

**PHASE 1 ARCHAEOLOGICAL  
IMPACT ASSESSMENT**

**for**

**Environmental Assurance  
(Pty) Ltd**

**on**

**a portion of portion 410 of the  
farm Waterkloof 305 JQ,  
Rustenburg, North West**

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## Executive Summary

The author was appointed by Environmental Assurance (Pty) Ltd to undertake an Archaeological Phase 1 study for Millsell Chrome Mine on the demarcated portion of portion 410 of the farm Waterkloof 305 JQ, Rustenburg, North West. The study area is located about 7km southeast of Rustenburg and 50km west-southwest of Brits. The aim of the study is to determine the scope of archaeological resources which could be impacted on by the proposed development of a new tailings dam.

Due to no visible material remains within the areas demarcated for development pertaining to heritage resources and subject to adherence of the recommendations and approval by SAHRA the development of the proposed tailings dam may continue. Should skeletal remains be exposed during development and construction phases, all activities must be suspended and the relevant heritage resources authority contacted (See National Heritage and Resources Act, 25 of 1999 section 36 (6)). Also, should culturally significant material be discovered during the course of the said development, all activities must be suspended pending further investigation by a qualified archaeologist.

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# 1. Project Background

## 1.1 Introduction

Environmental Assurance (Pty) Ltd appointed the author to undertake an Archaeological Phase 1 study for Millsell Chrome Mine on the demarcated portion of portion 410 of the farm Waterkloof 305 JQ, Rustenburg, North West Province (**Figures 1 & 2**). The purpose of this study is to examine the demarcated portion in order to determine if any archaeological resources of heritage value will be impacted on by the proposed construction of a tailings dam, as well as to archaeologically contextualise the general study area. The aim of this report is to provide the developer with information regarding the location of heritage resources on the portion demarcated for development.

In the following report, I discuss the implication for the construction of the tailings dam on the demarcated portion of portion 410 of the farm Waterkloof 305 JQ with regard to heritage resources. The legislation section included serves as a guide towards the effective identification and protection of heritage resources and will apply to any such material unearthed during development and construction phases on the demarcated study area.

## 1.2 Legislation

The South African Heritage Resources Agency (SAHRA) aims to conserve and control the management, research, alteration and destruction of cultural resources of South Africa and to prosecute if necessary. It is therefore crucially important to adhere to heritage resource legislation contained in the Government Gazette of the Republic of South Africa (Act No.25 of 1999), as many heritage sites are threatened daily by development. Conservation legislation requires an impact assessment report to be submitted for development authorisation that must include an AIA if triggered.

AIAs should be done by qualified professionals with adequate knowledge to (a) identify all heritage resources that might occur in areas of development and (b) make recommendations for protection or mitigation of the impact of the sites.

### 1.2.1 The EIA and AIA processes

Phase 1 Archaeological Impact Assessments generally involve the identification of sites during a field survey with assessment of their significance, the possible impact development might have and relevant recommendations.

All Archaeological Impact Assessment reports should include:

- a. Location of the sites that are found;
- b. Short descriptions of the characteristics of each site;

- c. Short assessments of how important each site is, indicating which should be conserved and which mitigated;
- d. Assessments of the potential impact of the development on the site(s);
- e. In some cases a shovel test, to establish the extent of a site, or collection of material, to identify the associations of the site, may be necessary (a pre-arranged SAHRA permit is required); and
- f. Recommendations for conservation or mitigation.

This AIA report is intended to inform the client about the legislative protection of heritage resources and their significance and make appropriate recommendations. It is essential to also provide the heritage authority with sufficient information about the sites to enable the authority to assess with confidence:

- a. Whether or not it has objections to a development;
- b. What the conditions are upon which such development might proceed;
- c. Which sites require permits for mitigation or destruction;
- d. Which sites require mitigation and what this should comprise;
- e. Whether sites must be conserved and what alternatives can be proposed to relocate the development in such a way as to conserve other sites; and
- f. What measures should or could be put in place to protect the sites which should be conserved.

When a Phase 1 AIA is part of an EIA, wider issues such as public consultation and assessment of the spatial and visual impacts of the development may be undertaken as part of the general study and may not be required from the archaeologist. If, however, the Phase 1 project forms a major component of an AIA it will be necessary to ensure that the study addresses such issues and complies with Section 38 of the National Heritage Resources Act.

## 1.2.2 Legislation regarding archaeology and heritage sites

*National Heritage Resource Act No.25 of April 1999*

Buildings are among the most enduring features of human occupation, and this definition therefore includes all buildings older than 60 years, modern architecture as well as ruins, fortifications and Farming Community settlements. The Act identifies heritage objects as:

- objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects, meteorites and rare geological specimens;

- visual art objects;
- military objects;
- numismatic objects;
- objects of cultural and historical significance;
- objects to which oral traditions are attached and which are associated with living heritage;
- objects of scientific or technological interest;
- books, records, documents, photographic positives and negatives, graphic material, film or video or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996), or in a provincial law pertaining to records or archives;
- any other prescribed category.

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

*“No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.”* (34. [1] 1999:58)

and

*“No person may, without a permit issued by the responsible heritage resources authority:*

- (a) *destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;*
- (b) *destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;*
- (c) *trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or*
- (d) *bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.”*(35. [4] 1999:58)

and

*“No person may, without a permit issued by SAHRA or a provincial heritage resources authority:*

- (a) *destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;*
- (b) *destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority;*
- (c) *bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) and excavation equipment, or any equipment which assists in the detection or recovery of metals.” (36. [3] 1999:60)*

On the development of any area the gazette states that:

*“...any person who intends to undertake a development categorised as:*

- (a) *the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;*
- (b) *the construction of a bridge or similar structure exceeding 50m in length;*
- (c) *any development or other activity which will change the character of a site-*
  - i. *exceeding 5000m<sup>2</sup> in extent; or*
  - ii. *involving three or more existing erven or subdivisions thereof; or*
  - iii. *involving three or more erven or divisions thereof which have been consolidated within the past five years; or*
  - iv. *the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;*
- (d) *the re-zoning of a site exceeding 10000m<sup>2</sup> in extent; or*
- (e) *any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.” (38. [1] 1999:62-64)*

and

*“The responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection (2)(a): Provided that the following must be included:*

- (a) *The identification and mapping of all heritage resources in the area affected;*



- (b) *an assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6(2) or prescribed under section 7;*
- (c) *an assessment of the impact of the development on such heritage resources;*
- (d) *an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;*
- (e) *the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;*
- (f) *if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and*
- (g) *plans for mitigation of any adverse effects during and after the completion of the proposed development.”*  
(38. [3] 1999:64)

#### *Human Tissue Act and Ordinance 7 of 1925*

The Human Tissues Act (65 of 1983) and Ordinance on the Removal of Graves and Dead Bodies (Ordinance 7 of 1925) protects graves younger than 60 years. These fall under the jurisdiction of the National Department of Health and the Provincial Health Departments. Approval for the exhumation and re-burial must be obtained from the relevant Provincial MEC as well as the relevant Local Authorities. Graves 60 years or older fall under the jurisdiction of the National Heritage Resources Act as well as the Human Tissues Act, 1983.

## 2. Study Area and Project Description

### Location & Physical environment

The study area is located in the North West Province and lies 13km southeast of Rustenburg within the Bojanala District Municipality and Rustenburg Local Municipality. Brits lies roughly 50km to the east-northeast. The N4 Highway lies roughly 250m to the southeast while the R104 is located about 500m to the northeast. In terms of vegetation the study area falls within the Savannah Biome, Central Bushveld Bioregion and Marikana Thornveld vegetation unit (Mucina & Rutherford 2006). According to Mucina & Rutherford (2006) this vegetation unit has a conservation status of endangered (Mucina & Rutherford 2006). The conservation target for this vegetation unit is 19% with less than 1% statutorily conserved. This vegetation unit is considerably impacted with 48% transformed by cultivation and built-up areas. The western section of this unit, in the vicinity of Rustenburg, is mainly threatened by agriculture while the eastern section near Pretoria is threatened by industrial development. Erosion is generally low to moderate within the Marikana Thornveld while alien invasive plant species may occur localised in high densities, especially in drainage lines. The Savannah Biome covers approximately 32.8% of South Africa (Mucina & Rutherford 2006).

The study area is generally level while slightly sloping towards the north. The elevation of the study area is 1164 metres above sea level. The underlying geology is norite and is also responsible for the black turf soils common in the area (Robinson 2015). The location demarcated for the tailings dam is roughly 465 X 200m, making the rectangular shape suitable for a tailings dam.

The study area falls within the summer rainfall region. The mean annual precipitation is 513mm with the majority of rainfall occurring during mid-summer. The annual average temperature may vary between a maximum of 28.6 °C in summer and a minimum of 1.7 °C during winter months (Sa Explorer 2015).

The study area falls within the Quaternary Drainage Region A22H. This region forms part of the Limpopo River Catchment and is located within the Crocodile West and Marico Water Management Area. The closest surface water to the area of planned development is a non-perennial river located roughly 1.3 km to the east. The closest perennial rivers to the study area are the Selons River 20km to the west and the Sterkstroom 20km to the west.

The land on which the proposed development will take place belongs to Samancor and was previously utilised for cultivation. It is also evident from aerial photographs that the area was ploughed. The north-eastern corner of the demarcated area is currently used as a rock storage facility with dimensions roughly 75 X 85 m. A brick making facility borders the study area to the north and farmland to the west while two existing tailings dams are located to the east thereof. Two residential properties are located to the south of the study area.

## **Project description**

The Millsell Chrome Mine is running short of tailings disposal facilities. Land was therefore bought to the west of two existing tailings dams (1 & 2) for the construction of a third. The new tailings dam, bordering two other tailings dams to the east, will be developed to a height of between four and five metres. Thereafter the new tailings dam will slope away in order to allow re-mining of the existing tailings dams. Upon completion of the re-mining of the existing dams, the deposition onto the new tailings dam will stop as well. The existing dams will then be redeveloped. Upon completing this process, the existing two dams can be consolidated into a single compartment. This will allow the combined dam to be raised further and extend its life (Robinson 2015).

The current development strategy suggests that the re-mining process will be completed by 2033. This will mean that tailings dam 1 will have an available capacity of 1.8Mt for current arisings and allow another 19 years of mining. By that time all three dams could be consolidated and raised another 5 metres, allowing the life of the mine to be extended another 10 years to 2062 (Robinson 2015).

The new tailings dam will be built similarly to the two existing dams with the exception of a liner being included under the dam. This will be done as it is required by the DWA in order to separate seepage from the tailings dam from clean ground water (Robinson 2015).

Pre-deposition infrastructure for the new tailings dam will include the following:

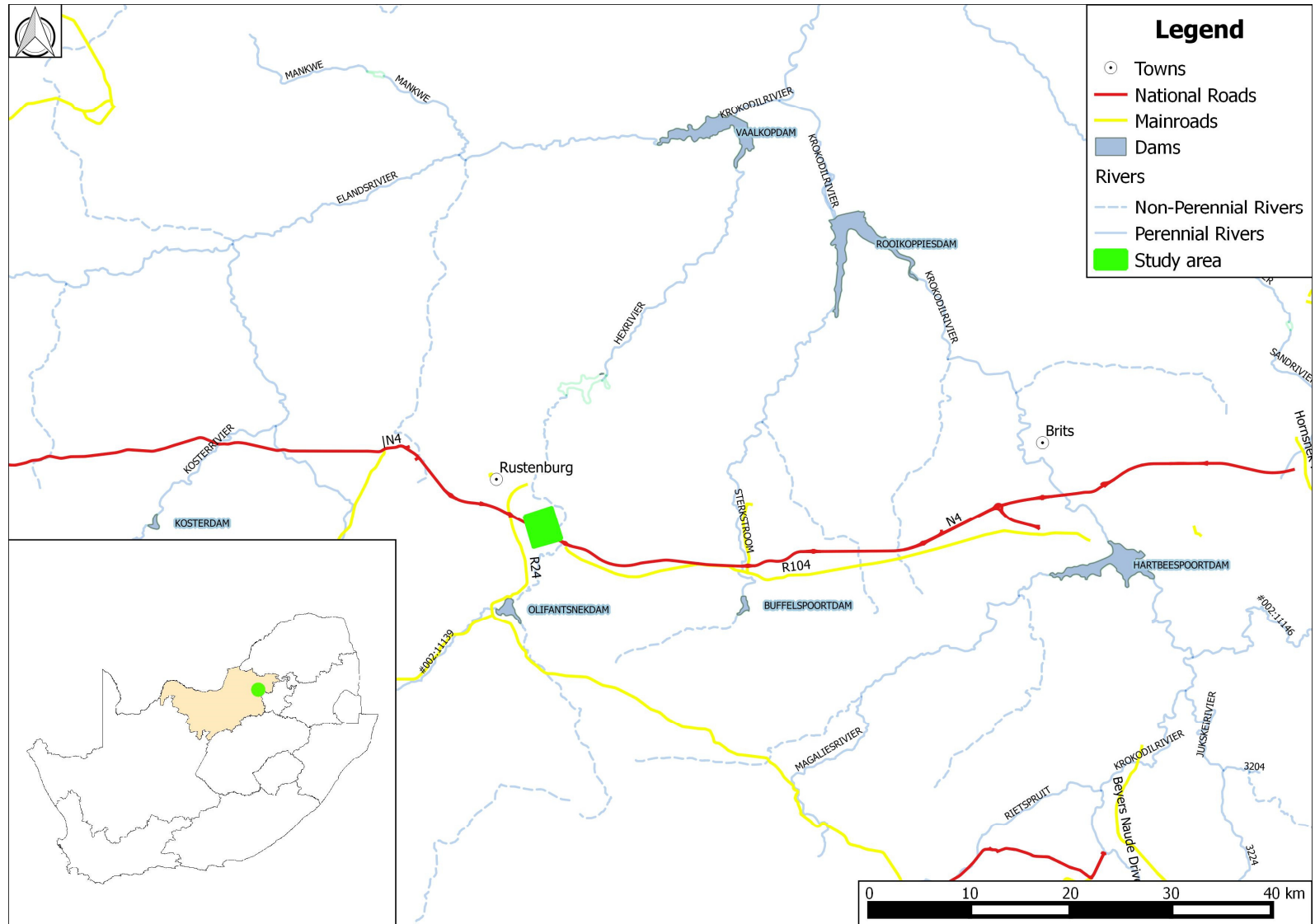
- Relocating or extending the existing mine electrified fence to include the area of planned development
- Relocating trees along the western side of one of the existing tailings dams to the southern boundary
- Removing the earth bund wall from tailings dam two's western side and replacing it within the new boundary
- Stripping of  $\pm 200$ mm of soil and vegetation from the footprint of the proposed tailings dam
- Excavation of a profiled borrow trench around the edge of the basin
- Smoothing and compaction of the basin footprint
- Installation of the penstock inlet tower base and outlet pipe
- Installation of a concrete base at the centre for a 30m high mast flood light
- Formation of the toe wall
- Shaping and compaction of the wall footprint between the heel and toe walls
- Installation of filter drain outlet pipes
- Installation of a buried drain collection pipe around the perimeter
- Installation of perimeter filter drain
- Installation of liner
- Excavation for and construction of twin reinforced concrete silt traps

- Provision for electrical power for return water pumps and floodlight
- Provision and installation of return water pumps
- Provision and installation of return water pipe
- Formation of access/road ramp
- Provision and installation of slurry pipe lines.

The proposed tailings dam's footprint will be roughly 9.3 ha and is located towards the southern section of portion 410 of the farm Waterkloof 305 JQ (**Table 1 & Figure 2**).

**Table 1:** Property name & coordinates

<b>Property</b>	<b>Site &amp; Portion</b>	<b>Map Reference (1:50 000)</b>	<b>Coordinates</b>
Waterkloof 305 JQ	A portion of portion 410	2527 CB	S: -25.713934 E: 27.288020



**Figure 1:** Regional and Provincial location of the study area.

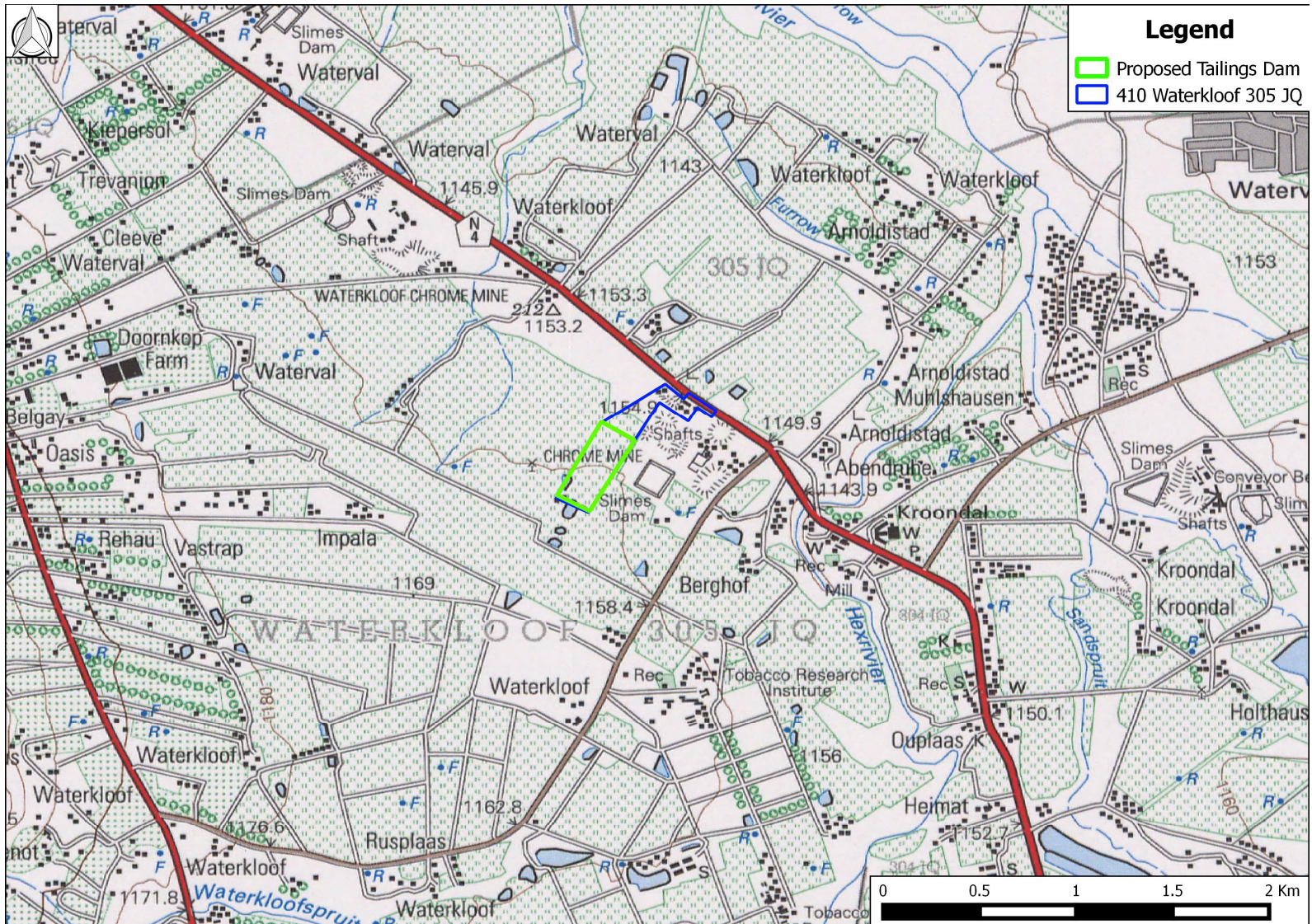


Figure 2: Segment of SA 1: 50 000 2527 CB indicating the study area.

## 2.1 Archaeological Background

Southern African archaeology is broadly divided into the Early, Middle and Later Stone Ages; Early, Middle and Late Iron Ages; and Historical or Colonial Periods. This section of the report provides a general background to archaeology in South Africa and also focuses on more site specific elements where relevant.

### 2.1.1 General Archaeological Context

#### The Stone Age

The earliest stone tool industry, the Oldowan, was developed by early human ancestors which were the earliest members of the genus *Homo*, such as *Homo habilis*, around 2.6 million years ago. It comprises tools such as cobble cores and pebble choppers (Toth & Schick 2007). Archaeologists suggest these stone tools are the earliest direct evidence for culture in southern Africa (Clarke & Kuman 2000). The advent of culture indicates the advent of more cognitively modern hominins (Mitchell 2002: 56, 57)

The Acheulean industry completely replaced the Oldowan industry. The Acheulean industry was first developed by *Homo ergaster* between 1.8 to 1.65 million years ago and lasted until around 300 000 years ago. Archaeological evidence from this period is also found at Swartkrans, Kromdraai and Sterkfontein. The most typical tools of the ESA are handaxes, cleavers, choppers and spheroids. Although hominins seemingly used handaxes often, scholars disagree about their use. There are no indications of hafting, and some artefacts are far too large for it. Hominins likely used choppers and scrapers for skinning and butchering scavenged animals and often obtained sharp ended sticks for digging up edible roots. Presumably, early humans used wooden spears as early as 5 million years ago to hunt small animals.

Middle Stone Age artefacts started appearing about 250 000 years ago and replaced the larger Early Stone Age bifaces, handaxes and cleavers with smaller flake industries consisting of scrapers, points and blades. These artefacts roughly fall in the 40-100 mm size range and were, in some cases, attached to handles, indicating a significant technical advance. The first *Homo sapiens* species also emerged during this period. Associated sites are Klasies River Mouth, Blombos Cave and Border Cave (Deacon & Deacon 1999).

Although the transition from the Middle Stone Age to the Later Stone Age did not occur simultaneously across the whole of southern Africa, the Later Stone Age ranges from about 20 000 to 2000 years ago. Stone tools from this period are generally smaller, but were used to do the same job as those from previous periods; only in a different, more efficient way. The Later Stone Age is associated with: rock art, smaller stone tools (microliths), bows and arrows, bored stones, grooved stones, polished bone tools, earthenware pottery and beads. Examples of Later Stone Age sites are Nelson Bay Cave, Rose Cottage Cave and Boomplaas Cave (Deacon & Deacon 1999).

## The Iron Age & Historical Period

The Early Iron Age marks the movement of farming communities into South Africa in the first millennium AD, or around 2500 years ago (Mitchell 2002:259, 260). These groups were agro-pastoralist communities that settled in the vicinity of water in order to provide subsistence for their cattle and crops. Archaeological evidence from Early Iron Age sites is mostly artefacts in the form of ceramic assemblages. The origins and archaeological identities of this period are largely based upon ceramic typologies. Some scholars classify Early Iron Age ceramic traditions into different “streams” or “trends” in pot types and decoration, which emerged over time in southern Africa. These “streams” are identified as the Kwale Branch (east), the Nkope Branch (central) and the Kalundu Branch (west). Early Iron Age ceramics typically display features such as large and prominent inverted rims, large neck areas and fine elaborate decorations. This period continued until the end of the first millennium AD (Mitchell 2002; Huffman 2007). Some well-known Early Iron Age sites include the Lydenburg Heads in Mpumalanga, Happy Rest in the Limpopo Province and Mzonjani in Kwa-Zulu Natal.

The Middle Iron Age roughly stretches from AD 900 to 1300 and marks the origins of the Zimbabwe culture. During this period cattle herding appeared to play an increasingly important role in society. However, it was proved that cattle remained an important source of wealth throughout the Iron Age. An important shift in the Iron Age of southern Africa took place in the Shashe-Limpopo basin during this period, namely the development of class distinction and sacred leadership. The Zimbabwe culture can be divided into three periods based on certain capitals. Mapungubwe, the first period, dates from AD 1220 to 1300, Great Zimbabwe from AD 1300 to 1450, and Khami from AD 1450 to 1820 (Huffman 2007: 361, 362).

The Late Iron Age roughly dates from AD 1300 to 1840. It is generally accepted that Great Zimbabwe replaced Mapungubwe. Some characteristics include a greater focus on economic growth and the increased importance of trade. Specialisation in terms of natural resources also started to play a role, as can be seen from the distribution of iron slag which tend to occur only in certain localities compared to a wide distribution during earlier times. It was also during the Late Iron Age that different areas of South Africa were populated, such as the interior of KwaZulu Natal, the Free State, the Gauteng Highveld and the Transkei. Another characteristic is the increased use of stone as building material. Some artefacts associated with this period are knife-blades, hoes, adzes, awls, other metal objects as well as bone tools and grinding stones.

The Historical period mainly deals with Europe’s discovery, settlement and impact on southern Africa. Some topics covered by the Historical period include Dutch settlement in the Western Cape, early mission stations, Voortrekker routes and the Anglo Boer War. This time period also saw the compilation of early maps by missionaries, explorers, military personnel, etc. **Figure 3** indicates the rough location of the study area as perceived by Merensky in 1875.





Figure 3: Rough indication of the study area on a map compiled by Merensky (Extract from: Merensky 1875).

### Rustenburg Archaeo-History

During the 19<sup>th</sup> century the Kwena and Kgatla occupied the general area north of Pretoria. These areas included the Apies, Crocodile, and Pienaars Rivers, as well as Magaliesberg, Brits, Rustenburg, Bela-Bela, Modimolle, Pilanesberg and the Waterberg. These groups were disturbed during the *difaqane* by Mzilikazi's Ndebele but returned afterwards. Examples of Kwena and Kgatla communities during these times include: Mogôpa-Kwena, Kwena, Modimosana ba Maake-Kwena, Modimosana ba Mmatau-Kwena, Modimosana ba Matlhaku-Kwena, Kgafêla-Kgatla, Mosêthla-Kgatla, Mmakau-Kgatla and the Motsha-Kgatla (Bergh 1998a: 106).

Early in the 19<sup>th</sup> Century the Fokeng was present in the vicinity of present day Rustenburg as well. Traditionally their territory stretched from the Magaliesberg in the south to probably the Elands River in the north. In the west their territory stretched from the Selons River to the roughly the area where the Mogôpa-Kwena resided near Sterkstroom in the east. Clashes with the Tlokwa, Kgafêla-Kgatla and the Pedi during the first two decades of the 19<sup>th</sup> Century, however, weakened the position of the Fokeng. With the arrival of Mzilikazi shortly afterwards the Fokeng moved further in a southern direction across the Vaal River. Other groups that resided in the vicinity of Rustenburg during these times were the Taung, Tlokwa, Po and Phiring (Bergh 1998a: 106-107).

According to J. van Schalkwyk (2007: 3), who conducted a phase one HIA on various farm portions of the farm Waterkloof 305 JQ, the larger farm originally belonged to Paul Kruger during the early 1840s. Kruger resided on

the farm until about 1873 when he moved the farm Boekenhoutkloof. Accordingly his farmstead on the farm Waterkloof 305 JQ still exists. Also, a strong German community was established in the vicinity of the Hermansburg mission station on the farm Kroondal (Van Schalkwyk 2007: 3).

When the Magaliesberg congregation split from Potchefstroom in 1850 plans were made for the establishment of Rustenburg. The suggestion by Andries Pretorius to appoint a landdroos in Rustenburg was approved in January 1851 and P.J. van Staden was appointed (Bergh 1998b: 130).

### 3. Methodology

I conducted archaeological reconnaissance of the study area through a systematic pedestrian site survey. The transects were spaced roughly 50m apart and stretched in a NNE – SSW direction (**Figure 4**). Sites or points of interest were recorded via GPS (Global Positioning System) location and photographic record. Also, the site was inspected beforehand on Google as well as black and white aerial imagery in order to identify possible heritage remains. No remains, however, were observed on aerial imagery. The total area surveyed was roughly 9.3 hectare.

The reconnaissance of the area under investigation served a twofold purpose:

- To obtain an indication of heritage material found in the general area as well as to identify or locate archaeological sites on the demarcated portion of portion 410 of the farm Waterkloof 305 JQ. This was done in order to establish a heritage context and to supplement background information that would benefit the developing company through identifying areas that are sensitive from a heritage perspective.
  
- All archaeological and historical events have spatial definitions in addition to their cultural and chronological context. Where applicable, spatial recording of these definitions were done by means of a handheld GPS during the site visit.



**Figure 4:** Study area with survey transects.

### 3.1 Sources of information

At all times during the survey I followed standard archaeological procedures for the observation of heritage resources. As most archaeological material occurs in single or multiple stratified layers beneath the soil surface, I paid special attention to disturbances; both man-made such as roads and clearings, and those made by natural agents such as burrowing animals and erosion. I recorded general conditions on the terrain with a Sony Cyber-shot camera and recorded GPS tracks with a Garmin Oregon 550 GPS.

I conducted a literature study, which incorporated previous work done in the region, in order to place the study area into context from a heritage perspective.

### 3.2 Limitations

The vegetation on the study area consists of short grass cover and it is clear that the area used to be cultivated and was ploughed (**Figures 5 - 9**). The general visibility was good during the time of surveying (May 2015).



**Figure 5:** Environment from the south-western corner with existing tailings dams in the background.



**Figure 6:** Environment from the north-western corner.



**Figure 7:** Environment from the north-eastern corner indicating the rock storage facility.



**Figure 8:** Study area from mid-eastern boundary.



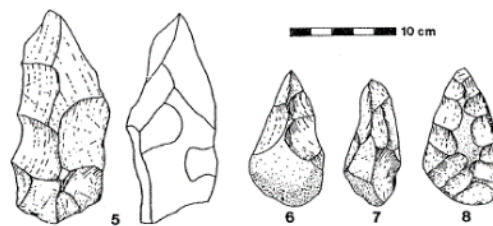
**Figure 9:** Environment from the south-eastern corner.

## 4. Archaeological and Historical Remains

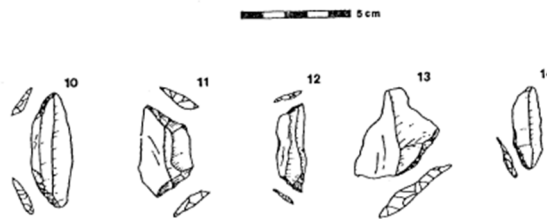
### 4.1 Stone Age Remains

I found no Stone Age archaeological remains on the demarcated portion of portion 410 of the farm Waterkloof 305 JQ.

Although no Stone Age archaeological remains were visible, remains might occur in the area. These artefacts are often associated with rocky outcrops or water sources. **Figures 10 - 12** below are examples of stone tools often associated with the Early, Middle and Later Stone Age of southern Africa.



**Figure 10:** ESA artefacts from Sterkfontein (Volman 1984).



**Figure 11:** MSA artefacts from Howiesons Poort (Volman 1984).



**Figure 12:** LSA scrapers (Klein 1984).

### 4.2 Iron Age Farmer Remains

I found no Iron Age Farmer archaeological remains on the demarcated portion of portion 410 of the farm Waterkloof 305 JQ.

The study conducted by Van Schalkwyk (2007) states that the owner of the farm, Mr G. Wenhold, is not aware of any stone walled sites.

Julius Pistorius (2007) surveyed a corridor for the construction of an Eskom power line between Matimba B Power Station near Lephalale and the Marang Substation near Rustenburg. In the study by Pistorius several stone walled enclosures were observed along the 270km long corridor. These enclosures are characteristic of Tswana and mixed Tswana/Zulu (Ndebele) populations (Pistorius 2007).

### **4.3 Historical Remains**

I found no Historical archaeological remains on the demarcated portion of portion 410 of the farm Waterkloof 305 JQ.

The heritage study conducted by Van Schalkwyk on the farm Waterkloof 305 JQ on an area roughly 1km to the south of the area demarcated for the construction of the tailings dam identified an old but well maintained farmhouse dating to the 1930s. The farmhouse owner is part of a larger German community in the area. The site was rated as having a medium level of significance on a local level (Grade III). A recommendation was made to sample and/or map the site (Van Schalkwyk 2007: 12).

### **4.4 Recent remains**

I observed no recent remains within the demarcated portion of portion 410 of the farm Waterkloof 305 JQ.

The study conducted by Van Schalkwyk on the area to the south of the current study area revealed a barn and other outbuildings dating to recent times (Van Schalkwyk 2007: 13).

### **4.5 Graves**

No graves were observed during the survey.

A graveyard with some graves dating to 1910 was observed by Van Schalkwyk roughly 2.5km to the south of the current study area. These graves probably belong to some of the earliest white settlers in the area (Van Schalkwyk 2007: 12).

## **5. Evaluation**

The significance of an archaeological site is based on the amount of deposit, the integrity of the context, the kind of deposit and the potential to help answer present research questions. Historical structures are defined by Section 34 of the National Heritage Resources Act, 1999, while other historical and cultural significant sites, places and features, are generally determined by community preferences.

A fundamental aspect in the conservation of a heritage resource relates to whether the sustainable social and economic benefits of a proposed development outweigh the conservation issues at stake. There are many



aspects that must be taken into consideration when determining significance, such as rarity, national significance, scientific importance, cultural and religious significance, and not least, community preferences. When, for whatever reason the protection of a heritage site is not deemed necessary or practical, its research potential must be assessed and if appropriate mitigated in order to gain data / information which would otherwise be lost. Such sites must be adequately recorded and sampled before being destroyed.

No heritage material were observed within the demarcated area on the demarcated portion of portion 410 of the farm Waterkloof 305 JQ. It should also be mentioned that no heritage material were observed by Archaetnos Culture & Cultural Resources Consultants, who conducted a heritage assessment on portion 91 of the farm Waterkloof 305 JQ. Portion 91 is located roughly 2.5km west of the current study area (Van Vollenhoven 2014).

## 5.1 Field Rating

All sites should include a field rating in order to comply with section 38 of the National Heritage Resources Act (Act No. 25 of 1999). The field rating and classification in this report is prescribed by SAHRA.

**Table 2:** Field Ratings

Rating	Field Rating/Grade	Significance	Recommendation
National	Grade 1		National site
Provincial	Grade 2		Provincial site
Local	Grade 3 A	High	Mitigation not advised
Local	Grade 3 B	High	Part of site should be retained
General protection A	4 A	High/Medium	Mitigate site
General Protection B	4 B	Medium	Record site
General Protection C	4 C	Low	No recording necessary

\*It should be noted that no sites were located.

## 6. Statement of Significance & Recommendations

### 6.1 Statement of significance

#### **The demarcated portion of portion 410 of the farm Waterkloof 305 JQ**

I observed no material of heritage importance within the demarcated study area. The area demarcated for the development of the new tailings dam is severely disturbed as the site was cultivated.

The general Rustenburg area is rich in archaeological evidence as can be observed in the report by Pistorius on the area between Lephale and Rustenburg.

### 6.2 Recommendations

The following recommendations are made in terms with the National Heritage Resources Act (25 of 1999) in order to avoid the destruction of heritage remains in areas demarcated for development:

- Because archaeological artefacts generally occur below surface, the possibility exists that culturally significant material may be exposed during the development and construction phases, in which case all activities must be suspended pending further archaeological investigations by a qualified archaeologist. Also, should skeletal remains be exposed during development and construction phases, all activities must be suspended and the relevant heritage resources authority contacted (See National Heritage Resources Act, 25 of 1999 section 36 (6)).
- Should the need arise to expand the development beyond the surveyed area mentioned in this study, the following applies: a qualified archaeologist must conduct a full Phase 1 Archaeological Impact Assessment (AIA) on the sections beyond the demarcated area which will be affected by the development, in order to determine the occurrence and extent of any archaeological sites and the impact development might have on these sites.
- From a heritage point of view, development may proceed on the demarcated portion of portion 410 of the farm Waterkloof 305 JQ, subject to the abovementioned conditions, recommendations and approval by the South African Heritage Resources Agency.

## 7. Addendum: Terminology

### **Archaeology:**

The study of the human past through its material remains.

### **Artefact:**

Any portable object used, modified, or made by humans; e.g. pottery and metal objects.

### **Assemblage:**

A group of artefacts occurring together at a particular time and place, and representing the sum of human activities.

### **Context:**

An artefact's context usually consist of its immediate *matrix* (the material surrounding it e.g. gravel, clay or sand), its *provenience* (horizontal and vertical position within the matrix), and its *association* with other artefacts (occurrence together with other archaeological remains, usually in the same matrix).

### **Cultural Resource Management (CRM):**

The safeguarding of the archaeological heritage through the protection of sites and through salvage archaeology (rescue archaeology), generally within the framework of legislation designed to safeguard the past.

### **Excavation:**

The principal method of data acquisition in archaeology, involving the systematic uncovering of archaeological remains through the removal of the deposits of soil and other material covering and accompanying it.

### **Feature:**

An irremovable artefact; e.g. hearths or architectural elements.

### **Ground Reconnaissance:**

A collective name for a wide variety of methods for identifying individual archaeological sites, including consultation of documentary sources, place-name evidence, local folklore, and legend, but primarily actual fieldwork.

### **Matrix:**

The physical material within which artefacts is embedded or supported, i.e. the material surrounding it e.g. gravel, clay or sand.

### **Phase 1 Assessments:**

Scoping surveys to establish the presence of and to evaluate heritage resources in a given area.

### **Phase 2 Assessments:**

In-depth culture resources management studies which could include major archaeological excavations, detailed site surveys and mapping / plans of sites, including historical / architectural structures and features. Alternatively, the sampling of sites by collecting material, small test pit excavations or auger sampling is required.

**Sensitive:**

Often refers to graves and burial sites although not necessarily a heritage place, as well as ideologically significant sites such as ritual / religious places. *Sensitive* may also refer to an entire landscape / area known for its significant heritage remains.

**Site:**

A distinct spatial clustering of artefacts, features, structures, and organic and environmental remains, as the residue of human activity.

**Surface survey:**

There are two kinds: (1) unsystematic and (2) systematic. The former involves field walking, i.e. scanning the ground along one's path and recording the location of artefacts and surface features. Systematic survey by comparison is less subjective and involves a grid system, such that the survey area is divided into sectors and these are walked ally, thus making the recording of finds more accurate.

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## **Maps**

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