Solar Project

Grave Relocation Projects

Relocation of graves and site monitoring at Chloorkop as well as permit application and liaison with local authorities and social processes with local stakeholders, Gauteng Province.
 Relocation of the grave of Rifle Man Maritz as well as permit application and liaison with local authorities and social processes with local stakeholders, Ndumo, Kwa Zulu Natal.
 Relocation of the Magolwane graves for the office of the premier, Kwa Zulu Natal
 Relocation of the OSuthu Royal Graves office of the premier, Kwa Zulu Natal

Phase 2 Mitigation Projects

Field Director for the Archaeological Mitigation For Booyensdal Platinum Mine, Steelpoort, Limpopo Province. Principle investigator Prof. T. Huffman
 Monitoring of heritage sites affected by the ARUP Transnet Multipurpose Pipeline under directorship of Gavin Anderson.
 Field Director for the Phase 2 mapping of a late Iron Age site located on the farm Kameelbult, Zeerust, North West Province. Under directorship of Prof T. Huffman.
 Field Director for the Phase 2 surface sampling of Stone Age sites effected by the Medupi – Spitskop Power Line, Limpopo Province

Heritage management projects

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

MEMBERSHIP OF PROFESSIONAL ASSOCIATIONS:

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

PUBLICATIONS AND PRESENTATIONS

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

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

REFERENCES:

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