

PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT

For

**The Proposed
Lakeside/Leeuwfontein
Colliery Expansion near
Ogies, Mpumalanga**

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July 2020

A Phase 1 Archaeological Impact Assessment for the Proposed
Lakeside/Leeuwfontein Colliery Expansion near Ogies, Mpumalanga

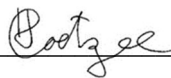
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I, Tobias Coetzee, declare that –

- I act as the independent specialist;
- I am conducting any work and activity relating to the proposed Lakeside/Leeuwfontein Colliery Expansion 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: 17 July 2020

Executive Summary

The author was appointed by Eco Elementum (Pty) Ltd to undertake a Phase 1 Archaeological Impact Assessment for the proposed expansion of the Lakeside/Leeuwfontein Colliery on six demarcated portions intersecting several portions (listed in **Table 1**) of the farms Welgelegen 221 IR and Leeuwfontein 219 IR near Ogies in the Mpumalanga Province. The proposed expansion project is located near the western border of Mpumalanga, with Kendal Power Station located approximately 3.5 km to the northeast. Surrounding towns include Ogies 13.5 km to the east-northeast, eMalahleni 37 km to the northeast and Delmas 23 km to the west. The aim of the study is to determine the scope of archaeological resources that could be impacted on by the proposed expansion of the Lakeside/Leeuwfontein Colliery.

Mining Block A

The area is completely disturbed by mining activities. No potential sites were observed on historical aerial images and topographical maps. The area is therefore not considered to be significant from a heritage perspective.

Mining Block B

Currently the northern section forms part of mining activity while the southern section consists of cultivated fields. No potential sites were observed on historical aerial images and topographical maps. The area is therefore not considered to be significant from a heritage perspective.

Mining Block C

Three sites (Sites L01, L07, L12) are associated with Mining Block C, of which only Sites L01 and L12 are considered significant. Site L01 portrayed evidence of huts, buildings and ruins evident from historical aerial imagery. Though currently partially cultivated, the demarcated sensitive area might produce significant subsurface heritage material exceeding 60 years of age that would be protected under the NHRA act 25 of 1999.

Site L12, a cemetery, was identified via personal communication and is still intact, although in an overgrown and dilapidated state. The graves are protected by legislation and should Mining Block C be developed, a conservation buffer of 50 m is recommended, as well as a Conservation Maintenance Plan.

Mining Block D

One site consisting of several buildings (L02) was identified from historical aerial imagery and topographical maps, but appears to have been demolished by 2010. The general area surrounding site L02 is completely disturbed by mining activities up to a level where it is doubtful any heritage remains of significance will be situated. The area is therefore not considered to be significant from a heritage perspective.

Mining Block E

One cemetery (L05) was identified from 1958 aerial imagery and is still intact, although in a severely dilapidated state. The graves are protected by legislation and should Mining Block E be mined, a conservation buffer of 50 m is recommended, as well as a Conservation Maintenance Plan.

Mining Block G

Seven areas within or within close proximity of Mining Block G were investigated (Sites L03, L04, L06, L08, L09, L10, L11), of which only Sites L04, L06 and L11 proved to be of significance. The majority of the mining block have been cultivated since at least 1958 and several structures are visible on historical aerial imagery and topographical maps.

Sites L03, L09 and L10 date to recent times and are not protected under heritage legislation. However, should Mining Block G be mined, the structures must be recorded by a qualified archaeologist and a destruction permit must be obtained from the relevant heritage authority prior to impact.

Site L08 is a natural feature and not significant from a heritage perspective.

Although Sites L04 & L06 have significantly been altered, the initial structures date to historical times and might be significant from a heritage perspective. Should the associated demarcated sensitive areas be impacted, a qualified archaeologist must record all the buildings and structures and destruction permits must be obtained from the relevant heritage authority prior to impact.

Site L11 indicates the approximate location of an unmarked grave. It is therefore recommended that a conservation buffer of 50 m be placed around the demarcated 'sensitive' area. If impact cannot be avoided, the grave may be relocated by a qualified graves relocation unit to a premises earmarked by the local municipality, but will set in motion a substantial process as new legislation will be triggered.

Subject to adherence of the recommendations and approval by SAHRA, the proposed Lakeside/Leeuwfontein Expansion as per the indicated demarcations may continue. Should skeletal remains be exposed during development and construction phases, all activities must be suspended and the relevant heritage resources authority contacted (See National Heritage and Resources Act, 25 of 1999 section 36 (6)). Also, should culturally significant material be discovered during the course of the said development, all activities must be suspended pending further investigation by a qualified archaeologist.

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1. Project Background

1.1 Introduction

Eco Elementum (Pty) Ltd appointed the author to undertake a Phase 1 Archaeological Impact Assessment for the proposed expansion of the Lakeside/Leeuwfontein Colliery on six demarcated portions intersecting several farm portions (**Table 1**) of the Farms Welgelegen 221 IR and Leeuwfontein 219 IR near Ogies in the Mpumalanga Province (**Figures 1 & 2**). The proposed expansion project is located near the western border of Mpumalanga, with Kendal Power Station located approximately 3.5 km to the northeast. Surrounding towns include Ogies 13.5 km to the east-northeast, eMalahleni 37 km to the northeast and Delmas 23 km to the west. The purpose of this study is to examine the demarcated portion in order to determine if any archaeological resources of heritage value will be impacted on by the proposed expansion of the colliery, 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 portions.

In the following report, I discuss the implication for the mining of coal on the demarcated portions with regard to heritage resources: The demarcated portions intersecting Portions 24 and 26 of the Farm Welgelegen 221 IR and Portions 2, 5, 7, 8, 22 and 27-33 of the Farm Leeuwfontein 219 IR. The demarcated portions are irregular in shape and are located towards the north-eastern corner of the Farm Welgelegen 221 IR and within the western half of the Farm Leeuwfontein 219 IR. The legislation section included serves as a guide towards the effective identification and protection of heritage resources and will apply to any such material unearthed during development and construction phases within the demarcated study areas.

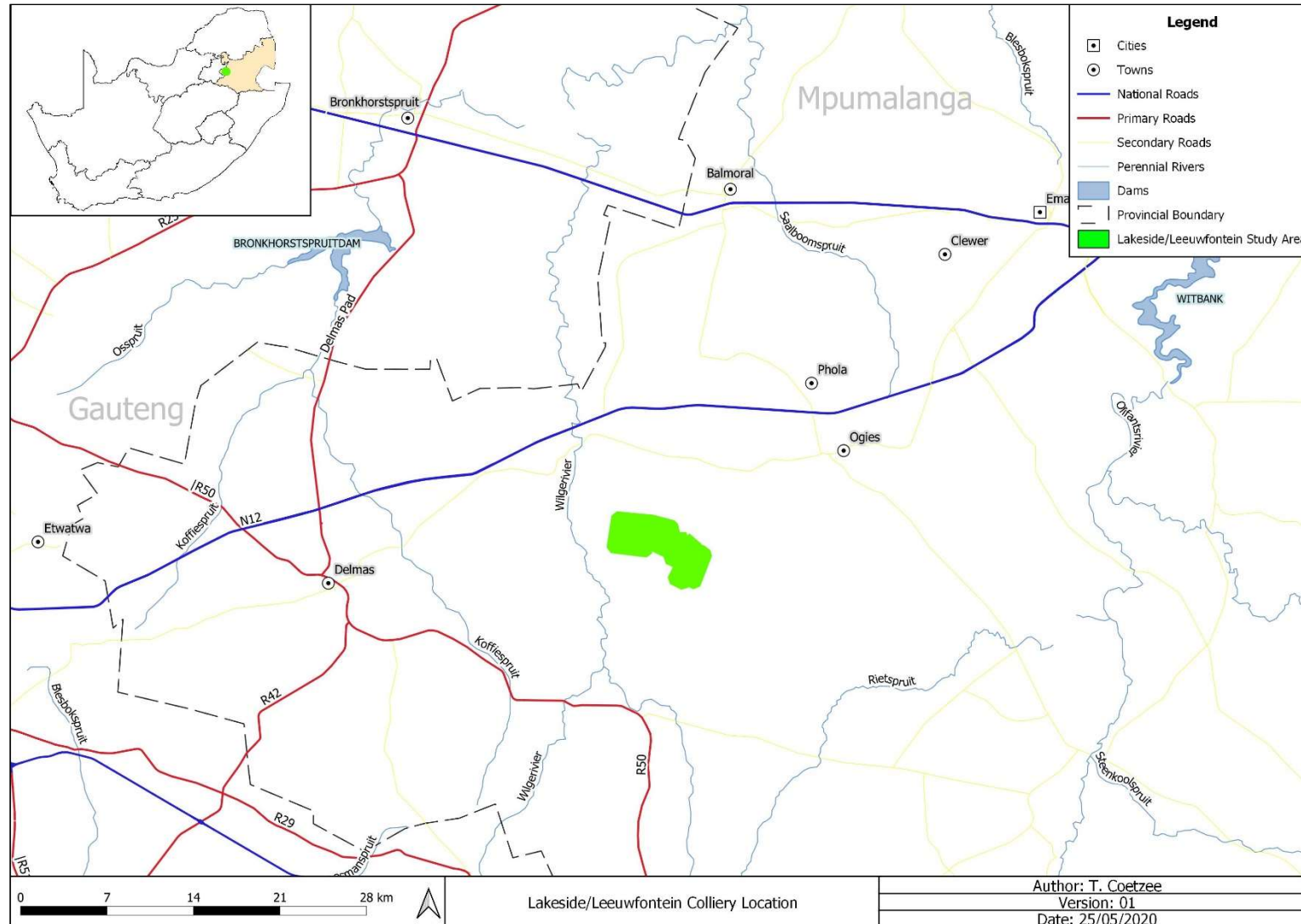


Figure 1: Regional and Provincial location of the study area.

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.

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

1.2.1 The EIA and AIA processes

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

All Archaeological Impact Assessment reports should include:

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

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

- a. Whether or not it has objections to a development;
- b. What the conditions are upon which such development might proceed;

- c. Which sites require permits for mitigation or destruction;
- d. Which sites require mitigation and what this should comprise;
- e. Whether sites must be conserved and what alternatives can be proposed to relocate the development in such a way as to conserve other sites; and
- f. What measures should or could be put in place to protect the sites which should be conserved.

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

1.2.2 Legislation regarding archaeology and heritage sites

National Heritage Resource Act No.25 of April 1999

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

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

- any other prescribed category.

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

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

and

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

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

and

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

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

On the development of any area the gazette states that:

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

- (a) *the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;*
- (b) *the construction of a bridge or similar structure exceeding 50m in length;*
- (c) *any development or other activity which will change the character of a site-*
 - i. *exceeding 5000m² in extent; or*
 - ii. *involving three or more existing erven or subdivisions thereof; or*
 - iii. *involving three or more erven or divisions thereof which have been consolidated within the past five years; or*
 - iv. *the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;*
- (d) *the re-zoning of a site exceeding 10000m² in extent; or*
- (e) *any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.”(38. [1] 1999:62-64)*

and

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

- (a) *The identification and mapping of all heritage resources in the area affected;*
- (b) *an assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6(2) or prescribed under section 7;*
- (c) *an assessment of the impact of the development on such heritage resources;*
- (d) *an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;*
- (e) *the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;*

- (f) *if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and*
- (g) *plans for mitigation of any adverse effects during and after the completion of the proposed development.”*
(38. [3] 1999:64)

Human Tissue Act and Ordinance 7 of 1925

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

2. Study Area and Project Description

2.1 Location & Physical Environment

The proposed Lakeside/Leeuwfontein expansion project study area is situated between Ogies and Delmas. Six proposed mining areas (Blocks A – E & G) were identified for the expansion project across the following properties:

Table 1: Property name & coordinates

Property	Portion	Map Reference (1:50 000)	Lat	Lon	Parcel Size (ha)	Proposed area
Welgelegen 221 IR	24	2628 BB	-26.101994	28.899774	98.36	Block A & B
Welgelegen 221 IR	26	2628 BB	-26.114972	28.898644	412.08	Block B & C
Leeuwfontein 219 IR	2	2628 BB	-26.115014	28.922301	85.78	Block D
Leeuwfontein 219 IR	5	2628 BB	-26.114938	28.938910	181.25	Block E
Leeuwfontein 219 IR	7	2628 BB	-26.131816	28.941984	171.60	Block G
Leeuwfontein 219 IR	8	2628 BB	-26.136938	28.944700	171.71	Block G
Leeuwfontein 219 IR	22	2628 BB	-26.115025	28.932214	85.81	Block G
Leeuwfontein 219 IR	27	2628 BB	-26.131221	28.953597	20.92	Block G
Leeuwfontein 219 IR	28	2628 BB	-26.133904	28.952438	20.92	Block G
Leeuwfontein 219 IR	29	2628 BB	-26.137395	28.949138	20.92	Block G
Leeuwfontein 219 IR	30	2628 BB	-26.138180	28.952494	20.92	Block G
Leeuwfontein 219 IR	31	2628 BB	-26.141626	28.949269	20.92	Block G
Leeuwfontein 219 IR	32	2628 BB	-26.144320	28.948432	20.92	Block G
Leeuwfontein 219 IR	33	2628 BB	-26.147068	28.947337	20.90	Block G

The closest town to the study area is Ogies, located 13.5 km to the east-northeast. eMalahleni is located roughly 37 km to the northeast and Delmas 23 km to the west of the proposed expansion project (**Figures 1 & 2**). The study area falls within the Nkangala District Municipality and the Victor Khanye Local Municipality in the Mpumalanga Province. The eMalahleni Local Municipality borders the study area along the north-eastern

boundary. In terms of vegetation, the study area falls within the Grassland Biome, Mesic Highveld Grassland Bioregion and the Eastern Highveld Grassland vegetation unit. The Grassland Biome covers approximately 28% of South Africa (Mucina & Rutherford 2006). This vegetation unit's conservation status is considered to be endangered with a conservation target of 24%. Only a small portion is conserved in statutory and private reserves. Eastern Highveld Grassland consists of the plains between Belfast in the east and the eastern side of Johannesburg in the west and also extends towards Bethal, Ermelo and to the west of Piet Retief. This vegetation type is associated with slightly to moderately undulating planes and includes low hills and pan depressions. The general vegetation is short dense grassland with small, scattered rocky outcrops and some woody species. About 44% of this vegetation unit has been transformed by cultivation, plantations, mines, urbanisation and the building of dams. Although no serious alien invasions are reported, *Acacia mearnsii* may become dominant in disturbed areas. Erosion associated with this vegetation unit is low (Mucina & Rutherford 2006).

The average elevation for Eastern Highveld Grassland ranges from 1520 to 1780 MASL (Mucina & Rutherford 2006). The average elevation of the project area is 1580 MASL and slopes from the slightly more elevated eastern side towards the lower middle section before climbing slightly towards the west.

The study area falls within the summer rainfall region and the average annual rainfall is roughly 693 mm per year. The average annual temperature is 15.4 °C. The average summer temperature is 20.1 °C, while the average winter temperature averages 8.7 °C (Climate-data.org accessed 04/06/2020).

The study area falls within the B20E Quaternary Catchment that forms part of the Olifants Water Management Area. The closest perennial river to the study area is the Wilger River that flows 3.6 km to the east of the study area. Several non-perennial offshoots and minor dams and pans, however, are found within the study area.

When the surrounding environment is considered, the general study area is associated with agricultural activity with mining occurring to the northeast, north and west. Kendal Power Station is located approximately 3.5 km to the northeast. Access to the various mining blocks (**Figure 2**) is mostly via tertiary and jeep track farm roads.

On a local scale, Mining Block A falls completely within an already mined area. Mining Block B partially falls within a mined section along the northern boundary, while the remaining southern section is cultivated. The western half of Mining Block C is cultivated, while the eastern half is used for grazing. The majority of Mining Block D has already been mined, and although the aerial image indicates an open area towards the southern boundary, the site visit confirmed that this area has been mined and disturbed as well. The majority of Mining Block E consists of cultivated land, except for a small strip along the northern boundary that consists of open veldt. Block G, the largest of the Mining Blocks, is characterised by a combination of cultivated land, a pan, buildings and a small open area.

Historical topographical maps (**Appendix A**) show Block A to be an open area in 1965 and as cultivated land in 1984; Block B is shown to be a combination of an open area and cultivated land in 1965, while the 1984 topographical map shows the entire area to be cultivated. The 1965 topographical map shows Block C to be cultivated land with some huts, while on the 1984 topographical map a building is indicated near the previously shown huts with excavations to the west thereof. The surrounding area is shown to be a combination of crop cultivation and open veldt. Block D shows a combination of buildings, cultivation and open veldt between 1965 and 1984, while Block E is shown to be partially cultivated by 1965 and completely cultivated by 1984. Block G is characterised by a combination of buildings, a non-perennial river, a dry pan and cultivated fields by 1965. By 1984 several additional buildings were constructed.

2.2 Project description

The Lakeside/Leeuwfontein Colliery plans to obtain a mining right for the proposed expansion on six demarcated portions (Mining Blocks A – E & G) intersecting several farm portions of the Farms Welgelegen 221 IR and Leeuwfontein 219 IR (**Table 1**) in the vicinity of Ogies near the western border of the Mpumalanga Province. The proposed expansion areas are indicated on **Figure 2**. The proposed development options consist of three opencast mine areas on the Farm Welgelegen 221 IR and three on the farm Leeuwfontein 219 IR. The locations and approximate extents of the proposed Mining Blocks are indicated in **Table 2** below:

Table 2: Proposed development and approximate extents.

Property	Portion	Approximate Size (ha)	Lat	Lon
Block A	24/221	18.6	-26.10295228	28.89900422
Block B	24/221; 26/221	9.4	-26.10684301	28.89702215
Block C	26/221	80.2	-26.11425742	28.90539090
Block D	2/219	30.3	-26.11607127	28.91996541
Block E	5/219; 22/219	18.1	-26.11734065	28.93556242
Block G	7 & 8/219; 27-33/219	205	-26.13870297	28.94628029

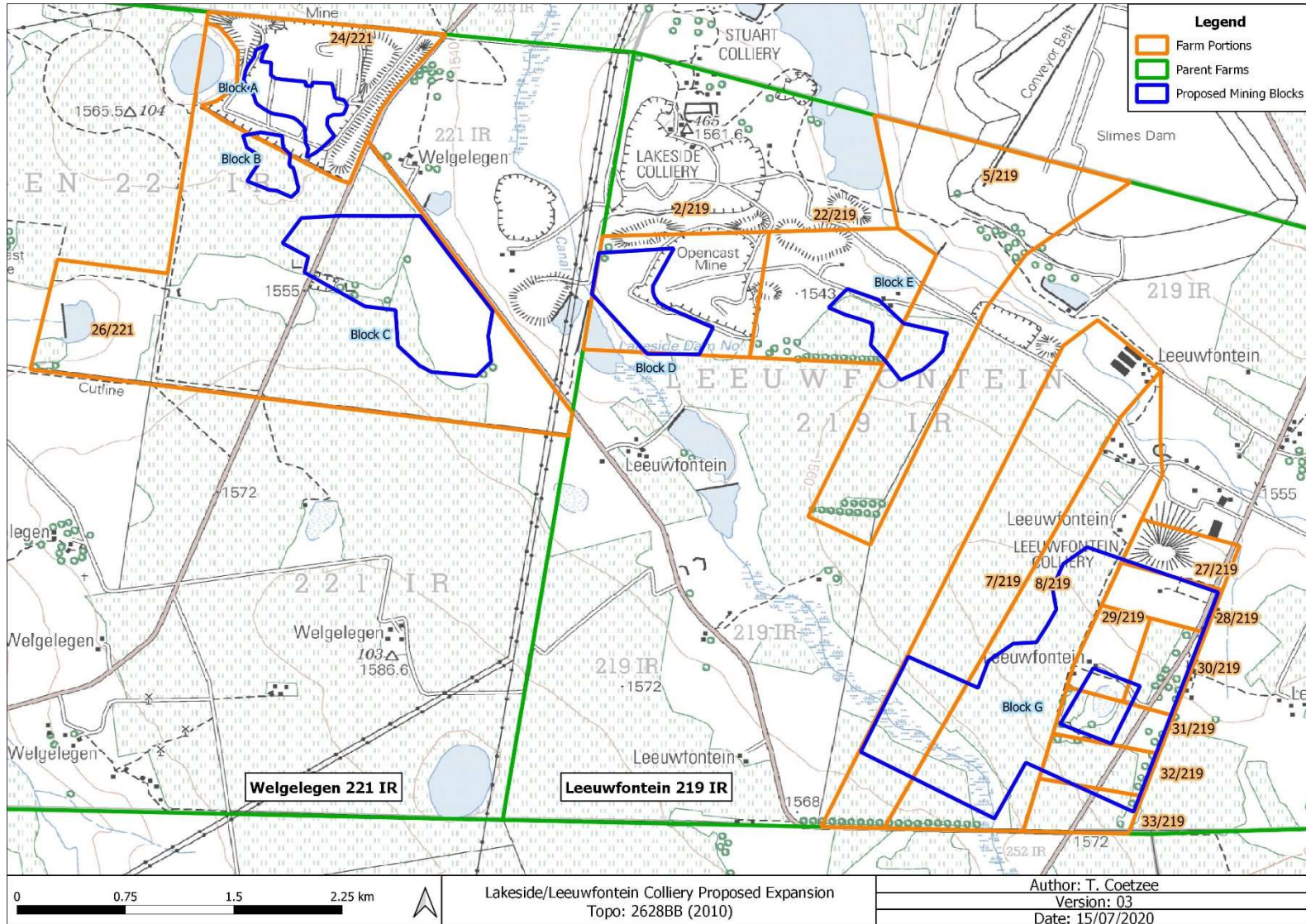


Figure 2: Segment of SA 1: 50 000 2628 BB indicating the study area.

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 and focuses on more site-specific elements where relevant.

3.1 The Stone Ages

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 are handaxes, cleavers, choppers and spheroids. Although hominins seemingly used handaxes often, scholars disagree about their use. There are no indications of hafting, and some artefacts are far too large for it. Hominins likely used choppers and scrapers for skinning and butchering scavenged animals and often obtained sharp ended sticks for digging up edible roots. Presumably, early humans used wooden spears as early as 5 million years ago to hunt small animals.

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

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

3.2 The Iron Age & Later History

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

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

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

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

3.2.1 The South African War

Several small skirmishes took place in the general area. However, no evidence could be found during the survey. The phase in the South African War that is significant in terms of the study area relates to the period after the British occupied Pretoria on 5 June 1900. During this time the republican forces retreated towards the eastern boundary of the *Zuid-Afrikaansche Republiek* under General Louis Botha and started employing guerrilla tactics (Matakoma Heritage Consultants 2007).

One of the more important and well-known South African War sites in the vicinity of the study area is the Battle of Bakenlaagte, located approximately 27 km southeast of the study area. The battle took place on 30 October 1901 between Lieutenant Colonel George Benson's Flying Column and the joint forces of General Louis Botha and General Sarel Grobler. Benson's Flying Column continuously threatened Boer commandos that caused the commandos to move camp every two days. Grobler had been following Benson's trail and harassed his rearguard, but it was only after Botha and his commando joined Grobler's commando that an attack could be launched. Benson's column was enroute from Syferfontein to Balmoral to resupply his men and horses. The column, consisting of more than 300 wagons, 800 horses and 600 infantry, aimed to camp at Bakenlaagte farmstead (Von der Heyde 2013: 208-209).

During the march, the column stretched out over a distance of approximately 2 km. The advance guard reached the Bakenlaagte farmstead at 09:00, but one of the rearguard wagons got stuck in mud when crossing a drift. Because the Boers were close by and visibility was poor, Benson rode back towards the rearguard and ordered two field guns be placed on a stony ridge between the camp and the rearguard. Benson was on his way to rescue the wagon when Botha with 800 men launched his attack. Upon seeing the attack, Benson ordered a retreat to Gun Hill, where the field guns were positioned. Two companies were also on their way from the camp to Gun Hill. At this stage Benson ordered some of the rearguard toward the northeast to protect the camp, creating a gap through which the Boers attacked. The position was overrun and of the 280 soldiers, the British suffered 231 casualties. Before Benson succumbed to his wounds, he ordered the camp to fire their guns at the hill, despite the danger to him and his men. The shelling drove the Boers back, but ambulance wagons provided cover and they managed to capture the two field guns. The Boers lost almost 100 men and decided not to follow up with an attack. The 73 British soldiers, including Benson, who were killed in the Battle were buried on Gun Hill, but were later exhumed and reburied in Germiston's Primrose Cemetery (Von der Heyde 2013: 208-209).

3.2.2 Coal mining general history near eMalahleni

eMalahleni, previously known as Witbank, has a rich history in terms of development and mineral exploitation. Mpumalanga, especially the area between eMalahleni, Middelburg, Bethal, Hendrina, Ermelo and Carolina, is associated with vast coal fields. These coal fields formed between 200 and 300 million years ago from rotten forests in swamps. During this period, Africa was still attached to South America, India and Antarctica as part of

the Gondwana supercontinent. By 250 million years ago, the climate changed to dry warm conditions and the swamps in Mpumalanga were replaced by desert-like conditions around 200 million years ago. By 180 million years ago, when the Gondwana supercontinent started to split up, volcanic lava fields covered areas in Mpumalanga (De Wit 2007: 37).

With the rich coal deposits in Mpumalanga, it was only a matter of time before its value was realised and the coal extracted. Coal mining is Mpumalanga's most important industrial activity and produces about 80% of South Africa's coal. The earliest coal mining in the area dates to 1868 when farmers extracted coal for personal use in the Middelburg district. Large-scale coal mining around eMalahleni, however, only started after the discovery of gold on the Witwatersrand in 1886. Due to the discovery of coal in the Brakpan and Springs surroundings in 1887 and no railway linking eMalahleni with the Rand, these early eMalahleni coal mines closed down. It was more cost effective to exploit the closer Brakpan and Springs coal deposits than the coal found at eMalahleni (Schirmer 2007: 316).

After the construction of the railway line between the Rand and eMalahleni the deposits were exploited on large scale again. The coal fields, which are about 40 km wide, are concentrated around eMalahleni and run towards Belfast in the east. The first collieries around eMalahleni were Douglas, Transvaal and Delagoa Bay, Witbank and Landau and are of a higher quality compared to the coal found at Brakpan and Springs. During the 1890s some of the coal was exported via Delagoa Bay. In addition, the coal was readily accessible as the deposits occurred at a depth of 100 m or less (Schirmer 2007: 316-317). It should also be noted that the railway line between Pretoria and Lorenzo Marques (Maputo) was completed on 2 November 1894 and the connection between eMalahleni and Johannesburg during the 1910s (Heydenrych 1999).

Between 1900 and 1920 many new collieries were established and the coal price dropped. This led to the establishment of the Transvaal Coal Owners' Association with the main aim to regulate output coal prices. This also acted to counter possible competition. It should also be noted that not all collieries joined this association. The establishment of the Transvaal Coal Owners' Association had positive as well as negative influences. On the one hand eliminating the competition might have impacted negatively on efficiency and the workers. On the other hand, it is possible that the capacity of coal mines was enhanced and facilitated further development in the industry. One positive point was that the association eased interaction with international buyers. During the 1930s, however, the coal price continued to drop and resulted in mechanisation. This introduced electric coal cutters and eliminated the need for high number of unskilled workers. By 1946 eMalahleni and Middelburg saw the emergence of a modern coal industry. The Transvaal had 34 large collieries that were responsible for 99.7% of the province's coal (Schirmer 2007: 317-319).

Between 1940 and 1960 coal output in the Eastern Transvaal increased from 13 million to 25 million tons. Although industrialisation expanded throughout this time in South Africa and a demand existed for coal both locally

and internationally, a steady shift to oil as the dominant form of energy was noted. In light of these developments Anglo American Corporation launched three research programmes in the 1960s. As a result of these programmes the region's coal mines became export orientated. This trend continued throughout the 1980s. During these times a series of coal-burning power stations around the eastern Highveld coal deposits were constructed (Schirmer 2007: 321).

The town of Witbank was founded in 1903 by Neumann's Witbank Colliery as a result of the mining activity. In 1906 Witbank became a health board, a village council in 1910 and a municipality in 1914 (Schirmer 2007: 338). On 3 March 2006 Witbank was renamed eMalahleni.

3.2.3 Ogies general history

The town of Ogies, established as a result of coal mining activities, was established on the farm Ogiesfontein that belonged to Jan Visagie (Bulpin 1986).

The existence of the railway station, the passing main roads through the area, as well as the growth of coal mining activities and the associated work force are all contributing factors that led to the establishment of the town of Ogies. The Health Committee for Rural Areas took a governing role of the area and in 1957 the Ogies Local Area Committee was established to assist the Health Committee. In 1959 the Health Committee for Rural Areas started advertising their intention to prepare a development scheme for the town. It was decided that an uneconomical coal deposit of about 130 acres, together with a dolerite reef running east-west along the railway line would be best suited for the establishment of the town. Only about 98 acres of the 130 were eventually available for the establishment of the town as 22 acres were owned by the South African Railways, and another 10 acres were out of bounds (PGS 2010).

In 1961 Oogies Mills (Pty) Ltd formally applied to the Townships Board for the establishment of the town of Ogies on Portions C and 28 of the Farm Grootpan 7 IS. The Townships Board approved the application based on the fact that staff housing was needed for both Oogies Mills (Pty) Ltd and the nearby Tweefontein united Collieries coal mine. The town's name was derived from the Oogiesfontein railway station. The application was eventually approved in 1965 for the establishment of Ogies on Portion 31 of the Farm Grootpan No, 7 IS.

3.2.4 Farm History

Leeuwfontein

C.A. van Niekerk first inspected the Farm Leeuwfontein 219 IR, previously no. 316, on 22 October 1864. Adriaan Jacobus de Lange was the first owner and his title deed was registered on 14 March 1870. The western 1/8 of the farm was transported from Wynand Wilhelmus Maré on behalf of A.J. de Lange to Cornelis Petrus de Lange on 14 March 1890. Following the death of C.P. de Lange, the same portion was transferred to Catharina Johanna Susanna de Lange (born Zukman) on 17 March 1891 (Matakoma Heritage Consultants 2007).

Welgelegen

The Farm Welgelegen was initially numbered Welgelegen 544, then as Welgelegen 51, followed by Welgelegen 221 IR. The farm was originally surveyed by Friedrich in October 1896 (S.G. No. A305/02) and the first owner was A.C. Duvenage, transferred on 30 March 1903 under deed of transfer 2756/03 (S.G. No. A1200/20).

4. Methodology

I conducted archaeological reconnaissance of the study area during May 2020 through an unsystematic pedestrian and vehicular site survey. General site conditions were recorded via photographic record (**Figures 6 – 14**). Also, the site was inspected beforehand on Google Earth, historical aerial imagery and topographical maps in order to identify possible heritage remains (**Appendix A**). Ten sites (2628BB-L01 – 2628BB-L10) were identified, pre-plotted and visited during the survey (**Table 3 & Figures 3 – 5**). Two additional sites (2628BB-L11 & 2628BB-L12) were identified during the survey as a result of personal communication with Eco Elementum, as well as one of the farmers in the vicinity. It should be noted that the prefix '2628BB' is not used for site reference due to the length of the name, but is recorded in **Table 3**. The historical topographical datasets dating to 1965, 1984 and 1995, as well as the historical aerial photographs dating to 1958 and 1967 proved useful in terms of providing an indication of the location and age of some of the structures and features associated with the study area. The total area surveyed was roughly 361.6 ha, but excludes Block D that has already been mined.

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 areas 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 GPS during the site visit.

Table 3: Site coordinates & description

Abbreviated name	Site / Survey Point Name	Longitude	Latitude	Description	Current Status	Identification Source
L01	2628BB-01	28.901994	-26.114817	Structures	Demolished	Aerial 1958
L02	2628BB-02	28.920348	-26.116842	Structures	Demolished	Aerial 1958
L03	2628BB-03	28.946858	-26.139301	Structures	Ruins	Topo 1984
L04	2628BB-04	28.948415	-26.138545	Structures	Altered / ruins	Aerial 1958
L05	2628BB-05	28.932946	-26.114960	Cemetery	Intact	Aerial 1958
L06	2628BB-06	28.952417	-26.133283	Structures	Ruins	Aerial 1958
L07	2628BB-07	28.905143	-26.113174	Soil disturbance	Trees	Aerial 1958
L08	2628BB-08	28.946039	-26.143042	Soil disturbance	Trees - unclear	Aerial 1967
L09	2628BB-09	28.946948	-26.143887	Structures	Ruin - unclear	Aerial 1967
L10	2628BB-10	28.947498	-26.142077	Structures	Ruins	Aerial 1967
L11	2628BB-11	28.949541	-26.132971	Grave	Unmarked	Pers. Com
L12	2628BB-12	28.904125	-26.116147	Cemetery	Intact	Pers. Com

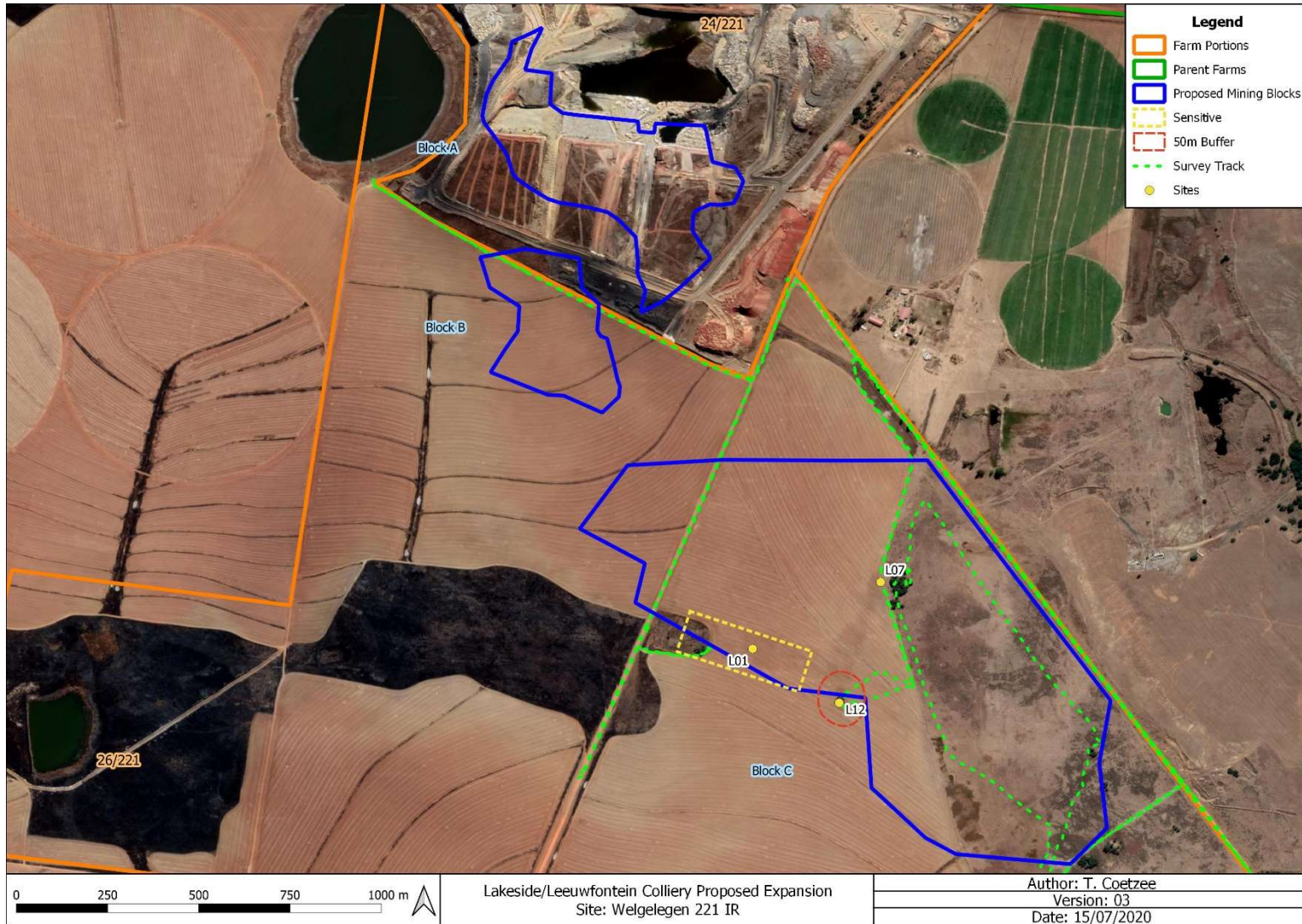


Figure 3: Blocks A – C with survey track on a 2020 aerial backdrop.

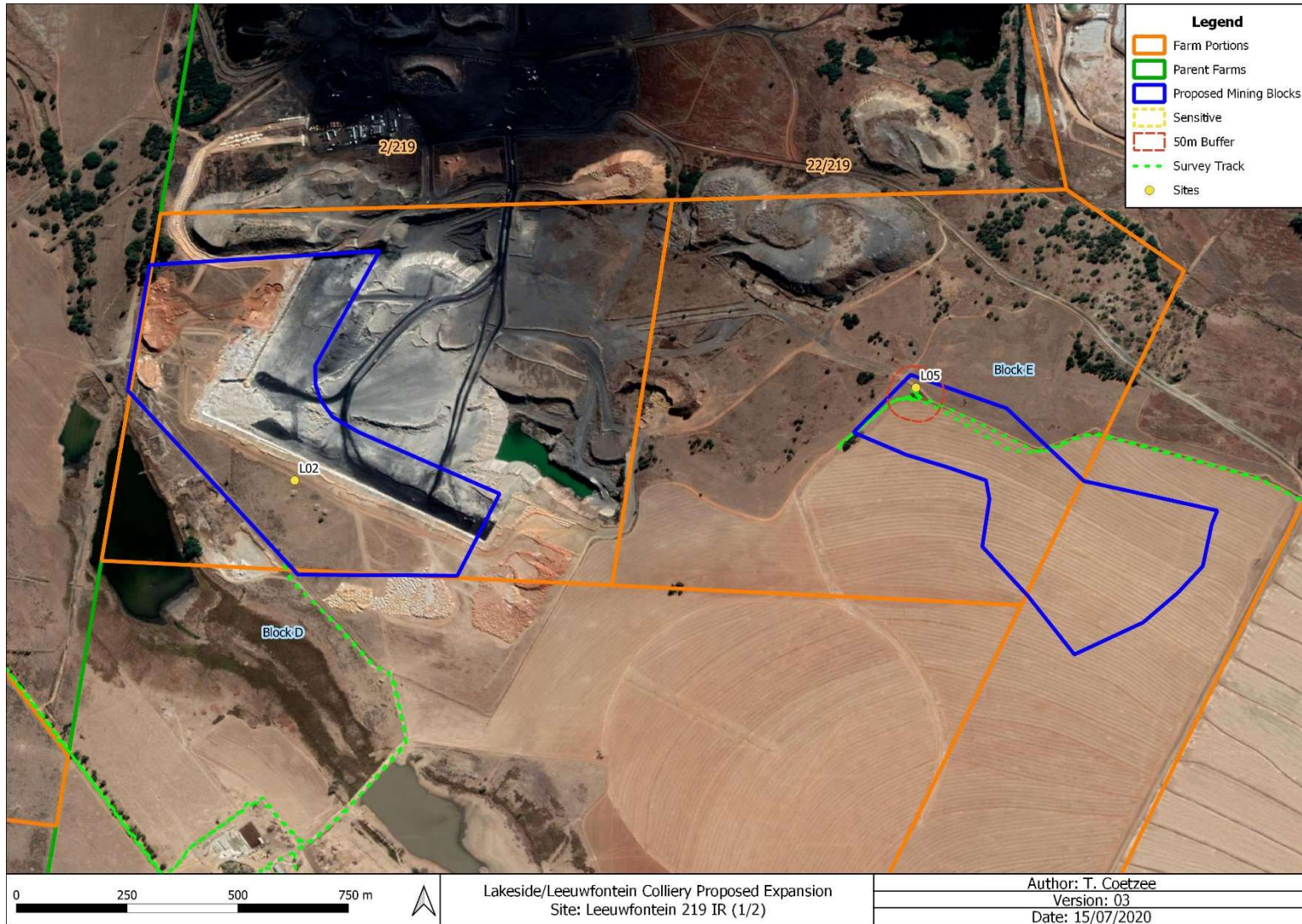


Figure 4: Blocks D & E with survey track on a 2020 aerial backdrop.

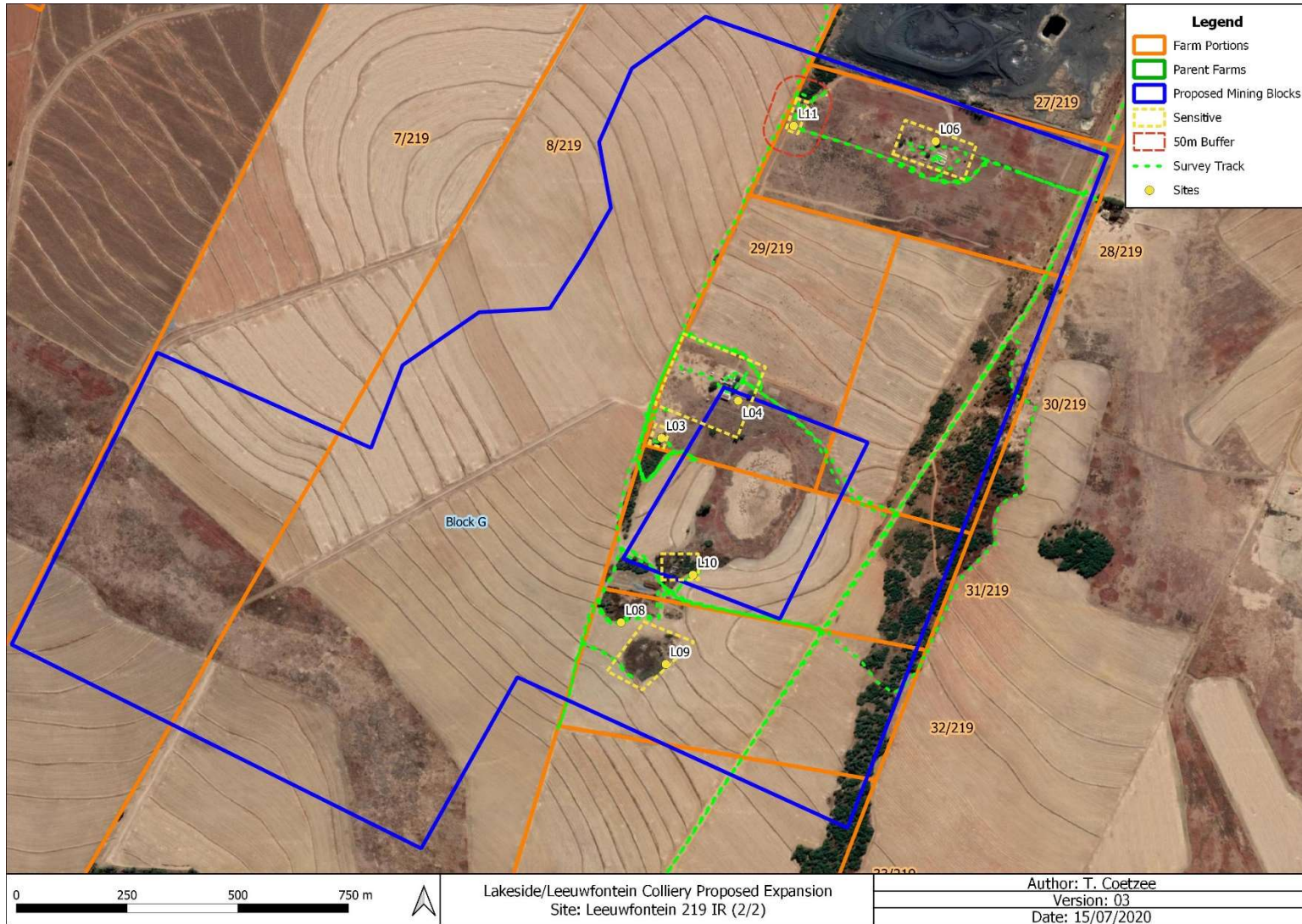


Figure 5: Block G with survey track on a 2020 aerial backdrop.



Figure 6: Block A mining activities.



Figure 7: Fenced-off section of Block A.



Figure 8: Block B – maize cultivation.



Figure 9: Open eastern section of Block C used for grazing – seen from the south.



Figure 10: Mining Block D as seen from the south.



Figure 11: Maize cultivation on Mining Block E.



Figure 12: Small fenced-off northern section of Mining Block E.



Figure 13: Maize cultivation on Mining Block G.



Figure 14: Open veldt next to building on Mining Block G.

4.1 Sources of information

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

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

Personal communication with Mr. Albertus Steenberg living in the residence on Mining Block G, revealed that the farmstead was significantly altered in the early 1980's and that to his knowledge, no graves exist in the vicinity (Albertus Steenberg, pers. Comm. 2020).

4.1.1 Previous Heritage Studies

Khutala Colliery, Nkangala District

Matakoma Heritage Consultants (2007) conducted a Heritage Impact Assessment for the BHP Billiton Khutala Colliery on certain portions of the farms Zondagsvlei, Schoongezicht, Leeuwfontein, Klippoortje, Springboklaagte,

Cologne, Bombardie and Smithfield in the Nkangala district. The HIA recorded 24 cemeteries consisting of approximately 735 graves, as well as 15 historical structures. This development is located roughly 3 km northeast of the proposed Lakeside/Leeuwfontein expansion project concerned in this report.

Klipspruit Extension: Weltevrede

The HIA survey for the Klipspruit Extension: Weltevrede project was done by Digby Wells (2014). The project entailed an assessment of the built environment that included a field reconnaissance survey that identified, recorded, and documented all structures and burials in the project area, in addition to the sites identified by Cultmatrix cc (De Jong 2009). The HIA recorded 57 heritage sites within the project area: 20 burial grounds, 34 built structures and 1 palaeontology and meteorites sites. The Klipspruit Extension Project is approximately 18 km northeast of the study area concerned in this report.

Nokuhle Colliery, Ogies

An Archaeological Impact Assessment was done for Nokuhle Coal (Pty) Ltd for the mining operations on the farm Oogiesfontein 4 IS about 1 km north of Ogies. During the surveys that covered roughly 180ha, three cemeteries and six ruins were located within the development footprints. A further five cemeteries and three ruins were located in the area adjacent to the demarcated footprint areas (PGS 2010). The colliery referred to, is located approximately 16 km northeast of the study area concerned in this report.

4.2 Limitations

The majority of the study areas were characterised by extremely dense vegetation and cultivated maize fields during the time of surveying (May 2020) that hampered visibility and access (**Figures 15 & 16**). Also, a small section of Block E could not be accessed due to the area being fenced-off (**Figure 17**), while Blocks A & D have completely been disturbed by mining activities (**Figures 18 & 19**). It should be noted that although Block D is shown to be partially mined on the aerial backdrop (**Figure 4**), observation confirmed that the entire area has been disturbed.



Figure 15: Dense vegetation at Mining Block G.



Figure 16: Cultivated maize associated with the majority of the study area.



Figure 17: Accessibility constraints at Block E.



Figure 18: Mined area at Block A.



Figure 19: Mining Block D.

5. Archaeological and Historical Remains

5.1 Stone Age Remains

I found no Stone Age archaeological remains within the demarcated study areas.

Although I located no Stone Age archaeological remains, such artefacts may occur in the area. These artefacts are often associated with rocky outcrops or water sources. **Figures 20 – 22** below are examples of stone tools often associated with the Early, Middle and Later Stone Age of southern Africa.

Archaeological studies done on the surrounding areas also did not locate material pertaining to the Stone Age.

According to Bergh (1999: 5), no major Stone Age archaeological sites are located in the direct vicinity of Ogies.

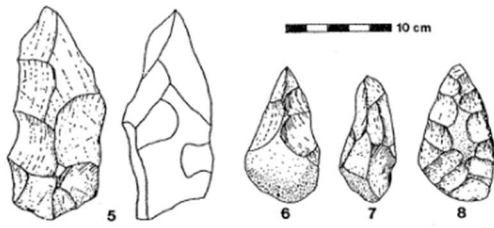


Figure 20: ESA artefacts from Sterkfontein (Volman 1984).

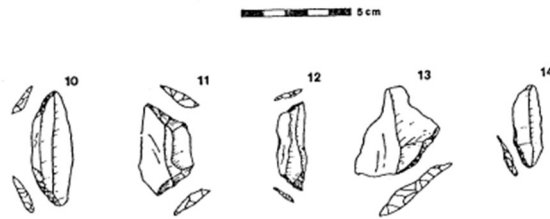


Figure 21: MSA artefacts from Howiesons Poort (Volman 1984).



Figure 22: LSA scrapers (Klein 1984).

5.2 Iron Age Farmer Remains

I found no Iron Age Farmer remains within the demarcated study areas.

Archaeological studies done on the surrounding areas also did not locate material pertaining to the Iron Age.

5.3 Historical

Four sites dating to historical times were identified using a combination of historical topographical maps and aerial images.

Site L01 is located on Portion 26 of the Farm Welgelegen 221 IR within Mining Block C (**Figure 3**). Structures are visible on the 1958 and 1967 aerial images (**Appendix A: Figures 54 & 55**) and huts and diggings are indicated on the 1965 topographical map (**Appendix A: Figure 60**). Today, only the diggings remain, while the rest is cultivated (**Figures 23 – 24**). The area associated with the structures as observed on the 1958 aerial image, measures 3.7 ha and was marked as a sensitive area (**Figure 3**).

Site L02, located on Portion 2 of the Farm Leeuwfontein 219 IR, falls within Mining Block D (**Figure 4**). Structures are visible on the 1958 and 1967 aerial images (**Appendix A: Figures 56 – 57**), while the 1965 and 1984 topographical maps indicate two buildings and the 1995 topographical map an additional 2 buildings (**Appendix A: Figures 60 – 62**). The 2010 topographical map (**Appendix A: Figure 63**), as well as recent aerial imagery (**Figure 4**), however, shows a complete absence of buildings and the presence of a nearby opencast mine. The buildings were therefore demolished between 1995 and 2010. Also, during the site visit, the entire area associated with Mining Block D appears to have been disturbed by mining activities (**Figure 25**). The area associated with the structures as observed on the historical aerial images, measures 2 ha but has been disturbed up to a significant depth where it is unlikely that significant heritage material will be located (**Figure 4**).

A dry pan exists within the boundary of Mining Block G, but has been excluded from the proposed expansion project. Site L04 is located on Portion 29 of the Farm Leeuwfontein 219 IR and partially intersects Mining Block G, while the remainder falls within the excluded pan section. The excluded pan section intersects portions 29, 30 and 31 of the Farm Leeuwfontein 219 IR (**Figure 5**). Site L04 consists of six structures of varying levels of preservation and one demolished site (**Figures 26 – 34**). Both the 1958 and 1967 aerial images (**Appendix A: Figures 58 – 59**) indicate the presence of structures, though the quantity cannot be determined. The 1965 topographical map indicates two buildings (**Appendix A: Figure 60**), the 1984 topographical map 3 buildings (**Appendix A: Figure 61**), the 1995 (**Appendix A: Figure 62**) topographical map four buildings and the 2010 topographical map (**Appendix A: Figure 63**) three buildings. Currently two intact buildings and several ruins are present at site L04. According to the owner, Mr. Albertus Steenberg, the main residence was significantly altered in the early 1980's. At present the main residence consists of a combination of plastered- and face brick with a tile roof (**Figures 26 – 27**). A brick near the swimming pool at the back of the house has the date '29/11/84' inscribed on it, possibly indicating the date of the alteration (**Figure 28**). To the south of the main residence a plastered outbuilding with corrugated iron roof is located (**Figure 29**). To the north of the main residence, a modern brick building that houses a water storage tank on the roof is found (**Figure 30**). Further to the west of the main residence, three building ruins are found (**Figures 31 – 33**). The use of these buildings is unknown. It appears that these structures date to more recent times as the first building in the vicinity appears on the 1984 topographical map (**Appendix A: Figure 61**). A building in the south-western corner of the area marked as 'sensitive' first appears on the 2010 topographical map (**Appendix A: Figure 63**) but has since been demolished (**Figure 34**). The 'sensitive' area associated with site L04 measures 3 ha.

Site L06 is located along the northern boundary of Mining Block G and within Portion 28 of the Farm Leeuwfontein 219 IR (**Figure 5**). Both the 1958 and 1967 aerial images indicate structures near a patch of trees in the centre of the farm portion, while the surrounding area appears to be cultivated fields (**Appendix A: Figures 58 – 59**). The 1965 topographical map (**Appendix A: Figure 60**), shows the presence of one building, while both the 1984

and 1995 maps (**Appendix A: Figures 61 – 62**) indicate one additional building. In all three instances the surrounding area is shown to be cultivated. The 2010 topographical map, however, shows the presence of only one building (**Appendix A: Figure 63**). Therefore, it seems that between 1965 and 1984 one additional building was constructed, but it is unclear which building was demolished between 1995 and 2010. However, personal communication with one of the neighbouring farmers revealed that the original building was demolished between 1972 and 1974 and a new building was constructed at the same location. This structure, consisting of plastered brick, however, is currently a ruin (**Figures 35 – 36**). Next to the main building to the west, another structure constructed from bricks is found. The use of this building is unknown (**Figure 37**). The area associated with the structures as observed on the historical aerial images, measures 1.4 ha and was marked as a sensitive area (**Figure 5**).

Heritage studies done in the surrounding area all recorded similar buildings/ruins/structures/farmsteads/sheds etc. dating to historical times. Several of these buildings have been demolished, while others have been altered and are still occupied (see PGS 2010, Matakoma Heritage Consultants 2007, Digby Wells 2014).



Figure 23: Site L01 – maize cultivation.



Figure 24: Site L01 – old diggings.



Figure 25: Site L02 - demolished site.



Figure 26: Site L04 – Front view of the main residence.



Figure 27: Site L04 – Rear view of the main residence.



Figure 28: Site L04 - Date engraved at the swimming pool (29/11/84).



Figure 29: Outbuilding at Site L04.



Figure 30: Modern structure with water tank at Site L04.



Figure 31: Building ruin at Site L04.



Figure 32: Building ruin west of the main residence at Site L04.



Figure 33: Building ruin adjacent maize field at Site L04.



Figure 34: Demolished building location at Site L04.



Figure 35: Main building ruin at Site L06 seen from the south.



Figure 36: Main building ruin at Site L06 seen from the west.



Figure 37: Structure to the west of the main building ruin at L06.

5.4 Contemporary Remains

Five sites dating to contemporary times were identified using a combination of historical topographical maps and aerial images.

Site L03 falls just inside of the south-western corner of Portion 29 of the Farm Leeuwfontein 219 IR and within Mining Block G. No structures are visible on the 1958 and 1967 aerial photographs (**Appendix A: Figures 58 – 59**), or the 1965 topographical map (**Appendix A: Figure 60**). The building, however, is indicated on the 1984 and 1995 topographical maps (**Appendix A: Figures 61 – 62**) but appears to have been demolished by 2010 (**Appendix A: Figure 63**). No remains are visible on current aerial imagery either (**Figure 5**). During the site visit, severely dilapidated building ruins were observed, but dense vegetation hampered identifying the extent of the ruins (**Figure 38**).

Site L07, located on Portion 26 of the Farm Welgelegen 221 IR and within Mining Block C, was identified as what appeared to be a soil disturbance on the 1958 aerial image (**Appendix A: Figure 54**). Locally, the site is situated between a cultivated maize field, open veldt possibly used for grazing, and a patch of trees (**Figures 39 – 40**). The Lakeside/Leeuwfontein mine officials also mentioned the location of possible graves in the vicinity. No indication of a burial site or structure was observed during the site visit. Additionally, none of the topographical maps (**Appendix A**) or recent aerial imagery (**Figure 3**) indicate the presence of any form of structure.

Site L08 is located in the north-western corner of Portion 32 of the Farm Leeuwfontein 219 IR and falls within Mining Block G (**Figure 5**). The site was identified as a soil disturbance visible on the 1967 aerial photograph (**Appendix A: Figure 59**). No structures, however, are visible on the 1958 aerial image (**Appendix A: Figure 58**) as the area appears to be covered by trees. Also, the historical topographical map dating to 1965 shows the area to be cultivated land, while the topographical maps dating to 1984, 1995 and 20210 (**Appendix A: Figures 60 – 63**) indicate tree cover only. On recent aerial imagery, only vegetation can be observed (**Figure 5**). During the site visit no structures were observed and accessibility was hampered due to extremely dense vegetation (**Figure 41**).

Site L09 was identified from 1967 aerial images depicting the presence of structures on the western half of Portion 32 of the Farm Leeuwfontein 219 IR and within Mining Block G (**Appendix A: Figure 59**). The 1958 aerial image (**Appendix A: Figure 58**), as well as the 1965 topographical map (**Appendix A: Figure 60**), however, show the area to be cultivated land. The building is also present on the 1984 topographical map (**Appendix A: Figure 61**), but is shown as a ruin on the 1995 topographical map (**Appendix A: Figure 62**) and is completely omitted from the 2010 topographical map (**Appendix A: Figure 63**). This suggests that the building was constructed between 1965 and 1967 and was demolished between 1984 and 1995. Recent aerial imagery shows the presence of a ruin (**Figure 5**). During the site visit access to the ruin could not be obtained due to extremely dense vegetation

(Figure 42). The area associated with the structure as observed on the historical aerial image, measures 1.5 ha and is located in a maize field (Figure 43). The associated area was marked as a sensitive area (Figure 5).

Site L10 is located in the vicinity of the south-western corner near the pan on Portion 31 of the Farm Leeuwfontein 219 IR, but falls outside of the area demarcated for mining on Mining Block G (Figure 5). The site is not visible on the 1958 aerial image (Appendix A: Figure 58) or the 1965 topographical map (Appendix A: Figure 60) as the area is covered by trees, but a building is visible on the 1967 aerial image (Appendix A: Figure 59) and 1984 topographical map (Appendix A: Figure 61). By 1995 (Appendix A: Figure 62) the site is depicted as a ruin and is completely omitted from the 2010 topographical map (Appendix A: Figure 63). This suggests that the building was constructed between 1965 and 1967 and was demolished between 1984 and 1995. Recent aerial imagery, however, still show the presence of ruins (Figure 5). During the site visit access to the ruin could not be obtained due to extremely dense vegetation (Figure 44). The area associated with the structure as observed on the historical aerial image, measures 0.5 ha and is bordered by maize fields on two sides. The associated area was marked as a sensitive area (Figure 5).

Heritage studies done in the surrounding area all recorded similar buildings/ruins/structures/farmsteads/sheds etc. dating to recent times. Several of these buildings have been demolished, while others have been altered and are still occupied (see PGS 2010, Matakoma Heritage Consultants 2007, Digby Wells 2014).



Figure 38: Building ruins associated with Site L03.



Figure 39: Patch of trees at Site L07.



Figure 40: Open veldt adjacent Site L07.



Figure 41: Dense vegetation at Site L08.



Figure 42: Dense vegetation at Site L09.



Figure 43: Maize fields surrounding Site L09.



Figure 44: Dense vegetation at Site L10.

5.5 Graves

I observed two cemeteries and identified one unmarked burial site on the demarcated study areas.

Site L05 is located on Portion 22 of the Farm Leeuwfontein 219 IR and within Mining Block E. The site was identified on 1958 aerial imagery (**Appendix A: Figure 56**), is visible as what appears to be a structure on 1967 aerial imagery (**Appendix A: Figure 57**) and as a disturbance in the soil on recent aerial imagery (**Figure 4**). No indications of a cemetery are found on any of the topographical maps in the vicinity of the site (**Appendix A**). During the site visit the formal cemetery was observed next to a farm road bordering a maize field and fenced-off open veldt occupied by the Lakeside/Leeuwfontein Colliery. The cemetery is fenced-off with iron poles and diamond mesh roughly 1.5 m high and consists of approximately 16 graves, but is extremely overgrown and in a dilapidated state that significantly hampered the identification of the graves (**Figures 45 – 46**). All graves are oriented in an east-west direction. Surnames appearing on the headstones include De Lange, Steyn and Bezuidenhout, while the oldest deceased date is 1927 and the most recent 1964 (**Figures 47 – 48**). It is possible that the De Lange graves relate to the first owners of the farm Leeuwfontein as noted in the Farm History section.

Site L11, located along the western border Portion 28 of the Farm Leeuwfontein 219 IR, was identified through personal communication with a nearby farmer who has been living in the vicinity for a significant amount of years (**Figure 5**). Accordingly, the grave is located next to the road and near a tree (**Figure 49**). Unfortunately, only the approximate location is known and according to the farmer, the site consists of only one informal grave of which the iron peg that marked the location was removed years ago. No indication is made on any of the topographical maps (**Appendix A: Figures 60 – 63**) regarding the location of the grave. Because the exact location is unknown, the general area where the grave is believed to be was marked as 'sensitive' on **Figure 5** and measures 0.2 ha.

Site L12 is located on Portion 26 of the Farm Welgelegen 221 IR and within Mining Block C. The site was identified through personal communication with the Environmental Company, who was informed of the cemetery by the mine. The patch of trees and dense vegetation where the cemetery is located (**Figure 3**), is visible on 1958 aerial imagery (**Appendix A: Figure 54**), as well as on 1967 aerial imagery (**Appendix A: Figure 55**). No indications of a cemetery are found on any of the topographical maps in the vicinity of the site (**Appendix A: Figures 60 – 63**). During the site visit, the formal cemetery was observed approximately 180 m into a maize field and partially intersects Mining Block C's south-western boundary. The cemetery is not fenced-off and the number of graves, as well as the inscriptions, are unknown due to extremely dense vegetation (**Figures 50 – 51**). Although it is unlikely that the cemetery is still used for new burials due to the limited space availability, the possibility exists that it might still be visited. Some of the graves are in a dilapidated state (**Figure 52**). The visible graves are oriented in an east-west direction and the headstones and some of the grave dressings are constructed from cement (**Figure 53**). It should also be noted that both the 1958 and 1967 aerial images indicate a footpath or

road between Site L01 and Cemetery L12, suggesting a possible time period during which the cemetery was used (**Appendix A: Figures 54 & 55**).

All three heritage studies done in the surrounding area recorded several burial sites and cemeteries (see PGS 2010, Matakoma Heritage Consultants 2007, Digby Wells 2014).



Figure 45: Cemetery L05.



Figure 46: Dilapidated state of cemetery L05.



Figure 47: Grave at Site L05 dating to 1927.



Figure 48: Grave at Site L05 dating to 1964.



Figure 49: Approximate location of Grave L11.



Figure 50: Location of Cemetery L12.



Figure 51: Dense vegetation at Cemetery L12.



Figure 52: Damaged headstone at Cemetery L12.



Figure 53: Formal graves in Cemetery L12.

6. 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.

6.1 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 4: 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

Table 5: Individual site ratings

Site / Survey Point Name	Type	Rating	Field Rating/Grade	Significance	Recommendation
2628BB-L01	Demolished structure	General Protection B	Grade 4 B	Medium	Record site
2628BB-L02	Demolished structure	General Protection C	Grade 4 C	Low	No recording necessary
2628BB-L03	Ruins	General Protection C	Grade 4 C	Medium	Record site
2628BB-L04	Buildings & ruins	General Protection B	Grade 4 B	Medium	Record site
2628BB-L05	Cemetery	Local	Grade 3 A	High	Mitigation not advised
2628BB-L06	Ruins	General Protection B	Grade 4 B	Medium	Record site
2628BB-L07	Soil Disturbance	General Protection C	Grade 4 C	Low	No recording necessary
2628BB-L08	Soil Disturbance	General Protection C	Grade 4 C	Low	No recording necessary
2628BB-L09	Ruins	General Protection B	Grade 4 B	Medium	Record site
2628BB-L10	Ruins	General Protection B	Grade 4 B	Medium	Record site
2628BB-L11	Grave	Local	Grade 3 A	High	Mitigation not advised
2628BB-L12	Cemetery	Local	Grade 3 A	High	Mitigation not advised

7. Statement of Significance & Recommendations

7.1 Statement of significance

The study area: The proposed Lakeside/Leeuwfontein Expansion Project

Some of the proposed areas demarcated for the expansion of the Lakeside/Leeuwfontein project are considered to be significant from a heritage perspective. The significance of the proposed areas and the observed sites are discussed here.

Mining Block A

The demarcated area used to be open veldt in 1958, was cultivated by 1967 and is currently completely disturbed by mining activities. No potential sites were observed on historical aerial images and topographical maps. The area is therefore not considered to be significant from a heritage perspective.

Mining Block B

The northern section of the demarcated area used to be open veldt in 1958 while the southern section was cultivated. By 1967 the entire area appears to have been cultivated and currently the northern section forms part of mining activity while the southern section consists of cultivated fields. No potential sites were observed on historical aerial images and topographical maps. The area is therefore not considered to be significant from a heritage perspective.

Mining Block C

Three areas within or within close proximity of Mining Block C were investigated (Sites L01, L07, L12). Evidence of huts, buildings and ruins are evident from historical aerial imagery dating to 1958 and 1967, as well as from 1965, 1984, 1995 and 2010 topographical maps in the vicinity of Site L01. Currently the eastern section of the 'sensitive' area associated with Site L01 is cultivated, while the western section where diggings are indicated on the 1984 topographical map is still not cultivated. Though the area is completely disturbed by cultivation and diggings, significant subsurface heritage material exceeding 60 years of age might be unearthed during construction and mining phases and would therefore be considered significant from a heritage perspective as such remains would be protected under the NHRA act 25 of 1999.

Site L07 appeared as a soil disturbance on 1958 aerial imagery, but no structure is indicated on any of the topographical maps. Also, the site visit confirmed the absence of heritage resources. The area is therefore not considered to be significant from a heritage perspective.

One cemetery (L12) was identified via personal communication and is still intact, although in an overgrown and dilapidated state. It is likely that the cemetery contains graves older, as well as younger than 60 years and is significant from a heritage perspective as the Human Tissues Act (65 of 1983) and Ordinance on the Removal of Graves and Dead Bodies (Ordinance 7 of 1925), as well as the National Heritage Resources Act 25 of 1999 apply.

Mining Block D

One site consisting of several buildings (L02) was identified from 1958 aerial imagery and remained visible on 1967 aerial imagery, as well as 1965, 1984 and 1995 topographical maps, but appears to have been demolished by 2010. No structure or ruin is visible on recent aerial imagery and the site visit confirmed that the 'sensitive' area associated with Site L02 is completely disturbed due to mining activities. The remaining area of Mining Block D appears to have been cultivated since at least 1965 until the establishment of the mine between 1995 and 2010. The general area surrounding site L02 is completely disturbed by mining activities up to a level whether it is doubtful any heritage remains of significance will be located.

Mining Block E

One cemetery (L05) was identified from 1958 aerial imagery and is still intact, although in a severely dilapidated state. The cemetery contains graves older, as well as younger than 60 years and is significant from a heritage perspective as the Human Tissues Act (65 of 1983) and Ordinance on the Removal of Graves and Dead Bodies (Ordinance 7 of 1925), as well as the National Heritage Resources Act 25 of 1999 apply.

Mining Block G

Seven areas within or within close proximity of Mining Block G were investigated (Sites L03, L04, L06, L08, L09, L10, L11). The majority of the mining block have been cultivated since at least 1958, while several structures are visible on historical aerial imagery and topographical maps.

The structure associated with Site L03 first appears on the 1984 topographical map, but appears to have been demolished by 2010, it is therefore unlikely that the site exceeds 60 years of age and would therefore not be protected under the NHRA 25 of 1999. Historical aerial imagery revealed no indications of structures, however, during the site visit, building ruins could be identified. Site L03 is not considered to be significant from a heritage perspective.

Site L04 consists of at least six structures and one demolished site. The oldest structures are visible on 1958 aerial imagery, but it should be noted that significant alterations have been made to the main house and later years saw the construction and subsequent destruction of additional buildings. Although the ruins to the west of the main house most likely do not exceed 60 years of age and the house alterations dating to the early 1980's significantly disturbed the context, the entire area demarcated as 'sensitive' should be considered significant from

a heritage perspective as it is likely that the main house together with the surrounding buildings relate to each other and form one area of significance that has its origins prior to 1958. Because some of the structures are likely to exceed 60 years of age, they are protected under the NHRA Act 25 of 1999 and are considered significant.

Site L06 and the associated 'sensitive' area currently consists of a two building ruins. The structures are visible on 1958 aerial imagery, but were demolished and replaced by a new building between 1972 and 1974, thereby disturbing the context of the original structure. The ruins associated with Site L06, therefore, do not exceed 60 years of age and are consequently not protected under the NHRA 25 of 1999. However, the indicated 'sensitive' area might still contain surface or subsurface material culture dating to the original occupation that exceeds 60 years of age and would therefore be considered significant from a heritage perspective as such remains would be protected under the NHRA act 25 of 1999.

Site L08 appeared as a soil disturbance on 1967 aerial imagery, but no structure is indicated on any of the topographical maps. The site visit confirmed the absence of heritage resources on the surface, but it should be noted that parts of the area could not be accessed due to dense vegetation. The area is not considered to be significant from a heritage perspective.

The 1958 aerial image, as well as the 1965 topographical map show the areas associated with Sites L09 & L10 to be respectively a cultivated field and a patch of trees. On the 1967 aerial image, however, buildings are visible. The buildings are shown on the 1984 topographical map as well, but are indicated as ruins on the 1995 topographical map. The exact location of Site L09 could not be visited during the survey as a result of the surrounding maize fields, while access to site L10 was hampered by extremely dense vegetation. However, ruins are still visible on recent aerial imagery and the building remains of Site L10 could be observed from nearby. It is likely that the buildings were constructed between 1965 and 1967 and were demolished between 1984 and 1995. The structures, therefore, do not exceed 60 years of age and are not protected under the NHRA 25 of 1999.

Site L11, an unmarked grave of which the exact location is unknown, is considered significant from a heritage perspective. Although the exact age is also not known the Human Tissues Act (65 of 1983) and Ordinance on the Removal of Graves and Dead Bodies (Ordinance 7 of 1925), as well as the National Heritage Resources Act 25 of 1999 legislation apply.

7.2 Recommendations

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

Mining Block A

- No heritage sites were observed – development may continue.

Mining Block B

- No heritage sites were observed – development may continue.

Mining Block C

- The area demarcated as 'sensitive' at Site L01 is considered potentially significant from a heritage perspective as this area is associated with structures dating to historical times. Even though the surface has completely been disturbed by cultivation and diggings, subsurface cultural material might exist and care should therefore be exercised during construction and mining phases.
- Site L07 is not considered to be a site of heritage importance.
- Because the cemetery at Site L12 partially falls within Mining Block C, is significantly overgrown and appears to be partially dilapidated, it is recommended that a fenced-off conservation buffer of 50 m be established around the cemetery and that a qualified archaeologist compile a Conservation Management Plan to ensure the safeguarding of the graves. Also, access to the cemetery must not be refused. Alternatively, the graves may be relocated by a qualified graves relocation unit to a premises earmarked by the local municipality, but will set in motion a substantial process as new legislation will be triggered. These processes, however, must be performed in accordance with the involvement of community leaders and the relatives of the deceased buried in the concerned cemetery.

Mining Block D

- Site L02 is not considered significant from a heritage perspective as this area has completely been disturbed by mining activities.

Mining Block E

- Because the cemetery at Site L05 is no longer in use, it is recommended that a fenced-off conservation buffer of 50 m be established around the cemetery and that a qualified archaeologist compile a Conservation Management Plan ensure the safeguarding of the graves. Also, access to the cemetery must not be refused.

Alternatively, the graves may be relocated by a qualified graves relocation unit to a premises earmarked by the local municipality, but will set in motion a substantial process as new legislation will be triggered. These processes, however, must be performed in accordance with the involvement of the relatives of the deceased buried in the concerned cemetery.

Mining Block G

- The structure associated with Site L03 was built and demolished in contemporary times and are not considered significant from a heritage perspective. However, it is recommended that should the area be impacted by the proposed mining development, the vegetation around Site L03 be cleared and that all buildings and structures associated with the demarcated areas be adequately recorded by a qualified archaeologist and destruction permits be obtained from the relevant heritage authority prior to any impact.
- The original structures associated with the 'sensitive' area at Site L04 date to historical times. Alteration work to the main house in the 1980's disturbed the original context and it is likely that some of the other buildings were constructed during the same period. It is recommended that should the demarcated 'sensitive' area be impacted by the proposed mining activities, all the buildings and structures associated with the demarcated area be adequately recorded by a qualified archaeologist and destruction permits be obtained from the relevant heritage authority prior to any impact.
- The original structures associated with the 'sensitive' area at Site L06 date to historical times. The original structures, however, were demolished between 1972 and 1974 and were replaced by buildings of which the current ruins are still visible. It is recommended that should the demarcated 'sensitive' area be impacted by the proposed mining activities, the vegetation hampering visibility be removed and that all buildings and structures associated with the demarcated area be adequately recorded by a qualified archaeologist and destruction permits be obtained from the relevant heritage authority prior to any impact.
- Site L08 is not considered to be a site of heritage importance.
- The structures associated with Sites L09 & L10 were possibly constructed between 1965 and 1967 and therefore date to contemporary times. Because the 'sensitive' areas of both sites are significantly overgrown by vegetation that hampered access, it is recommended that should development impact these areas, the vegetation hampering visibility be removed and that all buildings and structures associated with the demarcated areas be adequately recorded by a qualified archaeologist and destruction permits be obtained from the relevant heritage authority prior to any impact.

- Because Site L11 indicates the approximate location of an unmarked grave, it is recommended that a conservation buffer of 50 m be placed around the demarcated 'sensitive' area. If impact cannot be avoided, the grave may be relocated by a qualified graves relocation unit to a premises earmarked by the local municipality, but will set in motion a substantial process as new legislation will be triggered. These processes, however, must be performed in accordance with the involvement of community leaders and the relatives of the deceased buried at the specific location. It should be noted that additional methods, such as Ground Penetrating Radar, might be required to determine the exact location of the grave.
- 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 areas 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.
- From a heritage point of view, development may proceed on the demarcated surveyed mining blocks, subject to the abovementioned conditions, recommendations and approval by the South African Heritage Resources Agency.

8. Addendum: Terminology

Archaeology:

The study of the human past through its material remains.

Artefact:

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

Assemblage:

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

Context:

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

Cultural Resource Management (CRM):

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

Excavation:

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

Feature:

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

Ground Reconnaissance:

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

Matrix:

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

Phase 1 Assessments:

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

Phase 2 Assessments:

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

Sensitive:

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

Site:

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

Surface survey:

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

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Title Deeds

2756/03

S.G. Diagrams

S.G. No. A1200/20

S.G. No. A305/02

Appendix A: Historical Aerial Photographs and Topographical Maps



Figure 54: Mining Blocks A – D superimposed on a 1958 aerial photograph.



Figure 55: Mining Blocks A – D superimposed on a 1967 aerial photograph.

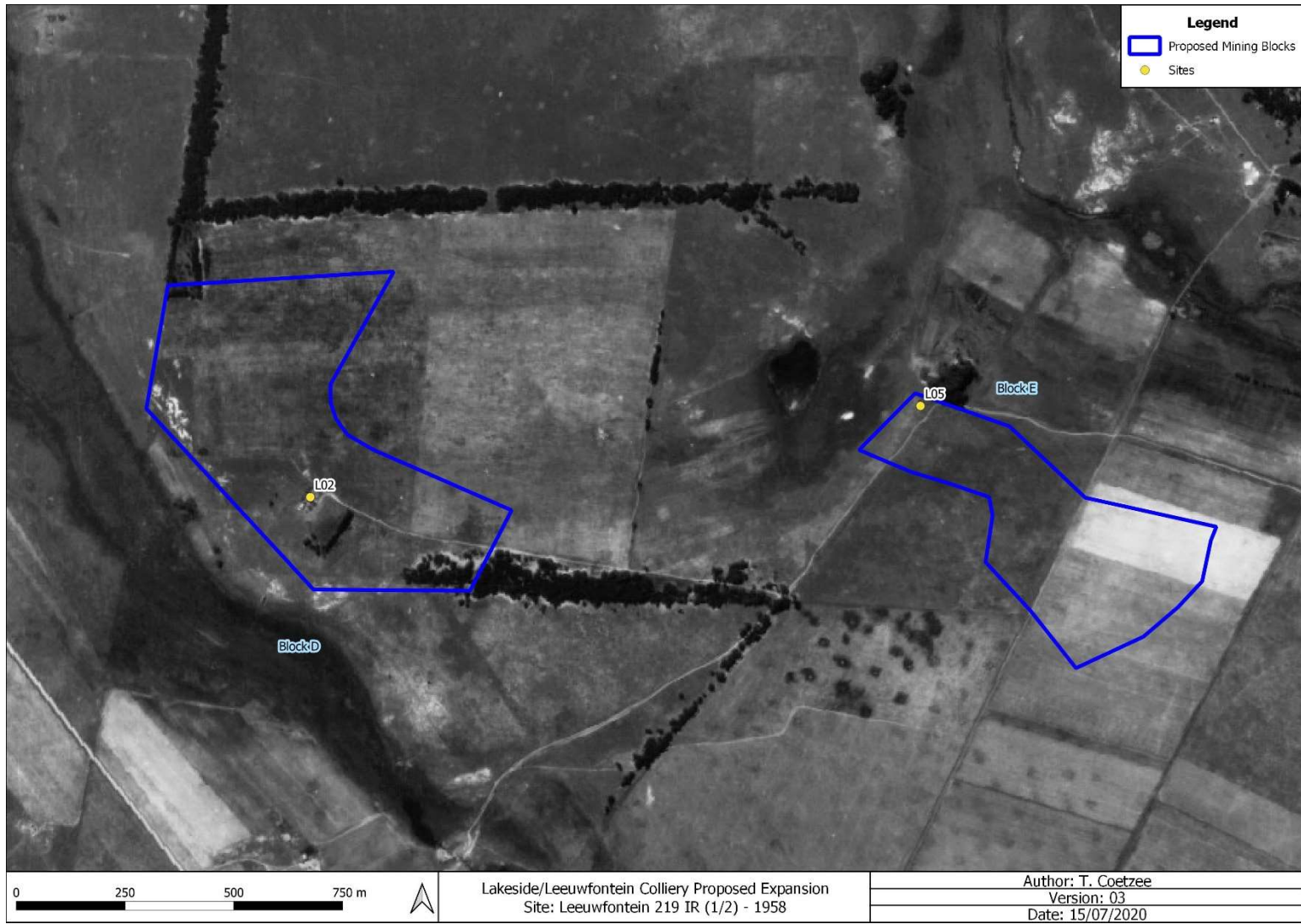


Figure 56: Mining Blocks D – E superimposed on a 1958 aerial photograph.

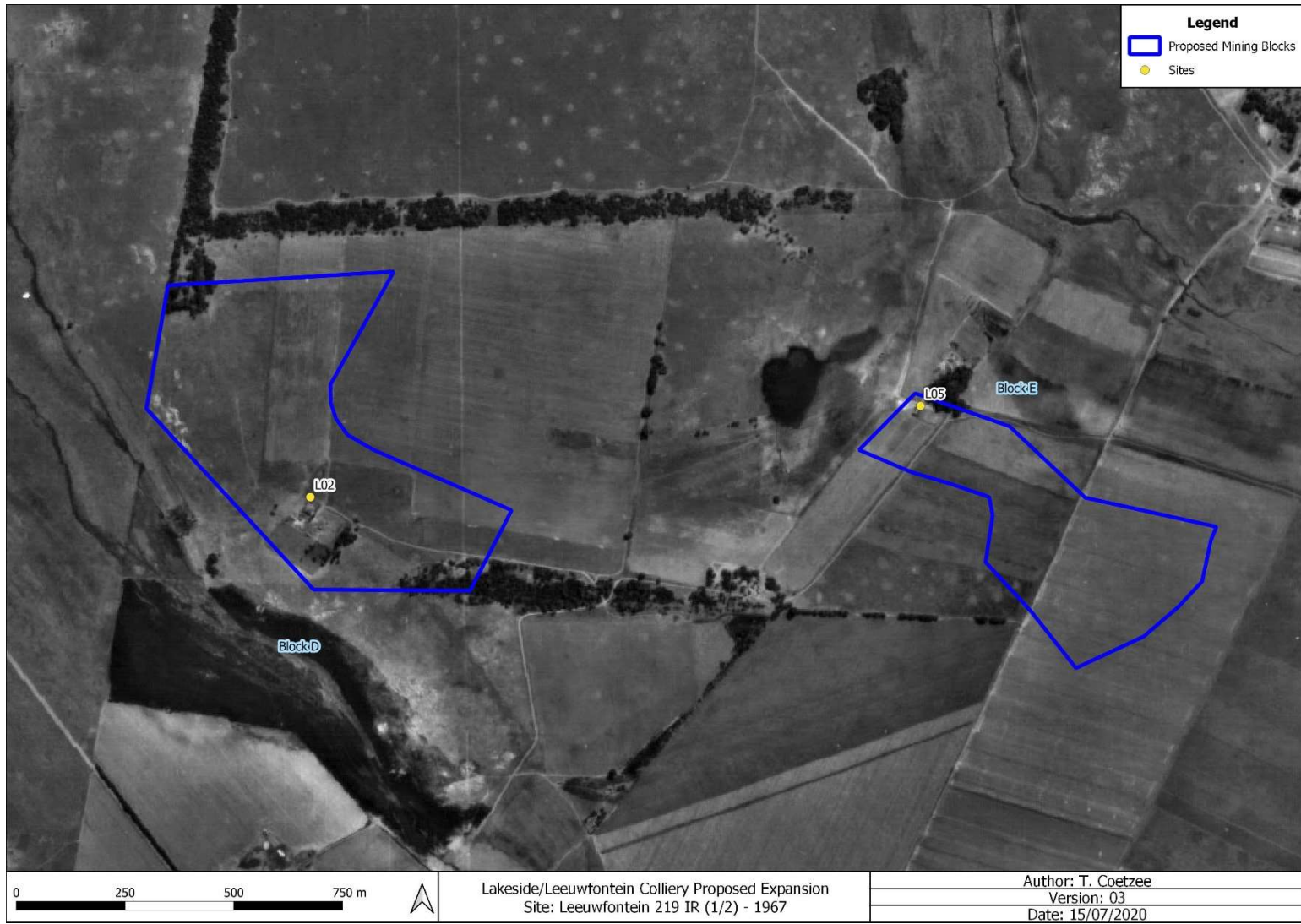


Figure 57: Mining Blocks D – E superimposed on a 1967 aerial photograph.



Figure 58: Mining Block G superimposed on a 1958 aerial photograph.



Figure 59: Mining Block G superimposed on a 1967 aerial photograph.

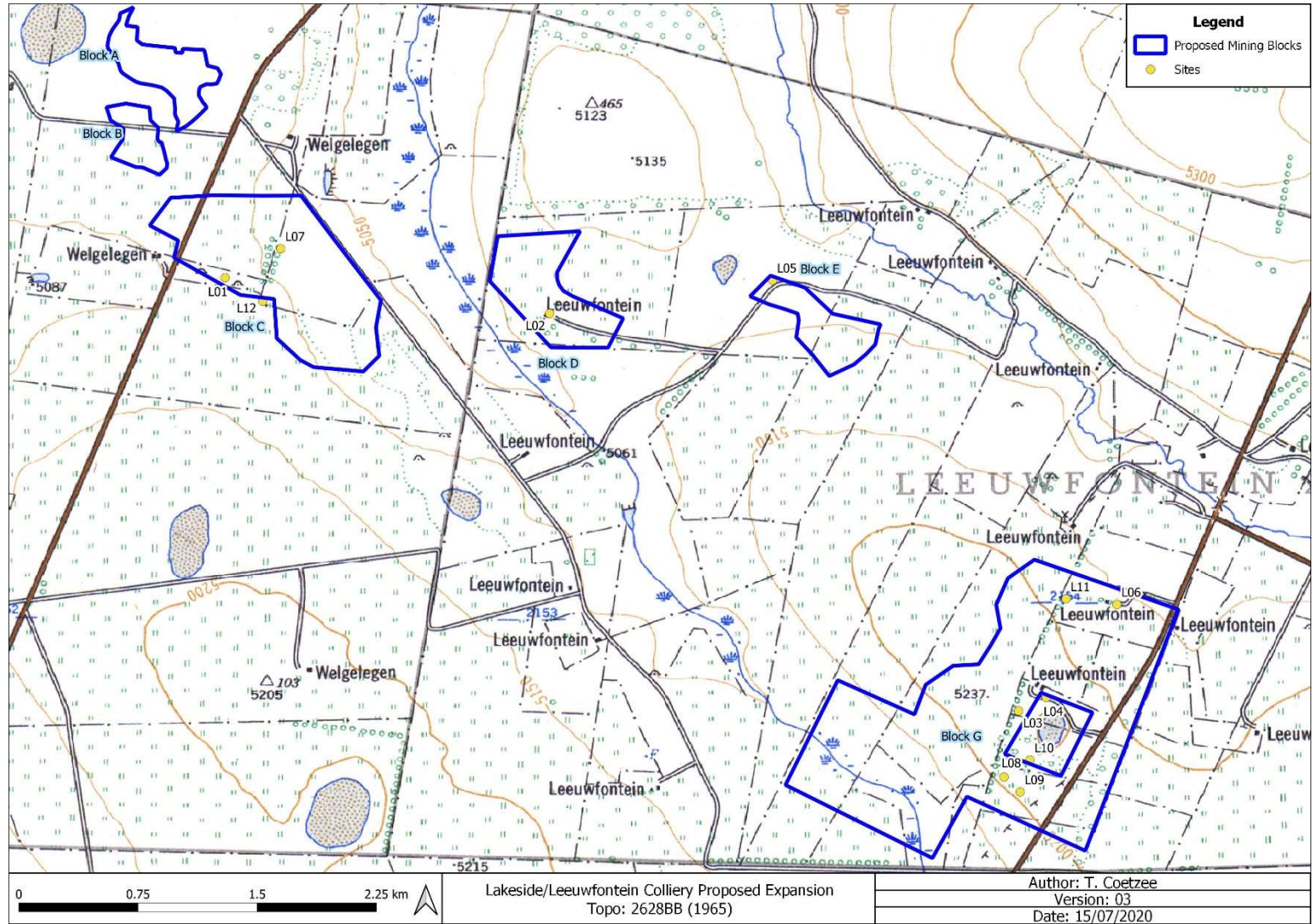


Figure 60: Study area superimposed on a 1965 topographical map.

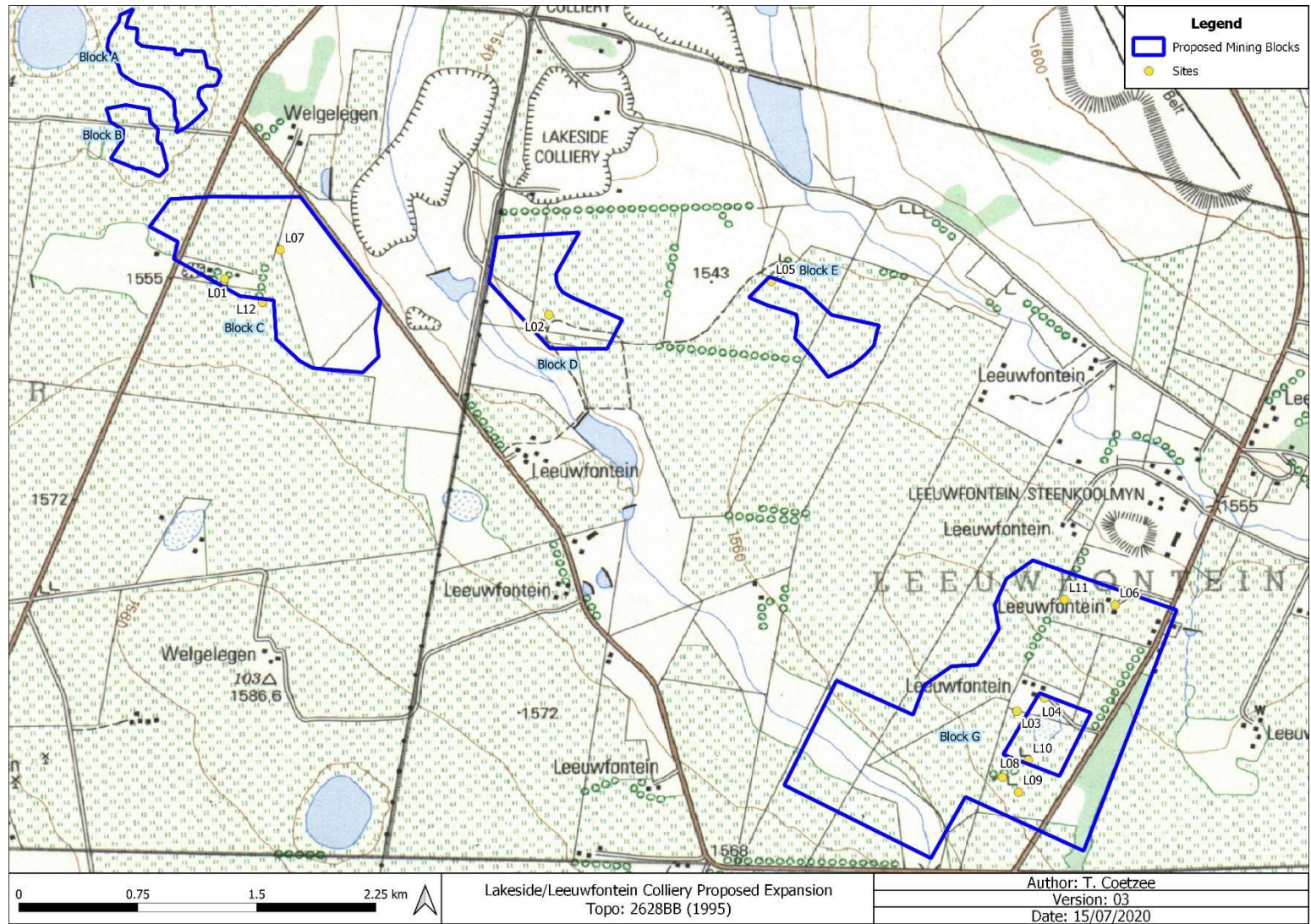


Figure 62: Study area superimposed on a 1995 topographical map.

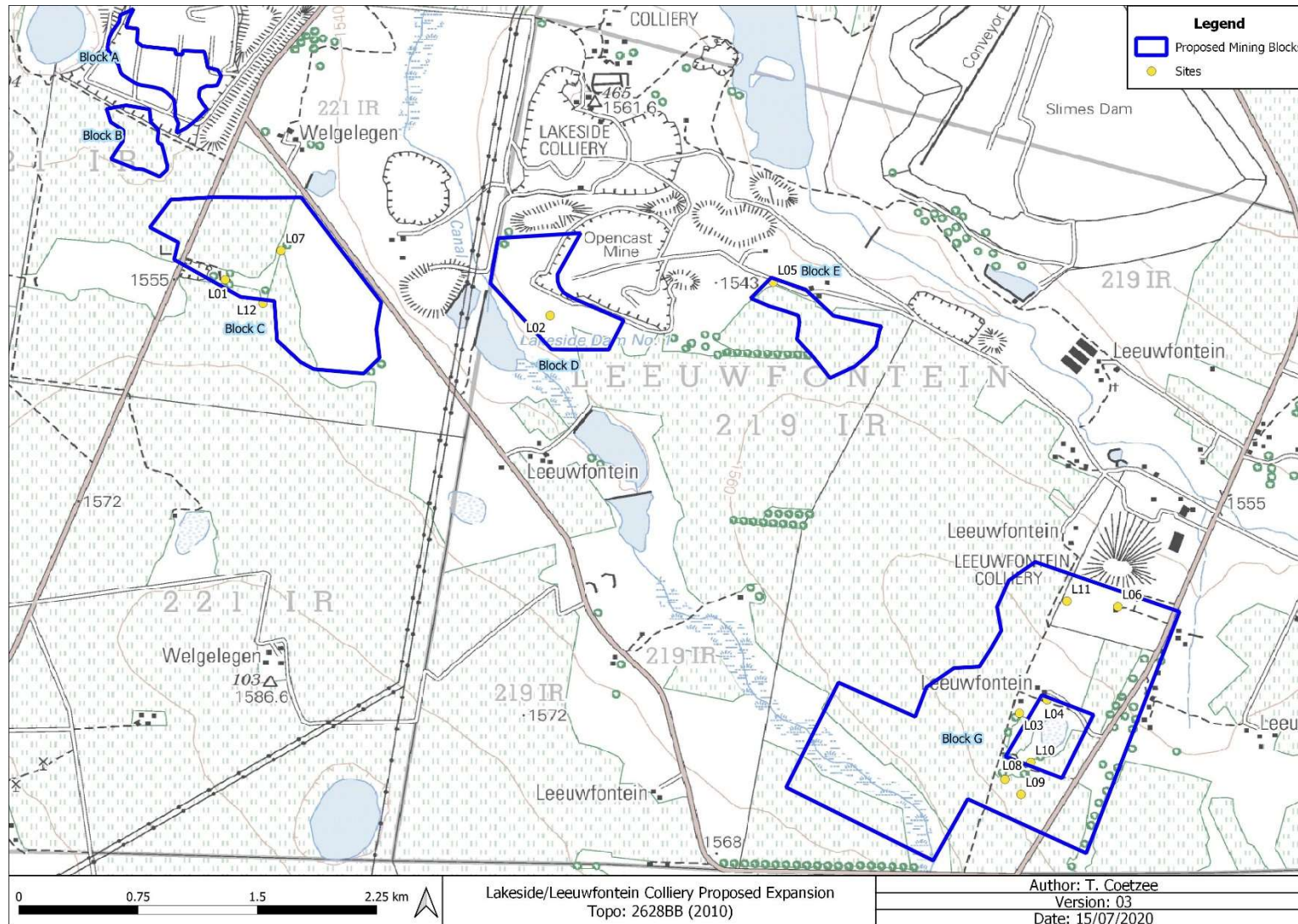


Figure 63: Study area superimposed on a 2010 topographical map.