# ARCHAEOLOGICAL DESKTOP STUDY

## for the Application of a Prospecting Right on the Farm Rhenosterfontein 210 JR and Naauwpoort 208 JR, Cullinan, Gauteng

**Author ©:**
**Tobias Coetzee, MA (Archaeology) (UP)**
**July 2021**

Archaeological Desktop Study for the Application of a Prospecting Right on the Farm Rhenosterfontein 210 JR and Naauwpoort 208 JR, Cullinan, Gauteng

For: Eco Elementum (Pty) Ltd

361 Oberon Ave

Glenfield Office Park

Nika Building

Faerie Glen

Pretoria

0081

Report No: 21-1384-AUTH

Project Name: NTM - Rhenosterfontein 10691 PR

Version: 1

Email: tobias.coetzee@gmail.com

- I, Tobias Coetzee, declare that –
- I act as the independent specialist;
- I am conducting any work and activity relating to the proposed National Treasure Minerals (Pty) Ltd 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: 26 July 2021

# Executive Summary

The author was appointed by Eco Elementum (Pty) Ltd to undertake an Archaeological Desktop study for National Treasure Minerals (Pty) Ltd on the listed Farm Portions (**Table 1)** within the City of Tshwane Metropolitan Municipality in the Gauteng Province. The study area is located roughly 37 km north of Cullinan. 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.

A total of 26 sites consisting of 24 buildings and 2 kraals were noted on historical topographical maps and aerial imagery (**Table 2**). Based on contemporary satellite imagery, one of these sites is associated with surface remains, while 25 appear to have been demolished as no surface remains are visible on satellite imagery. Although no surface remains are evident, subsurface culturally significant material might still be present. Ten of the demolished sites appear not to exceed 60 years of age and are therefore not considered significant form a heritage perspective. The remaining identified sites, consisting of demolished and intact buildings, should be avoided by the proposed prospecting activities. The 500 m River and gradient buffer areas are also considered potentially sensitive from a heritage perspective and care should be exercised when prospecting within these areas. A full Phase 1 AIA (Archaeological Impact Assessment) must be done should any development that triggers an AIA result from the prospecting project, including if the cumulative impact of the proposed prospecting exceeds 0.5 ha.

# List of Abbreviations

**AIA** – Archaeological Impact Assessment

**CRM** – Cultural Resource Management

**DMR** – Department of Mineral Resources

**EIA** – Environmental Impact Assessment

**ESA** – Early Stone Age

**ha** – Hectare

**HIA** – Heritage Impact Assessment

**km** – Kilometre

**LIA** – Late Iron Age

**LSA** – Later Stone Age

**m** – Metre

**MASL** – Metres Above Sea Level

**MEC** – Member of the Executive Council

**MSA** – Middle Stone Age

**NHRA** – National Heritage Resources Act

**SAHRA** – South African Heritage Resources Agency

# Table of Contents

**Executive Summary** ..... **3**

**List of Abbreviations** ..... **4**

**1. Project Background** ..... **7**

1.1 Introduction ..... 7
1.2 Legislation ..... 9

1.2.1 The EIA (Environmental Impact Assessment) and AIA processes ..... 9
1.2.2 Legislation regarding archaeology and heritage sites ..... 10

**2. Study Area and Project Description** ..... **13**

**2.1 Location & Physical Environment** ..... 13
**2.2 Project description** ..... 15

**3. Archaeological Background** ..... **19**

3.1 The Stone Age ..... 19
3.2 The Iron Age & Historical Period ..... 20
3.3 Examples of Heritage Sites ..... 22
3.4 Previous Heritage Studies ..... 25

**4. Evaluation** ..... **25**

**5. Statement of Significance & Recommendations** ..... **26**

5.1 Statement of significance ..... 26
5.2 Recommendations ..... 30

**6. Addendum: Terminology** ..... **31**

**7. References** ..... **32**

**Appendix A: Historical Aerial Imagery & Topographical Maps** ..... **A**

**List of Figures**

Figure 1: Regional and provincial location of the study area....8
Figure 2: Proposed layout map (Provided by Eco Elementum 2021). ....14
Figure 3: Segment of SA 1:50 000 2528 BC indicating the area demarcated for prospecting. ....17
Figure 4: Proposed prospecting area portrayed on a 2020 satellite image. ....18
Figure 5: ESA artefacts from Sterkfontein (Volman 1984). ....20
Figure 6: MSA artefacts from Howiesons Poort (Volman 1984)....20
Figure 7: LSA scrapers (Klein 1984). ....20
Figure 8: Example of undecorated potsherds. ....22
Figure 9: Example of a decorated potsherd. ....22
Figure 10: Example of a potential granary base. ....23
Figure 11: Example of a stone-walled site. ....23
Figure 12 : Example of a broken lower grinding stone. ....23
Figure 13: Example of a dilapidated stone-walled site. ....24
Figure 14: Example of a historical building. ....24
Figure 15: Example of a potential informal grave. ....24
Figure 16: Potential Sites & Sensitive Areas. ....28
Figure 17: Potential Sites . ....29
Figure 18: 1961 Aerial image of the study area. ....B
Figure 19: Segment of 1967 1:50 000 2528 BC indicating the study area. ....C
Figure 20: Segment of 1984 1:50 000 2528 BC indicating the study area. ....D
Figure 21: Segment of 1995 1:50 000 2528 BC indicating the study area. ....E
Figure 22: Segment of 2001 1:50 000 2528 BC indicating the study area. ....F
Figure 23: Segment of 2010 1:50 000 2528 BC indicating the study area. ....G

**List of Tables**

Table 1: Property name & coordinates. ....13
Table 2: Potential site location. ....27

# 1. Project Background

## 1.1 Introduction

Eco Elementum (Pty) Ltd appointed the author to undertake an Archaeological Desktop study for National Treasure Minerals (Pty) Ltd on nine farm portions of the Farms Rhenosterfontein 210 JR and Naauwpoort 208 JR within the City of Tshwane Metropolitan Municipality in the Gauteng Province. The study area is located roughly 37 km north of Cullinan (**Figure 1**) and the identified farm portions are listed in **Table 1**. 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, written historical information and historical topographical maps and aerial photographs.

In the following report, a broad overview of the proposed prospecting is provided and the study area is contextualised in terms of heritage resources. The prospecting application is for iron ore. 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.

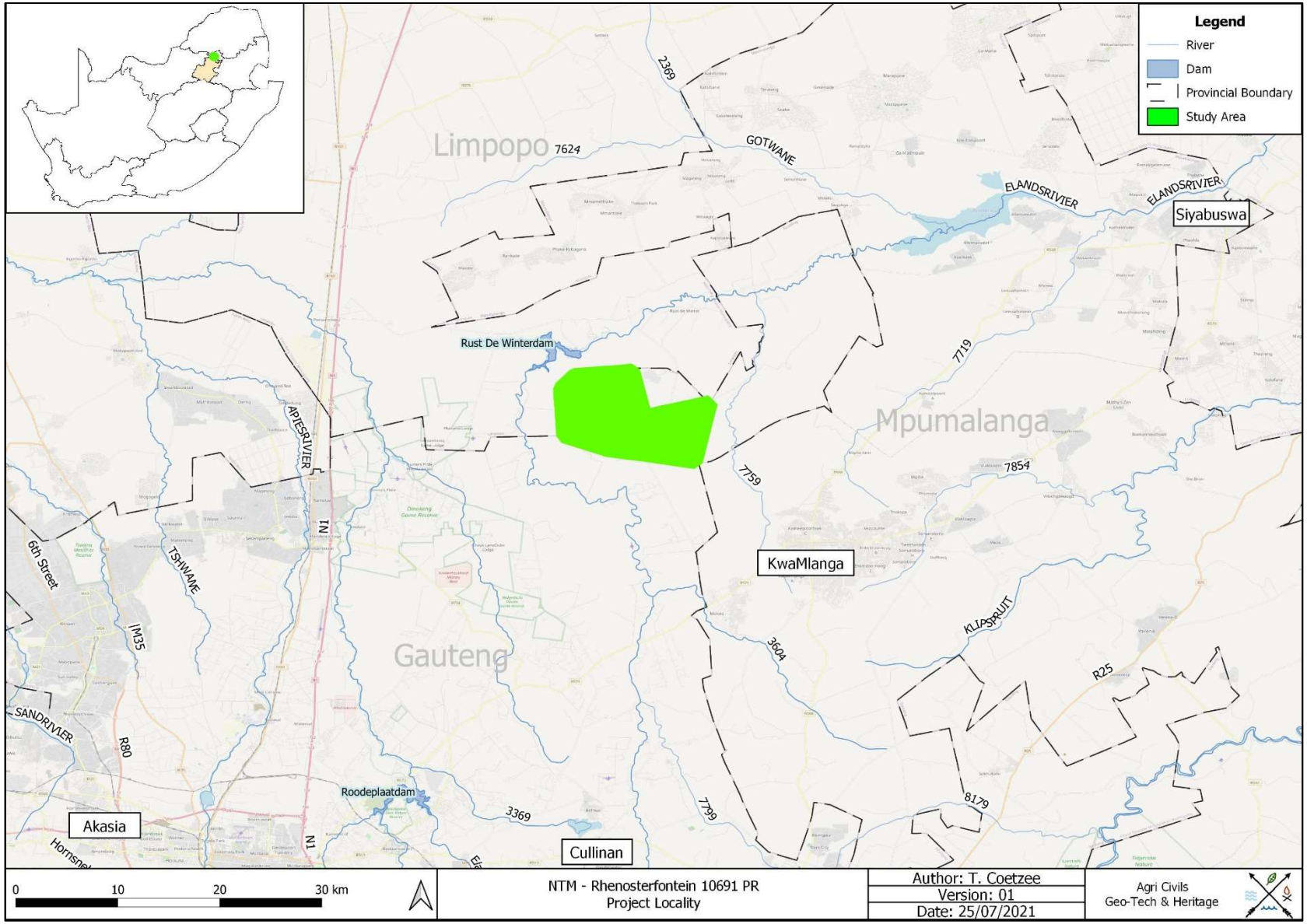


**Figure 1:** Regional and provincial location of the study area.

## 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.

Archaeological Impact Assessments (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 (Environmental Impact Assessment) 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 National Treasure Minerals (Pty) Ltd project is situated on the properties listed in **Table 1 & Figure 2**.

**Table 1:** Property name & coordinates.

| Property | Portion | Map Reference (1:50 000) | Lat (y) | Lon (x) | Extent (ha) |
|---|---|---|---|---|---|
| Naauwpoort 208 JR | RE/208 | 2528BC | -25.307848 | 28.604973 | 2099.8 |
| Naauwpoort 208 JR | 3/208 | 2528BC | -25.298578 | 28.583260 | 342.0 |
| Rhenosterfontein 210 JR | RE/210 | 2528BC | -25.269783 | 28.517007 | 620.0 |
| Rhenosterfontein 210 JR | 1/210 | 2528BC | -25.295808 | 28.520442 | 1214.4 |
| Rhenosterfontein 210 JR | 4/210 | 2528BC | -25.279494 | 28.560484 | 618.9 |
| Rhenosterfontein 210 JR | 6/210 | 2528BC | -25.259687 | 28.545701 | 602.0 |
| Rhenosterfontein 210 JR | 7/210 | 2528BC | -25.280549 | 28.541781 | 618.2 |
| Rhenosterfontein 210 JR | 8/210 | 2528BC | -25.309708 | 28.564522 | 620.0 |
| Rhenosterfontein 210 JR | 10/210 | 2528BC | -25.309116 | 28.543779 | 604.1 |
| **Total** | | | | | **7339.3** |

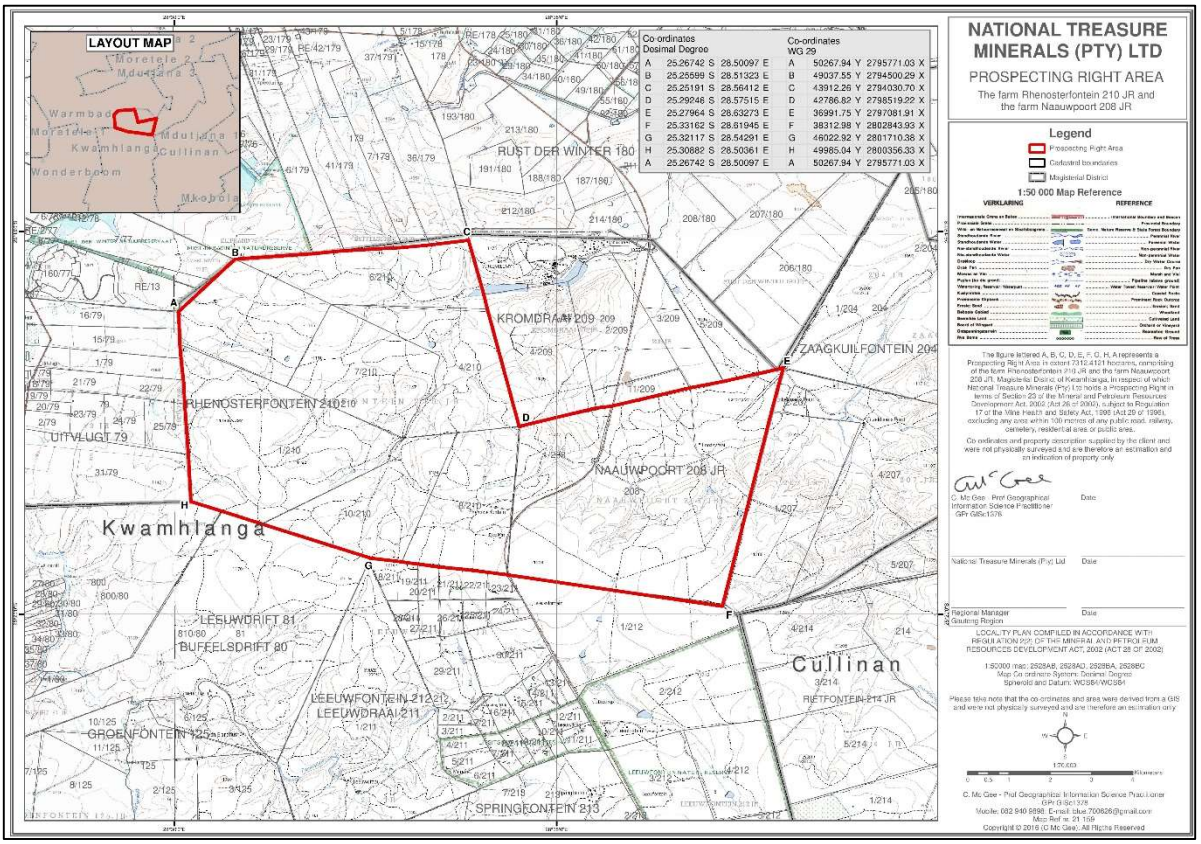


**Figure 2:** Proposed layout map (Provided by Eco Elementum 2021).

Cullinan is located roughly 37 km to the south of the proposed prospecting area, while Pretoria is located 56 km to the southwest and Belabela 45 km to the northwest. The demarcated farm portions fall within the City of Tshwane Metropolitan Municipality in the Gauteng Province. The R568 secondary road runs in a northeast-southwest direction approximately 14 km to the east, while the R567 tertiary road divides Portion 3 and the Remaining Extent of the Farm Naauwpoort 208 JR.

In terms of vegetation, the study area falls within the Savanna Biome and the Central Bushveld Bioregion. On a local scale the southern half of the study area falls on Central Sandy Bushveld and the northern half on Loskop Mountain Bushveld. According to Mucina & Rutherfords (2006), the conservation status for Central Sandy Bushveld is considered vulnerable. The conservation target for this vegetation unit is 19% and less than 3% is conserved, mostly in nature reserves. About 24% is transformed, including about 19% cultivated and 4% urban built-up areas. Central Sandy Bushveld is found in Limpopo, Mpumalanga, Gauteng and the North West Provinces. This vegetation unit is associated with undulating terrain that occurs in a broad arc south of the Springbokvlakte from Pilanesberg in the west through Hammanskraal and Groblersdal to GaMasemola in the east. A narrow band along the north-western edge of the Springbokvlakte extends into some valleys and lower-altitude areas within the Waterberg. Rural communities densely populate much of the broad arc south of the Springbokvlakte. Erosion in these areas vary from very low to high (Mucina & Rutherfords 2006).

Loskop Mountain Bushveld, on the other hand, is found in the Mpumalanga, Limpopo and Gauteng Provinces and occurs on mountains in the vicinity of Loskop Dam extending to Bronkhorstspruit and Rust de Winter. In terms of conservation, Loskop Mountain Bushveld is considered least threatened with a conservation target of 24%. About 15% is statutorily conserved in the Loskop Dam and Mabusa Nature Reserves, with an additional 2% conserved in other reserves. Less than 3% has been transformed by cultivation and urban built-up areas. Erosion generally varies between low and very low (Mucina & Rutherfords 2006).

According to Mucina & Rutherfords (2006), the average elevation for Central Sandy Bushveld ranges from 850 to 1450 MASL (metres above sea level), while the elevation for Loskop Mountain Bushveld varies between 1050 and 1500 MASL. The average elevation of the study area is 1180 MASL and is associated with mountainous terrain.

The study area falls within the summer rainfall region and the average annual rainfall is roughly 677 mm per year. The average annual temperature is 18.3 ºC. The average summer temperature is 22.1 ºC, while the winter temperature averages 12 ºC (Climate-data.org accessed 25/07/2021).

The majority of the study area falls within in the B31D quaternary catchment, while the western section falls within the B31C quaternary catchment of the Olifants Water Management Area. The closest perennial river to the study area is the Elands River 4 km to the west and 2 km to the north. A non-perennial river, Enkeldoringspruit, flows 1.6 km to the east. Several non-perennial streams are also found on all of the demarcated farm portions. The Rust de Winter Dam is located approximately 1.7 km km to the northwest of the study area.

Access to the demarcated areas appear to be through local roads turning from the R567 tertiary road. The majority of the study area appears to be unspoilt bushveld with small patches of cultivation next to river courses. Buildings and structures are visible on the majority of the farm portions. A vast network of local dirt roads is also associated with the demarcated farm portions.

## 2.2 Project description

The prospecting right application for iron ore covers approximately 7339.3 ha (**Figures 3 & 4**). For the prospecting phase, however, several sites will be selected for geotechnical drilling. These boreholes and its associated activities will impact on a surface area of between 250 and 625 m². The full extent of the drill site will also be demarcated and no drilling will be done outside of the boundary.

**Prospecting activities will include the following:**

Current access roads will be used as far as possible, but in cases where access roads to drill sites do not exist, a single track will be selected based on the area where the least environmental impact will occur. The same

tracks will be used should repeated access be required. Vegetation and topsoil excavated during the drilling process will be stockpiled next to sumps where it will serve as a storm water diversion berm. On completion of the drilling process, the rehabilitated sumps will be backfilled with the stockpiled material. Because a constant water supply is needed for the drilling process, 15 000l will be stored in tanks. The plastic-lined sumps will be used to recycle water through a filter process in order to maintain a constant clean water source for the purpose of drilling. In terms of potable water for employees and workers, a temporary 260l tank will be placed on-site. Additional facilities will include temporary portable toilets, berms, and a maximum of 60m³ of diesel fuel located on an impermeable surface with bunds.

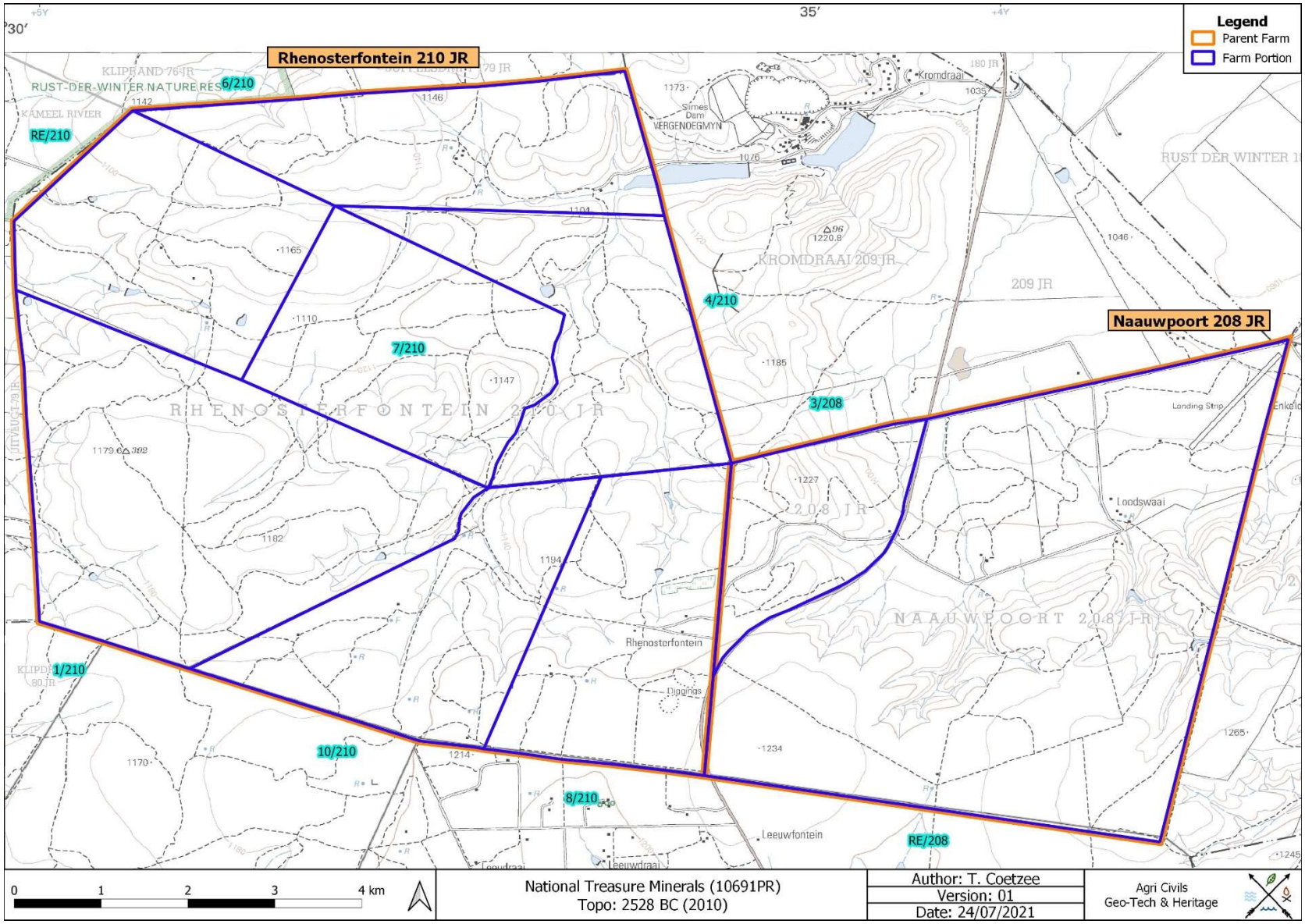


**Figure 3:** Segment of SA 1:50 000 2528 BC indicating the area demarcated for prospecting.

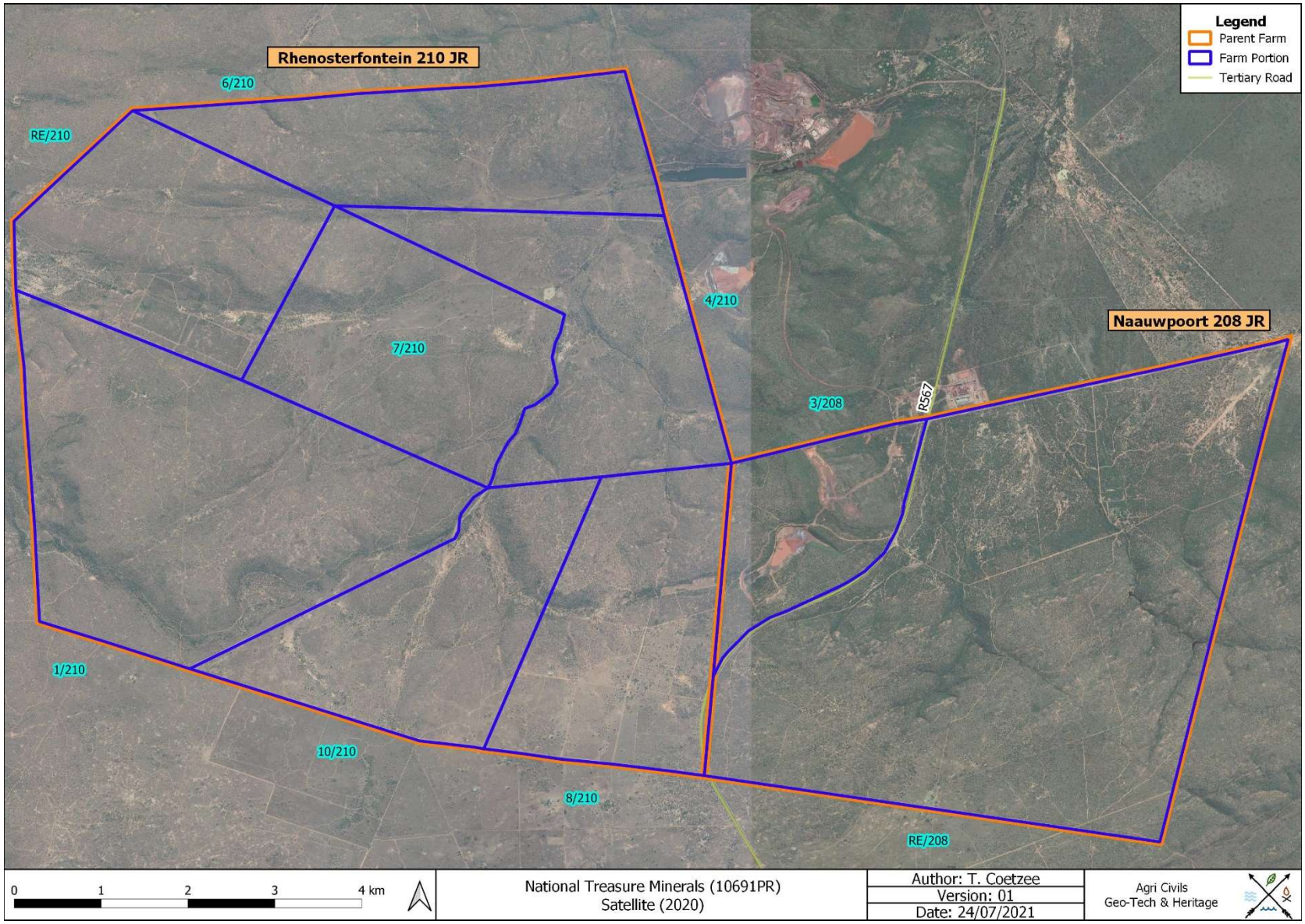


**Figure 4:** Proposed prospecting area portrayed on a 2020 satellite image.

# 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 Acheulian 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 (Early Stone Age) 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 (MSA) 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 (LSA) 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). These artefacts are often associated with rocky outcrops or water sources. The LSA site, Fort Troje, is located just north of Cullinan and approximately 29 km south of the proposed prospecting project (Korsman et al. 1998: 95). **Figures 5 – 7** below shows examples of stone tools often associated with the ESA, MSA and LSA of southern Africa.

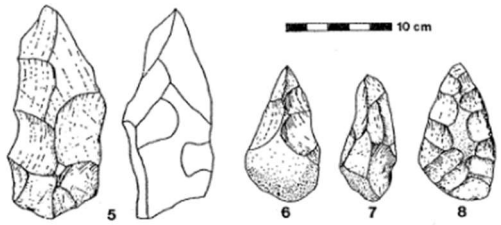


**Figure 5:** ESA artefacts from Sterkfontein (Volman 1984).

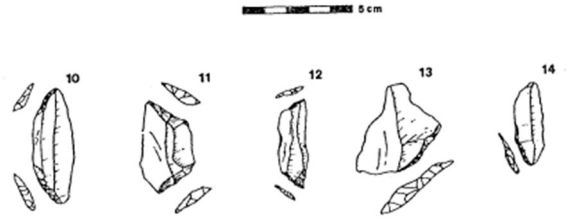


**Figure 6:** MSA artefacts from Howiesons Poort (Volman 1984).


**Figure 7:** LSA scrapers (Klein 1984).

## 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 (LIA) 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 general region of the study area is well known for LIA sites. The area west of Wonderboompoort is associated with one of the earliest LIA sites. Further to the west a high concentration of sites is also found that stretches to Olifantspoort in the Magaliesberg. These sites date to the Moloko period that roughly stretched from AD 1100 – 1500 (Van Vollenhoven 2006).

Oral traditions of Nguni-speaking Ndebele groups indicate their sites in the area to the east of Pretoria, while heritage reports conducted on the stone-walled sites of this area suggest that Ndebele-speaking people inhabited this area between the late 1600s and mid-1800s (Antonites 2020).

According to Van Vuuren (2006), Ndebele oral traditions state that they first settled at Emhlangeni, translating to “At the reeds”, near Randfontein in the Gauteng Province. Accordingly, they entered the Pretoria region during the early to mid- 1600s and settled at KwaMnyamana, which translates to “Place of the Black Hills”. KwaMnyamana is located close to the Hippo Quarries crusher site on the farms De Onderstepoort (300JR) and Doornpoort (295JR). The first chief to settle at this site was called Musi. A split between his sons caused the Ndebele to divide into several tribal entities. The descendants of the youngest son, Ndzundza, moved further to the east, while the descendants of the eldest son, Manala, stayed behind.

A later Ndebele invasion that was led by Mzilikaze in 1827, settled at Kungwini, present day Wonderboom in Pretoria North. In 1832, the Zulu king Dingane attacked Mzilikaze at Kungwini. According to Van Vollenhoven (2006), the Sotho-Tswana groups are the largest Bantu language speaking people who are formed by the Northern and Southern Sotho, as well as the Tswana. These groups are responsible for large stone-walled towns and according to oral histories, these groups re-established themselves after the 1827 arrival of Mzilikaze during the Mfecane/Difaquane.

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 Examples of Heritage Sites

**Figures 8 – 15** are examples of heritage sites sometimes encountered – such areas should be avoided.

**Figure 8:** Example of undecorated potsherds.

**Figure 9:** Example of a decorated potsherd.

**Figure 10:** Example of a potential granary base.

**Figure 11:** Example of a stone-walled site.

**Figure 12 :** Example of a broken lower grinding stone.

**Figure 13:** Example of a dilapidated stone-walled site.

**Figure 14:** Example of a historical building.

**Figure 15:** Example of a potential informal grave.

## 3.4 Previous Heritage Studies

**Chicken breeding facility – Buffelsdrift 179 JR**

A Heritage Impact Assessment was conducted for a chicken breeding facility on the Farm Buffelsdrift 179 JR. The demarcated impact area was approximately 4000 m² and is located roughly 5 km north of the proposed National Treasure Minerals (Pty) Ltd project. Van Schalkwyk (2007) surveyed the study area and located two cemeteries. The presence of LIA sites in the vicinity of the Rust de Winter dam is also noted.

**132kV Power Line between Rust de Winter Substation and the Nokeng Substation**

A Phase 1 HIA was conducted by Pistorius (2011) for the construction of a 132 kV power line between the Rust de Winter substation and the Nokeng substation near Rust de Winter Dam. The power line is located directly northeast of the proposed National Treasure Minerals (Pty) Ltd project area and appears to intersect Portion 3 and the Remaining Extent of the Farm Naauwpoort 208 JR. The study recorded two cemeteries and three houses dating to the historic period. A strong possibility for Stone Age and Iron Age remains are also noted.

**Nokeng Fluorspar Mine**

Kruger (2016) conducted an Archaeological Impact Assessment for the Nokeng Fluorspar Mine on Portions 4 and 11 and the Remaining Extent of Portion 2 of the Farm Kromdraai 209 JR and Portion 1 of the Farm Naauwpoort 209 JR. Based on the property description, the Nokeng Fluorspar project area partially intersects the National Treasure Minerals (Pty) Ltd project area towards the east. The project entails surface infrastructure and development on approximately 140 ha. The study, that serves as an update to the initial heritage study conducted by Kusel (2009), lists the presence of cemeteries, building ruins, a MSA stone tool scatter and an Iron Age stone-walled site with terracing.

# 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: Several portions of the Farms Rhenosterfontein 210 JR and Naauwpoort 208 JR, Gauteng.**

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 Stone Age, Iron Age, historical sites, and cemeteries/burial sites. Since heritage sites, such as burial sites, are not always clearly identifiable due to disturbed/removed surface features, care must be exercised when prospecting.

The **Appendix A** figures indicate the study area on 1967, 1984, 1995, 2001 and 2010 topographical maps, as well as on 1961 aerial images, while **Table 2** lists the potential sites, type of site, location, estimated extent and current status as observed on recent satellite imagery. **Figures 16 & 17** indicate the identified potential sites and sensitive areas.

Twenty-six potential sites were identified on the historical aerial images and topographical maps: Three sites on the Remaining Extent of the Farm Naauwpoort 208 JR, four sites on Portion 1/210, six sites on Portion 4/210, two sites on Portion 6/210, one on Portion 7/210, three sites on Portion 8/210, two sites on Portion 10/210, one site intersecting Portions 1/210 and 10/210, one site intersecting Portions 1/210, 7/210 and RE/210, two sites intersecting Portions 4/210 and 7/210, and one site intersecting Portion 7/210 and the RE/210.

A total of 16 sites associated with buildings were observed on 1961 aerial imagery. Fifteen of the sites appear to have been demolished as no surface features are noted on contemporary satellite imagery, while one site is associated with intact surface remains. The demolished sites, however, might be associated with subsurface culturally significant remains. It is also unknown whether the site associated with intact buildings have been demolished and replaced by modern buildings. Should any parts of the site observed on the 1961 aerial image still exist, it would be at least 60 years old and would therefore be protected by the NHRA (National Heritage Resources Act) 25 of 1999.

The eight sites associated with buildings and two sites associated with kraals identified on the 1984 topographical map appear to have been demolished and are not indicated on the 1967 topographical map or 1961 aerial image. These sites appear not to exceed 60 years of age and are therefore not considered significant from a heritage perspective.

**Table 2:** Potential site location.

| Site No | Type | Parent Farm | Farm Portion | Current Status | Estimated Extent (ha) | Lat (y) | Lon (x) |
|---|---|---|---|---|---|---|---|
| B01 | Building | Rhenosterfontein 210 JR | 4, 7 | Demolished | 35.9 | -25.272543 | 28.552586 |
| B02 | Building | Rhenosterfontein 210 JR | 1, 7, RE | Demolished | 29.2 | -25.283579 | 28.528359 |
| B03 | Building | Rhenosterfontein 210 JR | 7 | Demolished | 4.3 | -25.280851 | 28.549722 |
| B04 | Building | Rhenosterfontein 210 JR | 4 | Demolished | 5.5 | -25.283650 | 28.559467 |
| B05 | Building | Rhenosterfontein 210 JR | 10 | Demolished | 6.2 | -25.302818 | 28.546163 |
| B06 | Building | Rhenosterfontein 210 JR | 1 | Demolished | 4.2 | -25.304079 | 28.533567 |
| B07 | Building | Rhenosterfontein 210 JR | 1 | Demolished | 6.0 | -25.309817 | 28.518328 |
| B08 | Building | Rhenosterfontein 210 JR | 1 | Demolished | 4.2 | -25.308833 | 28.523515 |
| B09 | Building | Rhenosterfontein 210 JR | 1 | Demolished | 4.5 | -25.311954 | 28.521560 |
| B10 | Building | Rhenosterfontein 210 JR | 8 | Demolished | 17.0 | -25.310465 | 28.571262 |
| B11 | Building | Naauwpoort 208 JR | RE | Intact | 8.0 | -25.297835 | 28.615221 |
| B12 | Building | Rhenosterfontein 210 JR | 6 | Demolished | 3.4 | -25.259190 | 28.550650 |
| B13 | Building | Rhenosterfontein 210 JR | 6 | Demolished | 4.9 | -25.264619 | 28.557414 |
| B14 | Building | Rhenosterfontein 210 JR | 4 | Demolished | 3.8 | -25.269044 | 28.558069 |
| B15 | Building | Rhenosterfontein 210 JR | 4 | Demolished | 3.3 | -25.274248 | 28.557230 |
| B16 | Building | Rhenosterfontein 210 JR | 4 | Demolished | 1.8 | -25.271154 | 28.548286 |
| B17 | Building | Rhenosterfontein 210 JR | RE, 7 | Demolished | 3.9 | -25.279292 | 28.526400 |
| B18 | Building | Rhenosterfontein 210 JR | 8 | Demolished | 3.1 | -25.306148 | 28.566044 |
| B19 | Building | Rhenosterfontein 210 JR | 8 | Demolished | 5.7 | -25.309146 | 28.568519 |
| B20 | Kraal | Rhenosterfontein 210 JR | 1, 10 | Demolished | 4.4 | -25.300739 | 28.546568 |
| B21 | Building | Rhenosterfontein 210 JR | 10 | Demolished | 3.0 | -25.306488 | 28.540919 |
| B22 | Kraal | Naauwpoort 208 JR | RE | Demolished | 6.6 | -25.326188 | 28.596792 |
| B23 | Building | Rhenosterfontein 210 JR | 4 | Demolished | 2.1 | -25.268011 | 28.555717 |
| B24 | Building | Rhenosterfontein 210 JR | 4, 7 | Demolished | 27.4 | -25.280237 | 28.554312 |
| B25 | Building | Naauwpoort 208 JR | RE | Demolished | 2.0 | -25.302137 | 28.594046 |
| B26 | Building | Rhenosterfontein 210 JR | 4 | Demolished | 33.0 | -25.274196 | 28.564547 |

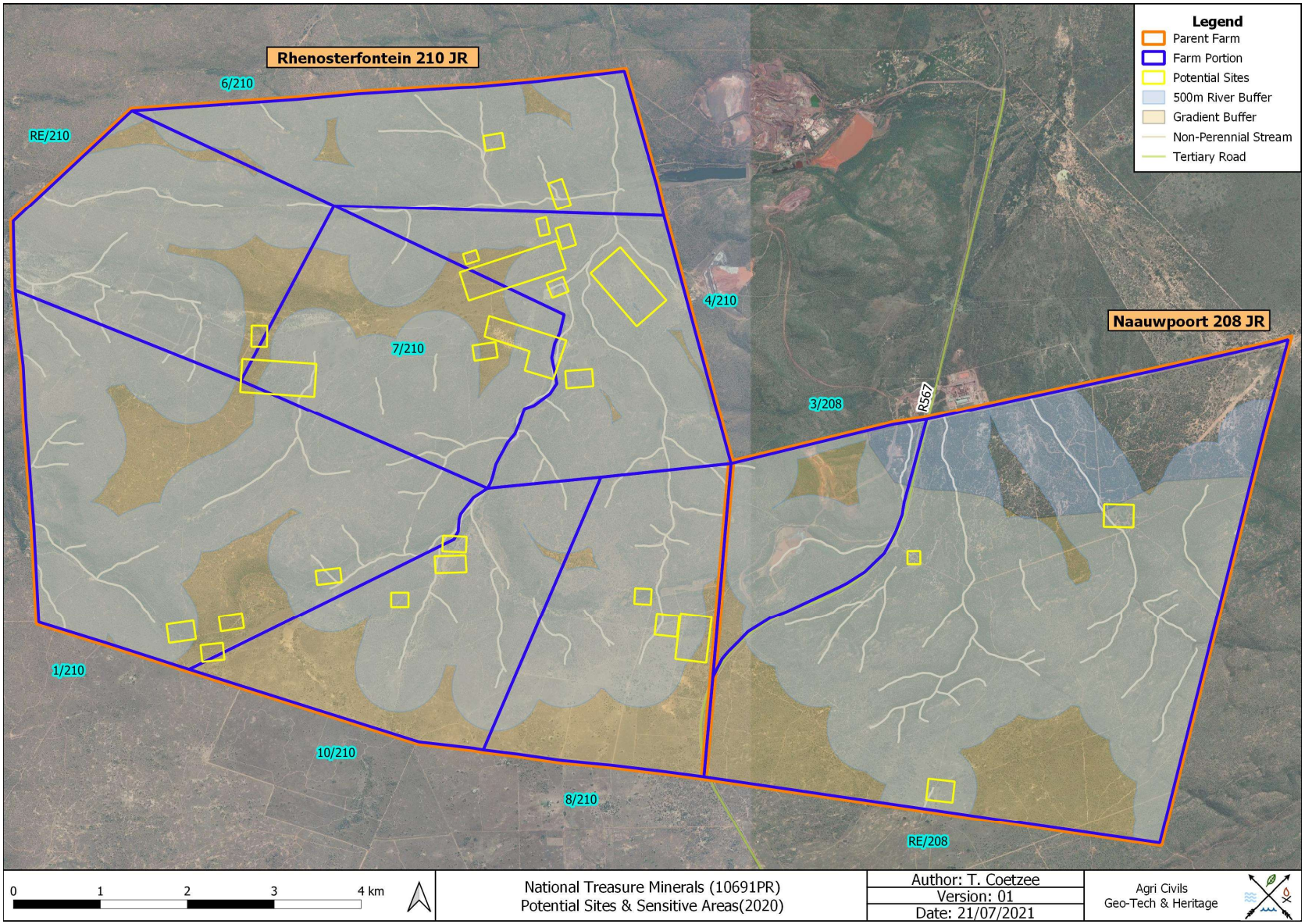


**Figure 16:** Potential Sites & Sensitive Areas.

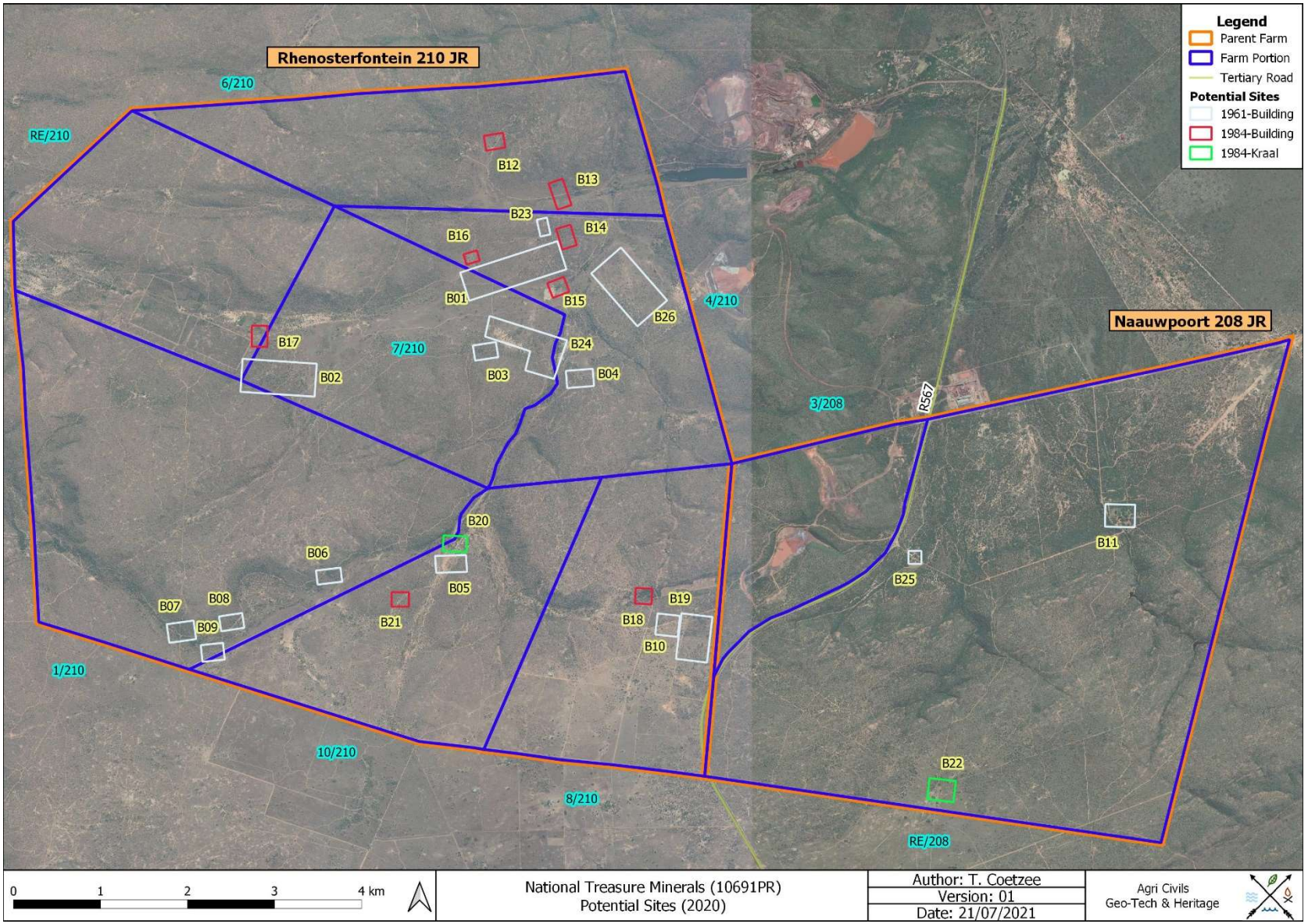


**Figure 17:** Potential Sites .

## 5.2 Recommendations

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

- Although the 15 demolished sites dating to 1961 (**Table 2**) appear not to be associated with surface remains, subsurface culturally significant material might be present. Therefore, it is recommended that these sites be avoided by the proposed prospecting activities. Should this not be possible, a qualified archaeologist should be present on-site during prospecting in order to limit potential impact on heritage resources.

- The one intact site dating to 1961 (**Table 2**) might be of cultural significance as the possibility exists that the associated buildings and structures exceed 60 years of age. It is therefore recommended that this area be avoided by the proposed prospecting activities. Should this not be possible, a qualified archaeologist should be present on-site during prospecting in order to limit potential impact on heritage resources.

- The 10 sites dating to 1984 are of contemporary origin and are unlikely to be significant from a heritage perspective.

- The 500 m buffer zone surrounding perennial/non-perennial rivers is potentially sensitive from a heritage perspective. Care should be exercised when prospecting in this vicinity.

- The gradient buffer zone that is associated with steep contours is potentially sensitive from a heritage perspective. Care should be exercised when prospecting in this vicinity.

- It is advised that a qualified archaeologist be contacted whenever uncertainty regarding potential heritage remains exists.

- Prospecting should not take place in the vicinity of stone cairns, potential burial sites, stone-walling, building ruins or any other heritage material or structures.

- 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. Also, a full Phase 1 AIA must be done should the cumulative impact of the proposed prospecting exceed 0.5 ha.

- 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)).

- From a heritage point of view, prospecting may proceed on the demarcated portions, subject to the abovementioned conditions and recommendations.

# 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 selvage 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


Antonites, A. 2020. Heritage Impact Assessment Report for the Proposed Pig Production Facility on Portion 23 of Kameel Zyn Kraal 547 JR, Bapsfontein, Gauteng Province. Pretoria.

Clarke, R.J. & Kuman, K. 2000. *The Sterkfontein Caves Palaeontological and Archaeological Sites*. Johannesburg: University of the Witwatersrand.

Climate-Data.org. KwaMlanga Climate. https://en.climate-data.org/africa/south-africa/mpumalanga/kwamlanga-57512/ Accessed 25-07-2021.

Deacon, H. & Deacon, J. 1999. *Human beginnings in South Africa.* Cape Town: David Philip.

Huffman, T.N. 2007. *Handbook to the Iron Age.* Pietermaritzburg: UKZN Press.

Klein, R. G. (ed.) 1984. South African prehistory and paleoenvironments. Rotterdam: Balkema

Korsman, S.A., Van Der Ryst, M.M. & Meyer, A. 1998. Die Vroegste Inwoners. In: Bergh, J. (ed.) *Geskiedenisatlas Van Suid-Afrika: Die Vier Noordelike Provinsies: 93-102*. Pretoria: J. L. van Schaik Uitgewers.

Kruger, N. 2016. Archaeological Impact Assessment (AIA) for the Proposed Nokeng Fluorspar Mine and Associated Infrastructure Project on Portions 4 and 11 and the Remaining Extent of Portion 2 of the Farm Kromdraai 209 JR and Portion 1 of the Farm Naauwpoort 208 JR, Gauteng Province. Pretoria: Exigo Sustainability

Kusel, U. 2009. Cultural heritage resources impact assessment of the proposed new fluorspar mine on the Farms Kromdraai 209jr and Naaupoort 208jr, Nokeng, Gauteng Province.

Mitchell, P. 2002. *The archaeology of southern Africa.* Cambridge: Cambridge University Press.

Mucina, L. & Rutherford, M. C. 2006. *The Vegetation of South Africa, Lesotho and Swazil*and. Strelitzia 19. South African National Biodiversity Institute, Pretoria.

Pistorius, J. 2011. A Phase 1 Heritage Impact Assessment Study for Eskom's Proposed Nokeng-Fluorspar Project: The Construction of a Proposed New 132kV Power Line Between the Rust de Winter Substation and the Proposed New Nokeng Substation with Associated Infrastructure near Rust de Winter in the Limpopo Province of South Africa. Pretoria

Toth, N. & Schick, K. 2007. *Handbook of paleoanthropology*. Berlin: Springer.

Van Schalkwyk, J. 2007. Heritage Impact Survey of Portions of the Farm Bufflelsdrift 179JR, Warmbad Magisterial District, Limpopo Province.

Van Vollenhoven, A.C. 2006. Die prehistoriese en vroeë historiese tydvak in Pretoria. South African Journal of Cultural History 20 (2): 176–200.

Van Vuuren, C.J. 2006. Ndebele Place Names and Settlement in Pretoria. South African Journal of Cultural History 20 (1): 78–99.

Volman, T. P. 1984. Early Prehistory of southern Africa. In: Klein, R. G. (ed.) Southern African prehistory and paleoenvironments. Rotterdam: Balkema.

*Human Tissue Act No. 65 of 1983, Government Gazette, Cape Town*

*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: Historical Aerial Imagery & Topographical Maps

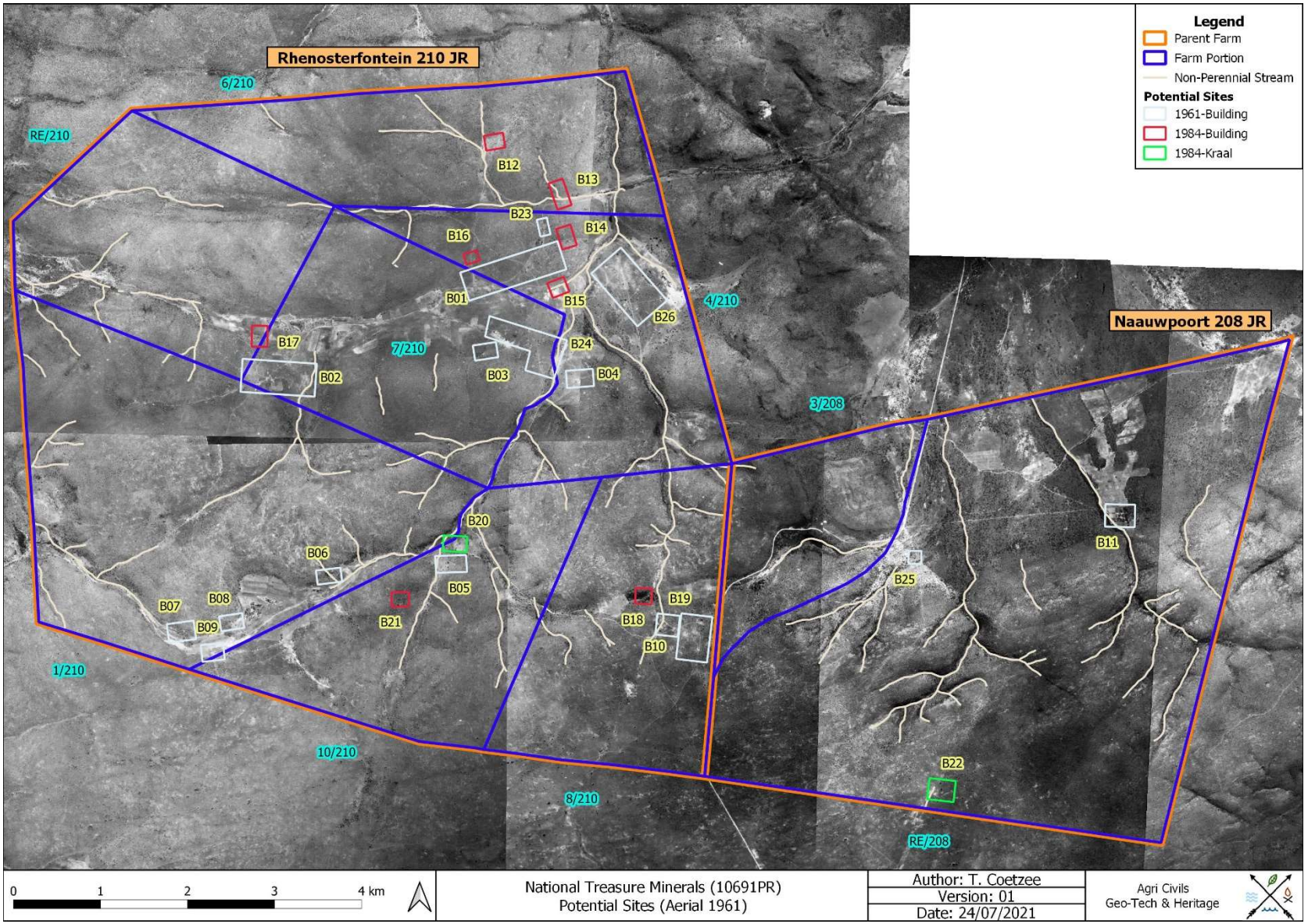


**Figure 18:** 1961 Aerial image of the study area.

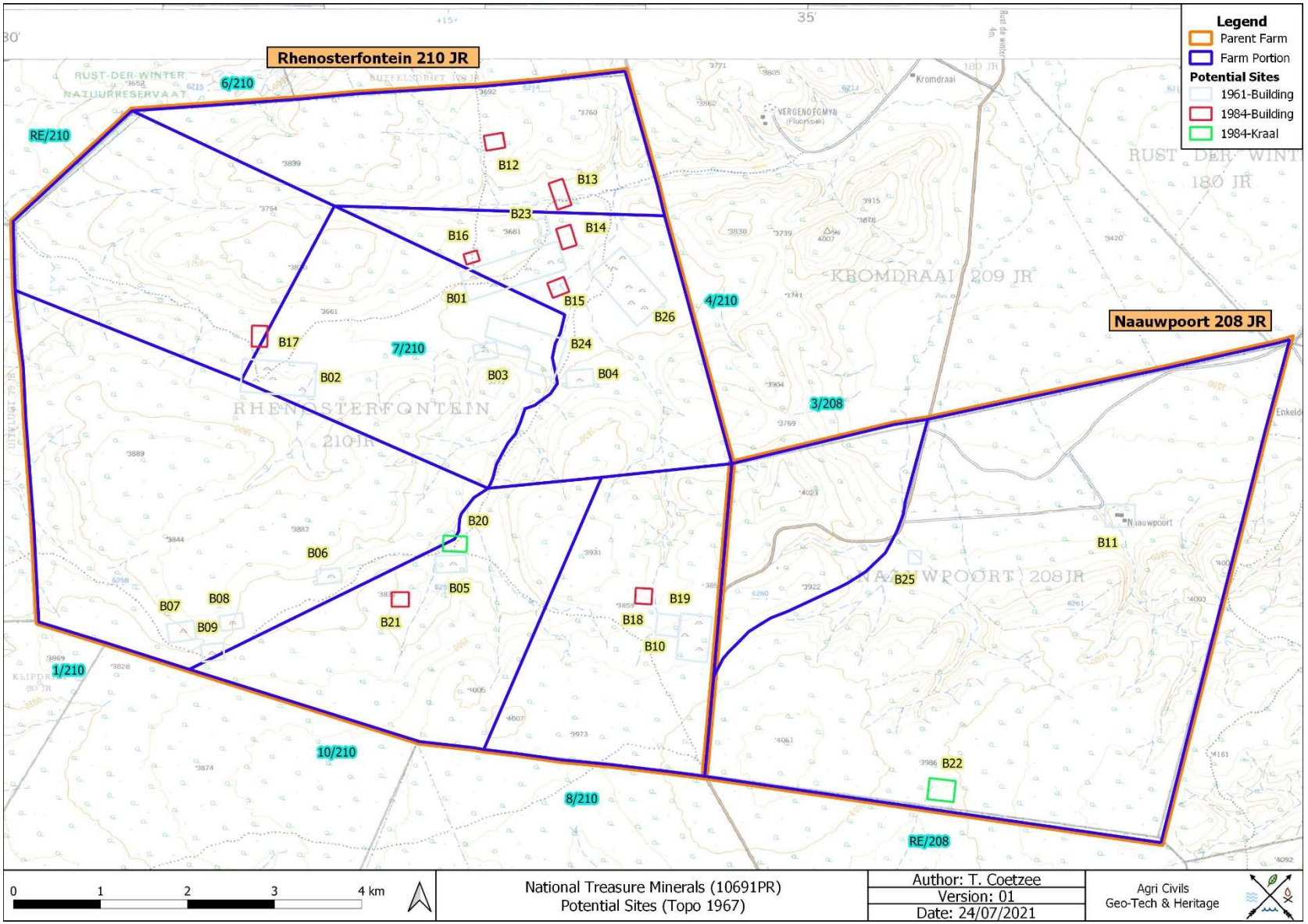


**Figure 19:** Segment of 1967 1:50 000 2528 BC indicating the study area.

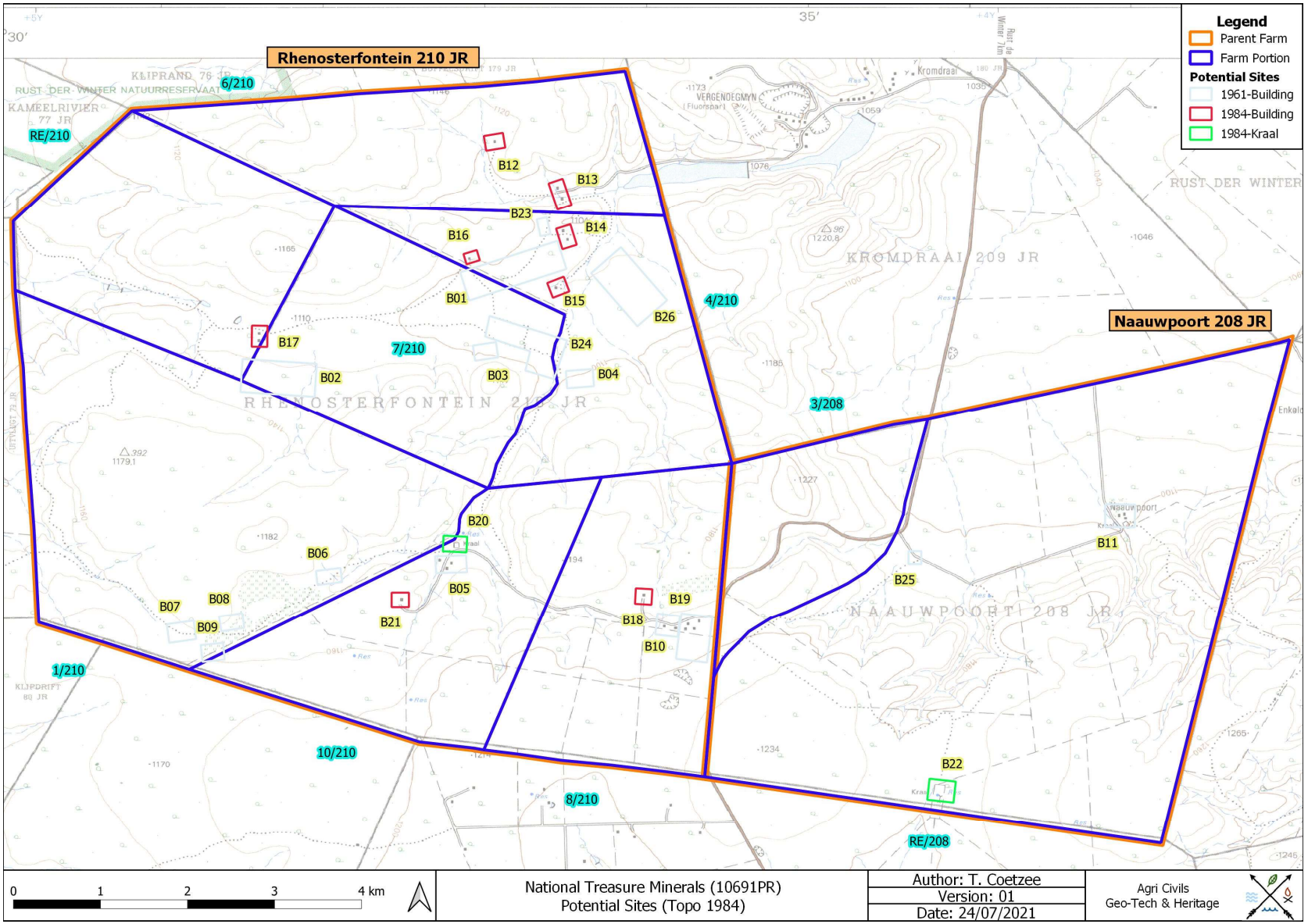


**Figure 20:** Segment of 1984 1:50 000 2528 BC indicating the study area.

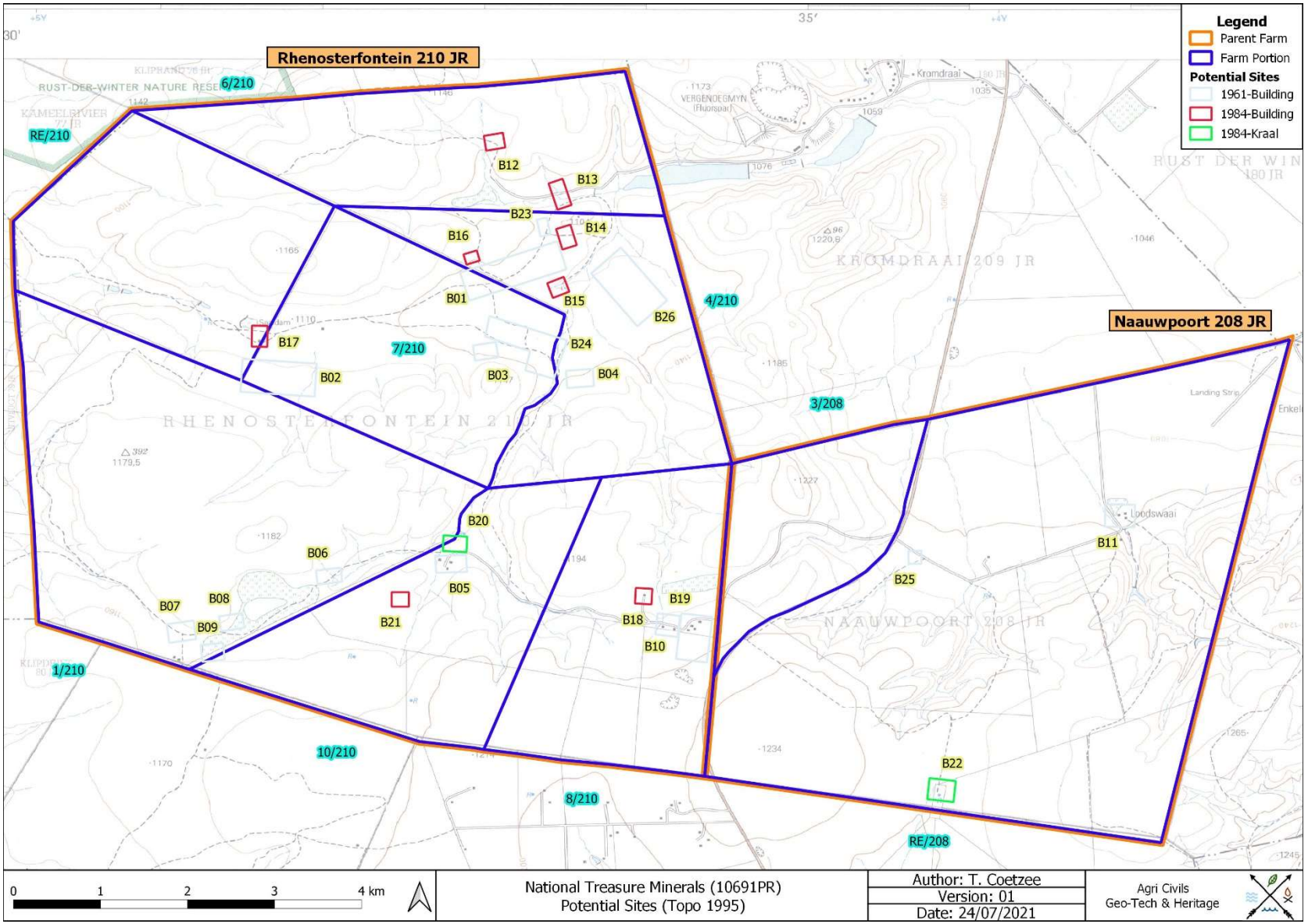


**Figure 21:** Segment of 1995 1:50 000 2528 BC indicating the study area.

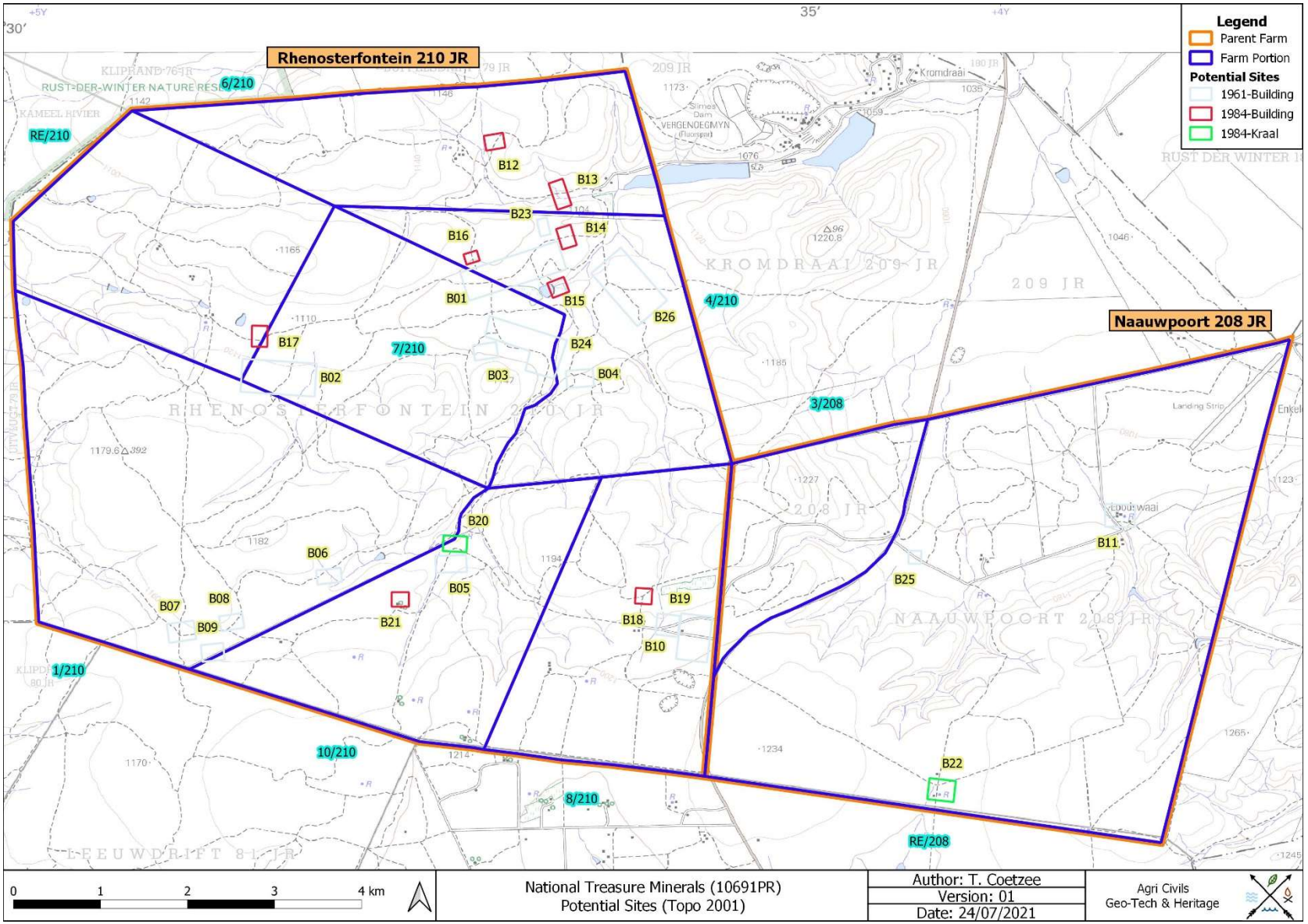


**Figure 22:** Segment of 2001 1:50 000 2528 BC indicating the study area.

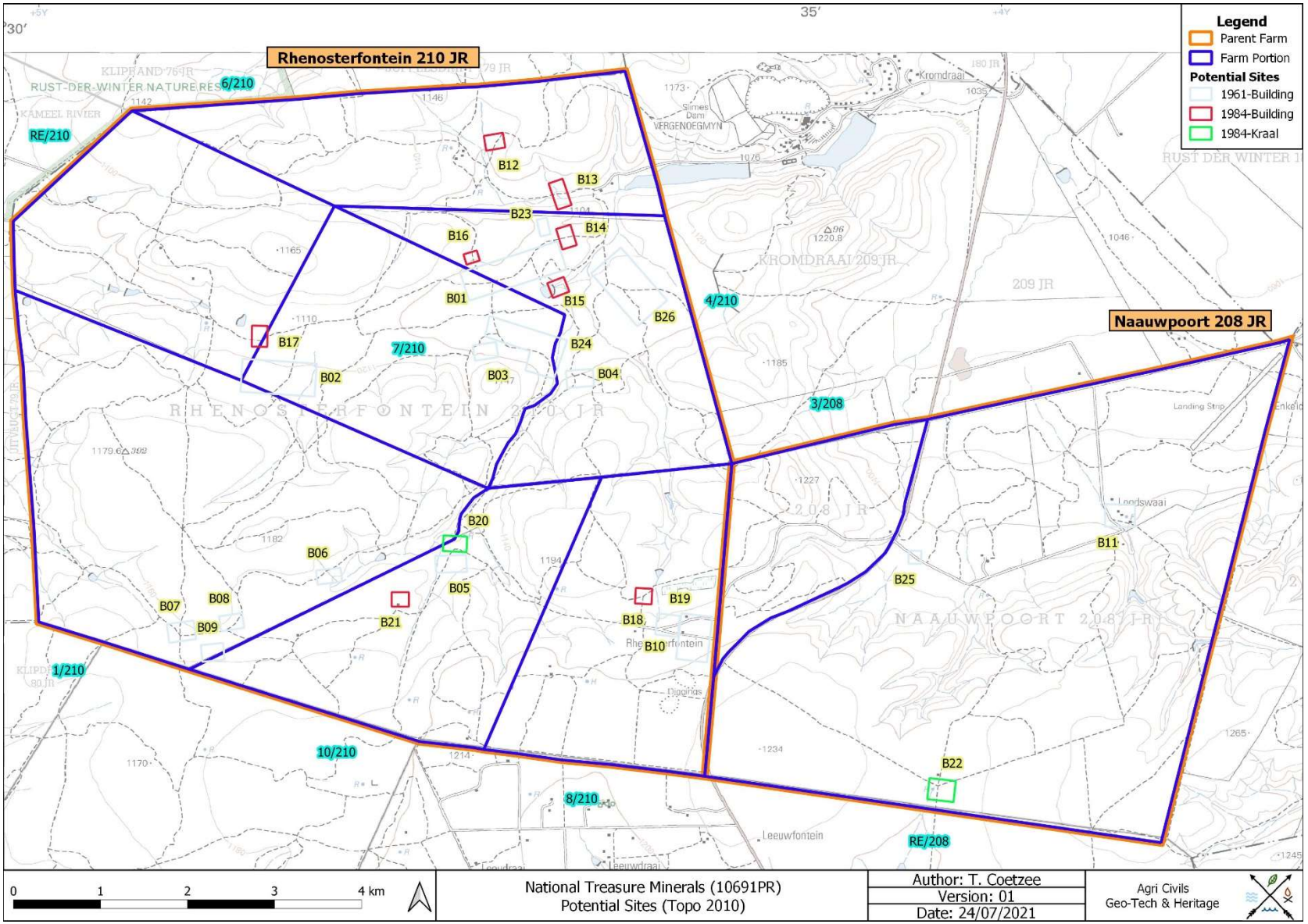


**Figure 23:** Segment of 2010 1:50 000 2528 BC indicating the study area.