

ARCHAEOLOGICAL DESKTOP STUDY

**for the application of a prospecting right
on a portion of Portion 9 of the Farm
Vlakfontein 281 IR, Nigel, Gauteng**

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September 2019


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- I, Tobias Coetzee, declare that –
- I act as the independent specialist;
- I am conducting any work and activity relating to the proposed Marievale Prospecting Project in an objective manner, even if this results in views and findings that are not favourable to the client;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have the required expertise in conducting the specialist report and I will comply with legislation, regulations and any guidelines that have relevance to the proposed activity;
- I have not, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this declaration are true and correct.



Date: 9 September 2019

Executive Summary

The author was appointed by Environmental Assurance (Pty) Ltd to undertake an Archaeological Desktop study for Ilangabi Investments 12 (Pty) Ltd on a portion of Portion 9 of the Farm Vlakfontein 281 IR within the Ekurhuleni Metropolitan Municipality. The study area is located 5 km east of Dunnottar, 8 km north of Nigel, 9 km south-southeast of Springs and follows the boundary of the former Marievale Engineers Golf Club. 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.

The areas falling within the 50 m buffer should be avoided and care should be exercised when prospecting on the rest of the demarcated portion as the general study area is associated with historical infrastructure. It is also advised that once the drilling locations have been determined, a qualified archaeologist review the localities. 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 Ilangabi Investments 12 (Pty) Ltd on a portion of Portion 9 of the Farm Vlakfontein 281 IR within the Ekurhuleni Metropolitan Municipality (**Figures 1 & 2**). The study area is located approximately 5 km east of Dunnottar, 8 north of Nigel and 9 km south-southeast of Springs. 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 heritage 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, written historical information, as well as historical aerial images and topographical maps.

In the following report, I provide a broad overview of the proposed sand, coal and clay prospecting 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.

AIA's 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 settlement to the study area is Dunnottar, located about 5 km to the west, while Nigel is located roughly 8 km to the south. The study area falls within the Ekurhuleni Metropolitan Municipality in the Gauteng Province. In terms of vegetation, the study area falls within the Grassland Biome, the Mesic Highveld Grassland Bioregion and on a local scale within Tsakane Clay Grassland. The Grassland Biome covers approximately 28% of South Africa. According to Mucina & Rutherford (2006), the conservation status for Tsakane Clay Grassland is considered endangered. This vegetation unit is found in Mpumalanga and Gauteng in patches in a narrow band from Soweto to Springs. From Springs the band broadens in a southern direction to Nigel and Vereeniging and includes the area north of the Vaal Dam as well as the area between Balfour and Standerton. The conservation target for this vegetation unit is 24% and only 1.5% is conserved in statutory reserves and a small portion in private nature reserves. Cultivation, urbanisation, mining, dam-building and roads have transformed more than 60% of this vegetation unit. Built-up areas that were developed on Tsakane Clay Grassland include large portions of Alberton, Springs, Tsakane and Soweto. The increasing urbanisation of the southern suburbs of Johannesburg and the towns of the East Rand further threatens Tsakane Clay Grassland. Erosion in these areas are mostly very low (Mucina & Rutherford 2006).

The average elevation for Tsakane Clay Grassland varies between 1480 and 1680 MASL (metres above sea level). The average elevation of the project area is 1585 MASL and slopes from the slightly more elevated western side towards the lower eastern side.

The study area falls within the summer rainfall region and the average annual rainfall is roughly 586 mm per year. The average maximum temperature for the study area ranges from 16.7 °C in June to 26 °C in January. The lowest temperatures occur during July when an average of 0.1 °C is reached during the night (SA Explorer accessed 05/09/2019).

The study area falls within the C21E Quaternary Catchment that forms part of the Upper Vaal water management area. The closest major river to the study area is Blesbokspruit, a perennial river flowing 1.4 km to the east.

The demarcated study area follows the boundary of the former Marievale Engineers Golf Club. Since the closure of the golf club, however, the area has been used as a military base (Marievale Military Base). Agricultural land is found to the northeast and west of the demarcated study area, while historical mining development borders the area to the east and recent mining development to the northwest. The area to the south of the study area is characterised by a few houses and open veld.

2.2 Project description

Ilangabi Investments 12 (Pty) Ltd currently holds a mining right on the area to the northwest of the study area and wishes to expand their mining development to the southeast. The area demarcated for the prospecting of Clay, Coal and Sand covers an area of approximately 64 ha (**Table 1 & Figure 3**). Prospecting will consist of a high-level desktop study, studying historical data and existing maps, as well as the drilling of 10 prospecting holes.

Table 1: Property name & coordinates

Property	Portion	Map Reference (1:50 000)	Coordinates
Vlakfontein 281 IR	9	2628AD	S: -26.344369 E: 28.490955

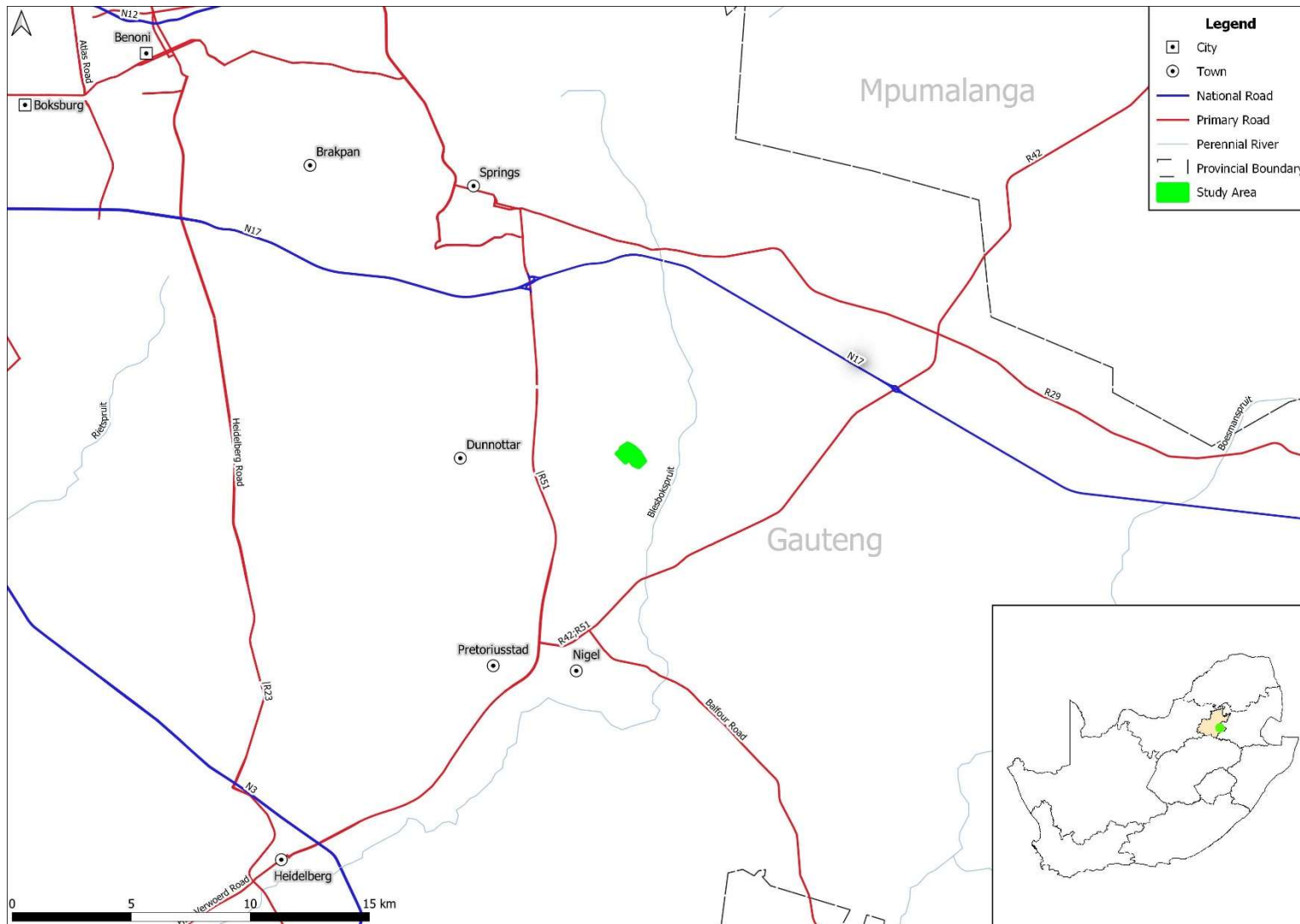


Figure 1: Regional and Provincial location of the study area.

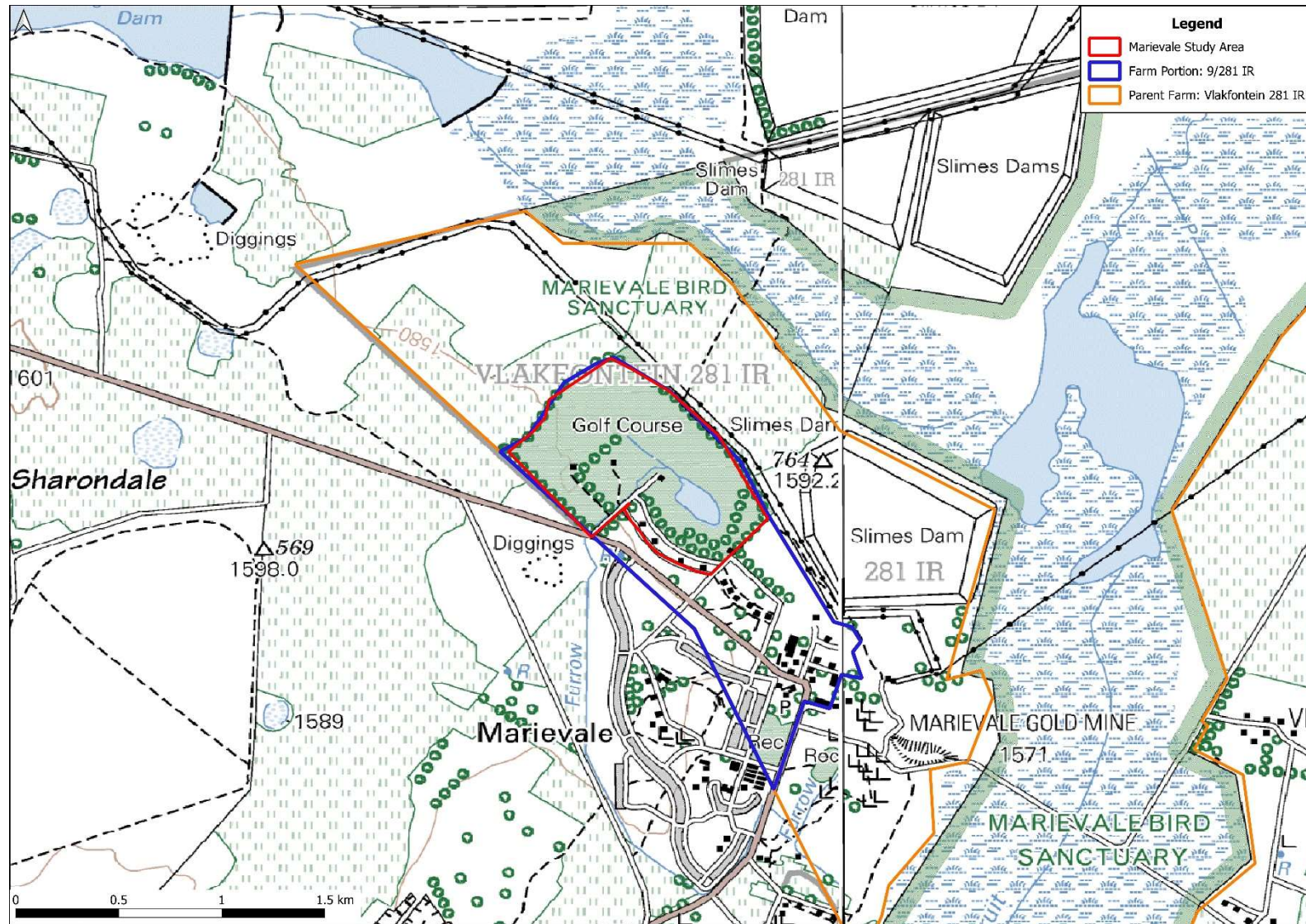


Figure 2: Segment of SA 1: 50 000 2628AD indicating the study area.



Figure 3: Proposed prospecting site on a 2019 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.

3.2.1 Historical Imagery, topographical maps and title deeds

Historical images and topographical maps dating to 1938, 1941, 1944, 1953 and 1960 (**Appendix A**) were used to determine the relative age of the structures present on the demarcated portion, the construction date of the golf course, as well as the presence of other potential heritage resources.

The aerial image dating to 1938 (**Appendix A: Figure 4**) indicates the presence of a building in the south-eastern corner of the demarcated study area, a road running from the northern boundary towards to the south-eastern boundary, as well as two natural water pans. The rest of the demarcated area, however, appears to be open veld. It should be noted that several similar structures are located outside of the demarcated study area towards the southeast. These buildings are therefore at least 81 years old.

At least five additional areas consisting of structures, as well as the general layout of the golf course, appear on the 1941 aerial image (**Appendix A: Figure 5**). Although not as clear as the 1938 aerial image, three structures/homesteads similar in appearance are visible to the northwest of the structure visible on the 1938 aerial image. Apart from these areas, two additional buildings within what appears to be a demarcated yard are shown in roughly the middle of the study area. It is assumed that these structures are associated with the construction of the golf course and/or the establishment of mining activity directly east of the demarcated study area. These additional structures and golf course demarcations visible on the 1941 aerial image, therefore, date to between 81 and 78 years ago.

When the 1944 topographical map is considered (**Appendix A: Figure 6**), only the structure just inside the south-eastern boundary of the demarcated study area that appears on the 1938 aerial image is indicated, while the historical structures/areas indicated on the 1941 aerial image are not shown. This topographical map indicates four additional structures located outside of the demarcated study area to the southeast and appear to be the same structures indicated on the 1938 aerial image. It should be noted that only one of the natural water pans visible on the 1938 aerial image is indicated and that the farm name is shown to be Vogelstruisbult. It appears that at this point, the topographical map has not been updated to reflect the structures visible on the 1941 aerial image.

On the 1953 aerial image (**Appendix A: Figure 7**), one additional structure/built-up area is visible just outside of the north-western corner of the demarcated yard that appears on the 1941 aerial image. The larger demarcated yard also appears more defined and although not clearly visible, additional structures might be present. The rest of the general area demarcated for prospecting shows the golf course markings more clearly. The structures that first appear on this aerial image, are therefore at least 66 years of age.

The first topographical map to reference the Marievale Golf Course, dates to 1960 (**Appendix A: Figure 8**). This topographical map indicates the structures within the demarcated study area along the southern boundary that first appear on the 1941 aerial image, as well as the structures in the vicinity of the centre of the demarcated study area. The building to the northwest of the yard that is visible on the 1953 aerial image is also indicated on the 1960 topographical map.

According to the title deed, Portion 9 of the Farm Vlakfontein 281 IR was originally transferred to Jacobus Stephanus Marais under Transfer dated 8th March 1867 and to Marievale Consolidated Mines, Limited under Deed of Transfer No. T. 9179/1935 dated 3rd July 1935 (**Appendix A: Figure 9**).

3.3 Previous Heritage Studies

Coal mining on the Farm Grootfontein 165 IR, District Nigel

A Cultural Heritage Impact Assessment, conducted by Francois Coetzee (2017) for a mining right application on the Farm Grootfontein 165 IR, revealed no material of heritage importance. According to the report, the survey area focused on Portions 23, 52 and 85 of the Farm Grootfontein 165 IR, as well as the remaining extent of the Farm Vogelstruisbult 127 IR and covered 170 hectares. Accordingly, the surveyed area borders the demarcated study area concerned in this report to the west and northwest.

Prospecting on slimes dams on the Farm Vlakfontein 281 IR

Digby Wells (Pty) Ltd undertook the Basic Assessment process for a prospecting right application for the 7L5 and 7L6 slimes dam project in the magisterial district of Nigel. The proposed study area is located on the remaining extent, Portion 1 and Portion 9 of the farm Vlakfontein 281 IR and deals with the extraction of low deposits of gold from the slimes dams deposited by less efficient historical mining methods. The demarcated slimes dams are located about 1.3 km to the northeast of the study area concerned in this project. The report found that some of the slimes dams were older than 60 years and are therefore protected by heritage legislation. However, according to the report the proposed prospecting activities did not threaten the historical character of the slimes dams (Higgitt 2015).

Project Phoenix Gold Plant and TSF, Ekurhuleni Metropolitan Municipality

Francois Coetzee (2014), conducted a Cultural Heritage Assessment for the Phoenix Gold Plant project and Sub-Nigel Tailings Facility on various portions of the farm Grootfontein 165 IR and Spaarwater 171 IR west of Nigel. The surveyed area is located roughly 6 km southwest of the study area concerned in this project. No Stone Age and Iron Age settlements, structures, features, assemblages or artefacts were recorded during the survey. Four sites with structures were noted, but did not exceed 60 years of age. Also, two large graveyards were recorded.

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: Portion of Portion 9 of the Farm Vlakfontein 281 IR (The former Marievale Engineers Golf Club)

As can be seen from previous research done in the area the general region is mostly significant from a heritage perspective in terms of mining history. Heritage sites are likely to include graveyards and historical buildings. Since heritage sites, such as graves, are not always clearly identifiable as it might consist of stone cairns, care must be exercised when prospecting.

Figure 3 indicates the study area on a recent aerial backdrop with structures/areas that are potentially sensitive from a heritage perspective indicated according to date first observed on aerial imagery. These areas were identified using historical aerial imagery dating to between 1938 and 1953. The structures visible on the 1938 aerial image are at least 81 years old, the structures on the 1941 aerial image at least 78 years old and the 1953 structures at least 66 years old. All these structures, therefore exceed 60 years of age and are protected under Section 34 of the National Heritage Resources Act, 1999. Because the exact boundaries of these structures could not be established accurately from the aerial images, a conservation buffer of 50 m is recommended and indicated on **Figure 3** to prevent prospecting causing damage to the structures. The Marievale Golf Course also first appears on the 1941 aerial image, making the general area significant from a heritage perspective.

5.2 Recommendations

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

- Care should be exercised when prospecting on the demarcated portion and areas falling within the 50 m buffer should be avoided.
- It is advised that once the drilling locations are established, the localities be reviewed by a qualified archaeologist to determine the impact the prospecting might have on heritage resources.
- A qualified archaeologist should be contacted whenever uncertainty regarding potential heritage remains are encountered.
- Prospecting should not take place in the vicinity of any building, ruin or any other potential heritage material and the general impact should be kept to a minimum.
- 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.

7. References

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- National Heritage Resource Act No.25 of 1999, Government Gazette, Cape Town*
- Removal of Graves and Dead Bodies Ordinance No. 7 of 1925, Government Gazette, Cape Town*

Appendix A

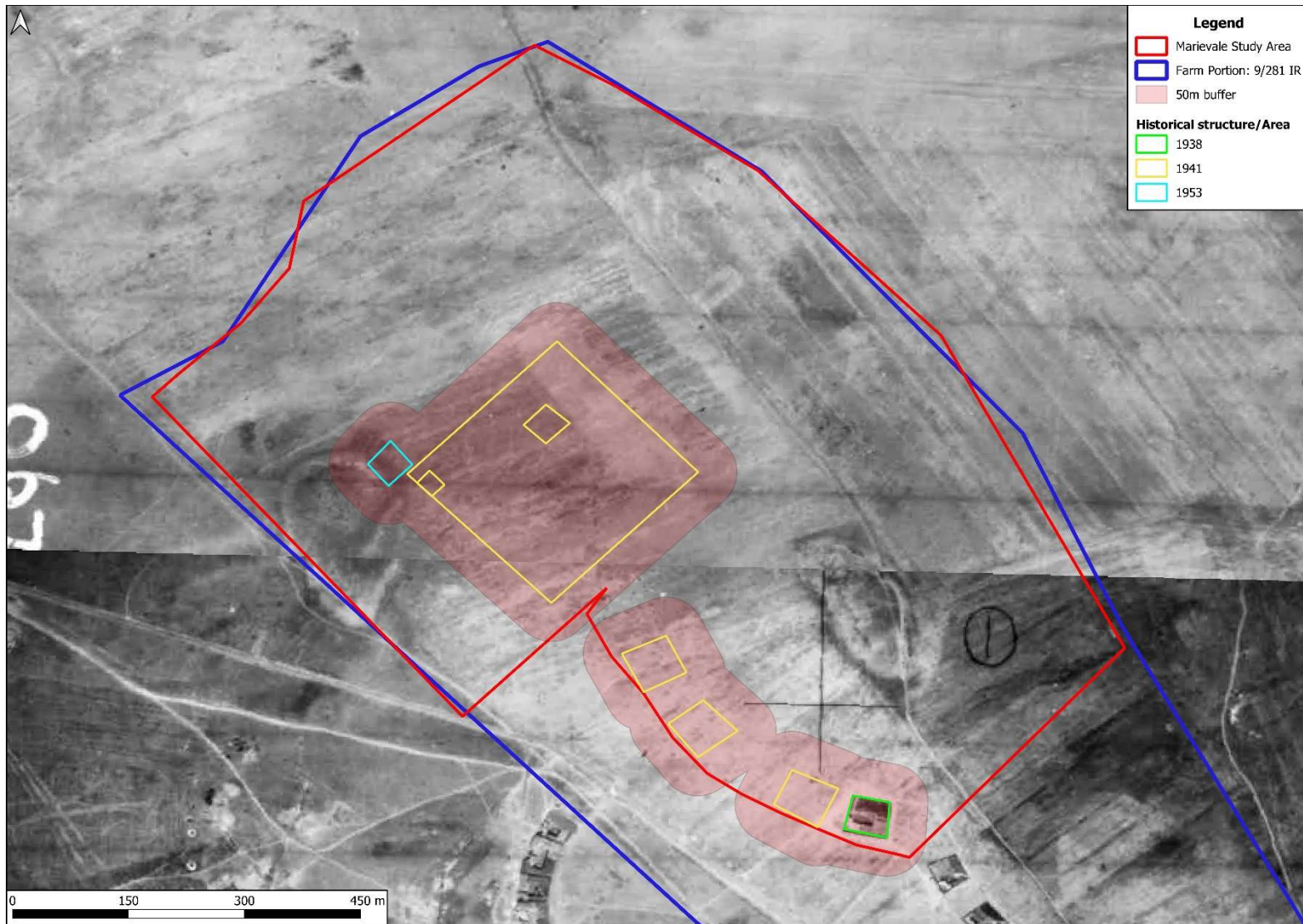


Figure 4: Proposed prospecting site on a 1938 aerial backdrop.

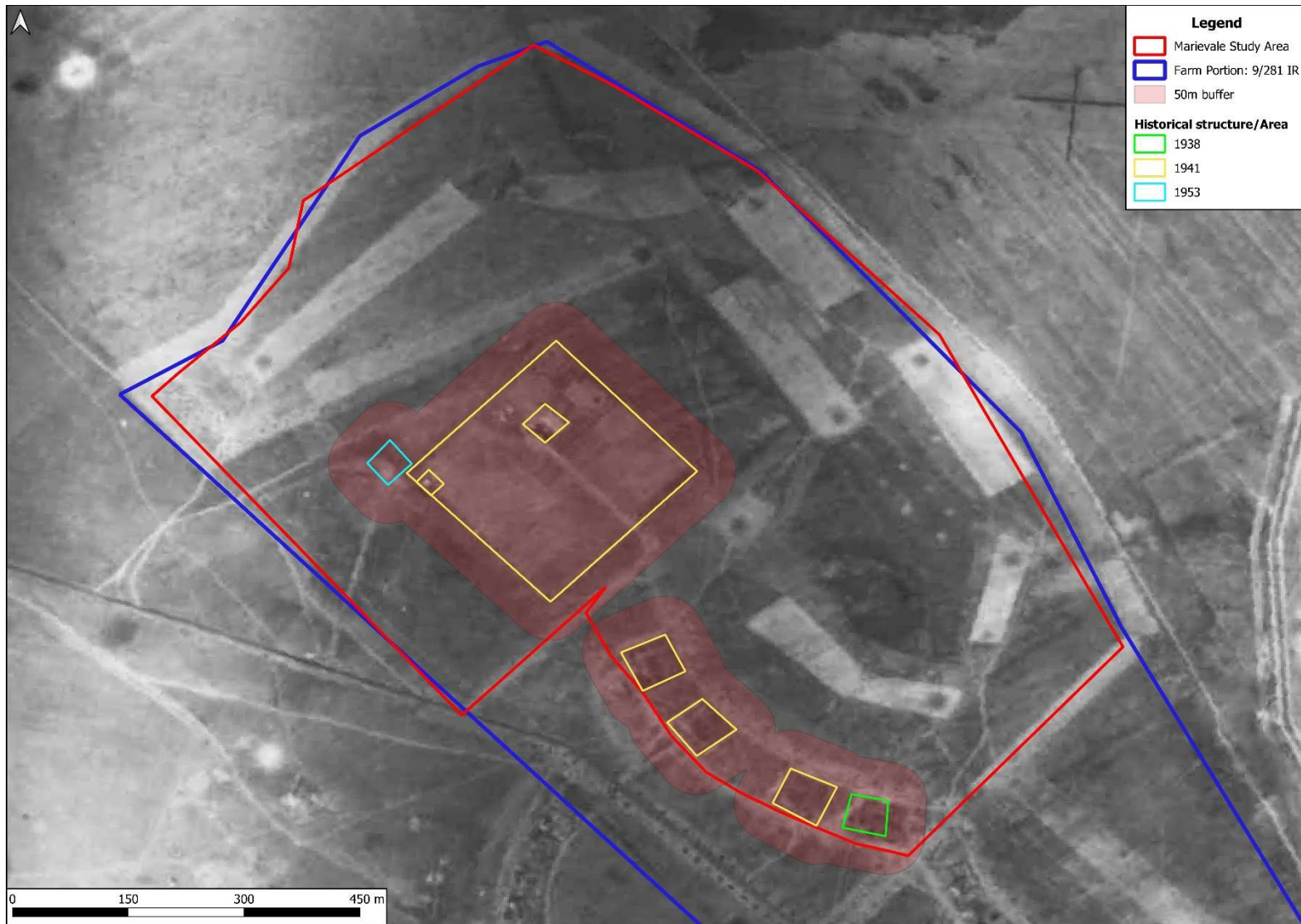


Figure 5: Proposed prospecting site on a 1941 aerial backdrop.

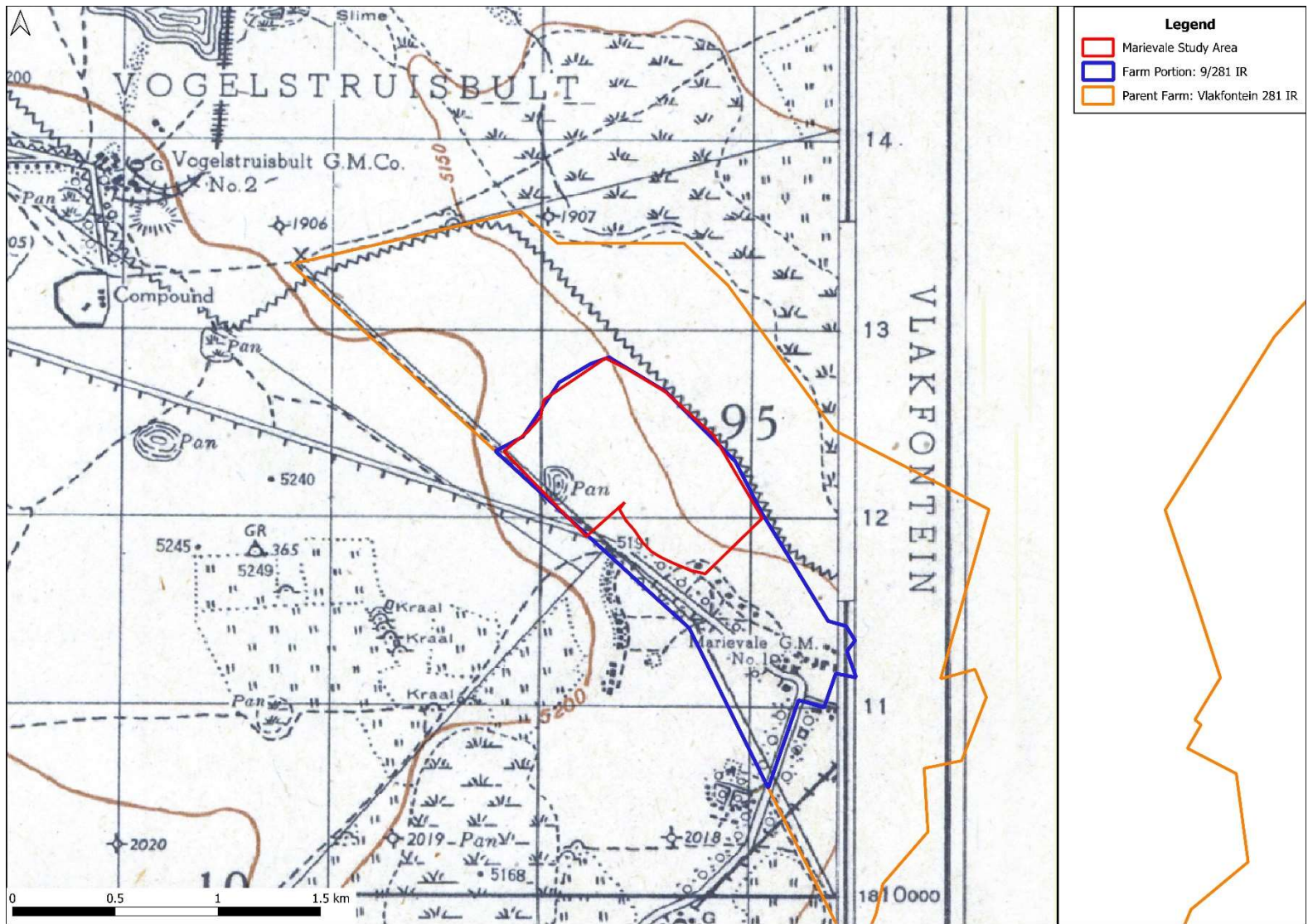


Figure 6: Segment of 1944 SA 1: 50 000 2628 AD indicating the study area.



Figure 7: Proposed prospecting site on a 1953 aerial backdrop.

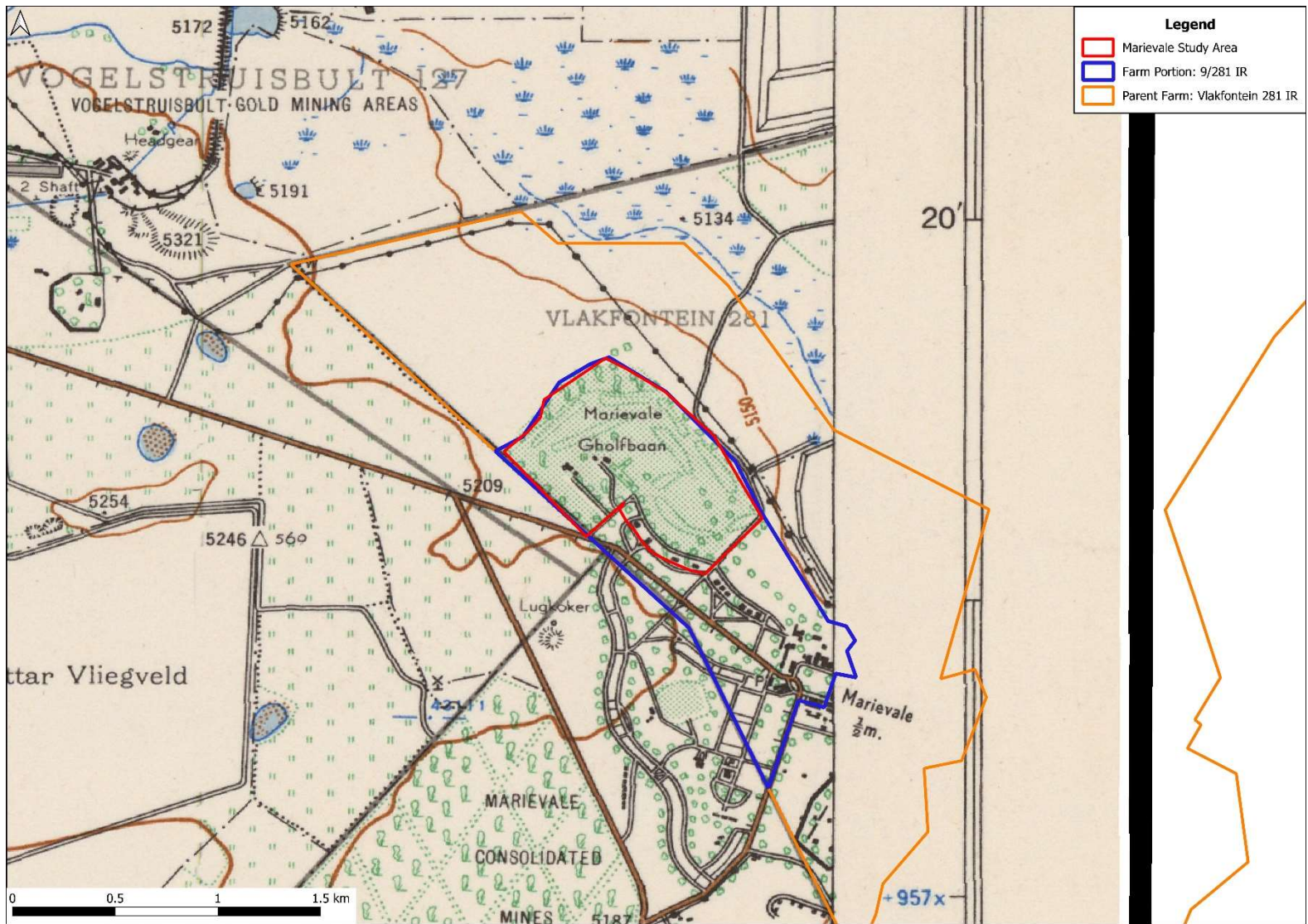


Figure 8: Segment of 1960 SA 1: 50 000 2628 AD indicating the study area.

hereby reserved to the said MARIEVALE CONSOLIDATED MINES LIMITED, and its successors in title to such rights.

(b) SUBJECT to Mynpacht 536, measuring 161,5890 (ONE HUNDRED AND SIXTY ONE COMMA FIVE EIGHT NINE NCJGHT) hectares in favour of MARIEVALE NIGEL GOLD MINES & ESTATE LIMITED.

AND FURTHER SUBJECT to such conditions as are mentioned or referred to in the aforesaid Deeds.

2. PORTION 9 of the farm VLAKFONTEIN No. 281, Registration Division I.R., Transvaal,

ORIGINALLY transferred to JACOBUS STEPHANUS MARAIS under Transfer dated 8th March 1867 and to MARIEVALE CONSOLIDATED MINES, LIMITED under Deed of Transfer No. T. 9179/1935 dated 3rd July 1935.

MEASURING 123,1133 (ONE HUNDRED AND TWENTY THREE COMMA ONE ONE THREE THREE) hectares,, as will more fully appear from Diagram S.G. No. A. 6011/77 annexed hereto.

SUBJECT to the following conditions :

X

(a) The former remaining extent of the farm VLAKFONTEIN No. 281, Registration Division I.R., Transvaal, measuring 3748,8428 (THREE THOUSAND SEVEN HUNDRED AND FORTY EIGHT COMMA EIGHT FOUR TWO EIGHT) hectares (of which the property hereby transferred forms a portion) is subject to a servitude to convey

- electricity -

WHITE GROUP
BLANKE GROEP

Figure 9: Title Deed.