

ARCHAEOLOGICAL DESKTOP STUDY

**for the application of a prospecting right
on portions 36, 37, 38, 39, 40 and 41 of the
Farm Boekenhoutkloof 315 JR, Pretoria
North, Gauteng**

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October 2017

An Archaeological Desktop Study for the application of a prospecting right
on portions 36, 37, 38, 39, 40 and 41 of the Farm Boekenhoutkloof 315 JR,
Pretoria North, Gauteng

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Executive Summary

The author was appointed by Environmental Assurance (Pty) Ltd to undertake an Archaeological Desktop study for SABRIX (Pty) Ltd on the following Farm Portions within the City of Tshwane Metropolitan Municipality in the Gauteng Province: Portions 36, 37, 38, 39, 40 and 41 of the Boekenhoutkloof 315 JR. The study area is located 13 km northwest of the Pretoria CBD and between Akasia and Atteridgeville. The aim of this report is to contextualise the general study area in terms of heritage resources and will provide the developers with general information regarding potentially sensitive areas. This will also shed light on what is to be expected during a Phase 1 Archaeological Impact Assessment and aid in interpreting finds.

Once the prospecting sites have been determined, it is recommended that a qualified archaeologist inspect the proposed sites in order to determine whether heritage resources will be impacted on. Should any development that triggers an AIA result from the prospecting, a full Phase 1 AIA must be done.

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1. Project Background

1.1 Introduction

Environmental Assurance (Pty) Ltd appointed the author to undertake an Archaeological Desktop study for SABRIX (Pty) Ltd on the following Farm Portions near Pretoria in the Gauteng Province: Portions 36, 37, 38, 39, 40 and 41 of the Boekenhoutkloof 315 JR (**Figures 1 & 2**). The study area is located approximately 13 km northwest of the Pretoria CBD. The purpose of this study is to contextualise the demarcated study area in order to determine the scope of heritage resources that might be encountered during the prospecting phase and subsequent heritage studies, as well as to provide recommendations for the safeguarding of archaeological resources during prospecting. The aim of this report is to provide the developer with information regarding heritage resources in the vicinity of the study area based on results from previous studies and written historical information.

In the following report, I provide a broad overview of the proposed development and contextualise the study area in terms of 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 the prospecting phase.

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 that the 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 5000m² 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 10000m² 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

2.1 Location & Physical environment

The closest city to the study area is Pretoria, located about 13 km to the southeast. Akasia is located about 4 km northeast of the area demarcated for prospecting and Atteridgeville 6 km to the south. The study area falls within the City of Tshwane Metro Municipality in the Gauteng Province. In terms of vegetation, the study area falls within the Grassland Biome, Central Bushveld Bioregion and Moot Plains Bushveld vegetation unit. A small section along the northern boundary of the study area falls on Gold Reef Mountain Bushveld. The Grassland Biome covers approximately 28% of South Africa. According to Mucina & Rutherford (2006), the conservation status for Moot Plains Bushveld is considered vulnerable. The conservation target for this vegetation unit is 19% and about 13% is conserved in the Magaliesberg Nature Reserve. Moot Plains Bushveld is found in the North-West and Gauteng Provinces, with the main belt occurring immediately south of the Magaliesberg from Selons River Valley in the west to Pretoria in the east. A narrow belt is also found immediately north of the Magaliesberg and Daspoort mountain ranges from Rustenburg in the west to the Crocodile River in the east. Cultivation, urban and built-up areas have transformed about 28% of this vegetation unit. Erosion in these areas is generally very low. Gold reef Mountain Bushveld, on the other hand, is found in the North-West, Gauteng, Free State and Mpumalanga Provinces and occurs along the quartzite ridges of the Magaliesberg from Boshhoek and Koster in the west to Bronkhorstspuit in the east. Other areas include the west-east ridges of the Witwatersrand, the inner ridges of the Vredefort Dome and part of the Suikerbosrand and hills around Heidelberg. In terms of conservation, Gold Reef Mountain Bushveld is considered least threatened with a conservation target of 24%. About 22% is conserved mainly in the Magaliesberg Nature Reserve and a small portion in other nature reserves. Cultivation, urban and built-up areas transformed about 15% and erosion is generally very low (Mucina & Rutherford 2006).

The average elevation for Moot Plains Bushveld varies between 1050 and 1450 MASL, while the elevation for Gold Reef Mountain Bushveld varies between 1200 and 1750 MASL. The average elevation of the project area is 1320 MASL and it is noted that the northern boundary is more elevated as it borders the Magaliesberg.

The study area falls within the summer rainfall region and the average annual rainfall is roughly 573 mm per year. The average maximum temperature for the study area ranges from 18.3 °C in June to 27.5 °C in January. The lowest temperatures occur during July when an average of 1.7 °C is reached during the night (SA Explorer accessed 24/10/2017).

The study area falls within the A21H Quaternary Catchment that forms part of the Crocodile (West) and Marico Management Area. The closest major river to the study area is the Swartspruit, a perennial river flowing roughly 1.5 km to the south of the area demarcated for prospecting.

2.2 Project description

The area demarcated for the prospecting of Shale/Brick Clay, Clay, Silica Sand, Sand and Aggregate covers an area of approximately 60.428 ha (**Table 1 & Figure 3**). Prospecting will initially consist of a high-level desktop study and potential desktop resource evaluation. Activities will include studying previous drilling, trenching, sampling and exploration data. Historical data and existing maps will be studied as well. Should the results of the desktop study be favourable, further exploration drilling, trenching and resource estimations will be performed on selected sites.

Table 1: Property name & coordinates

Property	Portion	Map Reference (1:50 000)	Coordinates
Boekenhoutkloof 315 JR	36	2528CA	S: -25.688399 E: 28.063330
Boekenhoutkloof 315 JR	37	2528CA	S: -25.687947 E: 28.066328
Boekenhoutkloof 315 JR	38	2528CA	S: -25.691207 E: 28.064781
Boekenhoutkloof 315 JR	39	2528CA	S: -25.694705 E: 28.062592
Boekenhoutkloof 315 JR	40	2528CA	S: -25.694705 E: 28.064234
Boekenhoutkloof 315 JR	41	2528CA	S: -25.694800 E: 28.065400

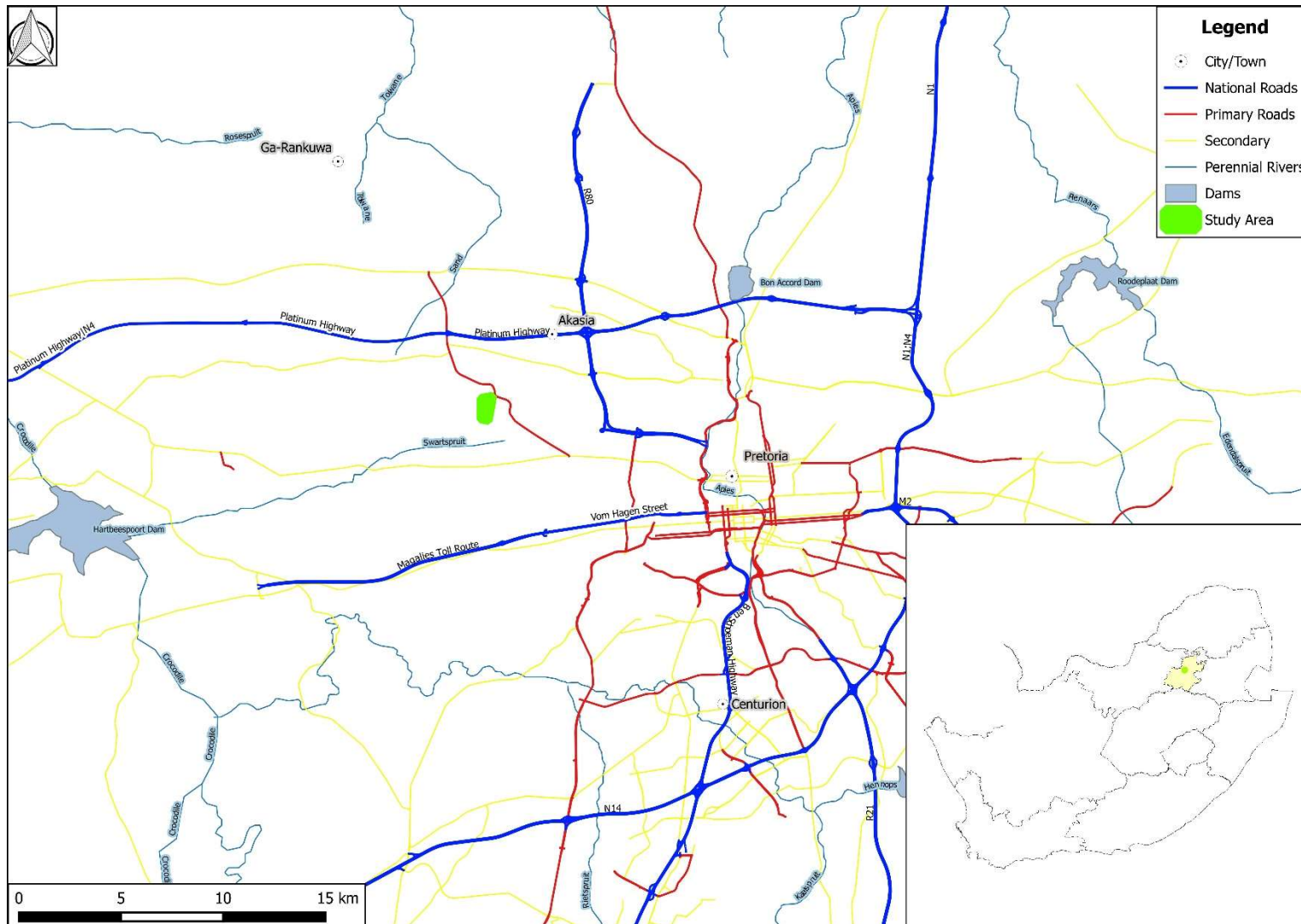


Figure 1: Regional and Provincial location of the study area.

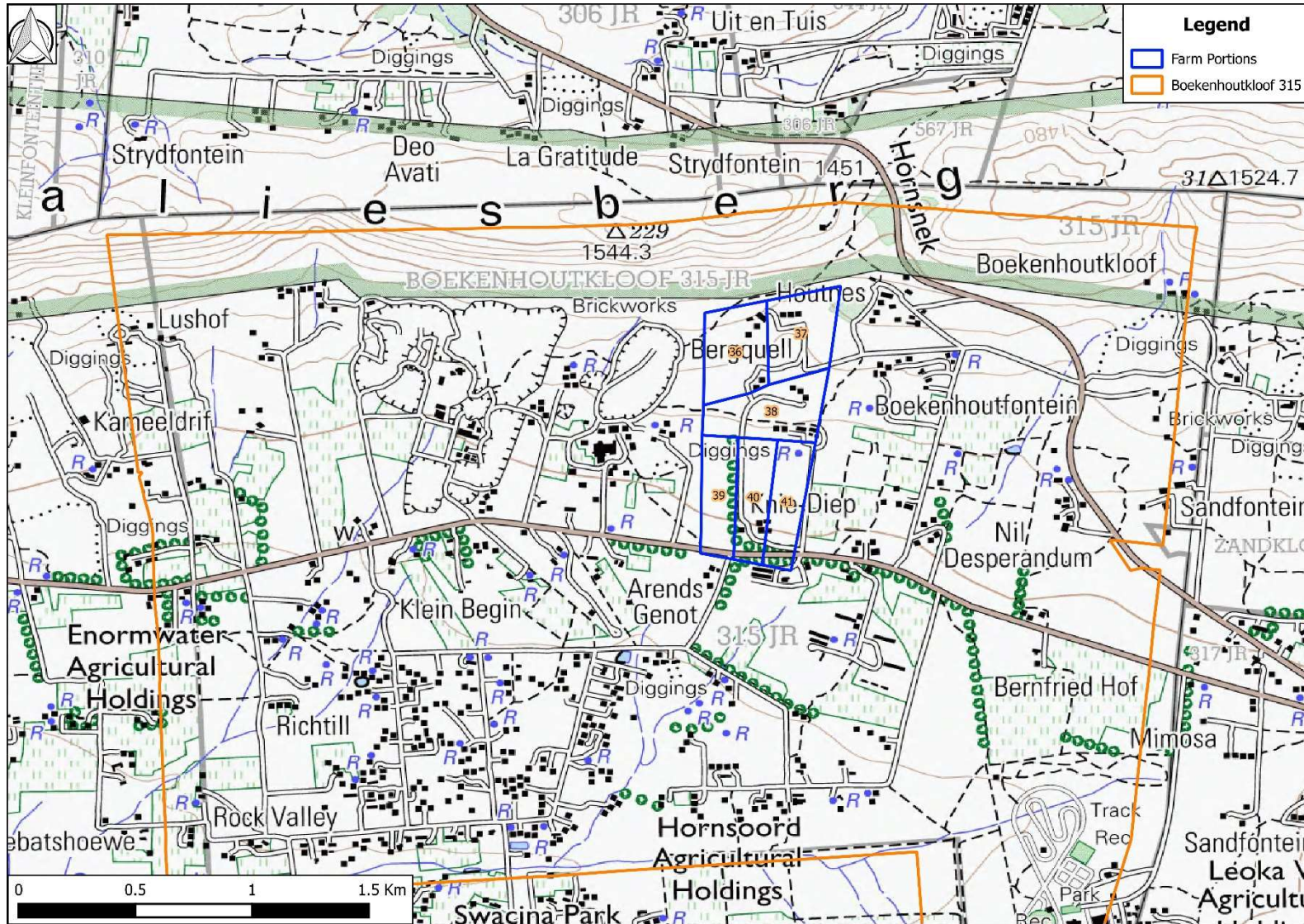


Figure 2: Segment of SA 1: 50 000 2528 CA indicating the study area.

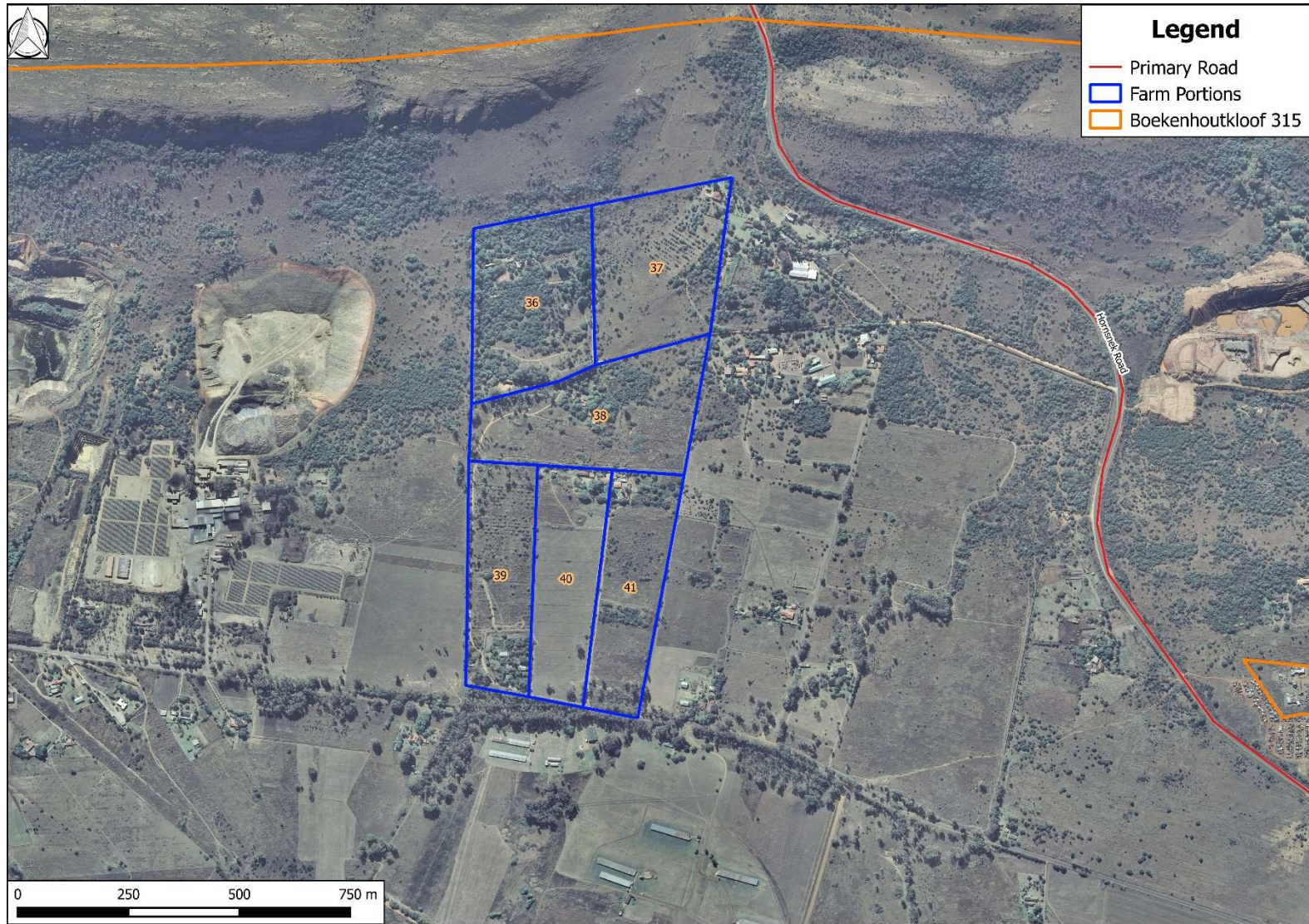


Figure 3: Proposed prospecting site on aerial backdrop.

3. Archaeological Background

Southern African archaeology is broadly divided into the Early, Middle and Later Stone Ages; Early, Middle and Later Iron Ages; and Historical or Colonial Periods. This section of the report provides a general background to archaeology in South Africa.

3.1 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).

3.2 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.

3.3 Previous research

Fort West Phase 1 Development

An archaeological survey was done for the development of a mixed-use township on Portion 1 of the Farm Fort 646 JR within the Tshwane Metropolitan Municipality. The site is located south of the Daspoortrand, north of the suburb of Lotus Gardens and approximately 4.5 km south of the proposed prospecting concerned in this report. J. van Schalkwyk (2012) surveyed the study area and located seven stone-walled Late Iron Age sites consisting of settlement structures, cattle enclosures and several other smaller enclosures. According to Van Schalkwyk (2012), these sites can probably be linked to Tswana- or Ndebele speakers who settled in the area within the past 300 years. Other sites of heritage importance located in close vicinity are Fort Daspoort, built by the ZAR out of fear for British domination (Van Vollenhoven 1999), and Westfort Hospital, which was erected in 1898.

HIA on the Farm Hartbeeshoek 301 JR

The National Cultural History Museum (2002) conducted a Heritage Impact Assessment to identify graves on the Farm Hartbeeshoek 301 JR within the Akasia municipal area, Pretoria. The aim of the study was to identify graves within the road reserve of the Platinum Toll Highway. The study identified approximately 20 graves marked with stone cairns and a recommendation was made to relocate the graves. The identified graveyard was located about 5 km northeast of the area demarcated for the SABRIX prospecting concerned in this study.

Extension of SABRIX Quarry

Dr R. C. de Jong (2002) conducted a Heritage Scoping Study, done as part of the EMP, for the expansion of the SABRIX quarry on Portion 19 of the Farm Boekenhoutkloof 315 JR, Pretoria. According to De Jong (2002) the Farm Boekenhoutkloof originally belonged to the Zuid-Afrikaansche Republiek and was subsequently leased to Willem Hendrik Boshoff Jr. from 26 July 1859. During the 1860s, the farm was transferred to G. P. J. Horn. The original farmhouse was built by Horn to the northwest of the SABRIX quarry and a farm school was later erected approximately in the middle of the property. In June 1892, Arthur H. Walker surveyed the entire farm for G. P. J. Horn and in March 1912, the farm was subdivided. During the survey, two heritage sites were identified: one ruin consisting of stone-walls and clay mortar dating to between 1930 and 1960, and one graveyard consisting of several graves (De Jong 2002).

4. 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.

5. Statement of Significance & Recommendations

5.1 Statement of significance

The study area: Portions 36, 37, 38, 39, 40 and 41 of the Farm Boekenhoutkloof 315 JR

As can be seen from previous research done in the area the general region is significant from a heritage perspective. Heritage sites are likely to include graveyards, Iron Age/Farmer and Historical remains. Since heritage sites, such as graves, are not always clearly identifiable as it might consist of stone cairns, it is advised that a qualified archaeologist inspect the proposed prospecting sites prior to drilling to establish whether the sites might be sensitive from a heritage perspective.

5.2 Recommendations

The following recommendations are made in order to avoid the destruction of heritage remains in the areas demarcated for prospecting:

- Prior to any development, construction or prospecting a qualified archaeologist should conduct a site inspection on the areas demarcated for geotechnical drilling/prospecting. Proposed access roads to the drill sites should also be surveyed in order to avoid the destruction of heritage material.
- Should the prospecting outcome result in further development or construction, a full Phase 1 Archaeological Impact Assessment must be conducted on the affected area if triggered.
- Because archaeological artefacts generally occur below surface, the possibility exists that culturally significant material may be exposed during the prospecting phase, in which case all activities must be suspended pending further archaeological investigations by a qualified archaeologist. Also, should skeletal remains be exposed, all activities must be suspended and the relevant heritage resources authority contacted (See National Heritage Resources Act, 25 of 1999 section 36 (6)).

6. 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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