

# Archaeological Impact Assessment

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**FOR THE PROPOSED WATER SUPPLY PIPELINE LINKING EXISTING PIPELINES AT THE PERCY  
FYFE Y-JUNCTION AND THE MOKOPANE HIGH RESERVOIR, LIMPOPO PROVINCE**

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Prepared For

**TEKPLAN ENVIRONMENTAL**

By



# HERITAGE

Contracts and Archaeological Consulting

TEL: +27 82 373 8491. E-MAIL JACO.HERITAGE@GMAIL.COM

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**CLIENT:** Tekplan Environmental  
**CONTACT PERSON:** **Danie Combrink**  
Cell: [015-291 4177](tel:015-2914177)  
Email: [tecoplan@mweb.co.za](mailto:tecoplan@mweb.co.za)

**SIGNATURE:** \_\_\_\_\_

**LEADING CONSULTANT:** Heritage Contracts and Archaeological Consulting CC

**CONTACT PERSON:** Jaco van der Walt  
Heritage Contracts and Archaeological Consulting  
Professional Member of the Association of Southern African  
Professional Archaeologist (#159)

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**SIGNATURE:** \_\_\_\_\_

## EXECUTIVE SUMMARY

**Site name and location:** The Mokopane Y Junction project is located in the Mogalakwena Local Municipality area, Waterberg District, Limpopo Province. The proposed route will run through the following properties: Portions 24, 80 (Remainder) and 140 of the Farm Piet Potgietersrust Town and Townlands 44 KS.

**Purpose of the study:** Archaeological Impact Assessment of the proposed water supply pipeline of approximately 3.5km in length to determine the presence of cultural heritage sites and the impact of the proposed infrastructure on these non-renewable resources.

**1:50 000 Topographic Map:** 2429 AA.

**EIA Consultant:** Tekplan Environmental

**Developer:** Mogalakwena Local Municipality

**Heritage Consultant:** Heritage Contracts and Archaeological Consulting CC (HCAC).

Contact person: Jaco van der Walt Tel: +27 82 373 8491

E-mail jaco.heritage@gmail.com.

**Date of Report:** 27 October 2014

### Findings of the Assessment:

The proposed water pipeline alignment was assessed for sites of archaeological significance. A scatter of decorated and undecorated ceramics was identified (Figure 12) but no other features such as grave sites or structures older than 60 years were identified in the proposed alignment.

There are no fatal flaws in terms of the archaeological component to the project; however management measures as made in section 8 of this report would need to be taken into account to avoid damage to the local heritage. If these recommendations are implemented, subject to approval from SAHRA this project can go ahead.

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- The technology described in any report;
- Recommendations delivered to the Client.

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## Annexure A

Desktop Palaeontological Heritage Impact Assessment Report On The Site Of A Proposed Pipeline To Be Located To The Immediate East Of Mokopane, On Portions 24, 80 (Remainder) And 140 Of The Farm Piet Potgietersrust Town And Townlands 44 Ks, Limpopo Province

## ABBREVIATIONS

AIA: Archaeological Impact Assessment
ASAPA: Association of South African Professional Archaeologists
BIA: Basic Impact Assessment
CRM: Cultural Resource Management
ECO: Environmental Control Officer
EIA: Environmental Impact Assessment*
EIA: Early Iron Age*
EIA Practitioner: Environmental Impact Assessment Practitioner
EMPR: Environmental Management Programme
ESA: Early Stone Age
GPS: Global Positioning System
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
PRHA: Provincial Heritage Resource Agency
SADC: Southern African Development Community
SAHRA: South African Heritage Resources Agency
SAHRIS: South African Heritage Resources Information System

*\*Although EIA refers to both Environmental Impact Assessment and the Early Iron Age both are internationally accepted abbreviations 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 BACKGROUND INFORMATION**

Heritage Contracts and Archaeological Consulting CC has been contracted by Tekplan Environmental to conduct a heritage walkthrough for the proposed infrastructure for the proposed water supply pipeline of approximately 3.5 km in length. The report forms part of the Basic Assessment Report (BAR) and Environmental Management Programme Report (EMPR) for the Mokopane Y Junction Water Supply pipeline.

The aim of the study is to survey the proposed water supply pipeline alignment 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 25 of 1999).

The report outlines the approach and methodology utilized before and during the survey, which includes: Phase 1, review of the HIA for the proposed project; Phase 2, the physical surveying of the area on foot and by vehicle; Phase 3, reporting the outcome of the study.

During the survey one site consisting of a scatter of ceramics were identified within the proposed pipeline corridor. 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.

This report must also be submitted to SAHRA for review.

### **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 identified as significant areas; c) determine the levels of significance of the various types of heritage resources affected by the proposed towers.

#### **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 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 25 of 1999).



## 1.2. Archaeological Legislation and Best Practice

Phase 1, an AIA or a HIA is a pre-requisite for development in South Africa as prescribed by SAHRA and stipulated by legislation. The overall purpose of a 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;
- » Make recommendations for the appropriate heritage management of these impacts.

The AIA or HIA, as a specialist sub-section of the EIA, is required under the National Heritage Resources Act NHRA of 1999 (Act 25 of 1999), Section 23(2)(b) of the NEMA and Sections 39(3)(b)(iii) of the MPRDA.

The AIA should be submitted, as part of the EIA, BIA or EMP, to the PHRA if established in the province or to SAHRA. SAHRA will be ultimately 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 EIA, BIA/EMP, 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 a legal body, 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 AIAs are primarily concerned with the location and identification of 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 from SAHRA by the client 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 reinterment 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).

### **1.3 Description of Study Area**

#### **1.3.1 Location Data**

The project is located in the Mogalakwena Local Municipality area, Waterberg District, Limpopo Province. The proposed route will run through the following properties: Portions 24, 80 (Remainder) and 140 of the Farm Piet Potgietersrust Town and Townlands 44 KS located to the east of Mokopane. The proposed project is mostly located within existing power line, railway line and water line servitudes for a large part within the Mokopane Game Breeding Centre.

The study area falls within the bioregion described by Mucina *et al* (2006) as the Central Bushveld Bioregion with the vegetation described as Polokwane Plateau Bushveld. Land use in the general area is characterized by residential and game breeding facilities. The study area is characterised by deep sandy to loamy soils.

### 1.3.2. Location Map

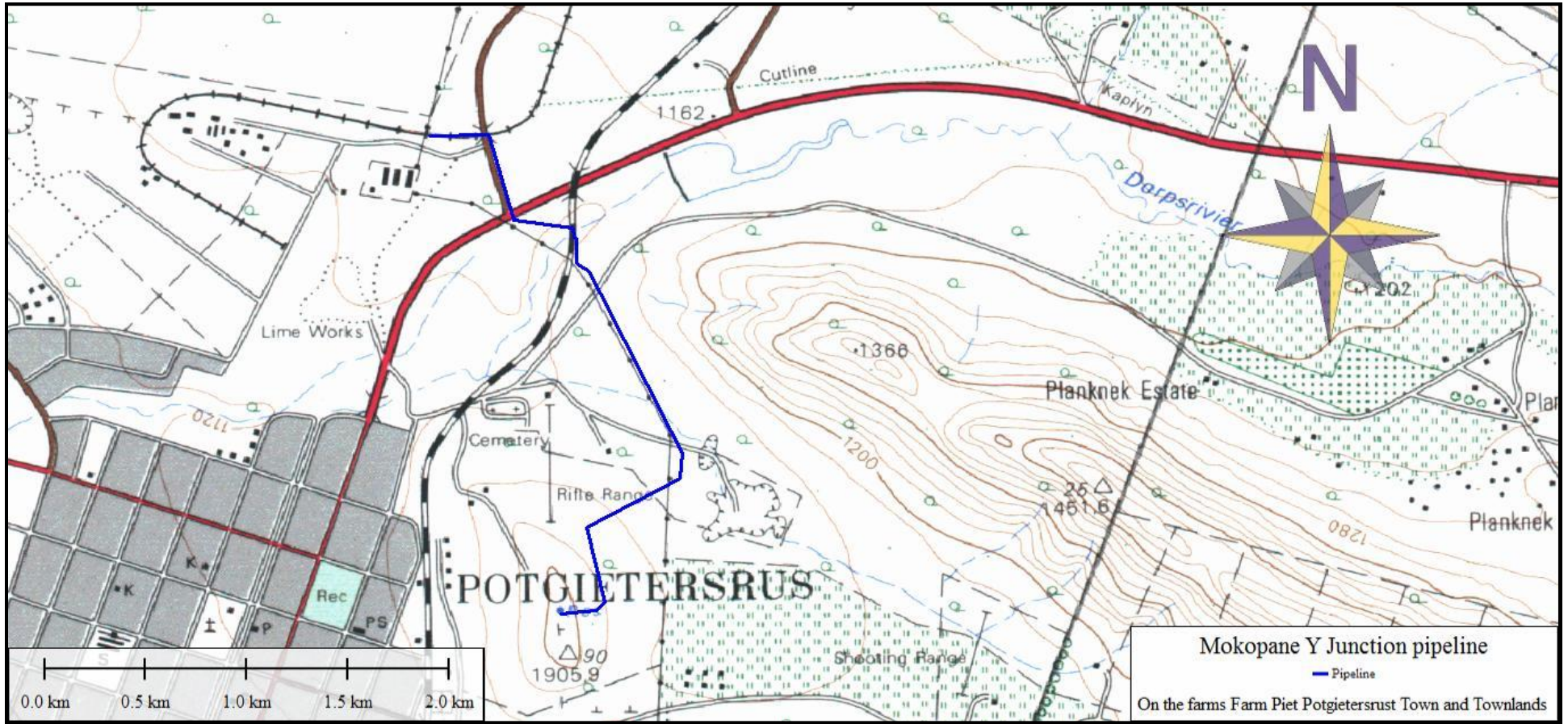


Figure 1: Locality map.

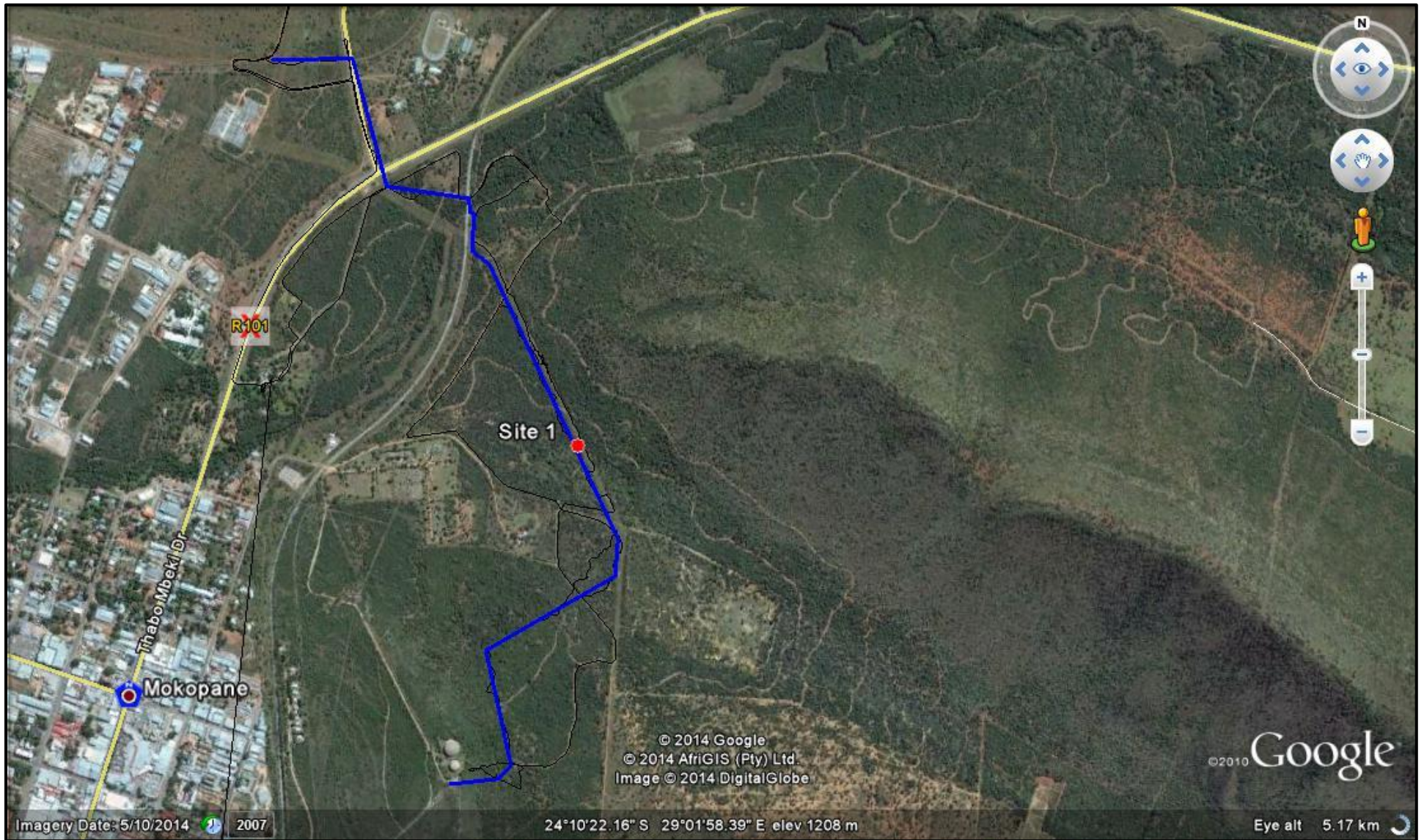


Figure 2: The study area with track logs of the survey in Black.

## **2. APPROACH AND METHODOLOGY**

The methodology used for walk through of linear developments is different to the methodology for projects where AIA's or HIA's are needed. To understand the heritage context of the study area the following phased approach was utilised for this project.

### **2.1 Phase 1**

Phase 1 included a study of published literature and CRM reports for the general study area. CRM reports consulted include Huffman, (1997); Fourie (2002); Pistorius (2002); Roodt (2007); Roodt (2008a & b); Van Schalkwyk, (2011) as well as Karodia and Higgitt (2013). The most important points pertaining to the area is summarised under section 4.2.

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.

### **2.2 Phase 2 - Physical Surveying**

A field survey of the linear development of approximately 3.4 km was conducted by a professional archaeologist. Fieldwork focussed on the proposed pipeline servitude while giving special attention to drainage lines, outcrops, high lying areas and disturbances in the topography. The proposed alignment were surveyed on foot and by vehicle on 17 September 2014. Sites recorded were plotted on 1:50 000 maps and their GPS co-ordinates noted. Digital photographs were taken at all the sites.

### **2.3. Restrictions**

Due to the fact that most cultural remains may occur below surface, the possibility exists that some features or artefacts may not have been discovered/ recorded during the survey. Vegetation and sand cover reduced archaeological visibility. Only the proposed pipe line alignment was surveyed as indicated in the location maps. Although Heritage Contracts and Archaeological Consulting CC surveyed the area as thoroughly as possible, it is incumbent upon the developer to stop operations and inform the relevant heritage agency should further cultural remains, such as stone tool scatters, artefacts, bones or fossils, be exposed during the process of development.

Any changes or deviations of the water supply line will have to be assessed separately.

## **3 NATURE OF THE DEVELOPMENT**

The pipeline will mainly be constructed next to power lines and railway lines. The first 600m of the water pipeline, from the reservoir, will consist of a 400 mm diameter uPVC pipe while the remaining pipeline will consist of a 800 mm diameter steel pipe.

## **4. ARCHAEOLOGICAL AND CULTURAL HISTORIC BACKGROUND**

### **4.1 Palaeontology**

An independent paleontological report was compiled by Prof Barry Millsted (Millsted 2014). Prof Millsted concluded:

“The effects of the required construction operations to the geological strata underlying the project area will be restricted to the late Achaean to early Proterozoic rocks of the Pretoria Group, Transvaal Supergroup. The Pretoria Group rocks are known to be almost completely unfossiliferous. Thus the probability and significance of any negative impact upon the palaeontological heritage of the area is assessed as being nil over the vast majority of the project area. Within a narrow stratigraphic band near the top of the Daspoort Formation (near its boundary with the Silverton Formation) discontinuous, localised richly stromatolitic carbonate beds are known to occur. However, the length and depth of any excavations that may intersect these carbonates will not be significant and, as such, only a small proportion of the rocks would be negatively affected (if at all). Similarly, the stromatolites within the Transvaal Supergroup are not diverse and tend to be similar throughout the units in which they occur. Any destruction of a small area these fossils would not unduly diminish the palaeontological heritage of the unit. The probability and significance of any negative impact occurring in the upper portions of the Daspoort Formation is assessed as being low.

The social benefits of the project have been classified as beneficial, herein, as the project aims to facilitate the provision of water to the community of Mokopane. This desktop study has not identified any palaeontological reason to prejudice the progression of the water supply pipeline project. No damage mitigation protocols need to be implemented to minimise the potential negative impact of the project.”

This report is included as Annexure A.

### **4.2. General History of the area**

By the 19th century, several local Ndebele communities occupied the region, one of the most prominent being the Kekana. 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 ([www.sahistory.co.za](http://www.sahistory.co.za)).

“Swart” Barend Vorster and some other families settled to the north of the present town of Polokwane 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 neighbor of Pietersburg, a town of similar size some 60km to the south, and part of the ZAR. Potgieter died in December 1852, and his son Piet Potgieter succeeded him in 1854.

There was tension between the Boers in and the local populations in the 1850's due to competition for land and the local trade (Tobias, 1945; Bonner, 1983; Delius & Trapido, 1983; Hofmeyr, 1988; Esterhuysen, et al., 2009; Esterhuysen, 2010; Morton, 2005). The clashes between the two groups culminated in the Mugombane siege of 1854 at Historic Cave in the Makapans Valley (Tobias, 1945). Hermanus Potgieter, brother of Piet, was killed during clashes with Chief Makapaan. Piet mobilized a command and drove Makapaan into hiding in a cave, where he was besieged. Both Makapaan and Piet Potgieter were killed in this battle, and Vredenburg was renamed Pietpotgietersrus in honour of the leader ([www.sahistory.co.za](http://www.sahistory.co.za)).

After this siege in 1858 a second group of Ndebele, the Langa of Hlubi (Nguni) origin under the Chief Mankopane, were attacked by a Boer expedition. Around 800 Langa Ndebele were killed. After their defeat, Chief Mankopane settled on Thutlwane Hill which is today located on the farm Kromkloof 744 LR (Jackson, 1969; Jackson, 1982). After this the Ndebele wanted nothing to do with Boers or Europeans. Malaria in this area was a problem and many people left the area ([www.sahistory.co.za](http://www.sahistory.co.za)).

In 1865 the Berlin Mission Station was given permission to establish a mission under W. Moschutz at the foot of Sefakaola Hill (Macalacaskop). Tensions between the Boers and Ndebele caused the mission stations abandonment and it was later used by the Boers as a garrison where they could fire upon Mokopane's chieftom, this resulted in the destruction of the mission station.

The mission was reoccupied in 1868 but in 1877, Mokopane exercised his authority and ousted the missionaries as he decided that it was a good vantage point for his enemies to spy on him. The chief erected an iron structure from the remains of the station as a symbol of his resistance to European interference.

Many colonial people living in Pietpotgietersrus died of malaria, and by April 1870 the town was abandoned. They returned in 1890 and Marabastad became the northernmost point of the ZAR. It was also the seat of the landdrost ([www.sahistory.co.za](http://www.sahistory.co.za)).

In 1890, Mokopane died and his successor was Lekgobo Valtyn. Valtyn's view of literacy was different to that of Mokopane, who regarded writing as Boer Business and refused to adopt it (Hofmeyr, 1991). Valtyn regarded literature as a resource that could be exploited (Hofmeyr, 1991) and therefore he allowed the mission station to be rebuilt. In 1890, a township was unofficially established named after Chief Valtyn. By the early 20th century the Berlin Mission Society began to fence off portions of land which caused tension between local inhabitants and Europeans resulting in what was called 'The Fence War' (Hofmeyr, 1990).

### **4.3. Earlier 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) and also in Makapan Valley in the caves in this 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.

Evidence suggests that the region surrounding the project area has been inhabited during all periods of the Stone Age, including the Early Stone Age (ESA), Middle Stone Age (MSA) and Later Stone Age (LSA). This is most evident and extensively documented at the Cave of Hearths in the Makapans Valley some 20 km to the east (McNabb & Binyon, 2004; Phillipson, 2005). Fourie (2002) reported on a possible ESA core found on the surface to the west of the study area.

Makapans Valley was declared a World Heritage Site in 2005. The UNESCO website states the following: "Fossils found in the many archaeological caves of the Makapan Valley have enabled the identification of several specimens of early hominids, more particularly of Paranthropus, dating back between 4.5 million and 2.5 million years, as well as evidence of the domestication of fire 1.8 million to 1 million years ago." (UNESCO, 2013).

The proposed development is not expected to have a visual impact on the area and the development is located in the servitude of other developments in the area and is not expected to have an impact on the World Heritage Site.

#### **4.4. 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). Previous impact assessments (Huffman, 1997; Fourie, 2002; Pistorius, 2002; Roodt, 2007; Roodt, 2008a; Roodt, 2008b) conducted in the greater study area have all reported stone tool scatters associated with the MSA and LSA. These finds are commonly associated with water sources, such as rivers and pans.

#### **4.5. 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 Oliboempoort Cave (Mason, 1962) and other sites in the Waterberg to the West (Van der Ryst, 1998). According to Bergh (1999) some rock paintings, are known 20 to 30 km north east of Mokopane and the Archaeological database at Wits also have paintings on record to the east of the study area on the Planknek Mountain range. Scatters of stone age artefacts 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.



#### 4.6 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 followed by the Middle and Late 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:

**Urewe Tradition:** Kwale branch- Mzonjani facies AD 450 – 750 (Early Iron Age).

Moloko branch- Icon facies AD 1300 - 1500 (Late Iron Age)

**Kalundu Tradition:** Happy Rest sub-branch - Doornkop facies AD 750 - 1000 (Early Iron Age)

Eiland facies AD 1000 – 1300 (Middle Iron Age)

Klingbeil facies AD 1000 - 1200 (Middle Iron Age)

Letaba facies AD 1600 - 1840 (Late Iron Age)

Based on previous CRM work in the area e.g Huffman, (1997); Fourie (2002); Pistorius (2002); Roodt (2007); Roodt (2008a & b); Van Schalkwyk, (2011) as well as Karodia and Higgitt (2013) and the Archaeological database at Wits the project area may possibly produce sites that span from the Early Iron Age through to the Late Iron Age (LIA). Most notably *Eiland and Moloko facies* ceramics and LIA Ndebele stone walling some of which was excavated by Huffman and Steele (1997).

## 5. HERITAGE SITE SIGNIFICANCE AND MITIGATION MEASURES

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 power line the local extent of its impact necessitates a representative sample and special attention was given to the proposed tower positions. 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:

- » 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;
- » Potential to answer present research questions.

Furthermore, The National Heritage Resources Act (Act No 25 of 1999, Sec 3) 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.

## 5.1. Field Rating of Sites

Site significance classification standards prescribed by SAHRA (2006), and approved 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 8 of this report.

<b>FIELD RATING</b>	<b>GRADE</b>	<b>SIGNIFICANCE</b>	<b>RECOMMENDED MITIGATION</b>
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

## 6. WALK THROUGH FINDINGS-DESCRIPTION OF SITES

This report focuses on the proposed water pipeline known as Mokopane Y junction. Portions of the proposed route were surveyed previously by Nel & De Kamper (2008) who did not record any sites within the study area.

The proposed route largely follows existing infrastructure like roads, power lines and a railway line. The proposed route starts from an existing reservoir going in a northerly direction (Figure 3) through a valley mostly located within the Mokopane Game Breeding property. This area is relatively flat but vegetation is thick in this area (Figure 4 & 6) limiting archaeological visibility. Outside of the Game Breeding centre the area is relatively disturbed, mostly by road construction of the R101 and other secondary roads (Figure 5) and would have obliterated any surface indication of any heritage sites in these areas. To the east of the study area at Planknek mountain range several Iron Age sites are on record (Eiland, Moloko and Ndebele) and some was excavated (Huffman & Steele 1996).

Within the study area one archaeological site was recorded (**Site 1**) at S24 10 24.5 E29 01 42.7 (Figure 11). The site consists of a low density scatter of decorated and undecorated ceramics. The assemblage is very small representing the Eiland ceramic *facies* dating to AD 1000-1300. A single decorated piece was also found that could represent a later *facies* known as Madikwe dating to AD 1500-1700, this is however only one piece and a larger sample is needed but could indicate a multicomponent site. Other archaeological material consists of a broken lower grinder and an upper grinding stone (Figure 7). Due to the lack of visible surface features the site is given a Generally Protected B (GP.B) field rating. Recommendations are included in Section 8 of this report.



Figure 3. Study area viewed from the reservoir.



Figure 4. Thick vegetation in the study area.



Figure 5. Existing road that the water supply line follows.



Figure 6: Existing conditions in the central portion of the study area.



Figure 7. Artefacts found at Site 1.

### 6.1. Site Distribution Map

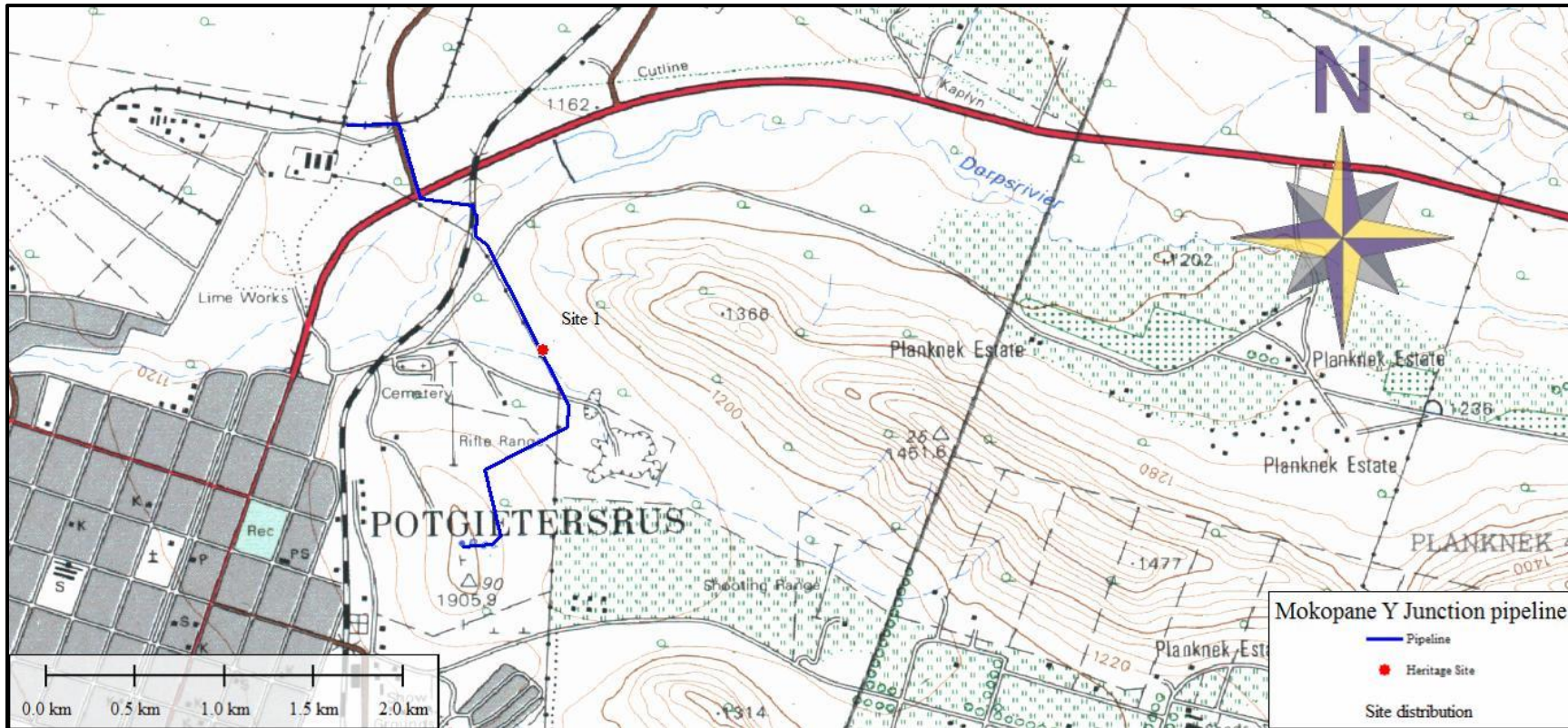


Figure 8: Recorded sites in relation to the proposed project.



## **7. Potential Impact**

### **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 road infrastructure needed for the construction phase. These activities can have a negative and irreversible impact on all of the recorded heritage sites. Impacts include destruction or partial destruction of non-renewable heritage resources.

### **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 all of the recorded heritage sites. Impacts include destruction or partial destruction of non-renewable heritage resources.

### **7.3. Operation Phase:**

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

## 8. CONCLUSIONS AND RECOMMENDATIONS

One archaeological site consisting of a scatter of ceramics dating to the Eiland *facies* (AD 1000-1300) was recorded during the walk through for the project. No archaeological features (huts, middens etc.) were recorded on the site and archaeological material was restricted to a low density scatter of ceramics, a broken lower grinder and upper grinder. A single decorated piece that could represent another ceramic *facies* known as Madikwe dating to AD 1500-1700 was noted that could indicate a multicomponent site. This statement is tentative at least and a closer investigation of a larger decorated assemblage is necessary to confirm this.

Due to the lack of visible surface features where archaeological mitigation could be focussed no preconstruction archaeological mitigation is recommended for the project. However as site extent etc. is unknown due to the subsurface nature of archaeological sites it is recommended that the area around site 1 is monitored during construction. It is recommended that the site must be visited by an archaeologist after bush clearing during the pre-construction as well as construction phase.

No cultural landscape elements were noted in the proposed corridor. Visual impacts to scenic routes and sense of place are also considered to be low as the line follows existing development servitudes. Although a large section (southern portion) of the proposed line is located in the western periphery of the buffer zone of the Makapan Valley World Heritage Site it is not envisaged that the Mokopane Y junction project will have any effect on the outstanding universal value of the Makapan Valley World Heritage Site.

Due to the subsurface nature of archaeological material and unmarked graves the possibility of the occurrence of subsurface finds can thus not be excluded. And 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 producers is discussed below.

### **Chance finds procedure**

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 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, 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.

If the recommendations as made in section 8 of this report are adhered to (subject to approval from SAHRA) there is from an archaeological point of view no reason why the proposed project should not proceed.

## **9. PROJECT TEAM**

Jaco van der Walt, Project Manager and Archaeologist

## **10. STATEMENT OF COMPETENCY**

I (Jaco van der Walt) am a member of ASAPA (no 159), and accredited in the following fields of the CRM Section of the association: Iron Age Archaeology, Colonial Period Archaeology, Stone Age Archaeology and Grave Relocation. This accreditation is also valid for/acknowledged by SAHRA and AMAFA.

I have been involved in research and contract work in South Africa, Botswana, Zimbabwe, Mozambique, DRC and Tanzania; having conducted more than 400 AIAs since 2000.

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