

HERITAGE BASELINE REPORT

Germiston Cemetery

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Executive Summary


LEAP has been appointed as the environmental assessment practitioner (EAP) to obtain Environmental Authorisation for the proposed Germiston Cemetery - Germiston Extension 45. As part of the process HCAC was appointed to conduct a heritage baseline assessment for the project, located on Portion 274 (A Portion of Portion 2) of the farm Driefontein 87- IR, within the City of Ekurhuleni, Gauteng Province.

Key findings of the assessment include:

- The study area is characterised by a reworked mine dump dating from the 1930's and therefore protected by heritage legislation;
- The remains of historical refuse middens are located towards the western border of the study area, with historical artefacts dating to between 1890 and 1910;
- The occurrence of Chinese and native cemeteries that have been buried underneath dumps like these at other historical gold mines in the area needs to be noted. The graves are exposed by current mining activities on these dumps, for example Star of the west, Crown mines and Paardekraal to name a few. These accidental discoveries led to expensive relocation and mitigation of the skeletal material and long delays;
- In terms of the palaeontological component, the area is of low paleontological sensitivity, and no further studies are required.

The following report outlines the methodology, heritage background to the area and lastly management guidelines for further work required.

Declaration of Independence

Specialist Name	Jaco van der Walt
Declaration of Independence	<p>I declare, as a specialist appointed in terms of the National Environmental Management Act (Act No 108 of 1998) and the associated 2014 Environmental Impact Assessment (EIA) Regulations, that I:</p> <ul style="list-style-type: none"> • I act as the independent specialist in this application; • I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant; • I declare that there are no circumstances that may compromise my objectivity in performing such work; • I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity; • I will comply with the Act, Regulations and all other applicable legislation; • I have no, 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 form are true and correct; and • I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.
Signature	
Date	21/04/2021

a) Expertise of the specialist

Jaco van der Walt has been practising as a CRM archaeologist for 15 years. He obtained an MA degree in Archaeology from the University of the Witwatersrand focussing on the Iron Age in 2012 and is a PhD candidate at the University of Johannesburg focussing on Stone Age Archaeology with specific interest in the Middle Stone Age (MSA) and Later Stone Age (LSA). Jaco is an accredited member of ASAPA (#159) and have conducted more than 500 impact assessments in Limpopo, Mpumalanga, North West, Free State, Gauteng, KZN as well as he Northern and Eastern Cape Provinces in South Africa.

Jaco has worked on various international projects in Zimbabwe, Botswana, Mozambique, Lesotho, DRC Zambia and Tanzania. Through this he has a sound understanding of the IFC Performance Standard requirements, with specific reference to Performance Standard 8 – Cultural Heritage.

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ABBREVIATIONS

AIA: Archaeological Impact Assessment
ASAPA: Association of South African Professional Archaeologists
BGG Burial Ground and Graves
BIA: Basic Impact Assessment
CFPs: Chance Find Procedures
CMP: Conservation Management Plan
CRR: Comments and Response Report
CRM: Cultural Resource Management
DEA: Department of Environmental Affairs
EA: Environmental Authorisation
EAP: Environmental Assessment Practitioner
ECO: Environmental Control Officer
EIA: Environmental Impact Assessment*
EIA: Early Iron Age*
EIA Practitioner: Environmental Impact Assessment Practitioner
EMP: Environmental Management Programme
ESA: Early Stone Age
ESIA: Environmental and Social Impact Assessment
GIS Geographical Information System
GPS: Global Positioning System
GRP Grave Relocation Plan
HIA: Heritage Impact Assessment
LIA: Late Iron Age
LSA: Late Stone Age
MEC: Member of the Executive Council
MIA: Middle Iron Age
MPRDA: Mineral and Petroleum Resources Development Act
MSA: Middle Stone Age
NEMA National Environmental Management Act, 1998 (Act No. 107 of 1998)
NHRA National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NID Notification of Intent to Develop
NoK Next-of-Kin
PRHA: Provincial Heritage Resource Agency
SADC: Southern African Development Community
SAHRA: South African Heritage Resources Agency

**Although EIA refers to both Environmental Impact Assessment and the Early Iron Age both are internationally accepted abbreviations and must be read and interpreted in the context it is used.*

GLOSSARY

Archaeological site (remains of human activity over 100 years old)

Early Stone Age (~ 2.6 million to 250 000 years ago)

Middle Stone Age (~ 250 000 to 40-25 000 years ago)

Later Stone Age (~ 40-25 000, to recently, 100 years ago)

The Iron Age (~ AD 400 to 1840)

Historic (~ AD 1840 to 1950)

Historic building (over 60 years old)

1. INTRODUCTION

HCAC was appointed to conduct a heritage baseline study for the proposed Germiston cemetery on Portion 274 (A Portion of Portion 2) of the farm Driefontein 87- IR - Germiston Extension 45, within the City of Ekurhuleni, Gauteng Province (Figure 1- 3).

The aim of the study is to identify cultural heritage sites, document, and assess their importance within local, provincial and national context. It serves to assess the impact of the proposed project on non-renewable heritage resources, and to submit appropriate recommendations with regard to the responsible cultural resources management measures that might be required to assist the developer in managing the discovered heritage resources in a responsible manner. It is also conducted to protect, preserve, and develop such resources within the framework provided by the National Heritage Resources Act of 1999 (Act 25 of 1999).

The report outlines the approach and methodology utilized before and during the survey, which includes: Phase 1, a desktop study; Phase 2, the physical surveying of the study area on foot and by vehicle; Phase 3, reporting the outcome of the study.

General site conditions were recorded by means of photographs, GPS locations, and site descriptions. Possible impacts were identified, and mitigation measures are proposed in the following report.

1.1. Project Description

The proposed development consists of a cemetery and associated infrastructure as indicated in Table 1.

Table 1: Project details.

Province	Gauteng
Municipality	City of Ekurhuleni
Nearest Town	Germiston
Property Name and Number	Portion 274 (A Portion of Portion 2) of the farm Driefontein 87- IR - Germiston Extension 45
GPS Co-ordinates (relative centre point of CDR)	26°12'10.48"S 28° 9'55.25"E
Final Land Use	Cemetery

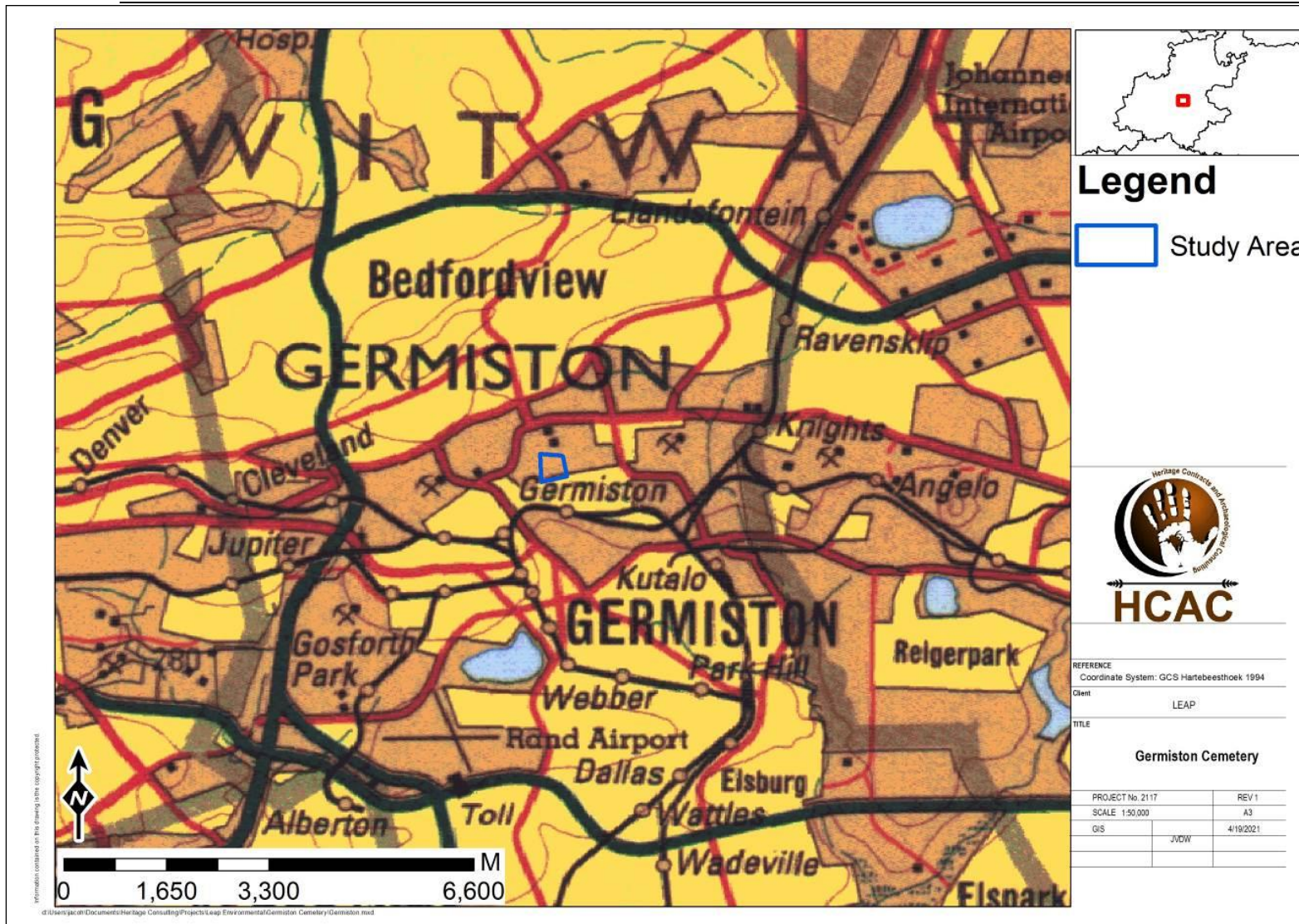


Figure 1. Regional setting of the project (1: 250 000 topographical map).

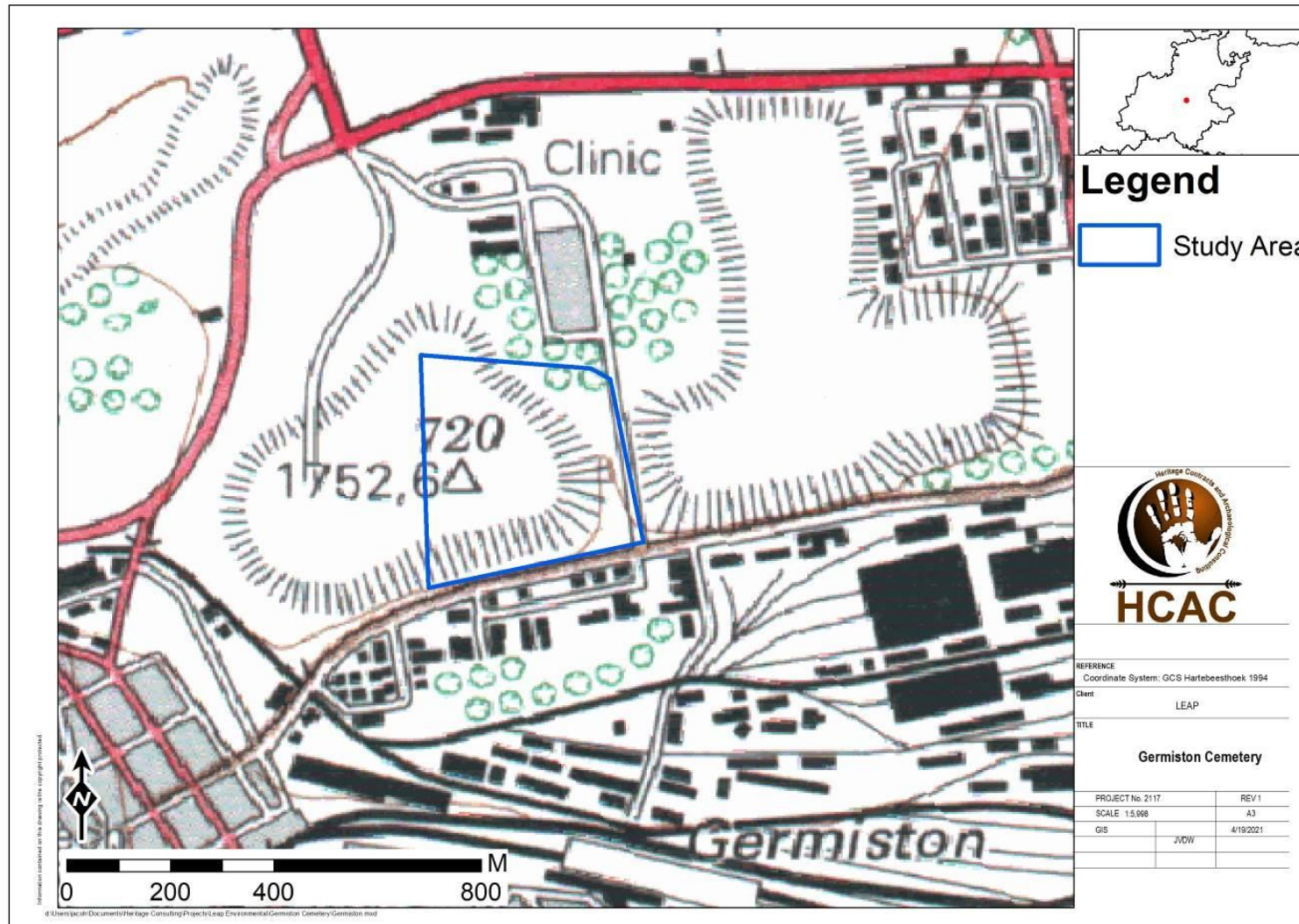


Figure 2. Local setting of the project (1: 50 000 topographical).

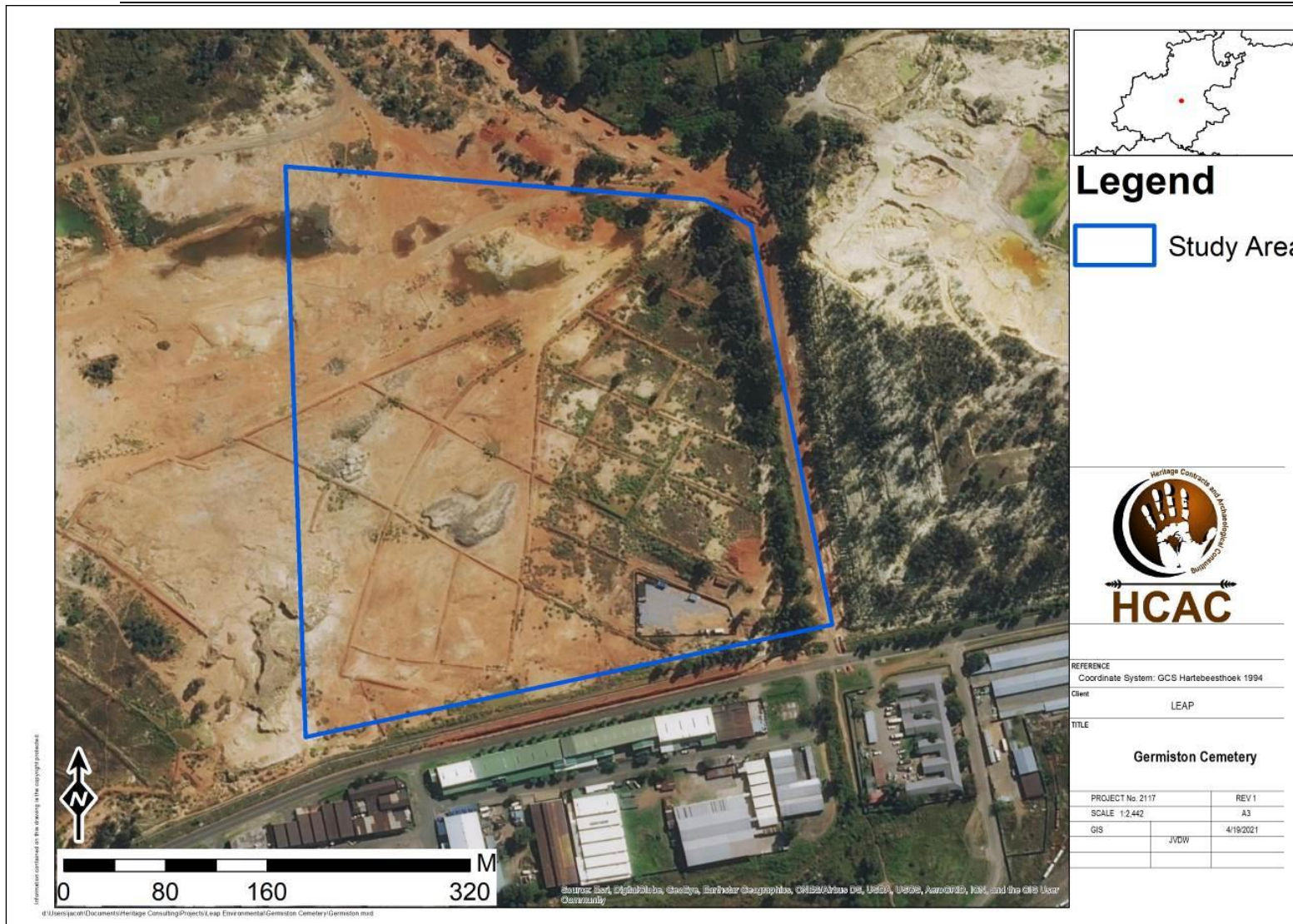


Figure 3. Aerial image of the study area. Note the reworking of the historical dump.

2. Legislative Requirements

The HIA, as a specialist sub-section of the EIA, is required under the following legislation:

- National Heritage Resources Act (NHRA), Act No. 25 of 1999
- National Environmental Management Act (NEMA), Act No. 107 of 1998 - Section 23(2)(b)
- Mineral and Petroleum Resources Development Act (MPRDA), Act No. 28 of 2002 - Section 39(3)(b)(iii)

A Phase 1 HIA is a pre-requisite for development in South Africa as prescribed by SAHRA and stipulated by legislation. The overall purpose of heritage specialist input is to:

- Identify any heritage resources, which may be affected;
- Assess the nature and degree of significance of such resources;
- Establish heritage informants/constraints to guide the development process through establishing thresholds of impact significance;
- Assess the negative and positive impact of the development on these resources; and
- Make recommendations for the appropriate heritage management of these impacts.

The HIA should be submitted, as part of the impact assessment report or EMPr, to the PHRA if established in the province or to SAHRA. SAHRA will ultimately be responsible for the evaluation of Phase 1 HIA reports upon which review comments will be issued. 'Best practice' requires Phase 1 HIA reports and additional development information, as per the impact assessment report and/or EMPr, to be submitted in duplicate to SAHRA after completion of the study. SAHRA accepts Phase 1 HIA reports authored by professional archaeologists, accredited with ASAPA or with a proven ability to do archaeological work.

Minimum accreditation requirements include an Honours degree in archaeology or related discipline and 3 years post-university CRM experience (field supervisor level). Minimum standards for reports, site documentation and descriptions are set by ASAPA in collaboration with SAHRA. ASAPA is based in South Africa, representing professional archaeology in the SADC region. ASAPA is primarily involved in the overseeing of ethical practice and standards regarding the archaeological profession. Membership is based on proposal and secondment by other professional members.

Phase 1 HIA's are primarily concerned with the location and identification of heritage sites situated within a proposed development area. Identified sites should be assessed according to their significance. Relevant conservation or Phase 2 mitigation recommendations should be made. Recommendations are subject to evaluation by SAHRA.

Conservation or Phase 2 mitigation recommendations, as approved by SAHRA, are to be used as guidelines in the developer's decision-making process.

Phase 2 archaeological projects are primarily based on salvage/mitigation excavations preceding development destruction or impact on a site. Phase 2 excavations can only be conducted with a permit, issued by SAHRA to the appointed archaeologist. Permit conditions are prescribed by SAHRA and includes (as minimum requirements) reporting back strategies to SAHRA and deposition of excavated material at an accredited repository.

In the event of a site conservation option being preferred by the developer, a site management plan, prepared by a professional archaeologist and approved by SAHRA, will suffice as minimum requirement.

After mitigation of a site, a destruction permit must be applied for with SAHRA by the applicant before development may proceed.

Human remains older than 60 years are protected by the National Heritage Resources Act, with reference to Section 36. Graves older than 60 years, but younger than 100 years fall under Section 36 of Act 25 of 1999 (National Heritage Resources Act), as well as the Human Tissues Act (Act 65 of 1983) and are the jurisdiction of SAHRA. The procedure for Consultation Regarding Burial Grounds and Graves (Section 36[5]) of Act 25 of 1999 is applicable to graves older than 60 years that are situated outside a formal cemetery administrated by a local authority. Graves in this age category, located inside a formal cemetery administrated by a local authority, require the same authorisation as set out for graves younger than 60 years, in addition to SAHRA authorisation. If the grave is not situated inside a formal cemetery, but is to be relocated to one, permission from the local authority is required and all regulations, laws and by-laws, set by the cemetery authority, must be adhered to.

Human remains that are less than 60 years old are protected under Section 2(1) of the Removal of Graves and Dead Bodies Ordinance (Ordinance No. 7 of 1925), as well as the Human Tissues Act (Act 65 of 1983) and are the jurisdiction of the National Department of Health and the relevant Provincial Department of Health and must be submitted for final approval to the office of the relevant Provincial Premier. This function is usually delegated to the Provincial MEC for Local Government and Planning; or in some cases, the MEC for Housing and Welfare. Authorisation for exhumation and reinternment must also be obtained from the relevant local or regional council where the grave is situated, as well as the relevant local or regional council to where the grave is being relocated. All local and regional provisions, laws and by-laws must also be adhered to. To handle and transport human remains, the institution conducting the relocation should be authorised under Section 24 of Act 65 of 1983 (Human Tissues Act).

3. METHODOLOGY

3.1 Literature Review

A brief survey of available literature was conducted to extract data and information on the area in question to provide general heritage context into which the development would be set. This literature search included published material, unpublished commercial reports and online material, including reports sourced from the South African Heritage Resources Information System (SAHRIS).

3.2 Genealogical Society and Google Earth Monuments

Google Earth and 1:50 000 maps of the area were utilised to identify possible places where sites of heritage significance might be located; these locations were marked and visited during the fieldwork phase. The database of the Genealogical Society was consulted to collect data on any known graves in the area.

3.3 Public Consultation and Stakeholder Engagement:

Stakeholder engagement is a key component of any EIA process, it involves stakeholders interested in, or affected by the proposed development. Stakeholders are provided with an opportunity to raise issues of concern (for the purposes of this report only heritage related issues will be included). The aim of the public consultation process was to capture and address any issues raised by community members and other stakeholders during key stakeholder and public meetings. The process involved:

- Placement of advertisements and site notices
- Stakeholder notification (through the dissemination of information and meeting invitations);
- Stakeholder meetings undertaken with I&APs;
- Authority Consultation
- The compilation of Basic Assessment Report (BAR).

3.4 Site Investigation

The aim of the site survey was to:

- a) survey the proposed project area to locate, identify, record, photograph and describe sites of archaeological, historical or cultural interest;
- b) record GPS points of sites/areas identified as significant areas;

c) determine the levels of significance of the various types of heritage resources recorded in the project area.

3.5 Data Interpretation: Assessment of Significance and Impacts

The presence and distribution of heritage resources define a 'heritage landscape'. In this landscape, every site is relevant. In addition, because heritage resources are non-renewable, heritage surveys need to investigate an entire project area, or a representative sample, depending on the nature of the project. In the case of the proposed project the local extent of its impact necessitates a representative sample and only the farms earmarked for development was surveyed. In all initial investigations, however, the specialists are responsible only for the identification of resources visible on the surface.

This section describes the evaluation criteria used for determining the significance of archaeological and heritage sites. The following criteria were used to establish site significance:

- The unique nature of a site;
- The integrity of the archaeological/cultural heritage deposits;
- The wider historic, archaeological and geographic context of the site;
- The location of the site in relation to other similar sites or features;
- The depth of the archaeological deposit (when it can be determined/is known);
- The preservation condition of the sites; and
- Potential to answer present research questions.

Furthermore, NHRA distinguishes nine criteria for places and objects to qualify as 'part of the national estate' if they have cultural significance or other special value. These criteria are:

- Its importance in/to the community, or pattern of South Africa's history;
- Its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- Its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- Its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- Its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- Its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- Its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- Its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and
- Sites of significance relating to the history of slavery in South Africa.

3.5.1 Field Rating of Sites

Site significance classification standards prescribed by SAHRA (2006), and acknowledged by ASAPA for the SADC region, were used for the purpose of this report.

FIELD RATING	GRADE	SIGNIFICANCE	RECOMMENDED MITIGATION
National Significance (NS)	Grade 1	-	Conservation; national site nomination
Provincial Significance (PS)	Grade 2	-	Conservation; provincial site nomination
Local Significance (LS)	Grade 3A	High significance	Conservation; mitigation not advised
Local Significance (LS)	Grade 3B	High significance	Mitigation (part of site should be retained)
Generally Protected A (GP. A)	-	High/medium significance	Mitigation before destruction
Generally Protected B (GP. B)	-	Medium significance	Recording before destruction
Generally Protected C (GP.C)	-	Low significance	Destruction

4. BACKGROUND INFORMATION

4.1 Literature Review

The following studies were conducted in the surrounding area and were consulted for this report.

Author	Year	Project	Findings
Pelser, A.J. and Van Vollenhoven, A.C.	2011	A report on the rescue of previously unknown burials exposed by water erosion on the farm Langlaagte 224 IQ, Crown Mines, Crownwood Road, Johannesburg Gauteng	More than 30 graves investigated with more than 120 exposed grave pits under previous mine dumps.
Pelser, A.J	2012	A report on the first phase of the historical archaeological and forensic investigation of previously unknown burials dating to the late 19th/early 20th century on the farm Langlaagte 224 IQ, Crown Mines, Crownwood Road, Johannesburg Gauteng	180 burial sites were investigated.
Thomas, G. and Nel, J.	2012	Heritage Statement for Lycaste Sand Dump 4/A/6 Dump	No sites.
Karodia, S., Du Piesanie, J. and Nel, J.	2012	Heritage Statement for the Central Basin, Witwatersrand AMD Project	No sites.
Fourie, W.	2014	Request for exemption from an archaeological impact study: prevention of water ingress into mined out areas of the Witwatersrand mining basin, Gauteng province	No sites
Van Schalkwyk, J.A.	2016	Cultural Heritage Statement for The Proposed Witfield Stormwater Network, Ekurhuleni Metropolitan Municipality, Gauteng Province	No sites.
Van Schalkwyk, J.A.	2017	Phase 1 Cultural Heritage Impact Assessment: the proposed construction of river crossings along underground HV feeder cables in Germiston and Croydon, Ekurhuleni district municipality, Gauteng province	No sites

4.2. Archaeology of the area

The archaeological record for the greater study area consists of the Stone Age and Iron Age.

Stone Age

The Stone Age can be divided in three main phases as follows;

- Later Stone Age (LSA); associated with Khoi and San societies and their immediate predecessors. Recently to ~30 thousand years ago
- Middle Stone Age (MSA); associated with Homo sapiens and archaic modern humans. 30-300 thousand years ago.
- Earlier Stone Age (ESA); associated with early Homo groups such as Homo habilis and Homo erectus. 400 000-> 2 million years ago.

Although there are no well-known Stone Age sites located in or around the study area there is evidence of the use of the larger area by Stone Age communities for example along the Kliprivier where ESA and MSA tools were recorded. LSA material is recorded along ridges to the south of the current study area (Huffman 2008). Petroglyphs occur at Redan as well as along the Vaal River (Berg 1999).

The Iron Age

The Iron Age represents the spread of Bantu speaking people and includes both the pre-Historic and Historic periods. It can be divided into three distinct periods:

- The Early Iron Age: Most of the first millennium AD.
- The Middle Iron Age: 10th to 13th centuries AD
- The Late Iron Age: 14th century to colonial period.

The Iron Age is characterised by the ability of these early people to manipulate and work Iron ore into implements that assisted them in creating a favourable environment to make a better living. Extensive Stone walled sites are recorded at Klipriviers Berg Nature reserve belonging to the Late Iron Age period. A large body of research is available on this area. These sites (Taylor's Type N, Mason's Class 2 & 5) are now collectively referred to as Klipriviersberg (Huffman 2007).

These settlements are complex in that aggregated settlements are common, the outer wall sometimes includes scallops to mark back courtyards, there are more small stock kraals, and straight walls separate households in the residential zone. These sites date to the 18th and 19th centuries and was built by people in the Fokeng cluster. In this area the Klipriviersberg walling would have ended at about AD 1823, when Mzilikazi entered the area (Rasmussen 1978). This settlement type may have lasted longer in other areas because of the positive interaction between Fokeng and Mzilikazi.

4.3. Historical Context

Germiston lies in the heart of the Rand goldfields and was founded in 1886 after the local discovery of gold. It officially became a town in 1903 and a city in 1950. Germiston was established during the gold rush when two prospectors, John and Jack from the farm of Germiston near Glasgow and August Simmer from Vacha in Germany, found pay dirt on the farm of Elandsfontein. The men made fortunes and the town was established next to the mine. Germiston still has historic buildings including the St Andrew's Presbyterian Church, built in 1905, as well as the St Boniface's Church, designed by Sir Herbert Baker and built in 1910 (this is the second church on the site, as the Anglican Parish was founded in 1897). The Dominican St Catherine's Convent was founded in the city centre in 1908. It was later relocated to the suburbs of Parkhill Gardens (1940s – 1960s).

In 1921 the world's largest gold refinery, the Rand Refinery, was established at Germiston. Seventy percent of the Western World's gold passes through this refinery. Due to its mining heritage the area was home to both local and immigrant miners.

4.4. Battlefields

Two incidents of the Anglo Boer War took place in the greater study area. An Anglo Boer War battle known as the Battle of Doornkop took place in the area on 29 May 1900. The British were advancing toward Johannesburg led by General John French. De La Rey and his men held the Klipriviersberg Ridge for the first two days but on the third day the Boers were outflanked by French's cavalry to the West, where General Sarel Oosthuizen's commando was forced to withdraw. This opened the road to Johannesburg and the British took the city peacefully on 30 May 1900 (Bikholtz 2013). Their route would have passed a few kilometres from the present study area and Huffman (2008) recorded several sangers dating to the Boer war close to the study area on a ridge. On 18 February 1901 a British train was held up by a Boer Commando along the railway line between the Klip River and Natalspruit Stations (www.vaalmeander.co.za) (Wallace, 1976). While Wallace (1976) states that the train was loaded with food and had been held up, the Vaal Meander website indicates that the train was derailed within the boundaries of the farm Palmietfontein after which a machine gun, cavalry greatcoats, saddles and other supplies were taken (Birkholtz 2014).

4.5. Cultural Landscape

The project is in an area that is characterised by mining activities from as early as the 1930's with developments and mining activities indicated on Topographic Map and Aerial images up to 2020 (Figure 4 to 9). The study area forms part of the original mining and industrial landscape associated with the first discovery of gold in the area.

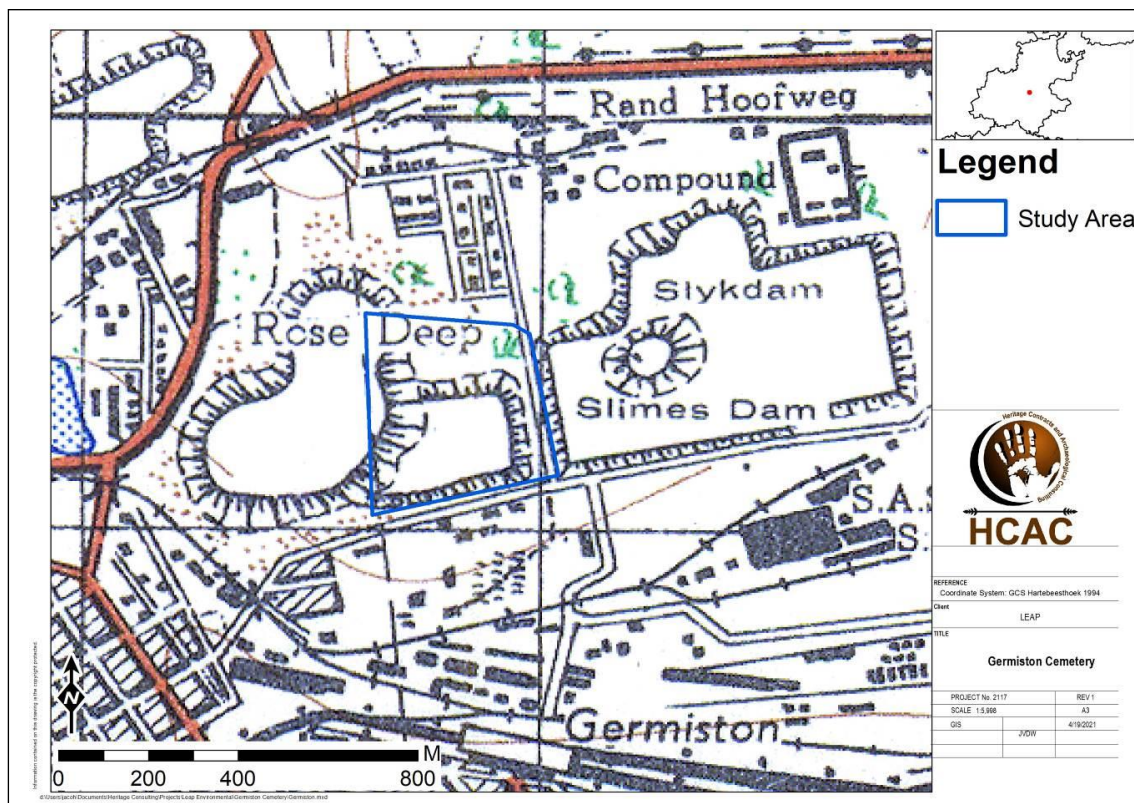


Figure 4. 1939 Topographic map of the study area. Mine dumps from Rose Deep mine cover the study area.

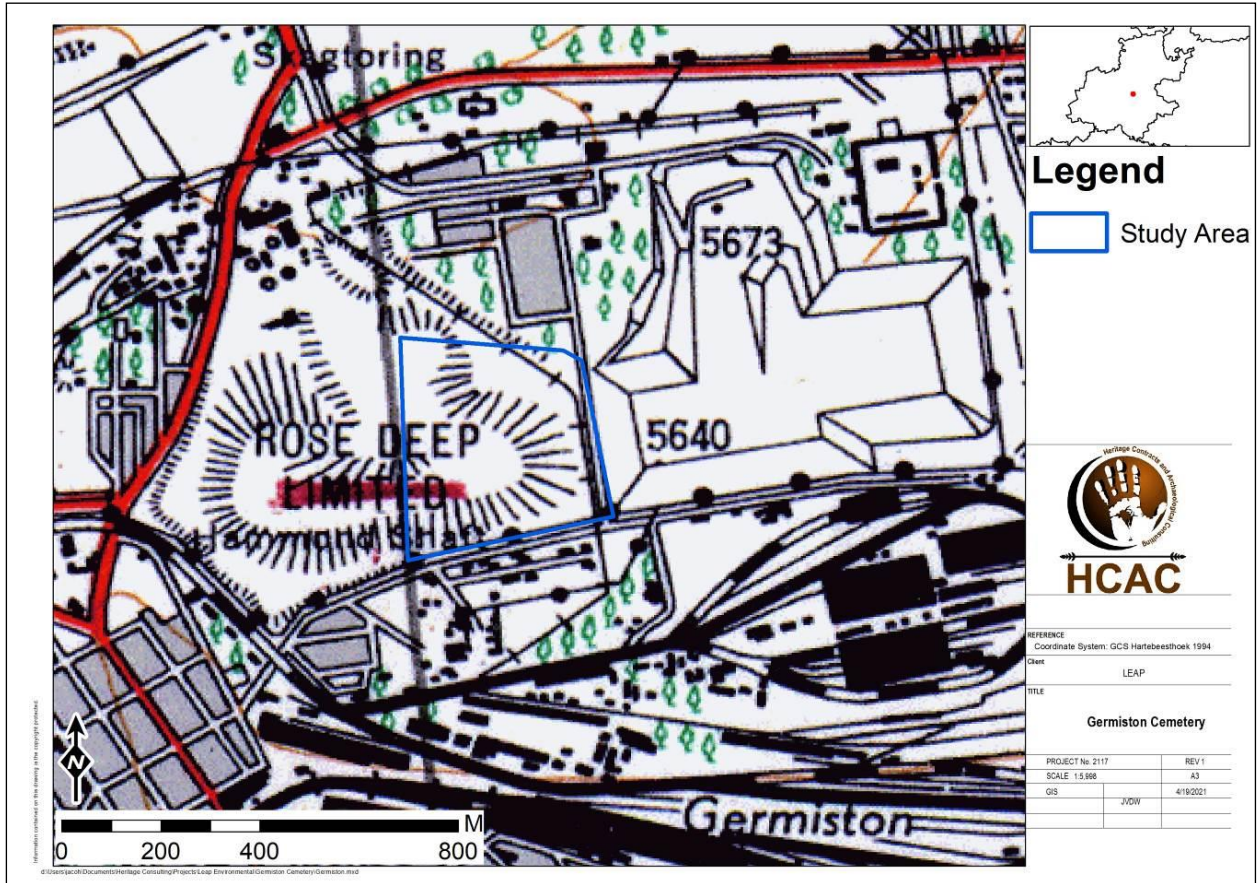


Figure 5. 1954 Topographical map of the study area. The mine dumps from Rose Deep mine are still visible.

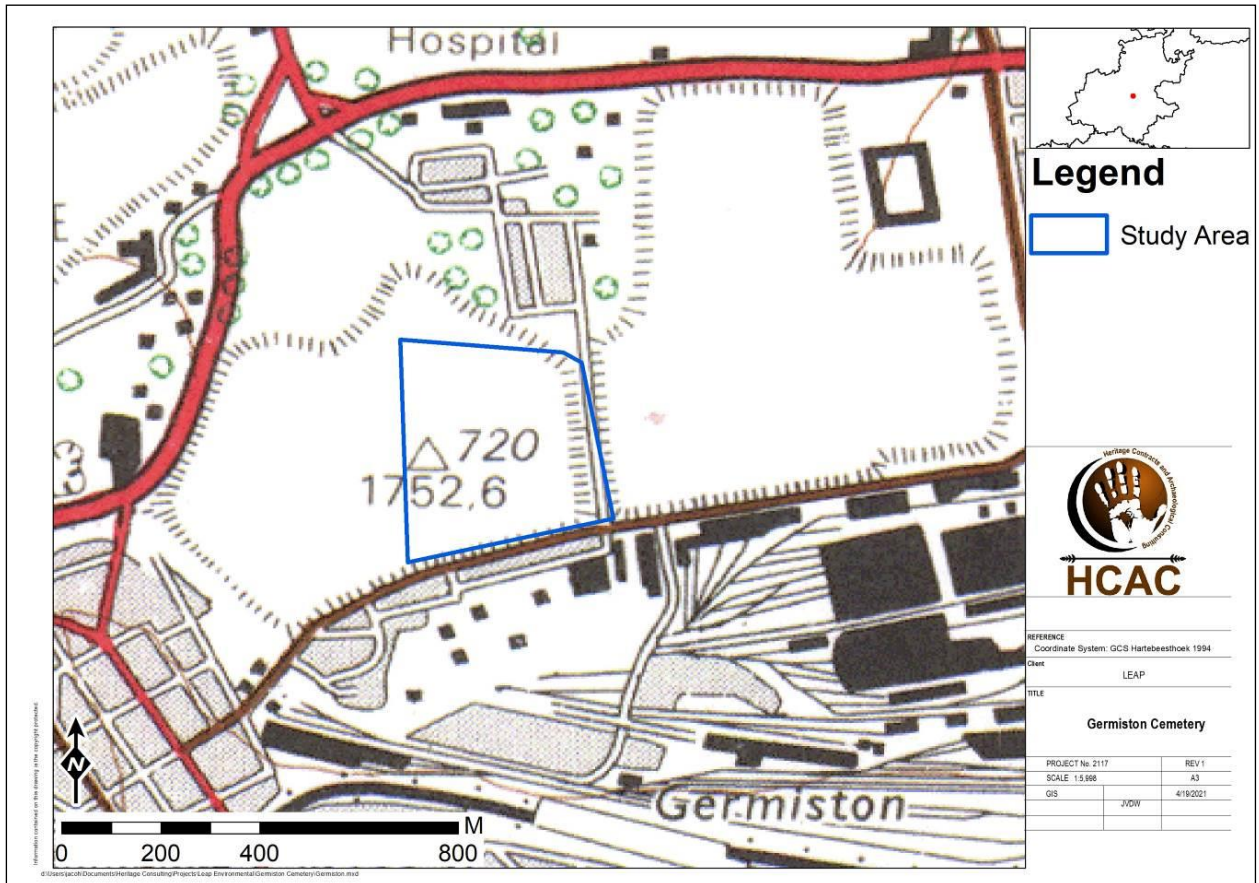


Figure 6. 1983 Topographic map showing the extensive mining in the area as well as the development of the surrounding area.



Figure 7. 2001 Google image of the study area showing the partially reclaimed mined dump.



Figure 8. 2018 image of the study area. The area has been transformed from the 2001 image.

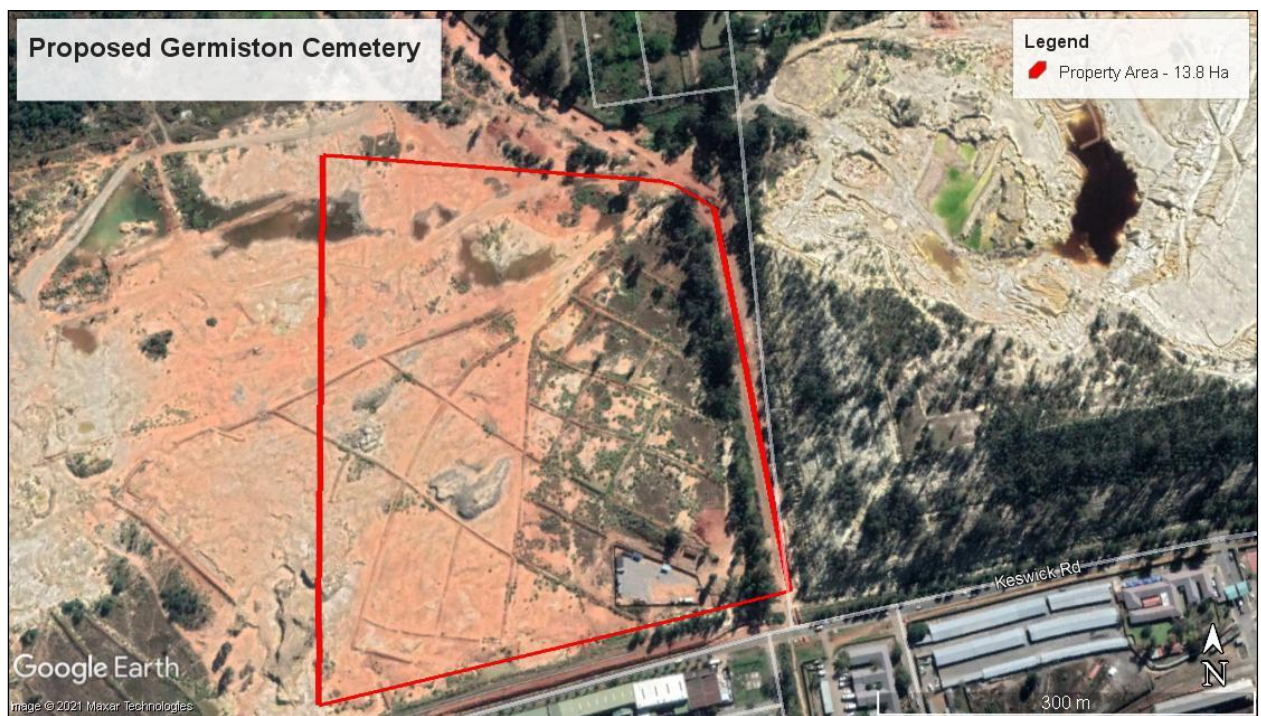


Figure 9. 2020 Google image of the study area with new developments visible in the South Eastern corner.

5. BASELINE DESCRIPTION

5.1. Heritage resources

Multiple small piles of historical refuse and mine waste material (Figure 10 and 11) are located towards the western border of the study area. These smaller refuse or mine waste dumps seem to contain a combination of old mine waste material, which is believed to contain traces of gold, as well as multiple layers of mine refuse which includes mostly old historical glass, porcelain and ceramic vessels, historical tobacco pipes, remnants of work boots and a high amount of large bone fragments (Probably cattle) (Figure 12). One of the bottles belonged to Goldberg & Zeffert (mineral water) from the Niagara Mineral Water works, operated in Johannesburg between 1898 and 1910. The bottles were produced at Eerste Fabrieken (Hatherley, Pretoria), owned by the famous Sammy Marks. De Morgan Crucibles (manufactured in England and possibly related to the adjacent Simmer and Jack or Rose Deep Mines) were also identified dating to the early 1900's. Some of the historic mining infrastructure of the area can also be seen towards the northern section of the study area. (Figure 13). The distribution of these features is illustrated in Figure 16.

Illegal mining of the dump is evident by various small and crude gold collection (Zama-Zama) operations (Figure 14). These operations seem to consist of crude sluice-runs constructed out of soil, bricks, tarps and other readily available refuse material such as old pipes and buckets.



Figure 10. Waste dumps



Figure 11. Waste dumps





Figure 12. Range of historical artefacts in waste dumps.



Figure 13. Historical mining infrastructure located outside of the study area.



Figure 14. Informal gold mining operation.



Figure 15. General site conditions

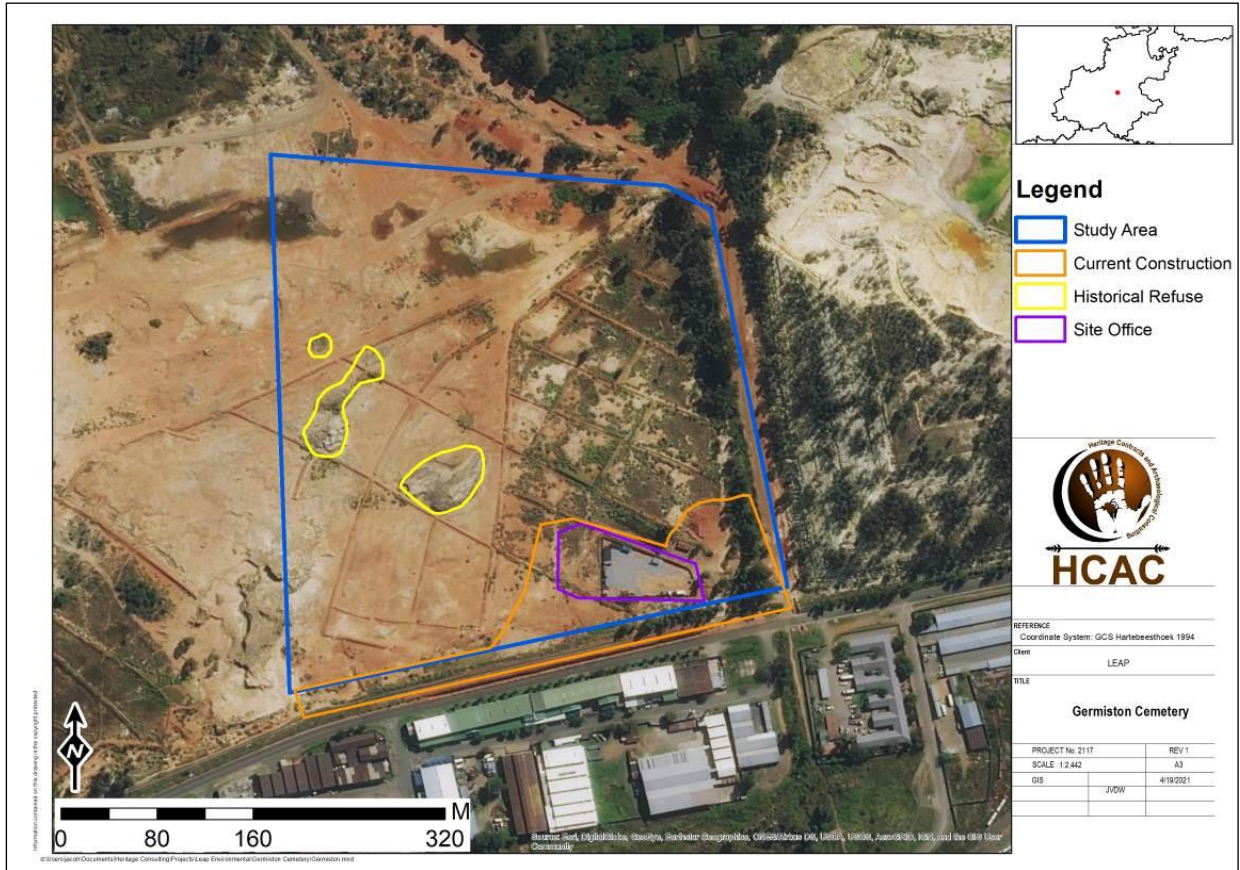


Figure 16. Distribution of recorded features.

5.2. Palaeontology

The SAHRIS palaeosensitivity map (Figure 17) indicates that the study area is of low paleontological sensitivity and no further studies are required for this aspect.



Colour	Sensitivity	Required Action
RED	VERY HIGH	Field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	Desktop study is required and based on the outcome of the desktop study, a field assessment is likely
GREEN	MODERATE	Desktop study is required
BLUE	LOW	No paleontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	No palaeontological studies are required
WHITE/CLEAR	UNKNOWN	These areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

Figure 17. SAHRA Paleontological sensitivity map indicating the approximate study area in yellow.

6. MANAGEMENT MEASURES

6.1. Discussion

Archaeological and historical features are protected by the NHRA and if impacted on will require mitigation. The historical refuse dumps identified on site are older than 60 years based on the artefacts recorded (dating to the late 1800's and early 1900's) and are therefore protected by NHRA. These features and associated artefacts form part of the cultural fabric of the early mining heritage of the Germiston area and should be mitigated. Although the current mine dump has been removed and its heritage value is compromised, the area is associated with the early mining history of the Germiston area, forming part of the cultural landscape.

In the surrounding area, graves of mine workers (including Chinese migrant workers), were discovered during reworking of the mine dumps (Pelser & Van Vollenhoven 2011; Pelser 2012) like the current study area. At the Lycaste dump, human remains have also been uncovered (Personal comm Justin du Piesanie 2020). This was also the case at Paardekraal (Van der Walt 2014) and Star of the West (Van der Walt 2012). These accidental discoveries led to expensive relocation and mitigation of the skeletal material and long delays.

6.2. The Way forward

It is recommended that the study area should be subjected to a full HIA prior to development including the following aspects:

- Determining the possible occurrences of mine worker graves through a site visit based on the results of an archival study;
- Investigation into permit requirements from SAHRA and phase 2 mitigation of the historical artefacts.
- Development of a comprehensive chance find procedure.

7. KNOWLEDGE GAPS

The authors acknowledge that the brief literature review is not exhaustive on the literature of the area. Due to the subsurface nature of archaeological artefacts, the possibility exists that some features or artefacts may not have been discovered/recorded during the survey. Similarly the possible occurrence of graves and other cultural material cannot be excluded. This study did not assess the impact on medicinal plants and intangible heritage as it is assumed that these components would have been highlighted through the public consultation process if relevant. It is possible that new information could come to light in future, which might change the results of this study.

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