

PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT

For

**The Proposed Golden Mole Mall on Farm
Portions 218 and 220 of the Farm
Tweefontein 372 JR, Pretoria, Gauteng**

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

A Phase 1 Archaeological Impact Assessment for the proposed Golden Mole Mall on Farm Portions 218 and 220 of the Farm Tweefontein 372 JR, Pretoria, Gauteng

For: Eco Elementum (Pty) Ltd

361 Oberon Ave

Glenfield Office Park

Nika Building

Faerie Glen

Pretoria

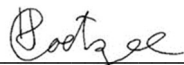
0081

Report No: GMM_1511211

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 Golden Mole Mall 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: 15 November 2021

List of Abbreviations

AIA – Archaeological Impact Assessment

CRM – Cultural Resource Management

EIA – Environmental Impact Assessment

ESA – Early Stone Age

GPS – (Global Positioning System)

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

Executive Summary

The author was appointed by Eco Elementum (Pty) Ltd to undertake a Phase 1 Archaeological Impact Assessment (AIA) for the construction of the proposed Golden Mole Mall on Portions 218 and 220 of the Farm Tweefontein 372 JR within the City of Tshwane Metropolitan Municipality in the Gauteng Province. The study area is located to the east of Pretoria, roughly 17 km east-southeast of the Pretoria CBD. The aim of this report is to determine the scope of archaeological resources that could be impacted by the construction of the proposed Golden Mole Mall.

No heritage sites were observed during the pedestrian survey and no structures exceeding 60 years of age appear on historical aerial images and topographical maps. An early topographical map dating to 1944 indicates the area to be cultivated, while historical aerial images show the area to be open veldt. The first evidence of buildings or construction activities is found on the 1976 aerial image. Therefore, this area can be regarded as having a low sensitivity in terms of archaeological and cultural heritage.

Due to no visible heritage material exceeding 60 years of age within the demarcated project area and subject to the approval by SAHRA (South African Heritage Resources Agency), the proposed construction of the Golden Mole Mall may continue. Should skeletal remains be exposed during development and construction phases, all activities must be suspended and the relevant heritage resources authority contacted (See National Heritage and Resources Act, 25 of 1999 section 36 (6)). Also, should culturally significant material be discovered during the course of the said development, all activities must be suspended pending further investigation by a qualified archaeologist.

Table of Contents

List of Abbreviations	3
Executive Summary.....	4
1. Project Background.....	7
1.1 Introduction	7
1.2 Legislation.....	9
1.2.1 The Basic 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.....	14
3. Archaeological Background	20
3.1 The Stone Age	20
3.2 The Iron Age & Historical Period.....	21
4. Methodology.....	22
4.1 Limitations	27
5. Sources of Information.....	28
5.1 Previous Heritage Studies.....	29
5.2 Historical Aerial Images & Topographical Maps	29
6. Archaeological and Historical Remains.....	30
6.1 Stone Age Remains	30
6.2 Iron Age Farmer Remains.....	31
6.3 Historical	31
6.4 Contemporary Remains	31
6.5 Graves.....	35
7. Evaluation.....	35
7.1 Field Ratings	35
8. Statement of Significance & Recommendations.....	36
8.1 Statement of significance	36
8.2 Recommendations	36
9. Addendum: Terminology.....	38
10. References.....	39
Appendix A: Historical Aerial Imagery & Topographical Maps	A

List of Figures

Figure 1: Regional and Provincial location of the study area.	8
Figure 2: Segment of 2001 SA 1: 50 000 2528 CD indicating the surrounding area.....	16
Figure 3: Satellite imagery of the surrounding area.	17
Figure 4: Proposed site plan – Ground Floor.	18
Figure 5: Proposed site plan – Upper Ground Floor.	19
Figure 6: The study area indicated on a 2020 satellite image.....	24
Figure 7: Open veldt associated with the eastern section of.....	25
Figure 8: Environment associated with the eastern section of.....	25
Figure 9: Environment associated with the western section of.....	26
Figure 10: Open veldt associated with the western section of.....	26
Figure 11: Patch of dense trees associated with the.....	27
Figure 12: Patch of dense trees associated with the.....	28
Figure 13: ESA artefacts from Sterkfontein (Volman 1984).	30
Figure 14: MSA artefacts from Howiesons Poort (Volman 1984).....	30
Figure 15: LSA scrapers (Klein 1984).	31
Figure 16: Building remains on the eastern section of the.....	32
Figure 17: Pond on the eastern section of the study area.....	32
Figure 18: Building rubble one the eastern section of the.....	33
Figure 19: Built environment associated with the western.....	33
Figure 20: Modern buildings on the western section of the.....	34
Figure 21: Contemporary infrastructure on the western.....	34
Figure 22: 1939 Aerial image of the study area.	B
Figure 23: Segment of 1944 SA 1: 50 000 2528 CD indicating the study area.....	C
Figure 24: 1958 Aerial image of the study area.	D
Figure 25: 1964 Aerial mage of the study area.	E
Figure 26: Segment of 1964 SA 1: 50 000 2528 CD indicating the study area.....	F
Figure 27: 1968 Aerial mage of the study area.	G
Figure 28: Segment of 1975 SA 1: 50 000 2528 CD indicating the study area.....	H
Figure 29: 1976 Aerial mage of the study area.	I
Figure 30: 1991 Aerial mage of the study area.	J
Figure 31: Segment of 1991 SA 1: 50 000 2528 CD indicating the study area.....	K
Figure 32: 2001 Aerial mage of the study area.	L
Figure 33: Segment of 2001 SA 1: 50 000 2528 CD indicating the study area.....	M
Figure 34: 2004 Google Earth satellite image of the study area.	N
Figure 35: 2005 Google Earth satellite image of the study area.	O
Figure 36: 2009 Google Earth satellite image of the study area.	P
Figure 37: 2011 Google Earth satellite image of the study area.	Q
Figure 38: 2015 Google Earth satellite image of the study area.	R

List of Tables

Table 1: Property name & coordinates.....	13
Table 2: Field Ratings.....	35

1. Project Background

1.1 Introduction

Eco Elementum (Pty) Ltd appointed the author to undertake a Phase 1 Archaeological Impact Assessment for the construction of the Golden Mole Mall on Portions 218 and 220 of the Farm Tweefontein 372 JR within the City of Tshwane Metropolitan Municipality in the Gauteng Province (**Table 1**). The study area is located to the east of Pretoria, roughly 17 km east-southeast of the Pretoria CBD (**Figure 1**).

The purpose of this study is to examine the demarcated portions in order to determine the scope of heritage resources that might be impacted by the proposed construction of the Golden Mole Mall, as well as to archaeologically contextualise the general study area. The aim of this report is to provide the developer with information regarding the location of heritage resources on the demarcated portion based on the results of a pedestrian survey, previous heritage studies, written historical information and historical topographical maps and aerial photographs.

In the following report, the implications for the construction of the Golden Mole Mall and the associated activities on Portions 218 and 220 of the Farm Tweefontein 372 JR are discussed with regard to heritage resources. The legislation section included serves as a guide towards the effective identification and protection of heritage resources and will apply to any such material unearthed.

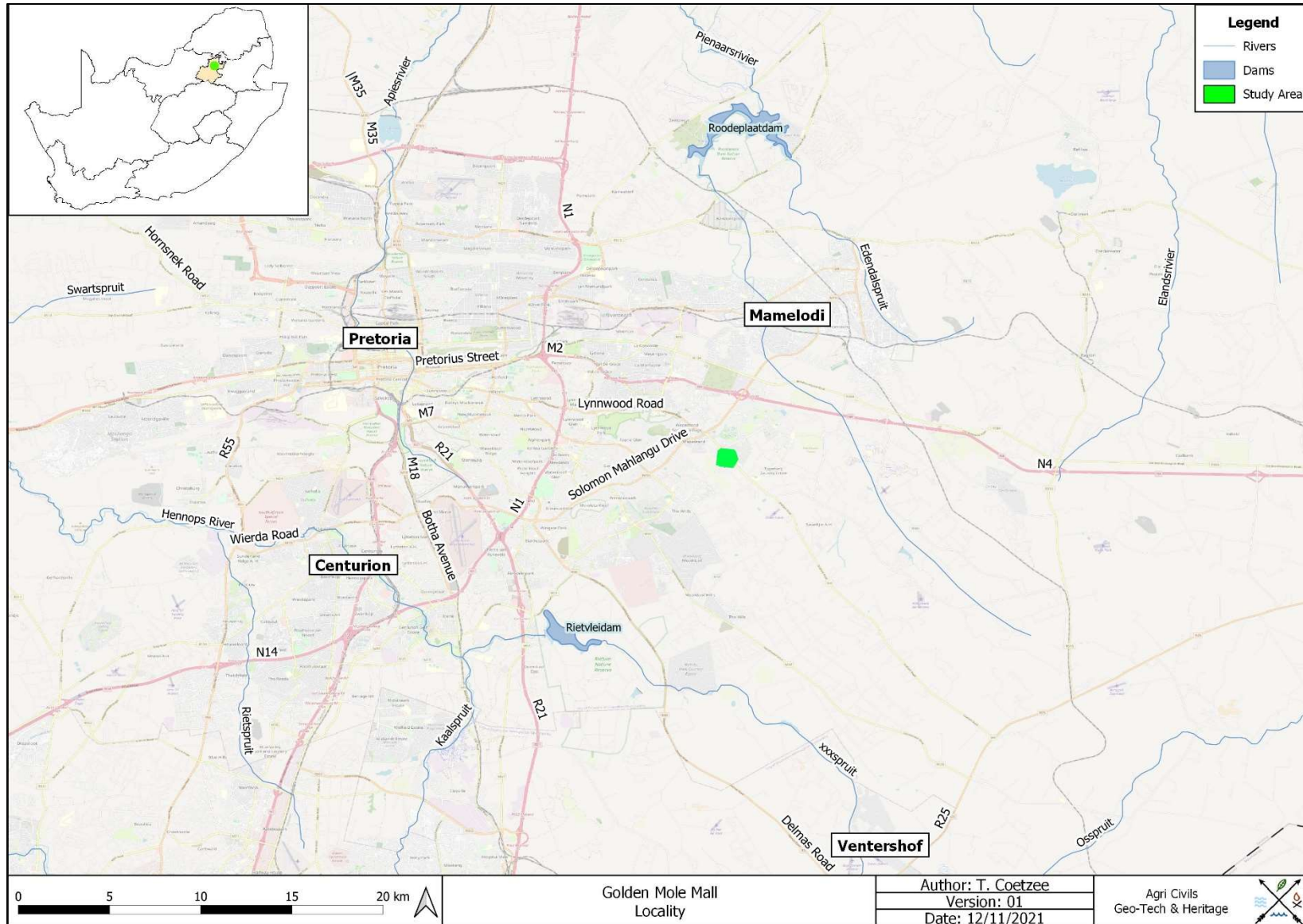


Figure 1: Regional and Provincial location of the study area.

1.2 Legislation

The South African Heritage Resources Agency 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 Basic 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 a Basic Assessment, 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 (NHRA).

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)*

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 Member of the Executive Council (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 proposed Golden Mole Mall is situated on the following properties:

Table 1: Property name & coordinates.

Property	Portion	Map Reference (1:50 000)	Lat (y)	Lon (x)	Development Extent (ha)
Tweefontein 372 JR	218 & 220	2528 CD	-25.790961	28.354707	3.56

The Pretoria CBD is located about 17 km west-northwest of the proposed Golden Mole Mall, while Centurion is located roughly 19 km to the west-southwest and Mamelodi 8 km to the north-northeast. The study area falls within the Tshwane Metropolitan Municipality in the Gauteng Province. Graham Road, a secondary road, runs in a northwest – southeast direction and borders the study area on the north-eastern side, while Struben Road runs along the eastern boundary and Catherine Road along the south-western boundary (**Figures 1 – 3**). Access to the study area is via Catherine Road.

In terms of vegetation, the study area falls within the Savanna Biome and Central Bushveld Bioregion. On a local scale, the vegetation of the study area is classified as Marikana Thornveld. This vegetation unit is found in the North West and Gauteng Provinces only and occurs on the plains from Rustenburg in the west, through Marikana and Brits to the Pretoria area in the east. In terms of conservation, Marikana Thornveld is considered endangered with a conservation target of 19%. Less than 1% is statutorily conserved in the Magaliesberg Nature Reserve, while more is conserved in the De Onderstepoort Nature Reserve. Cultivation, urban or built-up areas transformed about 48% of the vegetation unit and erosion is generally low. Alien invasive plants generally occur in high densities along drainage lines (Mucina & Rutherford 2006).

The average elevation for Marikana Thornveld varies between 1050 and 1450 MASL (Metres Above Sea Level) while the average elevation of the study area is 1404 MASL and slopes from the slightly more elevated western section to the lower eastern area.

The study area falls within the summer rainfall region and the average annual rainfall is roughly 661 mm per year. The average maximum temperature for the study area is recorded during January when an average of 22.3 °C is reached. The average minimum temperature is recorded during July when an average of 12 °C is reached (Climate-data.org 12/11/2021).

The study area falls within the A23A Quaternary Catchment within the Limpopo Water Management Area. The closest perennial river to the study area is the Moreletaspruit that flows approximately 1.9 km to the southwest of the proposed Golden Mole Mall. A few non-perennial offshoots are found in the general area as well.

On a local scale, the eastern section of the study area is associated with open veldt, a few patches of trees and building rubble. The western section of the study area is associated with modern infrastructure and a few patches of trees. The entire proposed project area is fenced-off. The greater area is generally associated with residential houses and sections of open land. Historical topographical maps and aerial images indicate that the study area consisted of open veldt since at least 1939, while the first signs of infrastructure were observed on the 1976 aerial image (**Appendix A**).

2.2 Project description

The area demarcated for the construction of the Golden Mole Mall is approximately 3.56 ha (**Figures 2 & 3**). **Figures 4 & 5** illustrate the proposed development.

Leoprop (Pty) Ltd was granted authorisation by the Gauteng Department of Agriculture and Rural Development (GDARD) on the 22nd of July 2014 with reference GAUT 002/10-11/E0082 for the application for environmental authorisation for the proposed township establishment: Leoprop on portion 220 of the farm Tweefontein 372JR, situated towards the east of Pretoria with an access road to the township from the Struben / Graham Road (Lynnwood Road Extension) intersection.

- The authorisation has subsequently been extended for a further 5 years on the 09th of April 2018.
- Cumacor Investments (Pty) Ltd has purchased the property as well as all the development from Leoprop (Pty) Ltd and therefore the amended Environmental Authorisation must also be transferred to Cumacor Investments as the new applicants/developer.

The current intention is to extend the approved shopping centre complex across the neighbouring property which has recently been acquired by the applicant but not covered under the current Environmental Authorisation.

- During the most recent engagement with the City of Tshwane and his Department as part of the MTO Town and Regional Planners': Township Application, a revised Conservation Area has been developed to ensure adequate protection of the Juliana's Golden Mole habitat ensuring ecological connectivity around the site, also including the now proposed Phase II extension of the Development.
- Subsequently the Township application has been approved on 07 May 2021 by the City of Tshwane.

The revised Conservation Area that has been planned (attached as Amended Conservation Area Illustration) ensures enhanced protection of the Juliana's Golden Mole habitat whilst ensuring ecological connectivity around the site, also including the now proposed Phase II extension of the Development. This enhanced connectivity is crucial to the survival of the species as it would now allow for free movement and connectivity to the larger Bronberg population which was not previously possible.

What is of importance to understand is that the Phase 1 and Phase 2 areas are currently divided by a physical barrier in the form of a wall and foundation structure that does not allow for movement between the two areas. By removing this physical barrier and extending the conservation area around the entire proposed site adequate protection and conservation of the species can be ensured.

The following list of positive impacts are associated with the Phase 2 extension.

Development footprint

- The Floor Area Ratio for the entire area including Phase 2 remains unchanged from the Phase 1 approvals
- The floor area ratio is the relationship between the total amount of usable floor area that a building has, or has been permitted to have, and the total area of the property on which the building stands.
- By including Phase 2 the entire project will be spread across a larger footprint area allowing for 'debulking' of the site and a less intensive development footprint with more green space.

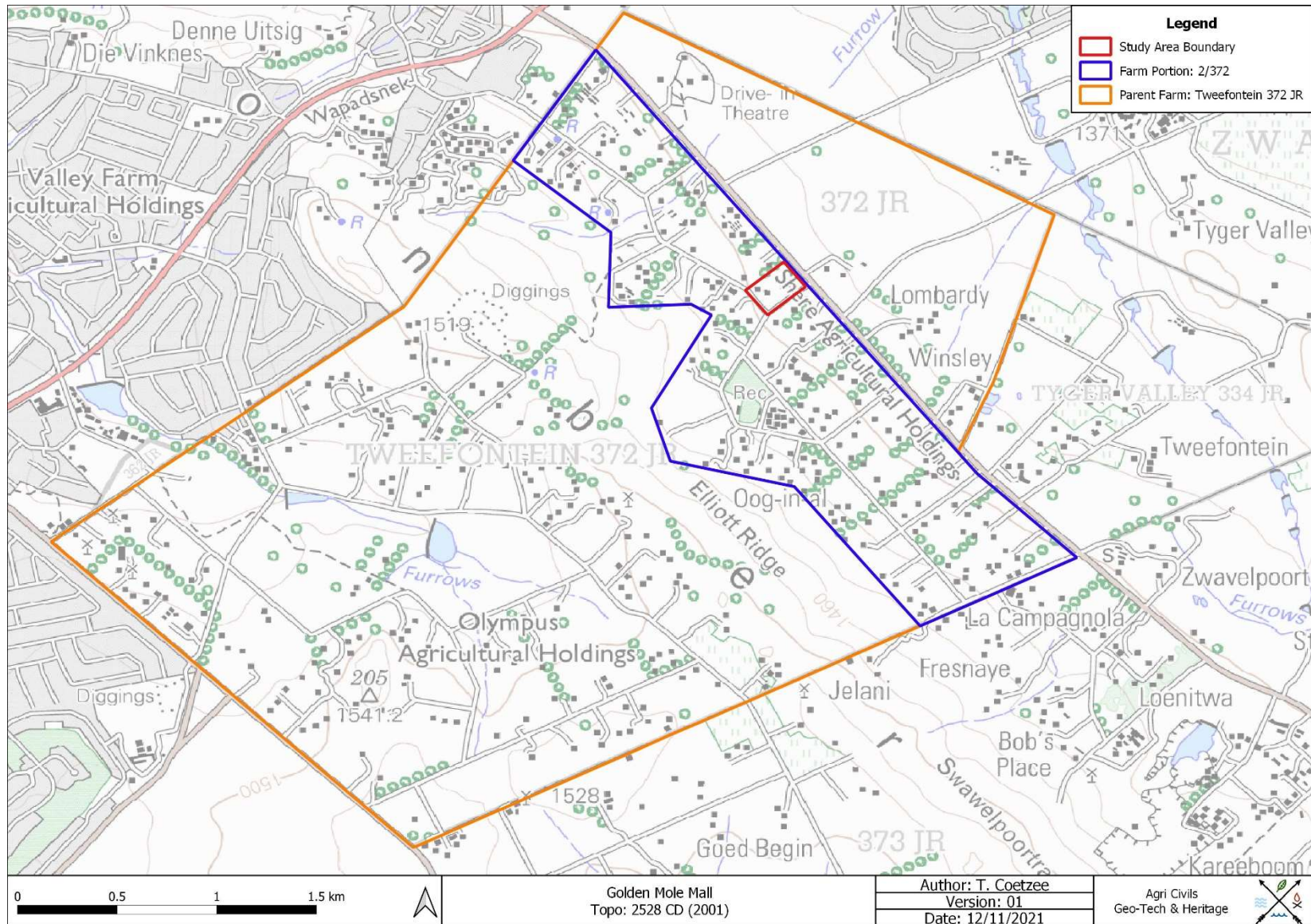


Figure 2: Segment of 2001 SA 1: 50 000 2528 CD indicating the surrounding area.

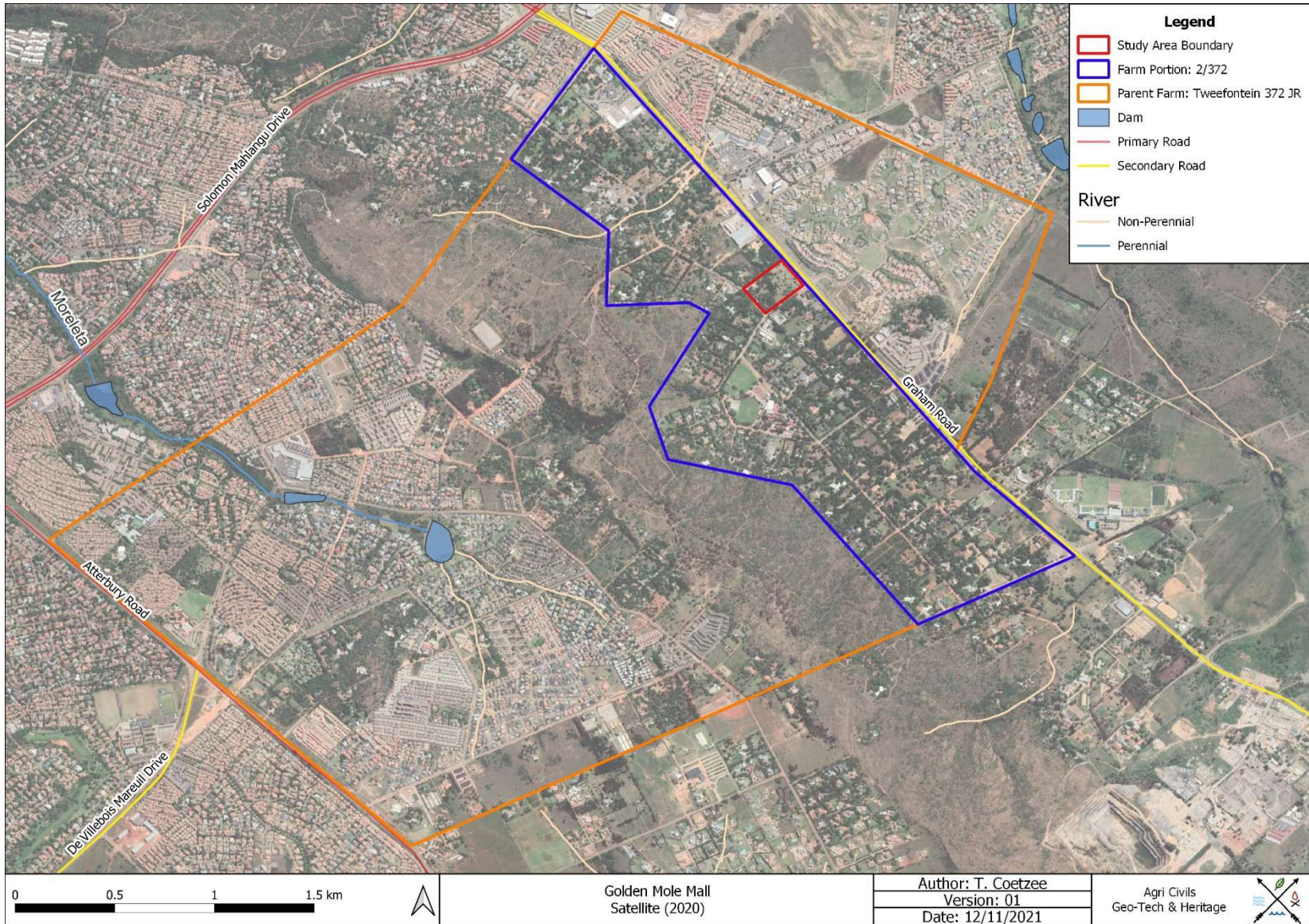
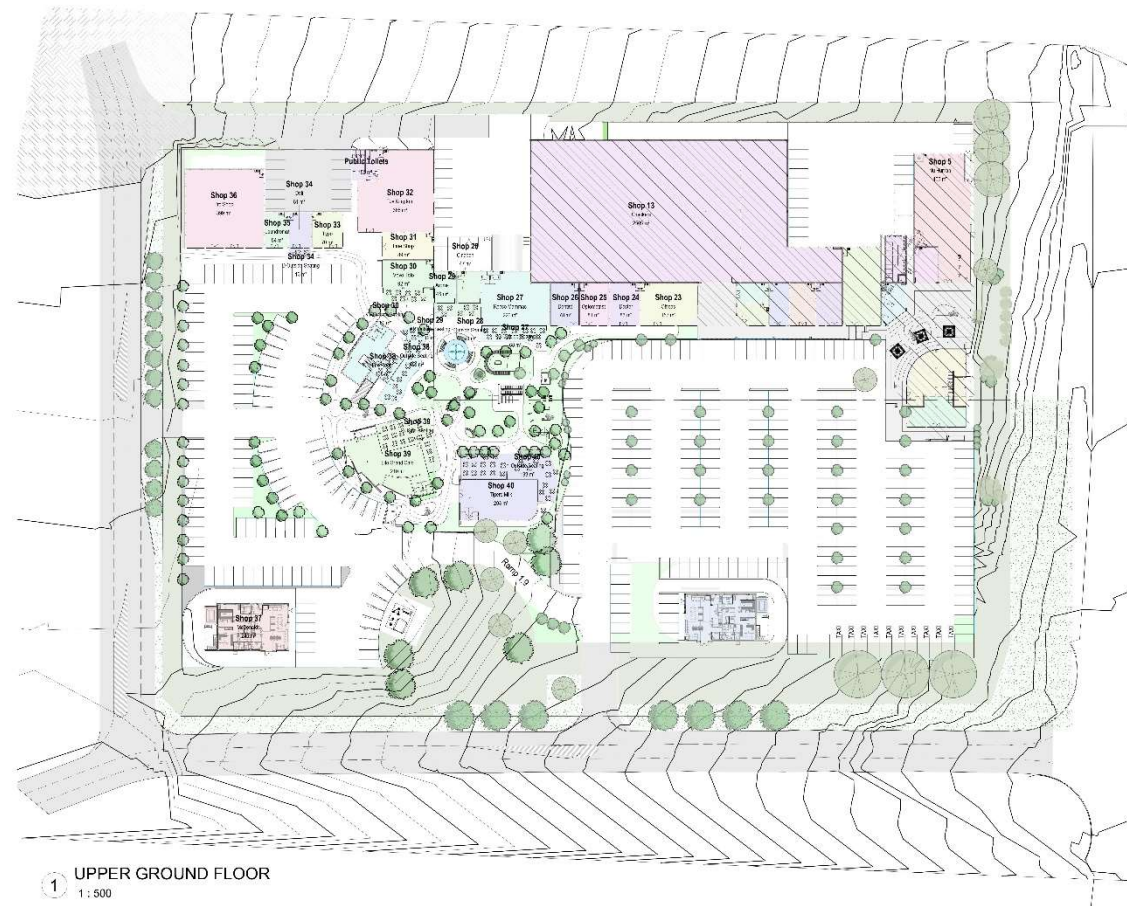


Figure 3: Satellite imagery of the surrounding area.



Figure 4: Proposed site plan – Ground Floor.



1 UPPER GROUND FLOOR
1:500

GLA PHASE 2						
Name	Occupancy	Area	Shop	Shop (area)	Storage	Storage (area)
Shop 19	Office	157 m ²	157 m ²	53	23 m ²	32
Shop 20	Office	85 m ²	77 m ²	42	23 m ²	31
Shop 5	Office	81 m ²	81 m ²	41	17 m ²	31
Shop 6	Office	75 m ²	86 m ²	43	17 m ²	31
Shop 17	Retail	236 m ²	152 m ²	115	34 m ²	33
Shop 27	Retail	85 m ²	56 m ²	35	17 m ²	31
Shop 28	Retail	47 m ²	46 m ²	25	7 m ²	31
Shop 29	Retail	27 m ²	17 m ²	13	3 m ²	30
Shop 30	Retail	15 m ²	37 m ²	22	7 m ²	31
Shop 31	Retail	15 m ²	8 m ²	13	3 m ²	30
Shop 32	Retail	31 m ²	25 m ²	17	13 m ²	31
Shop 33	Retail	50 m ²	43 m ²	25	8 m ²	31
Shop 34	Retail	8 m ²	76 m ²	43	17 m ²	31
Shop 35	Retail	33 m ²	32 m ²	19	5 m ²	30
Shop 36	Retail	75 m ²	36 m ²	23	13 m ²	31
Shop 37	Retail	91 m ²	42 m ²	25	8 m ²	31
Shop 38	Retail	15 m ²	1 m ²	1	2 m ²	30
Shop 39	Retail	14 m ²	46 m ²	18	8 m ²	31
Shop 40	Retail	34 m ²	23 m ²	24	6 m ²	30
Shop 41	Retail	24 m ²	26 m ²	15	5 m ²	30
Shop 42	Retail	136 m ²	117 m ²	73	21 m ²	32
Shop 43	Retail	21 m ²	21 m ²	11	4 m ²	30
Shop 44	Retail	24 m ²	25 m ²	17	4 m ²	30
Shop 45	Retail	14 m ²	46 m ²	18	8 m ²	31
Shop 46	Retail	24 m ²	26 m ²	15	5 m ²	30
Shop 47	Retail	24 m ²	26 m ²	15	5 m ²	30
Shop 48	Retail	136 m ²	117 m ²	73	21 m ²	32
Shop 49	Retail	21 m ²	21 m ²	11	4 m ²	30
Shop 50	Retail	15 m ²	15 m ²	10	3 m ²	30
Shop 51	Retail	31 m ²	25 m ²	17	13 m ²	31

SCHEDULE OF RIGHTS		
PROPERTY DESCRIPTION		
ERT (Portion 218), Existing	Site Area	2,400 HA
ERT (Portion 218), Existing	Site Area	1,040 HA
PHASE 1		
Gross Leasable Area (GLA)		622m ²
DEVELOPMENT CONTROL MEASURES		
Permissible	Control	Actual
2 Storey	Height of Buildings	2 Storey
50%	Coverage	23%
0.47	FAR	0.26
333	Parking Bays	287 Ground Level 117m ² 245m ² 286 357 Gars
PHASE 2		
Gross Leasable Area (GLA)		327m ²
DEVELOPMENT CONTROL MEASURES		
Permissible	Control	Actual
2 Storey	Height of Buildings	2 Storey
50%	Coverage	31%
0.32	FAR	0.26
171	Parking Bays	54



2 FIRE ROOM MEZZANINE
1:250

LEGAL NOTE:
THIS DRAWING MUST NOT BE SCALED, DIMENSIONS AND LEVELS ARE TO BE CHECKED. THE LATTER ON S.S. BY THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR SETTING OUT OF SHOP FOUNDINGS. THE DESIGN SHOWN IN THIS DRAWING IS CORRECT AND REMAINS THE PROPERTY OF THE ARCHITECT.

QUALITY OF MATERIALS AND WORKMANSHIP TO COMPLY WITH THE APPLICABLE RELEVANT CODES AND REGULATIONS OF SAUDI ARABIA AND THE MINIMUM STANDARDS OF STABILITY, FREELIABILITY, SAFETY AND MODEL PROFILES FOR MATERIALS (ENORMS) AND WITH APPLICABLE PROJECT SPECIFICATIONS.

OPTION 3

BLUNT ARCHITECTS
16 15 77 1 11 15 1 5
PETER STEIN, ESCOBAR, HANSEN & CO. ARCHITECTS
73 EAST 80th STREET, NEW YORK, NY 10021
TEL: 212 249 1111 | WWW.BLUNTARCHITECTS.COM
© 2021 BLUNT ARCHITECTS

DESIGNED BY: PETER STEIN
PROJECT NO: 7322
SHEET NAME: UPPER GROUND FLOOR PLAN
DATE:

CLIENT NAME: The Golden Mile Village
CLIENT: GMM
ADDRESS: 10000 GMM
PROJECT STATUS: ERT 5, Leopold & Remainder of Portion 218

DATE ISSUED: 2021.09.14
16:30:42
REVISION:
SHEET: 200
ARCHITECT: AS LANDSCAPE

Figure 5: Proposed site plan – Upper Ground Floor.

3. Archaeological Background

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

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 Early Stone Age (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 (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.

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.

In terms of general project area, the region 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, Ndzungza, moved further to the east, while the descendants of the eldest son, Manala, stayed behind.

The first composite pre-colonial Manala settlement was known as *Ezotshaneni* and is roughly situated on both sides of the current Cullinan-Bapsfontein roads (R515 and R25) and with one section located south of the N4 national road between the Donkerhoek and Cullinan off-ramps. The eastern section of the site includes the Osspruit. The following farms are associated with *Ezotshaneni*: Kleinsonderhout (519JR), Rhenosterfontein (514JR), Rietvlei (513JR), Witfontein (521JR), Puntlyf (520JR), Boschkop (543JR), Roodekopies (546JR), Kameel-zijn-kraal (547JR), Onbekend (398JR), Witpoort (551JR), Knoppiesfontein (549JR), Vlakfontein (548JR), Boscchkop (369JR). Accordingly, this was known as *KwaMangungu* (“Place of the drums”) and refers to the drums used during the girls’ initiation rituals (Van Vuuren 2006).

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.

According to Huffman (2007), the pottery associated with the general area surrounding Pretoria belongs to the Buispoort facies of the Moloko Branch of the Urewe Tradition. A likely date range of AD 1700 – 1840 is suggested.

4. Methodology

Archaeological reconnaissance of the study area was conducted during August 2021 (Winter) through an unsystematic pedestrian site survey that lasted one day (**Figure 6**). General site conditions were recorded via photographic record (**Figures 7 – 10**). Also, the site was inspected beforehand on Google Earth, historical aerial imagery and topographical maps in order to identify potential heritage remains (**Appendix A**). The historical

topographical datasets dating to 1944, 1964, 1975, 1991, 2001, as well as the historical aerial photographs dating to 1939, 1958, 1964, 1968, 1976, 1991 and 2001 proved useful in terms of determining the presence of historical structures and features within the study area. More recent site activities were noted on Google Earth satellite imagery dating to 2004, 2005, 2009, 2011 and 2015. The total area surveyed was 3.56 ha.

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

- To obtain an indication of heritage material found in the general area as well as to identify or locate archaeological sites on the area demarcated for development. This was done in order to establish a heritage context and to supplement background information that would benefit developers through identifying areas that are sensitive from a heritage perspective.

- All archaeological and historical events have spatial definitions in addition to their cultural and chronological context. Where applicable, spatial recording of these definitions were done by means of a handheld Global Positioning System (GPS) during the site visit.

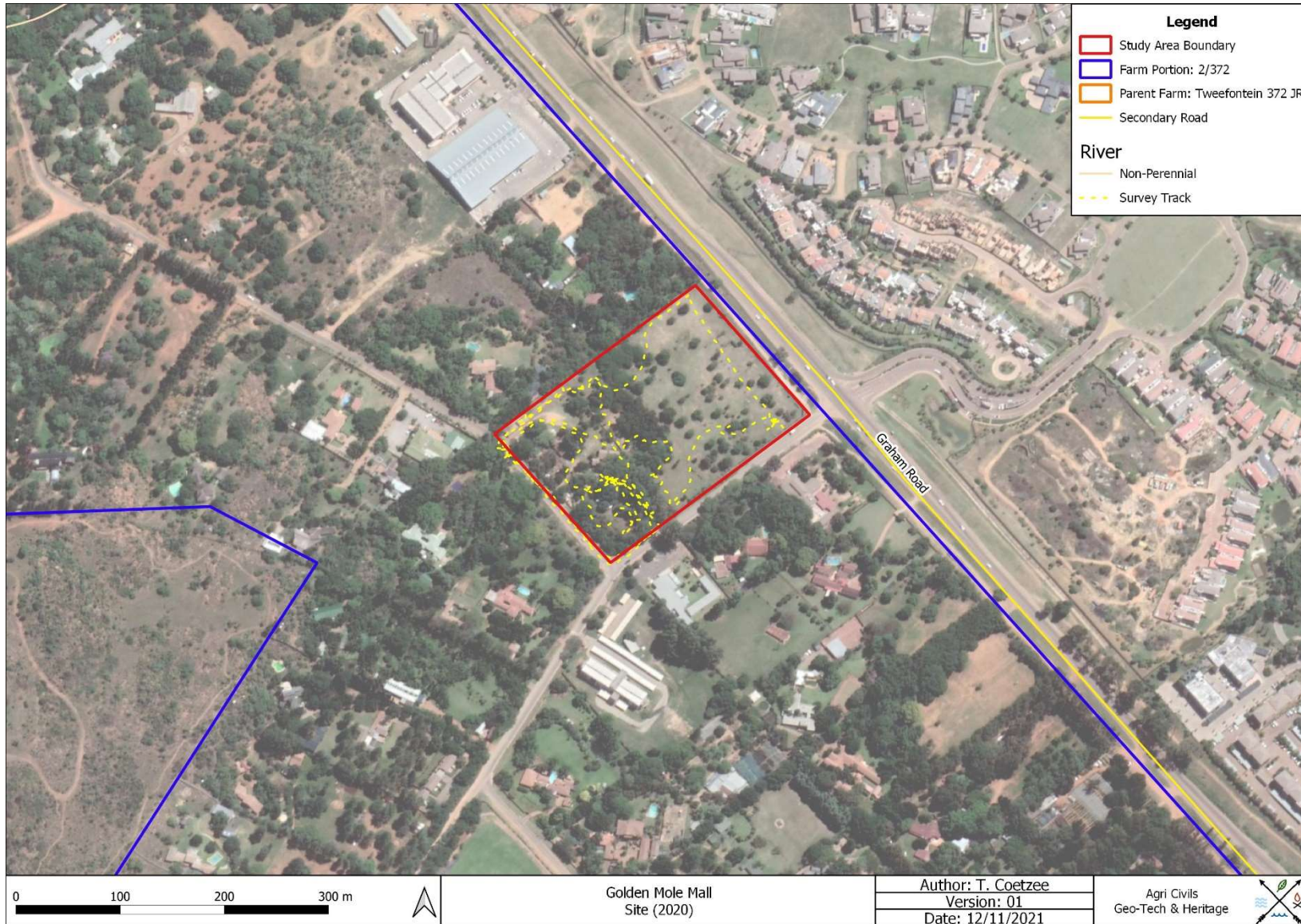


Figure 6: The study area indicated on a 2020 satellite image.



Figure 7: Open veldt associated with the eastern section of the study area.



Figure 8: Environment associated with the eastern section of the study area.



Figure 9: Environment associated with the western section of the study area.



Figure 10: Open veldt associated with the western section of the study area.

4.1 Limitations

No access constraints to the site were encountered. However, some open veldt section consisted of patches of dense vegetation cover at the time of surveying (August 2021) that hampered visibility to some extent (**Figures 11 & 12**).



Figure 11: Patch of dense trees associated with the western section of the study area.



Figure 12: Patch of dense trees associated with the eastern section of the study area.

5. Sources of Information

At all times during the survey, standard archaeological procedures for the observation of heritage resources were followed. As most archaeological material occur in single or multiple stratified layers beneath the soil surface, special attention to disturbances were paid; both man-made such as roads and clearings, and those made by natural agents such as burrowing animals and erosion. No archaeological material remains were recorded during the pedestrian survey, while the existing buildings and structures, as well as the general site conditions, were photographed with a Sony Cyber-shot camera.

A literature study which incorporated previous work done in the region was conducted in order to place the study area into context from a heritage perspective. The **Appendix A** figures indicate the study area on 1939, 1944, 1958, 1964, 1968, 1975, 1976, 1991, 2001, 2004, 2006, 2009, 2011 and 2015 historical aerial images, topographical maps and Google Earth satellite imagery and proved useful in tracing past activities on the portion demarcated for development.

5.1 Previous Heritage Studies

Bronberg Reservoir

A phase 1 HIA (Heritage Impact Assessment) was conducted for the Bronberg Reservoir site on Portion 18 of the Farm Tweefontein 372 JR, while a heritage scan was done on the adjacent properties. The reservoir site is located approximately 1.3 km west of the proposed Golden Mole Mall. The HIA revealed six instances of LIA stone walls and the recommendation was made that these sites be clearly marked and fenced during construction. According to Marais-Botes (2017), some of the LIA sites associated with the general region could belong to Tswana-speakers, while others could belong to Ndebele speakers. It was also noted that LIA sites cluster in the Bronberg, as well as open grassland.

Bronberg Township Development

The Phase 1 HIA conducted for the development of the Bronberg Township development on Holding 18 and the remainder of Holding 19 of the Olympus Agricultural Holdings, located 2.3 km southwest of the proposed Golden Mole Mall, revealed no heritage sites (Gaigher 2017).

AIA – Zwartkoppies

Huffman (2005) conducted an Archaeological Impact Assessment for the development of several farm portions of the Farm Zwartkoppies 364 JR located approximately 3.5 km northeast of the proposed Golden Mole Mall. The AIA located nine LIA sites that consisted of stone-walled kraals, middens and pottery. Accordingly, pottery from one of the middens belonged to the *Uitkomst facies* and the style of the walling to Kliprivierberg. Huffman (2005) stated that ancestors of the BaFokeng made both the walling and the pottery. Three historic sites were noted as well. According to Huffman (2005), the long front and back walls indicate that these sites were constructed by Southern (Transvaal) Ndebele. It is also noted that traditionally, Manala Ndebele lived in the Pretoria area and that some of these sites could date to the end of the 19th Century.

5.2 Historical Aerial Images & Topographical Maps

The 1939 aerial image (**Appendix A: Figure 22**) indicates the demarcated study area to be open veldt, while the 1944 topographical map shows the area to be cultivated (**Appendix A: Figure 23**). In both cases the road bordering the study area along the north-eastern boundary are shown. The 1958 and 1964 aerial images, as well as the 1968 aerial image and 1975 topographical map show no activity on the demarcated study area (**Appendix A: Figures 24 – 28**). Some development, however, is visible to the north and west of the study area as indicated by the 1968 aerial image.

The first signs of activity or infrastructure on the area demarcated for development is visible on the 1976 aerial image (**Appendix A: Figure 29**). Development is also indicated on the 1991 aerial image and topographical map (**Appendix A: Figures 30 & 31**). Development in the general area appears to have significantly expanded

between 1976 and 1991, while the 2001 aerial image and topographical map show a further increase in development (**Appendix A: Figures 32 & 33**).

The Google Earth images show that between 2004 and 2015 the infrastructure on the western side of the study remained roughly the same (**Appendix A: Figure 34 – 38**). The eastern side, however, saw several changes. The 2004 image shows a large building on the eastern section, while the 2005 image shows significant development further to the east thereof (**Appendix A: Figures 34 & 35**). By 2009 (**Appendix A: Figure 36**) the buildings previously associated with the eastern side have been demolished, while new buildings are shown to the north thereof. By 2011 (**Appendix A: Figure 37**), some of these buildings have been demolished and the trees cleared. The 2015 satellite image shows some tree growth, while all remaining buildings have been demolished on the eastern section (**Appendix A: Figure 38**).

6. Archaeological and Historical Remains

6.1 Stone Age Remains

No Stone Age archaeological remains were observed within the demarcated study area.

Although no Stone Age archaeological remains were located, such artefacts may occur in the area. These artefacts are often associated with rocky outcrops or water sources. **Figures 13 – 15** below are examples of stone tools often associated with the Early, Middle and Later Stone Age of southern Africa.

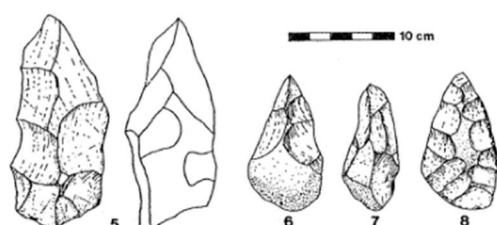


Figure 13: ESA artefacts from Sterkfontein (Volman 1984).

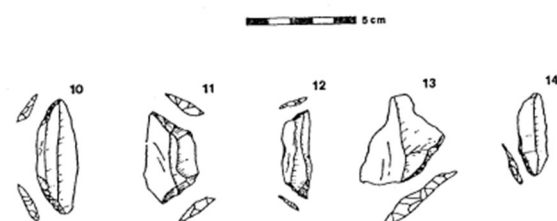


Figure 14: MSA artefacts from Howiesons Poort (Volman 1984).



Figure 15: LSA scrapers (Klein 1984).

Archaeological studies conducted in the surrounding areas also did not locate material pertaining to the Stone Age.

6.2 Iron Age Farmer Remains

No Iron Age Farmer remains were observed within the demarcated study area.

Two of the heritage studies done in the surrounding areas recorded stone-walled enclosures, potsherds and middens dating to the LIA (Huffman 2005; Marais-Botes 2017).

6.3 Historical

No Historical remains were observed within the demarcated study area.

The heritage study done by Huffman (2005) recorded some sites of historical origin that might belong to the Southern (Transvaal) Ndebele.

6.4 Contemporary Remains

The eastern section of the study area is associated with contemporary building remains and rubble (**Figures 16 – 18**), while the western section is characterised by several intact contemporary buildings that are mostly used as residences (**Figures 19 – 21**). According to historical aerial images and topographical maps, the earliest infrastructure on the demarcated study area was constructed between 1975 and 1976. Since the initial buildings, several buildings have been built and demolished.

The heritage studies conducted in the surrounding areas did not record contemporary remains (Huffman 2005, Marais-Botes 2017, Gaigher 2017).



Figure 16: Building remains on the eastern section of the study area.

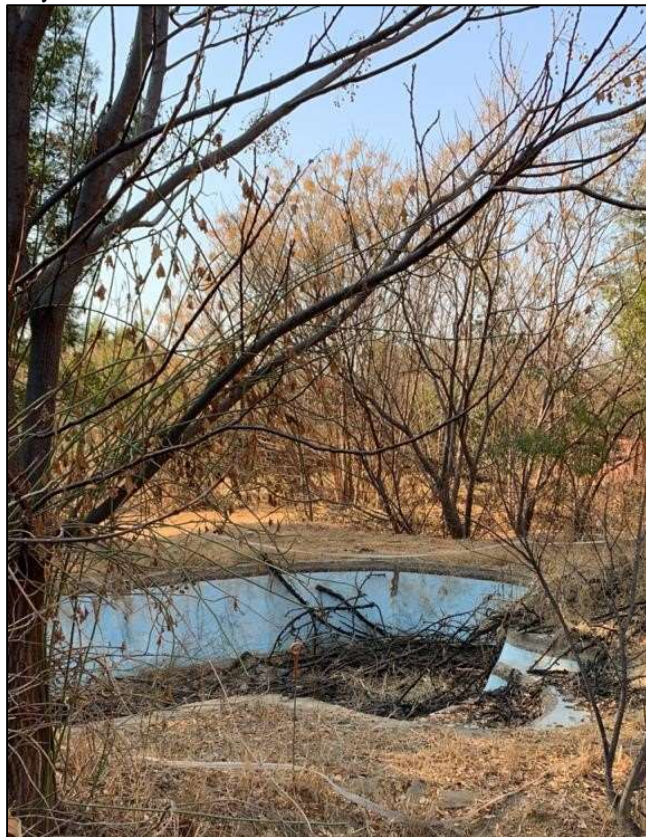


Figure 17: Pond on the eastern section of the study area.



Figure 18: Building rubble one the eastern section of the study area.



Figure 19: Built environment associated with the western section of the study area.



Figure 20: Modern buildings on the western section of the study area.



Figure 21: Contemporary infrastructure on the western section of the study area.

6.5 Graves

No graves or burial sites were observed within the demarcated study area.

The heritage studies conducted in the surrounding areas did not locate graves or burial sites (Huffman 2005, Marais-Botes 2017, Gaigher 2017).

7. 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.

7.1 Field Ratings

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

Table 2: Field Ratings

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

*It should be noted that no sites of heritage importance were located.

8. Statement of Significance & Recommendations

8.1 Statement of significance

The study area: Portions 218 and 220 of the Farm Tweefontein 372 JR, Pretoria, Gauteng

As can be seen from previous research done in the area, the general region is significant from a heritage perspective as LIA and historical sites have been identified.

On a local scale, however, no material of cultural significance were observed and historical aerial imagery and topographical maps indicate the first infrastructure to date between 1975 and 1976. The buildings present within the demarcated portion therefore do not exceed 60 years of age. Subsequently, these structures are not protected under the NHRA 25 of 1999.

Since heritage sites, such as burial sites, are not always clearly identifiable due to disturbed/removed surface features and dense vegetation, care must be exercised during the development and construction phases.

Due to the study area not being located in close proximity of a river and because no heritage sites were observed during the pedestrian survey or on historical aerial imagery and topographical maps, this area can be regarded as having a low sensitivity in terms of archaeological and cultural heritage, especially since large portions of the demarcated area have been disturbed by previous development.

8.2 Recommendations

The following recommendations are made in order to avoid the destruction of heritage remains on the area demarcated for the development of the Golden Mole Mall:

- Because archaeological artefacts generally occur below surface, the possibility exists that culturally significant material may be exposed during the development and construction phases, in which case all activities must be suspended pending further archaeological investigations by a qualified archaeologist. Also, should skeletal remains be exposed during development and construction phases, all activities must be suspended and the relevant heritage resources authority contacted (See National Heritage Resources Act, 25 of 1999 section 36 (6))
- Should the need arise to expand the proposed development beyond the surveyed areas outlined in this study, the following applies: A qualified archaeologist must conduct a full Phase 1 Archaeological Impact Assessment (AIA) on the sections beyond the demarcated area that will be affected by the development in

order to determine the occurrence and extent of any archaeological sites and the impact development might have on these sites.

- No sites of heritage importance were observed on Portions 218 and 220 of the Farm Tweefontein 372 JR as indicated by **Figure 6**. From a heritage point of view, development may proceed on the demarcated project area, subject to the abovementioned conditions, recommendations and approval by the South African Heritage Resources Agency.

9. 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.

10. References

Antonites, X. 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. Pretoria Climate. <https://en.climate-data.org/africa/south-africa/gauteng/pretoria-154/> Accessed 12-11-2021.

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

Gaigher, S. 2017. Heritage Impact Assessment for the Proposed Bronberg Township Development on Holding 18 and the Remainder of Holding 19 of the Olympus Agricultural Holdings, within the City of Tshwane Metropolitan Municipality, Gauteng Province. GA Heritage.

Huffman, T.N. 2005. Archaeological Impact Assessment for the Farm Zwartkoppies. Wits: Archaeological Resources Management.

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.

Marais-Botes, L. 2017. Phase 1 Heritage Impact Assessment For The Proposed Bronberg Reservoir Site, Portion 18 Of The Farm Tweefontein 372-Jr, City Of Tshwane Metropolitan Municipality, Pretoria, Gauteng Province. Including A Heritage Scan Of The Adjacent Area (Remaining Extent Of Tweefontein Farm 372-Jr, Agricultural Holding Number 76-Jr Of The Shere Agricultural Holdings, Agricultural Holding Number 77-Jr Of The Shere Agricultural Holdings And Erf 520 Bronberg) Of The Site Earmarked For Associated Activities/Infrastructure. Pretoria.

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 Swaziland*. Strelitzia 19. South African National Biodiversity Institute, Pretoria.

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

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

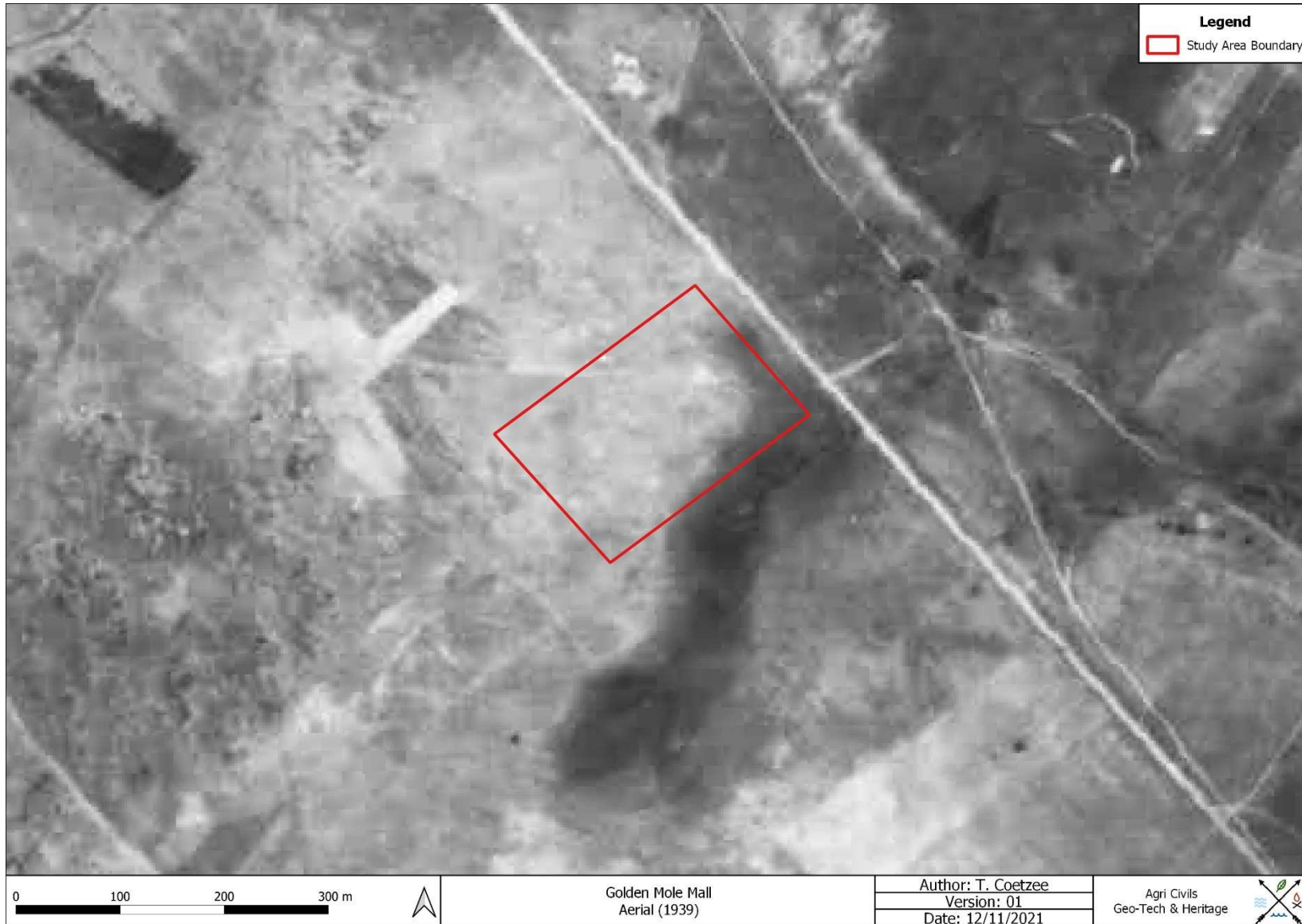


Figure 22: 1939 Aerial image of the study area.

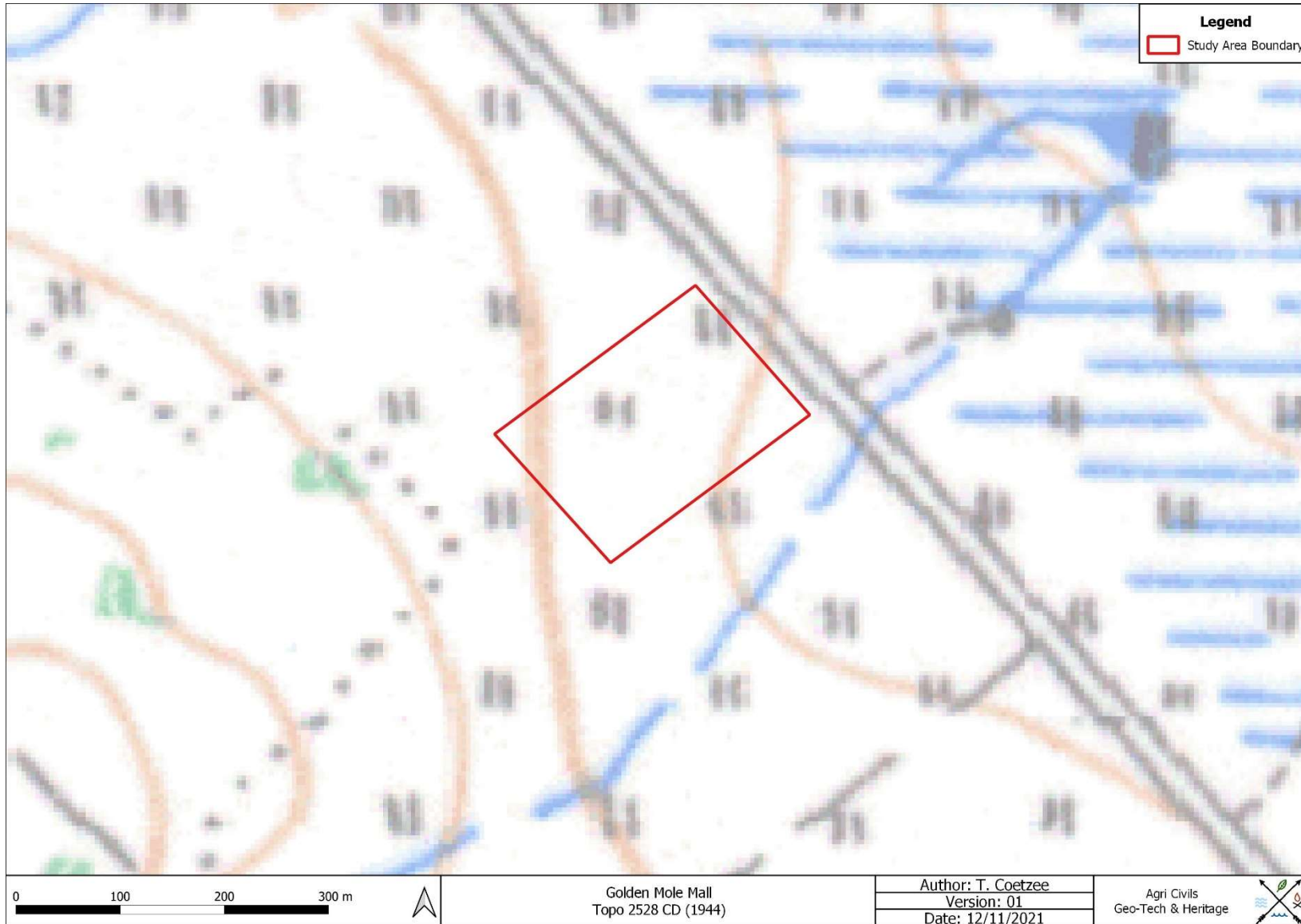


Figure 23: Segment of 1944 SA 1: 50 000 2528 CD indicating the study area.

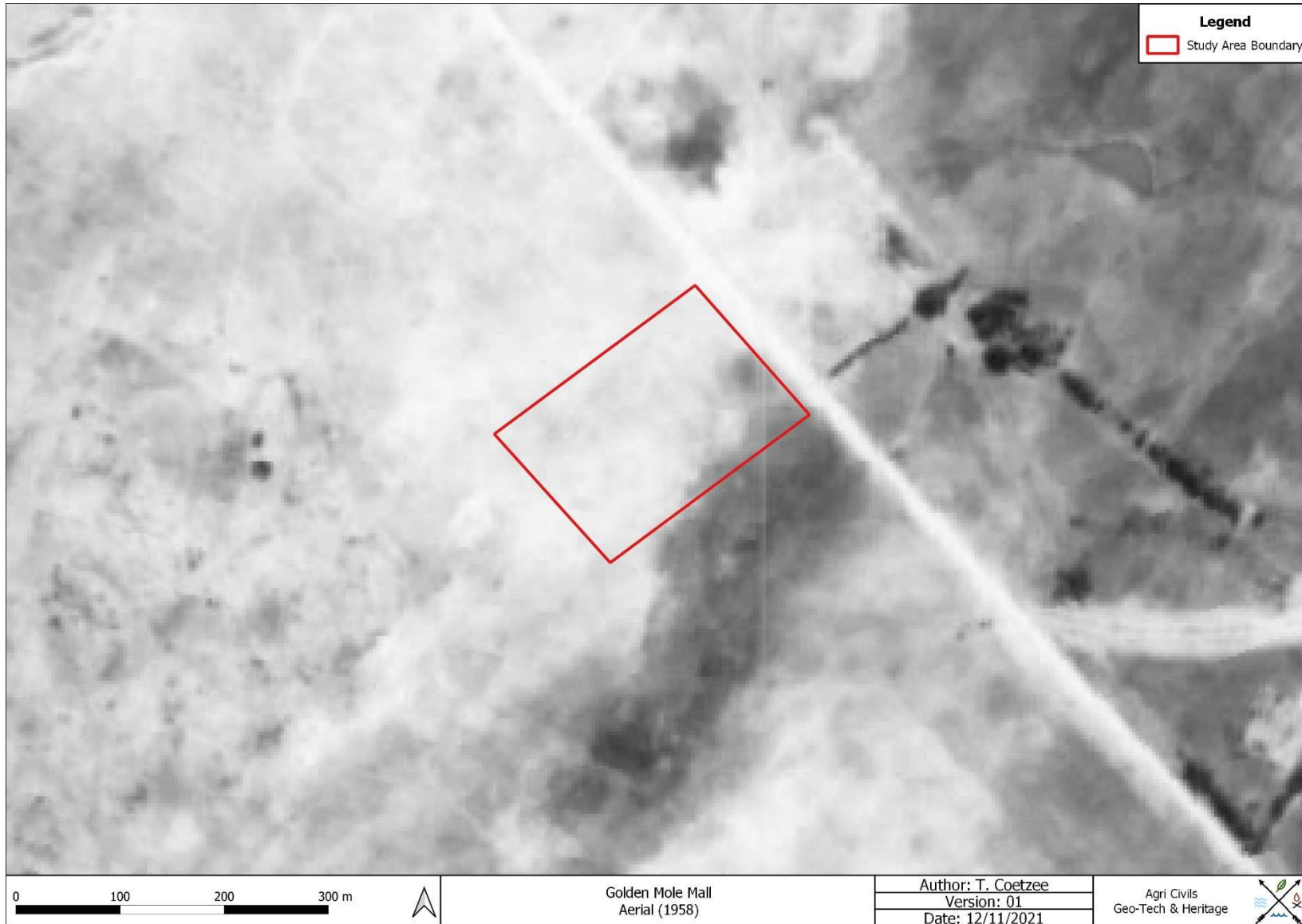


Figure 24: 1958 Aerial image of the study area.



Figure 25: 1964 Aerial mage of the study area.



Figure 26: Segment of 1964 SA 1: 50 000 2528 CD indicating the study area.



Figure 27: 1968 Aerial mage of the study area.

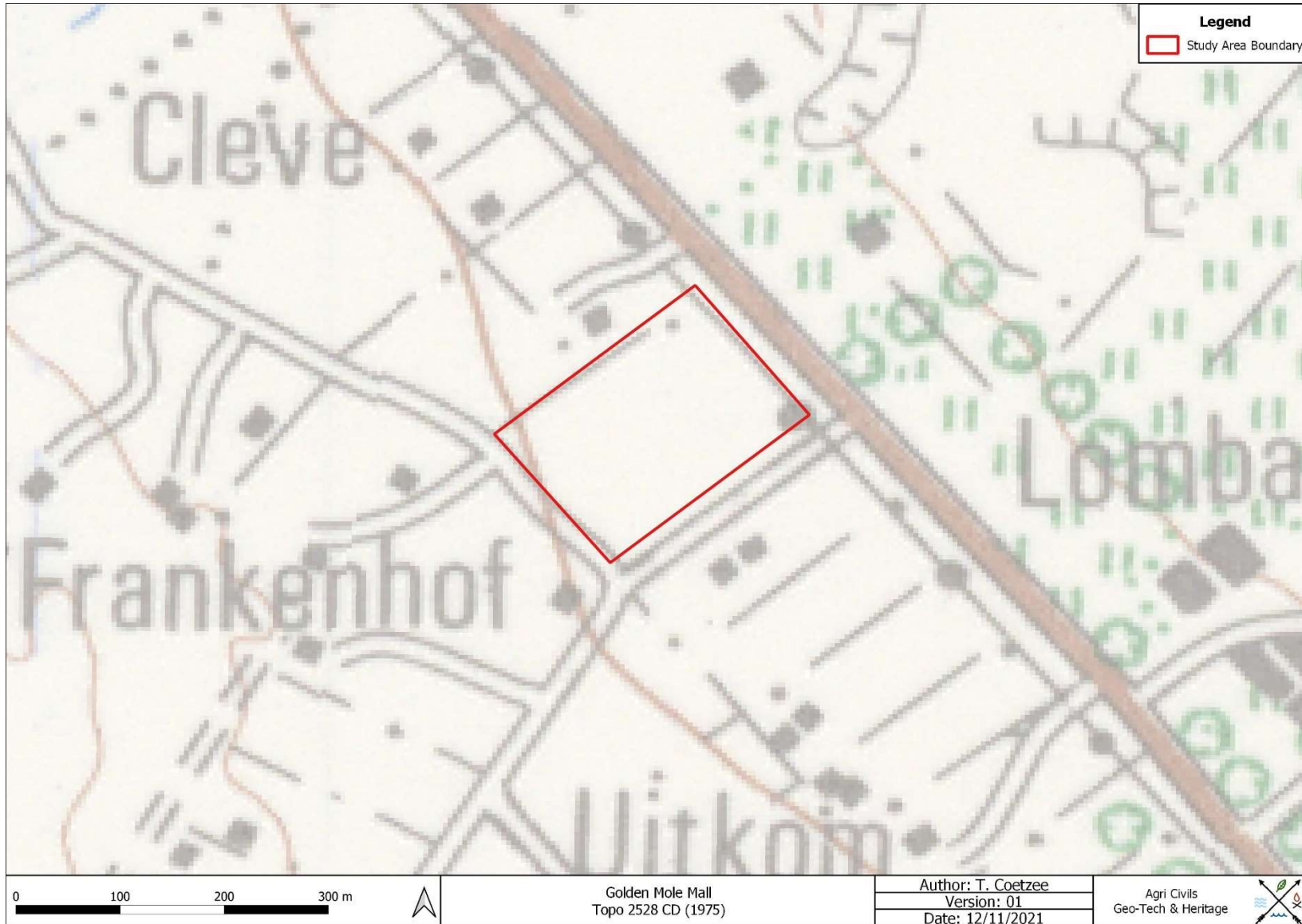


Figure 28: Segment of 1975 SA 1: 50 000 2528 CD indicating the study area.



Figure 29: 1976 Aerial mage of the study area.



Figure 30: 1991 Aerial mage of the study area.

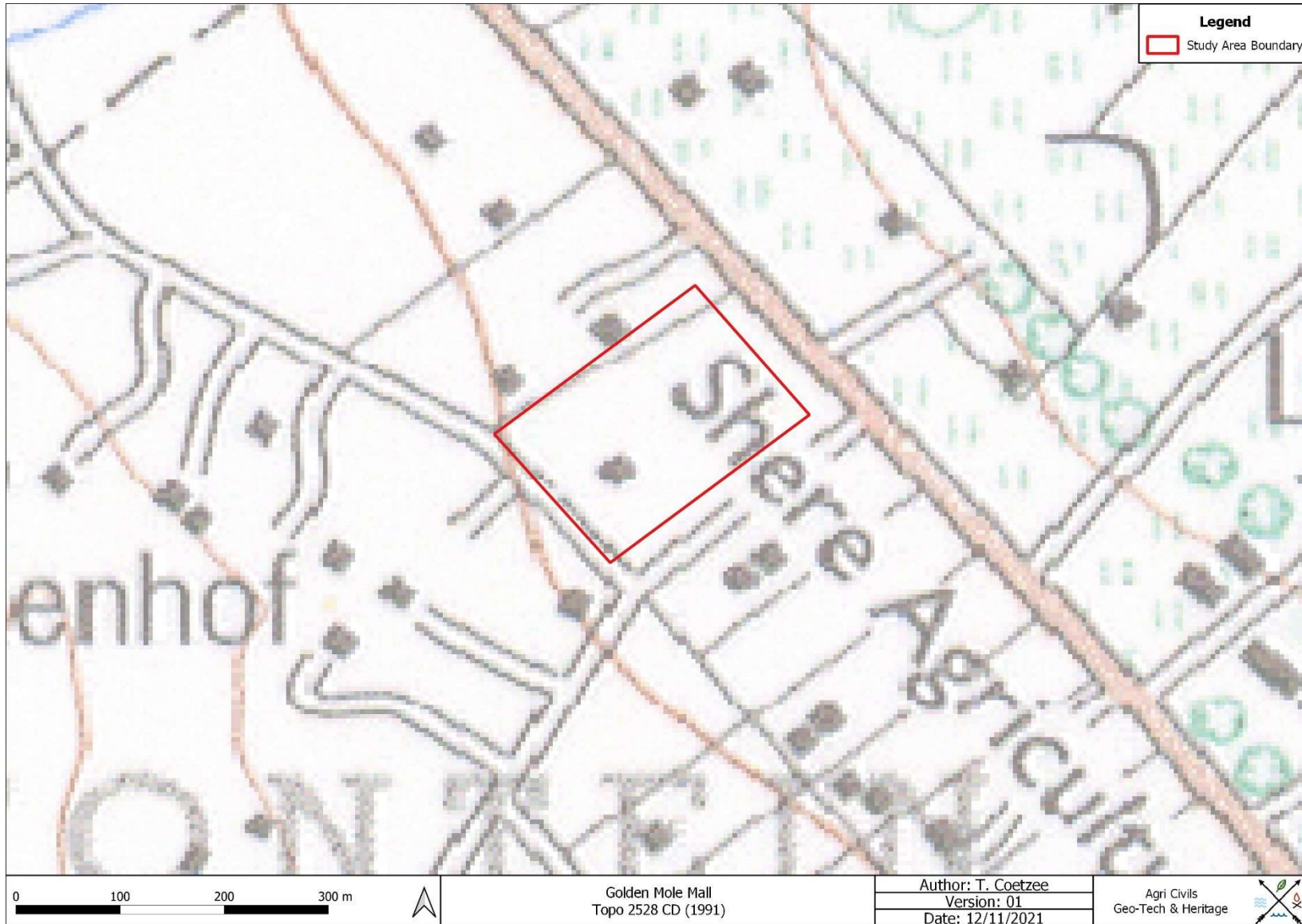


Figure 31: Segment of 1991 SA 1: 50 000 2528 CD indicating the study area.



Figure 32: 2001 Aerial mage of the study area.

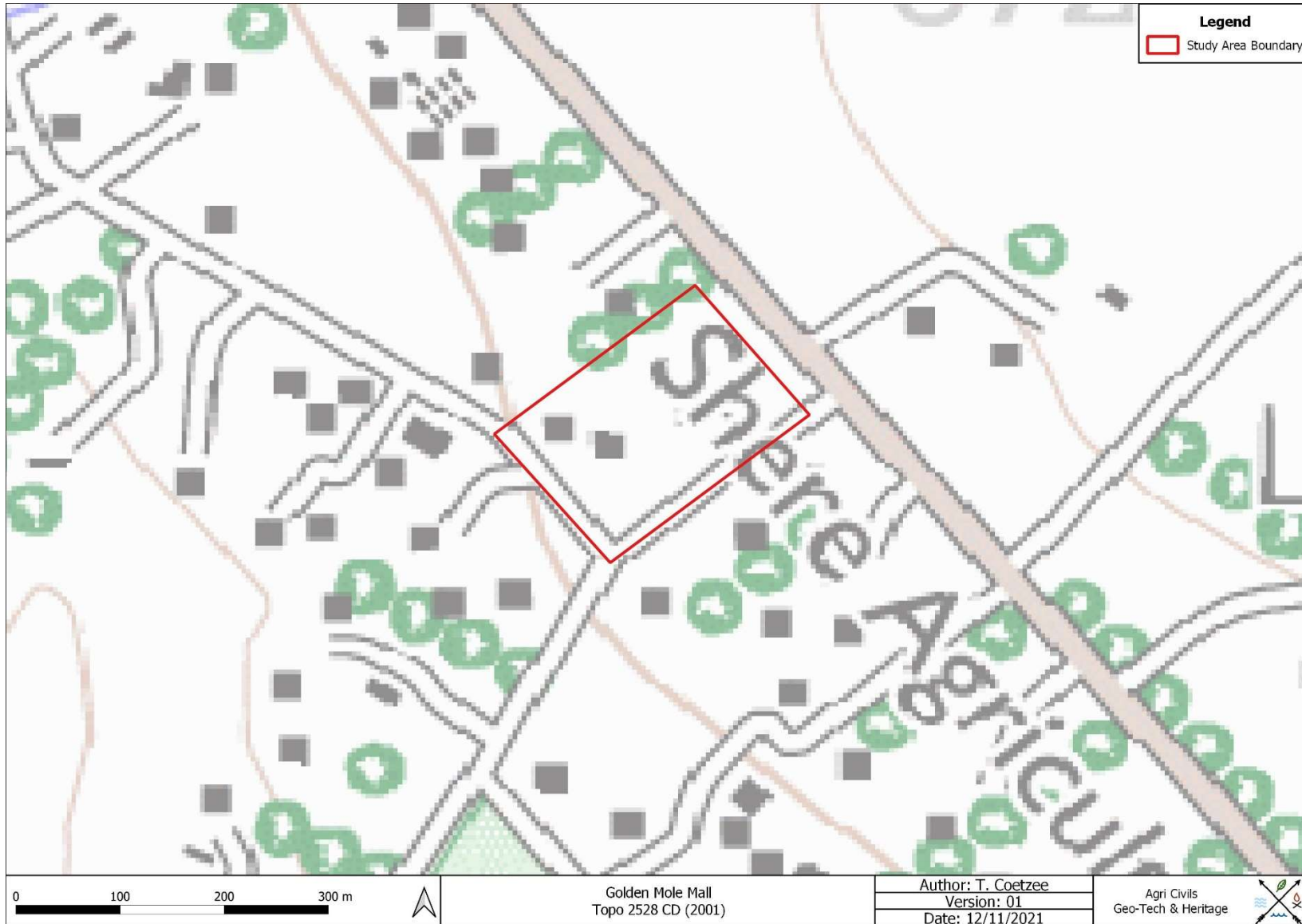


Figure 33: Segment of 2001 SA 1: 50 000 2528 CD indicating the study area.



Figure 34: 2004 Google Earth satellite image of the study area.



Figure 35: 2005 Google Earth satellite image of the study area.

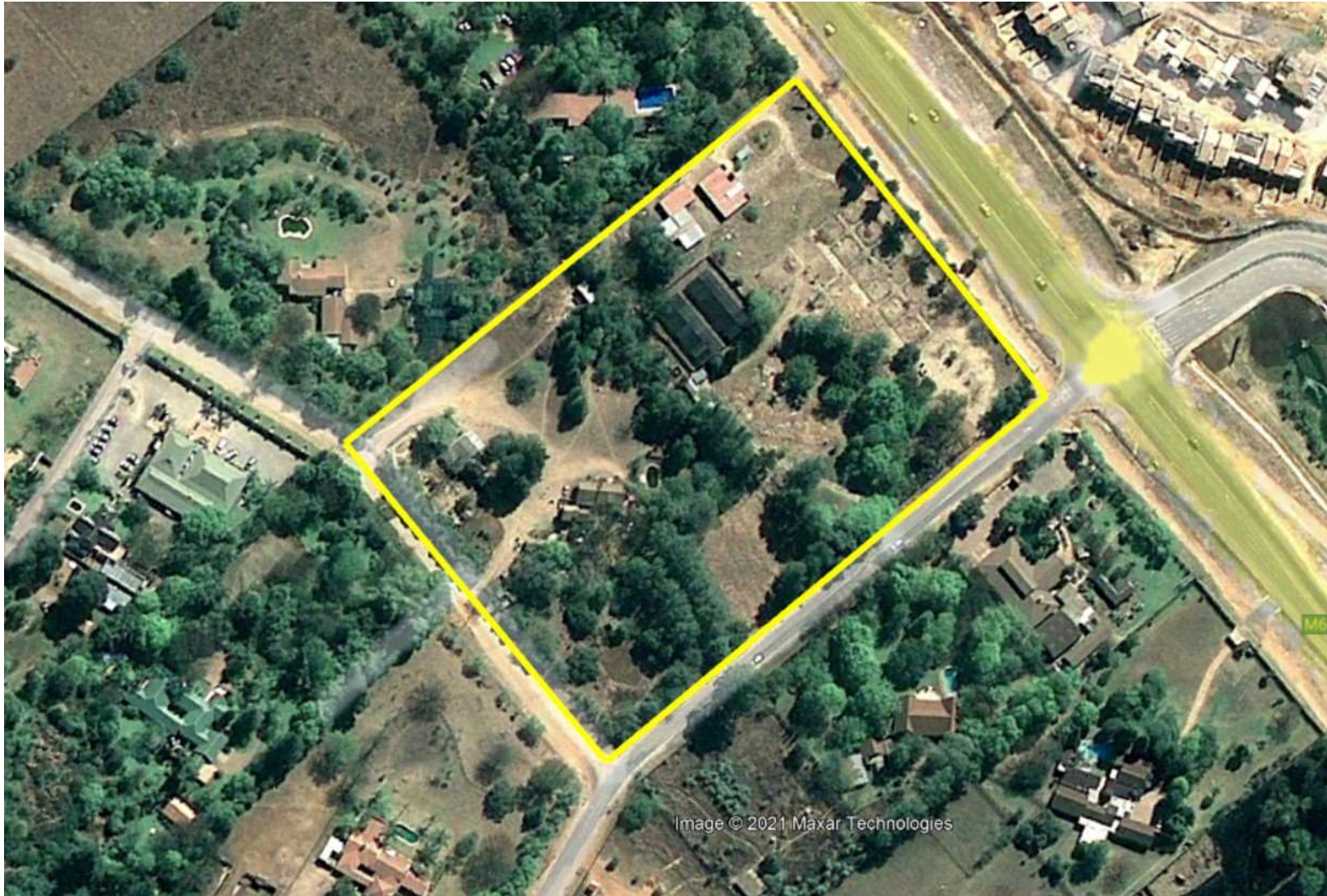


Figure 36: 2009 Google Earth satellite image of the study area.



Figure 37: 2011 Google Earth satellite image of the study area.

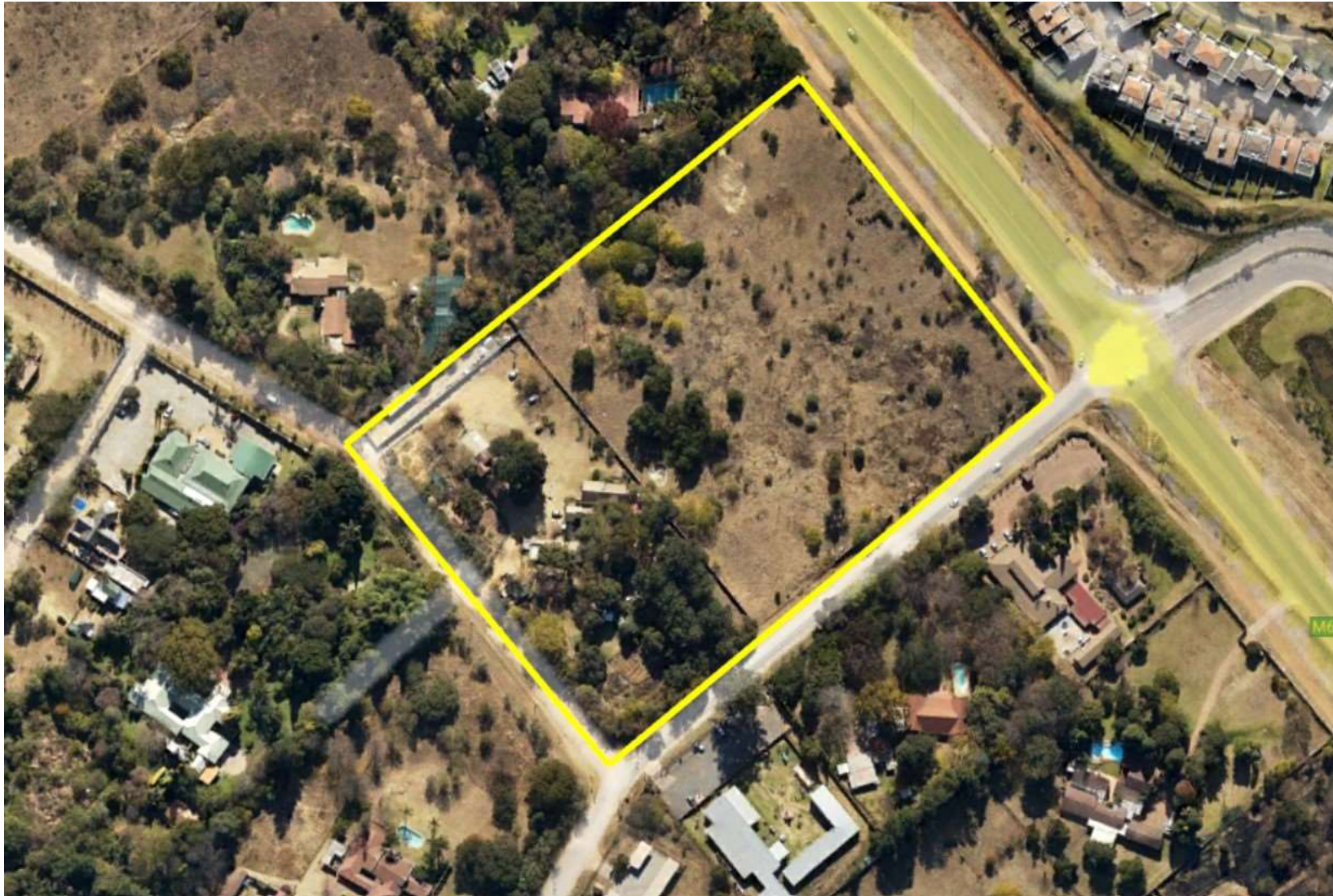


Figure 38: 2015 Google Earth satellite image of the study area.