

HERITAGE IMPACT ASSESSMENT

(REQUIRED UNDER SECTION 38(8) OF THE NHRA (No. 25 OF 1999))

THE PROPOSED MIXED-USE DEVELOPMENT ON THE REMAINDER OF PORTION 212 OF THE FARM LUIPAARDSVLEI 246-IQ

Type of development:

Mixed Use Development

Client:

Prism

Client info:

Monica Niehof

E – mail: Monica@prismems.co.za

Applicant:

Onicatrim Property Projects

Paul Lapham



HCAC - Heritage Consultants

Private Bag X 1049

Suite 34

Modimolle

0510

Tel: 082 373 8491

Fax: 086 691 6461

E-Mail: jaco.heritage@gmail.com

Report Author:

Mr. J. van der Walt

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APPROVAL PAGE

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Report Title	Heritage Impact Assessment for the proposed mixed-use development on remainder of portion 212 of the Farm Luipaardsvlei 246-IQ
Authority Reference Number	TBC
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Document Compilation	Jaco van der Walt	MA Archaeology PhD Candidate ASAPA #159 APHP # 114	April 2018
Archaeologist	Marko Hutton	BA Hons Archaeology	April 2018
Archival Specialist	Liesl Bester	BHCS Honours	April 2018

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REPORT OUTLINE

Appendix 6 of the GNR 982 EIA Regulations, 2014 [as amended] provides the requirements for specialist reports undertaken as part of the environmental authorisation process. In line with this, Table 1 provides an overview of Appendix 6 together with information on how these requirements have been met.

Table 1. Specialist Report Requirements.

Requirement from Appendix 6 of GNR 982 EIA Regulations, 2014 [as amended]	Chapter
(a) Details of - (i) the specialist who prepared the report; and (ii) the expertise of that specialist to compile a specialist report including a curriculum vitae	Section a Section 12
(b) Declaration that the specialist is independent in a form as may be specified by the competent authority	<i>Declaration of Independence</i>
(c) Indication of the scope of, and the purpose for which, the report was prepared	Section 1
(cA) an indication of the quality and age of base data used for the specialist report	Section 3.4 and 7.1.
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	9
(d) Duration, Date and season of the site investigation and the relevance of the season to the outcome of the assessment	Section 3.4
(e) Description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used	Section 3
(f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 8 and 9
(g) Identification of any areas to be avoided, including buffers	Section 9
(h) Map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers	Section 8
(I) Description of any assumptions made and any uncertainties or gaps in knowledge	Section 3.7
(j) a description of the findings and potential implications of such findings on the impact of the proposed activity including identified alternatives on the environment or activities;	Section 9
(k) Mitigation measures for inclusion in the EMPr	Section 9 and 10
(l) Conditions for inclusion in the environmental authorisation	Section 9 and 10
(m) Monitoring requirements for inclusion in the EMPr or environmental authorisation	Section 9 and 10
(n) Reasoned opinion - (i) as to whether the proposed activity, activities or portions thereof should be authorised; (iA) regarding the acceptability of the proposed activity or activities; and (ii) if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan	Section 10.2
(o) Description of any consultation process that was undertaken during the course of preparing the specialist report	Section 6
(p) A summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Refer to BA report
(q) Any other information requested by the competent authority	Section 10

Executive Summary

Prism EMS were appointed to conduct an Environmental Scoping and Impact Assessment for the proposed Luipaardsvlei Mixed Use development, located within Mogale City Local Municipality, Gauteng Province. It is located at the R28 Krugersdorp / Randfontein / Azaadville interchange and runs parallel with the main railway line between Lanwen Station and past Krugersdorp Station. It further extends on both sides of Winsor Road in the direction of Luipaardsvlei and terminates at Tudor Road and Stasie Street. HCAC was appointed to conduct a Heritage Impact Assessment of the proposed project to determine the presence of cultural heritage sites and the impact of the proposed development on these non-renewable resources. The study area was assessed both on desktop level and by a field survey. The field survey was conducted as a non-intrusive pedestrian survey to cover the extent of the development footprint.


No archaeological sites or material was recorded during the survey and based on the SAHRIS Paleontological Sensitivity Map, the area is of low paleontological significance. Therefore, no further mitigation prior to construction is recommended in terms of Section 35 for the proposed development to proceed. In terms of the built environment, two residential dwellings and partially demolished mining related structures occur in the study area. According to archival maps mining infrastructure were built from 1913 and structures in the study area could be older than 60 years and would then be protected by the NHRA. The age of standing structures in the study area should be confirmed and if older than 60 years a destruction permit will be required from the PHRAG.

In terms of Section 36 of the Act no burial sites were recorded. However, if any graves are identified they should ideally be preserved *in-situ* or alternatively relocated according to existing legislation. No public monuments are located within or close to the study area. The study area is surrounded by industrial and residential developments and road infrastructure developments and the proposed residential development will not impact negatively on significant cultural landscapes or views. During the public participation process conducted for the project no heritage concerns were raised.

Due to the lack of significant heritage resources in the study area the impact of the proposed project on heritage resources is considered low and impacts can be mitigated to an acceptable level. It is therefore recommended that the proposed project can commence on the condition that the following recommendations are implemented as part of the EMP and based on approval from SAHRA:

- Implementation of a chance find procedure;
- The age of standing structures should be confirmed and if greater than 60 years of age a destruction permit will be required from the PHRAG;
- A paleontological protocol for finds should be included in the EMP.

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	04/04/2018

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 and Terms of Reference:

Heritage Contracts and Archaeological Consulting CC (**HCAC**) has been contracted by Prism to conduct a heritage impact assessment of the proposed infrastructure for a mixed-use development with associated uses. The report forms part of the Environmental Impact Report and Environmental Management Programme Report (EMPR) for the mixed-use development on the remainder of portion 212 of the Farm Luipaardsvlei 246-IQ.

The aim of the study is to survey the proposed development footprint 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 No 25 of 1999). The report outlines the approach and methodology utilized before and during the survey, which includes: Phase 1, review of relevant literature; Phase 2, the physical surveying of the area on foot and by vehicle; Phase 3, reporting the outcome of the study.

During the survey, 3 structures of possible heritage significance were identified. General site conditions and features on sites were recorded by means of photographs, GPS locations, and site descriptions. Possible impacts were identified, and mitigation measures are proposed in the following report. SAHRA as a commenting authority under section 38(8) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) require all environmental documents, compiled in support of an Environmental Authorisation application as defined by NEMA EIA Regulations section 40 (1) and (2), to be submitted to SAHRA. As such the Environmental Impact Report and its appendices must be submitted to the case officer as well as the EMP, once it's completed by the Environmental Assessment Practitioner (EAP).

1.1 Terms of Reference

Field study

Conduct a field study to: (a) 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 affected by the proposed development.

Reporting

Report on the identification of anticipated and cumulative impacts the operational units of the proposed project activity may have on the identified heritage resources for all 3 phases of the project; i.e., construction, operation and decommissioning phases. Consider alternatives, should any significant sites be impacted adversely by the proposed project. Ensure that all studies and results comply with the relevant legislation, SAHRA minimum standards and the code of ethics and guidelines of ASAPA.

To assist the developer in managing the discovered heritage resources in a responsible manner, and to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act of 1999 (Act No 25 of 1999).

Table 2: Project Description

Size of farm and portions	47,5 hectares on the Remainder of Portion 212 of the Farm Luipaardsvlei 246-IQ
Magisterial District	Mogale City Local Municipality
1: 50 000 map sheet number	2627BB
Central co-ordinate of the development	-26.120055° 27.796621°

Table 3: Infrastructure and project activities

Type of development	Mixed Use Development
Project size	Approximately 47,5 ha
Project Components	Mixed Use development with associated uses.

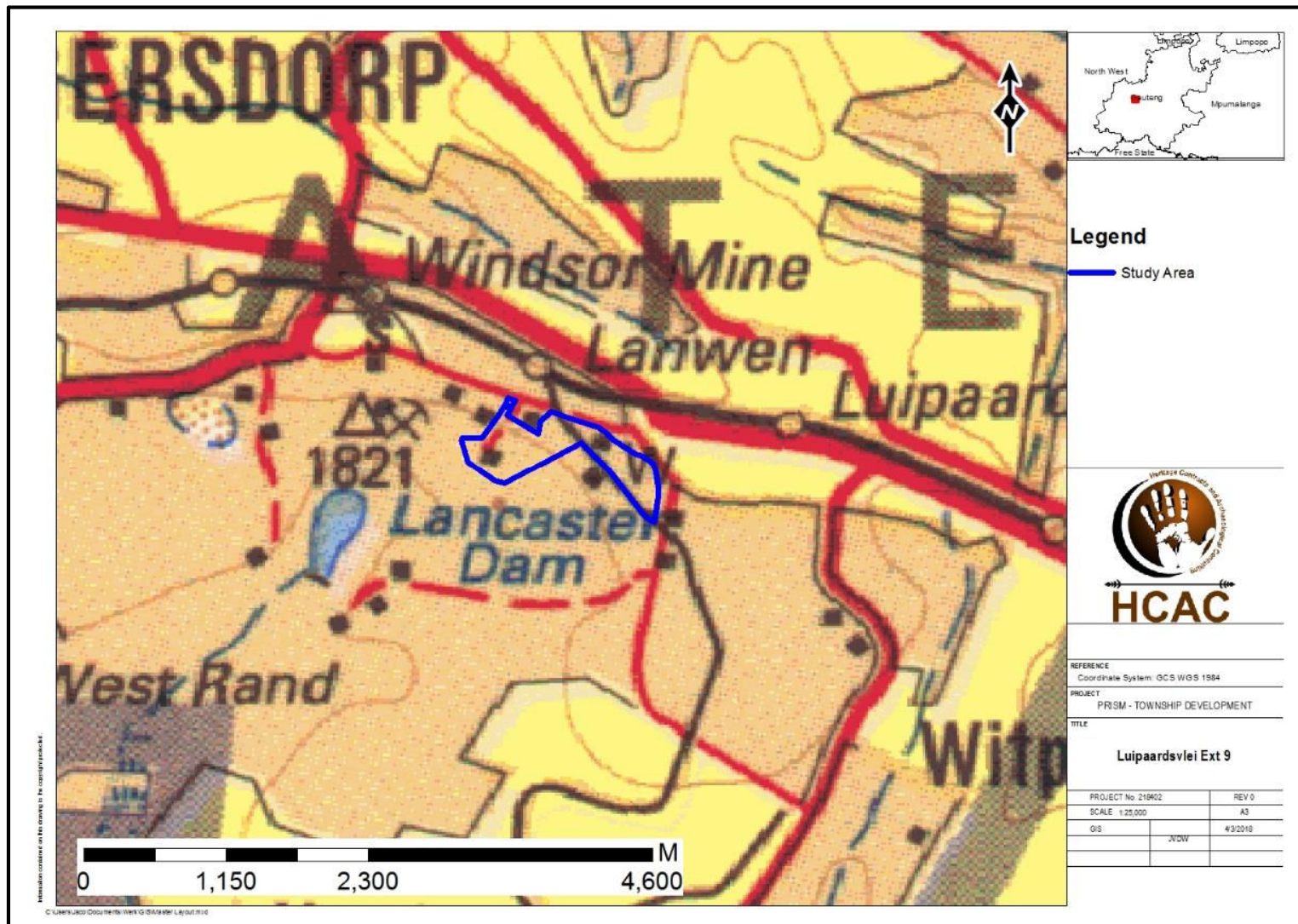


Figure 1. Provincial locality map (1: 250 000 topographical map)

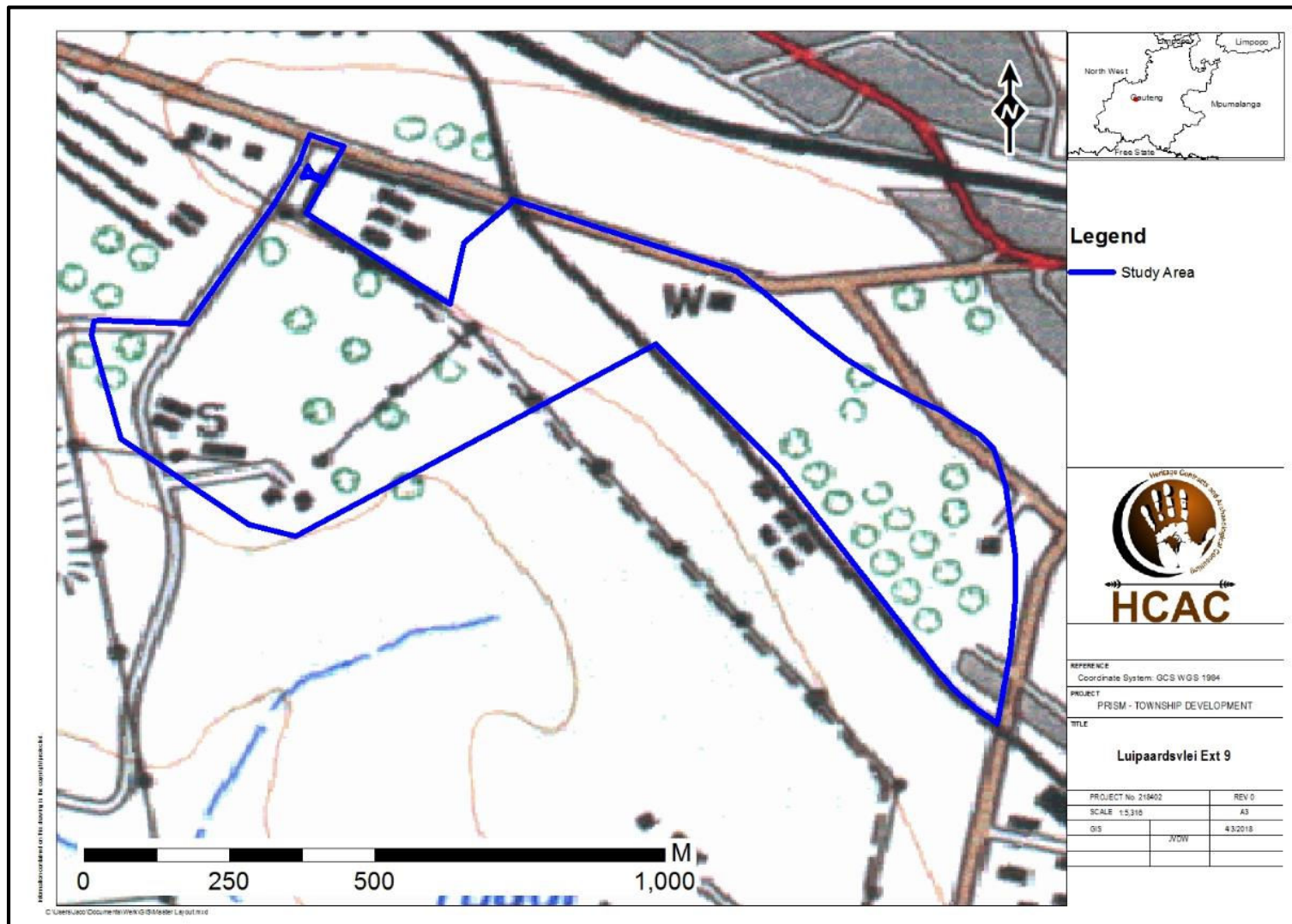


Figure 2: Regional locality map (1:50 000 topographical map).

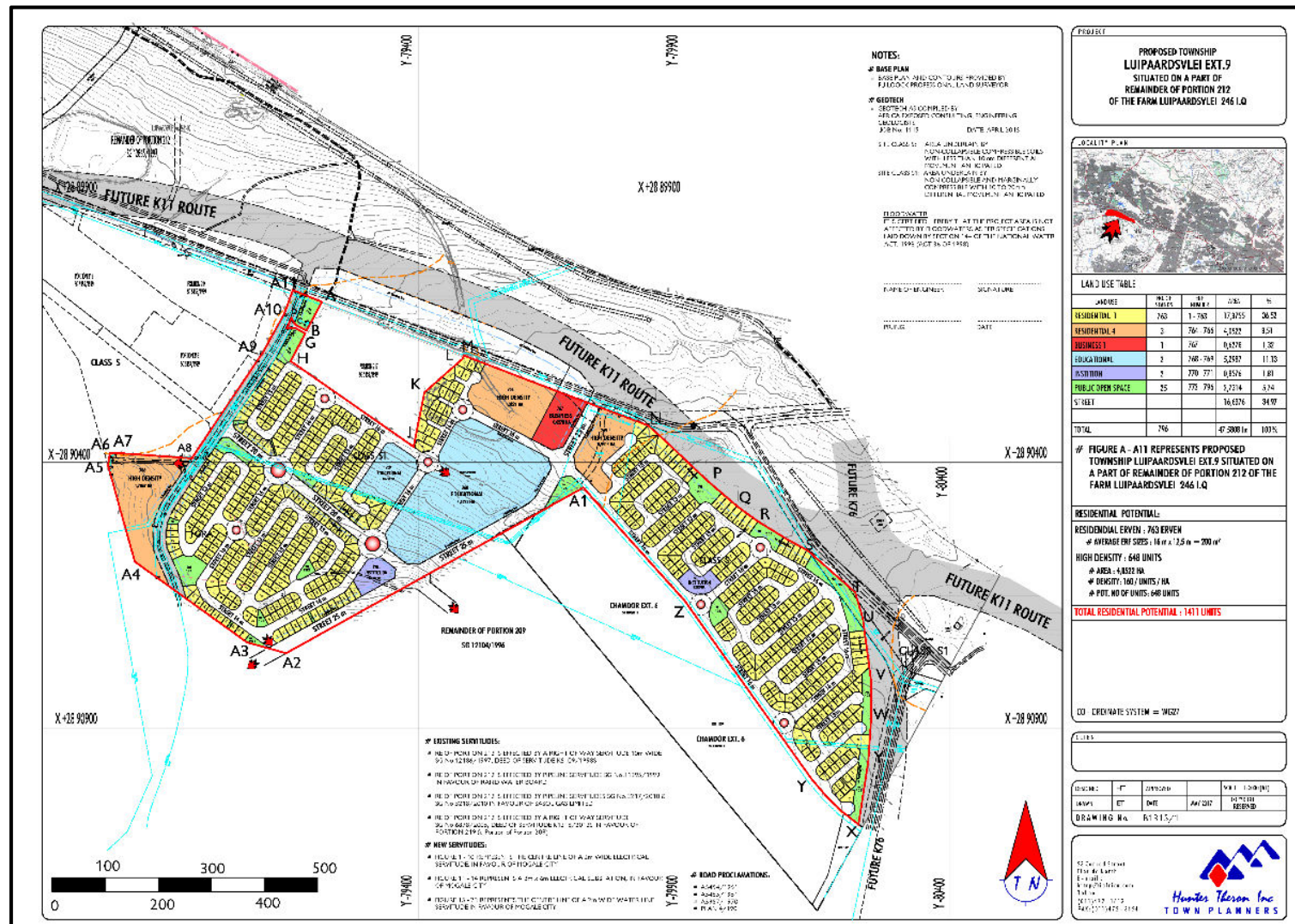


Figure 3. Lay out map as provided by Prism EMS



Figure 4. Satellite image indicating the study area in blue (Google Earth 2018).

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 professional evaluation of Phase 1 reports upon which review comments will be issued. 'Best practice' requires Phase 1 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 AIA 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 AIA'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 field work 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:

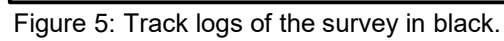
- Placement of advertisements and site notices;
- Stakeholder notification (through the dissemination of information and meeting invitations);
- Stakeholder meetings undertaken with I&APs;
- Authority Consultation;
- The compilation of a Scoping report and Environmental Impact Report and opportunity for I&APs to comment on the draft reports.
- The compilation of a Comments and Response Report (CRR).

3.4 Site Investigation

Conduct a field study to: a) systematically 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.

Table 4: Site Investigation Details

	Site Investigation
Date	13 Junie 2017
Season	Early Winter – vegetation in the study area is low and archaeological visibility is high. The impact area was sufficiently covered (Figure 5) to adequately record the presence of heritage resources.



3.5 Site Significance and Field Rating

Section 3 of the 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;
- Sites of significance relating to the history of slavery in South Africa.

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 footprint of the areas demarcated for development were 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 with cognisance of Section 3 of the NHRA:

- 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.

In addition to this criteria field ratings prescribed by SAHRA (2006), and acknowledged by ASAPA for the SADC region, were used for the purpose of this report. The recommendations for each site should be read in conjunction with section 10 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

3.6 Impact Assessment Methodology

The criteria below are used to establish the impact rating on sites:

- The **nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- The **extent**, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional, and a value between 1 and 5 will be assigned as appropriate (with 1 being low and 5 being high):
- The **duration**, wherein it will be indicated whether:
 - * the lifetime of the impact will be of a very short duration (0-1 years), assigned a score of 1;
 - * the lifetime of the impact will be of a short duration (2-5 years), assigned a score of 2;
 - * medium-term (5-15 years), assigned a score of 3;
 - * long term (> 15 years), assigned a score of 4; or
 - * permanent, assigned a score of 5;
- The **magnitude**, quantified on a scale from 0-10 where; 0 is small and will have no effect on the environment, 2 is minor and will not result in an impact on processes, 4 is low and will cause a slight impact on processes, 6 is moderate and will result in processes continuing but in a modified way, 8 is high (processes are altered to the extent that they temporarily cease), and 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- The **probability of occurrence**, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale of 1-5 where; 1 is very improbable (probably will not happen), 2 is improbable (some possibility, but low likelihood), 3 is probable (distinct possibility), 4 is highly probable (most likely) and 5 is definite (impact will occur regardless of any prevention measures).
- The **significance**, which shall be determined through a synthesis of the characteristics described above and can be assessed as low, medium or high; and
- the **status**, which will be described as either positive, negative or neutral.
- the degree to which the impact can be reversed.
- the degree to which the impact may cause irreplaceable loss of resources.
- the *degree* to which the impact can be mitigated.

The **significance** is calculated by combining the criteria in the following formula:

$$S=(E+D+M) P$$

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The **significance weightings** for each potential impact are as follows:

- < 30 points: Low (i.e., where this impact would not have a direct influence on the decision to develop in the area),
- 30-60 points: Medium (i.e., where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- 60 points: High (i.e., where the impact must have an influence on the decision process to develop in the area).

3.7 Limitations and Constraints of the study

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 and the possible occurrence of unmarked graves and other cultural material cannot be excluded. Similarly, the depth of the deposit of heritage sites cannot be accurately determined due its subsurface nature. This report only deals with the footprint area of the proposed development and consisted of non-intrusive surface surveys. 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 Impact Assessment.

4 Description of Socio Economic Environment

StatsSA provides the following information: According to Census 2011, Mogale City Local Municipality has a total population of 820 995 of people, of which 75,6% are black African, 21,0% are white, 0,8% are coloured, and 2,2% are Indian/Asian. Of those aged 20 years and older, 4,0% have completed primary school, 35,0% have some secondary education, 32,6% have completed matric, and 14,2% have some form of higher education. 134 635 people are economically active (employed or unemployed but looking for work), and of these, 24,6% are unemployed. Of the 60 706 economically active youth (15–34 years) in the area, 32,3% are unemployed.

5 Description of the Physical Environment:

The farm Luipaardsvlei and surrounding properties formed part of the mining developments which took place in the area after the discovery of gold in the late 1800's. These properties were exposed to several mining activities and developments since those discoveries. The mining developments and activities changed the face of this region into what we experience here today.

The study area measures approximately 47,5ha in size and is situated on the southern side of Windsor Road (R28) which forms the northern boundary of the proposed site. Tudor Road forms the eastern boundary and a small tarred road forms the western boundary of the proposed site. A disused and removed railway line forms part of the southern boundary with some old mine dumps also situated on the southern side of the proposed site.

6 Results of Public Consultation and Stakeholder Engagement:

Adjacent landowners and the public at large were informed of the proposed activity as part of the EIA process. Site notices and advertisements notifying interested and affected parties were placed at strategic points and in local newspapers as part of the process.

7 Literature / Background Study:

7.1 Literature Review

32 Previously recorded sites are on record for the 2627 BB 1: 50 000 sheet at the Wits database. These sites consist of Stone Age (ESA & LSA), Late Iron Age, Anglo Boer War remains and Historic mining remains. None of these sites are located within the project area but provide a background of to the sites that can be expected. The closest site is a historic mining site (Rand Leases) to the south east of the study area.

The following CRM reports were conducted in the greater area and were consulted for this report:

Author	Year	Project	Findings
Van der Walt, J.	2015	Archaeological Impact Assessment for the Roodekrans Ext. 26 Residential Development. Roodekrans, Johannesburg, Gauteng Province	Structures older than 60 years.
Van Schalkwyk, J.	2012	Heritage Impact Report for The Proposed New Ntshona Substation And 132kv Power Line, South of Mogale City, Gauteng Province	Historic Mining features
Van Vollenhoven, A. & Pelsaer, A.J.	2007	A Report on A Cultural Heritage Impact Assessment on Erf 85, Chamdor, Krugersdorp For the William Tell Particle Boards and Medium Density Manufacturing Plant	Structures and a graveyard

7.1.1 Genealogical Society and Google Earth Monuments

No known grave sites are on record close to the study area.

7.2 General History of the area

7.2.1 Archaeology of the area

7.2.1.1 Stone Age

South Africa has a long and complex Stone Age sequence of more than 2 million years. The broad sequence includes the Later Stone Age, the Middle Stone Age and the Earlier Stone Age. Each of these phases contain sub-phases or industrial complexes, and within these we can expect regional variation regarding characteristics and time ranges. The three main phases can be divided as follows;

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

Stone Age sites are usually associated with stone artefacts found scattered on the surface or as part of deposits in caves and rock shelters. No previously recorded Stone Age sites are on record for the study area. Interestingly, the study is located not too far from the vicinity of the Melville Koppies, which is a Middle Stone-Age site. (Bergh 1999: 4)

7.2.1.2 Iron age

The Iron Age of the region consists of Tswana speaking people who settled in the area from the early 16th century. This area was also important to Iron Age communities, since these people had smelted and worked iron ore at the Melville Koppies site since the year 1060, by approximation. (Bergh 1999: 7, 87)

The Melville Koppies site was excavated by Professor Mason from the Department of Archaeology of WITS in the 1980's. Extensive Stone walled sites are also recorded further South 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.

7.2.2 Historical Background

The Difaqane (Sotho), or Mfekane (“the crushing” in Nguni) was a time of bloody upheavals in Natal and on the Highveld, which occurred around the early 1820’s until the late 1830’s. (Bergh 1999: 10) It came about in response to heightened competition for land and trade, and caused population groups like gun-carrying Griquas and Shaka’s Zulus to attack other tribes. (Bergh 1999: 14; 116-119) It seems that, in 1827, Mzilikazi’s Ndebele started moving through the area where Johannesburg is located today. This group went on raids to various other areas in order to expand their area of influence. (Bergh 1999: 11)

During the time of the Difaqane, a northwards migration of white settlers from the Cape was also taking place. Some travellers, missionaries and adventurers had gone on expeditions to the northern areas in South Africa, some already as early as the 1720’s. One Bain travelled through, or close by the area where the study area was located in 1831. One Harris also travelled through this area in 1836. (Bergh 1999: 13)

It was however only by the late 1820’s that a mass-movement of Dutch speaking people in the Cape Colony started advancing into the northern areas. This was due to feelings of mounting dissatisfaction caused by economical and other circumstances in the Cape. This movement later became known as the Great Trek. This migration resulted in a massive increase in the extent of that proportion of modern South Africa dominated by people of European descent. (Ross 2002: 39) By 1939 to 1940, farm boundaries were drawn up in an area that includes the present-day Johannesburg and Krugersdorp. (Bergh 1999: 15).

The study area is located in close proximity to the towns of Roodepoort and Krugersdorp and therefore a short discussion on the origins of these towns are applicable. Roodepoort is a residential area which gets its name from the red soil that characterise the area. Roodepoort was established as a mine camp during the pioneering days of gold mining and dates back to 1884, when Fred Struben discovered the first payable gold in the area at what he called the Confidence Reef, a large rocky outcrop in the centre of Roodepoort. After the Great Trek of 1834-1840, some of the farmers who had left the Cape Colony, settled in the interior of the country and the first farms in the vicinity of Roodepoort/Krugersdorp were already measured out in 1839/40. By the 1880’s the area was settled by scattered Boer farmers on nine farms. This means that it is one of the first areas where white farmers settled. Four of the farms - Roodepoort, Vogelstruisfontein, Paardekraal and Wilgespruit were soon declared public diggings. The farm Paardekraal is also well known as the place where the Transvaal Boers placed a heap of stones in what is today known as the Paardekraal Monument. This was an act of unity between the Boers to fight for their freedom against Great Britain who annexed the Transvaal in April 1877.

The prospecting rights on the farm Roodepoort were secured by Jan Bantjies and the next year, gold was discovered. The farm was opened for public diggings. The diggers needed a place to pitch their tents and so the farm Roodepoort opened up its land and a shantytown sprang up. In 1857 the area formed part of the district of Pretoria as few other towns were established however four mining towns, Roodepoort, Florida, Hamberg and Maraisburg, were proclaimed between 1886 and 1888. In 1886 the main reef at Langlaagte in Johannesburg was discovered. The gold at Confidence Reef, mostly surface gold in quartz rock, soon ran out, but by then a settled community was established in Roodepoort. In 1963 the Roodepoort-Maraisburg municipality was changed to Roodepoort and city status was granted in 1977 (at which time Maraisburg was dropped from the name).

The area has a rich mining history with several large mining companies like the Klein Paardekraal Estate Gold Mining Co. Ltd, Main Reef Gold Mining Co. Ltd. and Consolidated Main Reef Mines Estate Ltd who obtained property in the area from the late 19th century. The mines used to have their own hospitals and cemeteries, especially relating to the so called native workers.

In 1934 permission was granted to Crown Mines Ltd. to establish a ‘native burial ground’ on the farm Vierfontein (and in 1942 permission was granted for the establishment of native cemeteries at Paardekraal to name a few examples. An unmarked cemetery associated with mine workers was exposed during development on the farm Paardekraal that stopped development in that area. During the Second World War some of the mine property was converted to be used by the Union Defence Force that included the

Crown Mines hospital. It is therefore even possible that some graves in these cemeteries may belong to people who died during the war, although most probably not in active service

The Roodepoort area has several monuments. One of these is monument that commemorates the Jameson Raid of 1895. The old municipal offices in Berlandina Street, a plaster and stone building that is now used as the Roodepoort branch library was declared a national monument in 1985. Another national monument is the old Roodepoort Town School in Rex Street, on the site of the original building erected in 1894 to name but a few.

Krugersdorp was proclaimed a town in 1887 and owes its origin to two important events in the history of South Africa, namely The Transvaal War of independence (1881) and the discovery of the Witwatersrand Goldfields (1886). These two occurrences with their far-reaching political and economic consequences, were mainly instrumental in causing the establishment of two townships, originally apart, but subsequently united under the name of Krugersdorp. The one township became the business centre of the West Rand Goldfields, while the other sprang into existence by reason of the position and significance of the Paardekraal Monument.

Gold, manganese, iron, asbestos and lime are all mined in and around Krugersdorp and the area is characterised by a long mining history, which began when gold was discovered on the farm Paardekraal. Recently Krugersdorp Local Council was re-named after Chief Mogale, the young heir to the Po Chieftom of the Batswana. The Po tribe, one of the original tribes, occupied the territory now known as Mogale City. They occupied an area that stretched from the Magaliesberg in the west to the present day Northcliff Ridge in the east, to the Vaal River in the southwest and Hartebeespoort Dam in the northwest.

Toward the end of the 1820s, the stability of the area was disrupted by the invasion of Mzilikazi ka Mashobane. Mzilikazi warriors easily overwhelmed the Po, killed their chief and took the young heir, Mogale wa Mogale, captive. Around 1830 the Voortrekkers, dissatisfied with life under British administration in the Cape Colony, began to migrate from the Cape. Mzilikazi was driven out of the area by the Voortrekkers under Paul Kruger, who named the area after himself.

The area has several significant historical sites. One of the most attractive buildings is the civic centre. The Earl of Selbourne, High Commissioner of the Transvaal and Orange Free State, unveiled the foundation stone of the original building in 1907. The JG Strijdom arch bust, designed by JH Labuschagne, was unveiled on 16 December 1966 by Susan Strijdom. It stands on gold-bearing rock. The arch was designed by T Pitout. Another interesting feature is the first stone of the cenotaph that was laid on 20 May 1922. It was unveiled by Sir Abe Bailey on 15 July 1922. The names of those who died in action during the World Wars were added in 1975.

More than 800 women and children were buried in the Concentration Camp Cemetery during the Boer War. The Memorial Avenue, which runs from Paardekraal to the hospital, commemorates those who died during the First World War. Several monuments are found in the area and include amongst others the Old Station Building, Voortrekkerpad Monument, Town Hall, Old Magistrate's Court Building, Paardekraal Monument, JG Strijdom Bust, Paul Kruger Statue, The Blockhouse, and The Concentration Camp.

7.3 Background of Luipaardsvlei 468 IQ

Since the mid-1800s up until the present, South Africa has been divided and re-divided into various districts. Since 1857, the farm under investigation formed part of the Pretoria district. As of 1894 the farm formed part of the Krugersdorp district. This remained the case up until 1977, when South Africa was divided into various smaller magisterial districts. The farm area became known as the Krugersdorp magisterial district within the Witwatersrand district. Today, the property falls within the Mogale City Local Municipality in the West Rand District Municipality, Gauteng Province. (Bergh 1999: 17; 20-27)

Note that, by the early 1900s the property under investigation was known as Luipaardsvlei 8, and after 1950 it was renamed Luipaardsvlei 468 IQ.

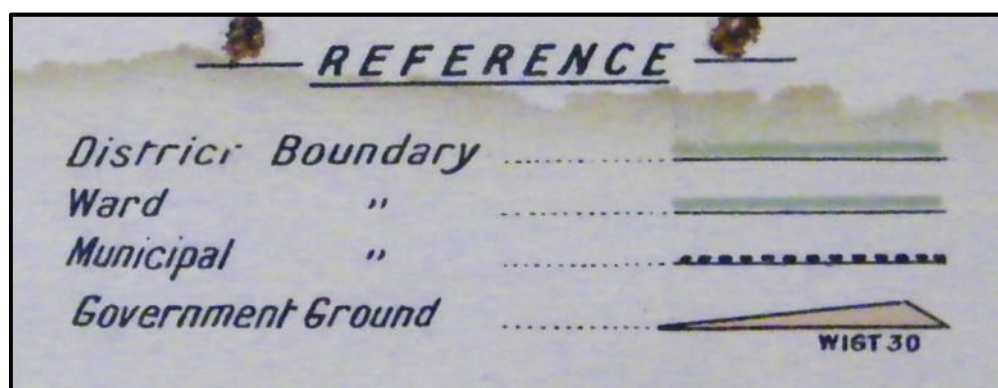
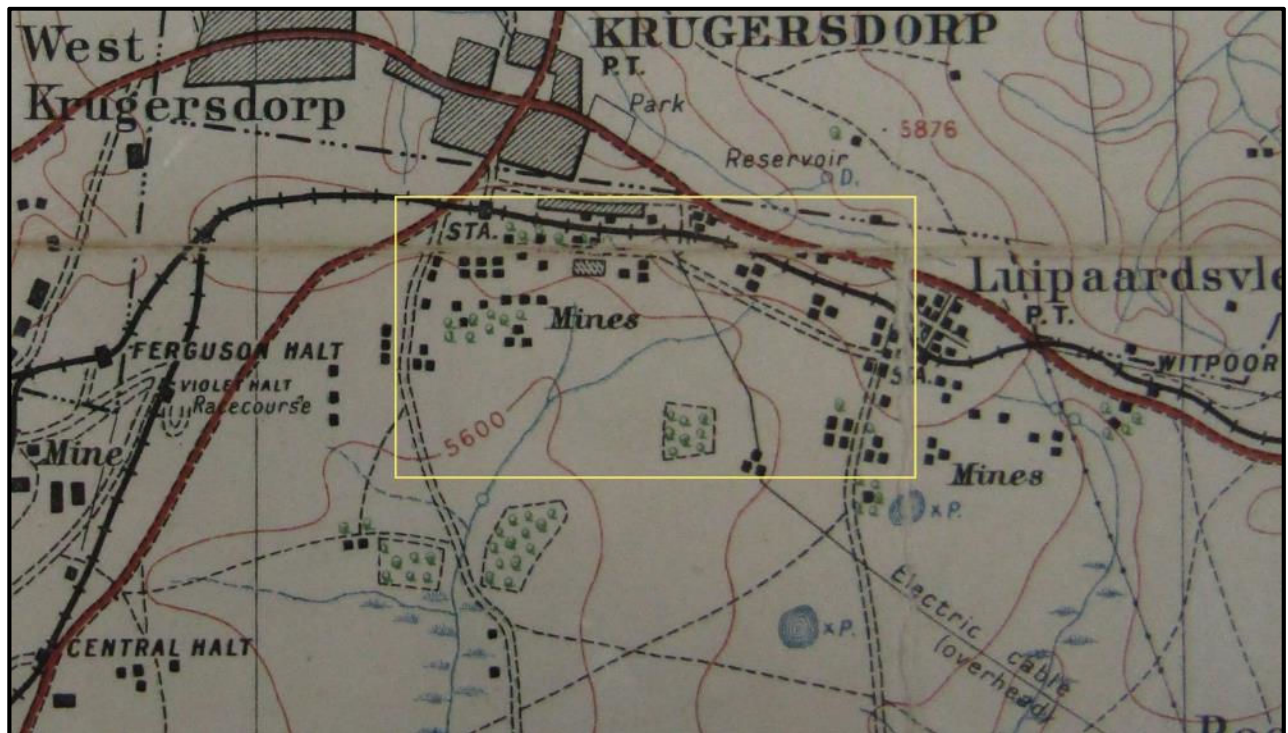


Figure 6. 1908 Map of the property Luipaardsvlei 8, which formed part of the Krugersdorp ward of the Witwatersrand magisterial district at the time. One can see the railway line that would form the northern border of the study area, just to the south of Krugersdorp. (NASA Maps: 3/282)



REFERENCE	
Towns	
Villages with Locations	
Native Locations, Hut or Kraal	
Boundaries, Provincial	
" District	
" Ward	
Railways (single unless otherwise stated)	
Platelayer's cottage	
Telegraphs	
" along roads	
Post or Telegraph Offices	
Roads, Frequented wagon (main communications coloured brown)	
" Unfrequent wagon	
" Bridle	
" Steep or heavy, requiring extra spans	
Government Ground	
Mission Stations - Protestant, Roman Catholic	
Triangulation Points and Bolts	
Farm Beacons	

Figure 7. 1913 Krugersdorp district map. The approximate study area is indicated with a yellow border. A railway, roads, buildings, a township development and mines are visible in this section. (NASA Maps: 3/1419)

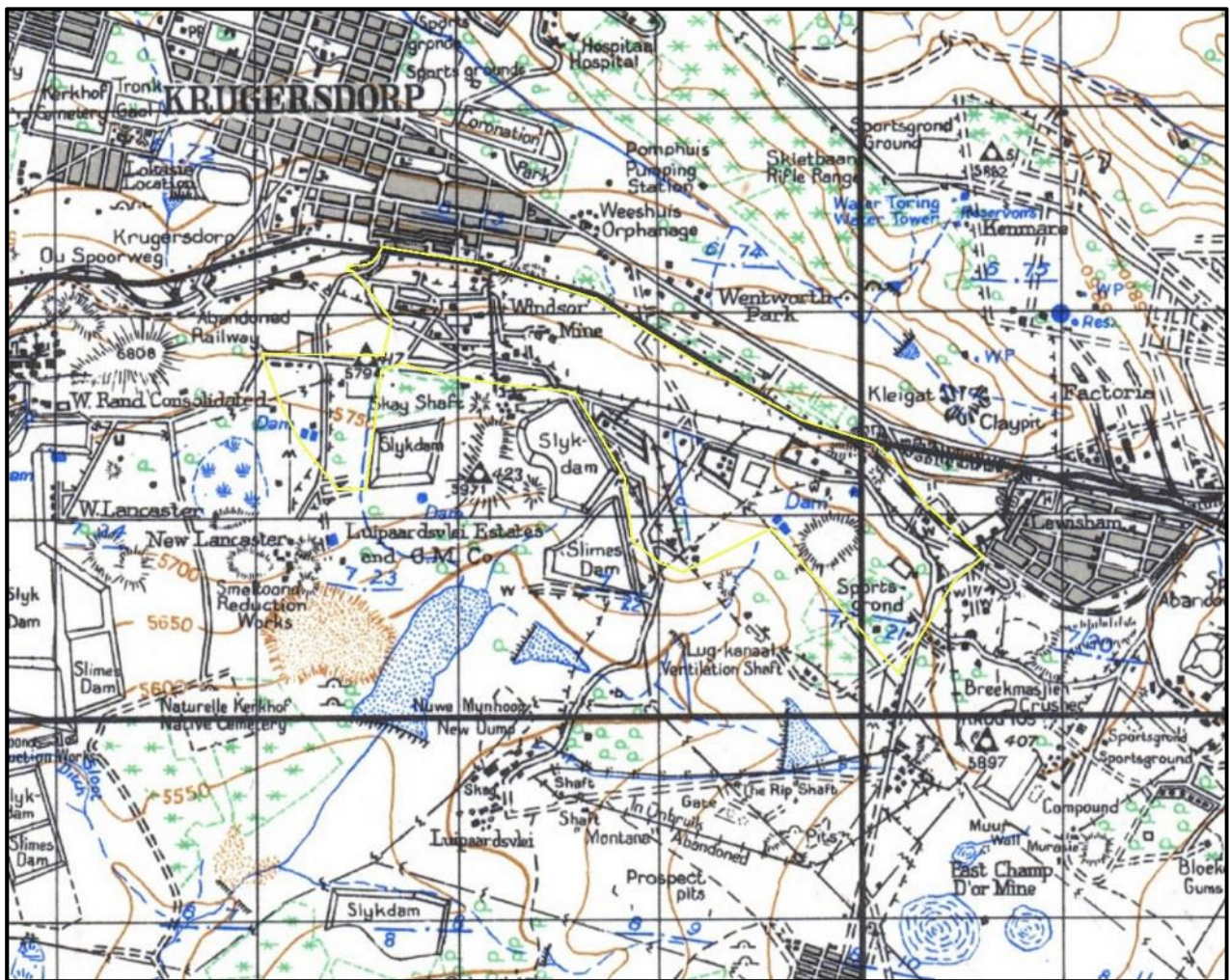


Figure 8. 1943 Topographical map of the area under investigation. The approximate study area is indicated with a yellow border. An electrified railway forms the northern boundary of the site under investigation. There are a number of structures related to Windsor Mine, including roads, buildings and dams in the western part of the study area. One can also see three excavation sites, three more dams, two shops, telephone lines, roads and buildings in the eastern part of the property. To the north west of the study area one can see Krugersdorp, and the Luipaardsvlei Estates and Gold Mining Company Limited can be seen to the south. Wentworth Park is visible to the north of the study area, and Lewisham can be seen to the east. (Topographical Map 1943)

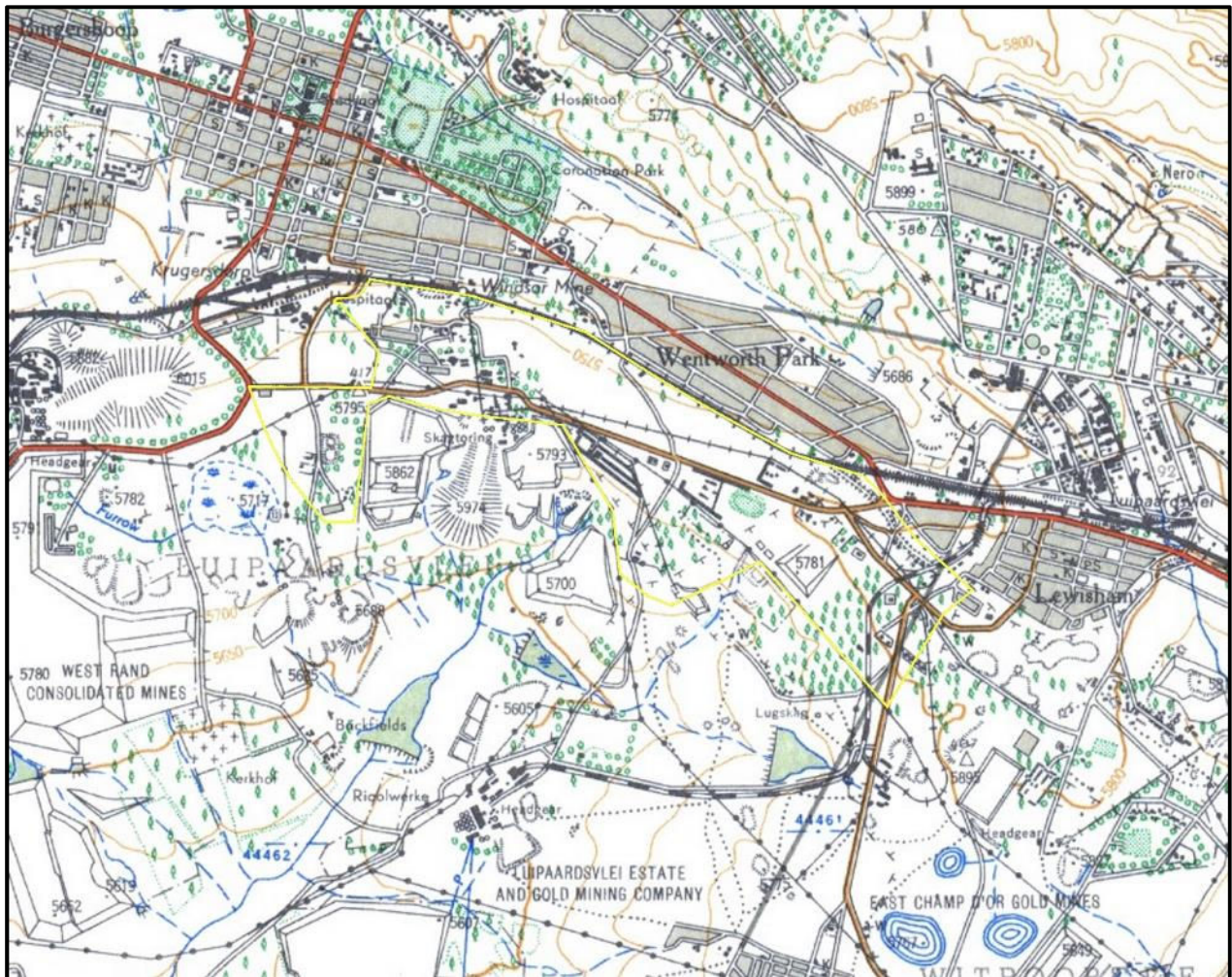


Figure 9. 1954 Topographical map of the site under investigation.

The approximate study area is indicated with a yellow border. An electrified railway still formed the northern boundary of the site under investigation. A secondary road and a normal railway also intersect the property. In the western part of the study area, one can still see roads, buildings, excavation sites and other structures related to the Windsor Mine. A hospital is also visible near the western border of the study area. To the east, one can see sports grounds, buildings, telephone lines, excavation sites and buildings. The Luipaardsvlei Estate and Gold Mining Company's mining operations can still be seen to the south, Wentworth Park is still visible to the north, and Lewisham can be seen to the east. (Topographical Map 1954)

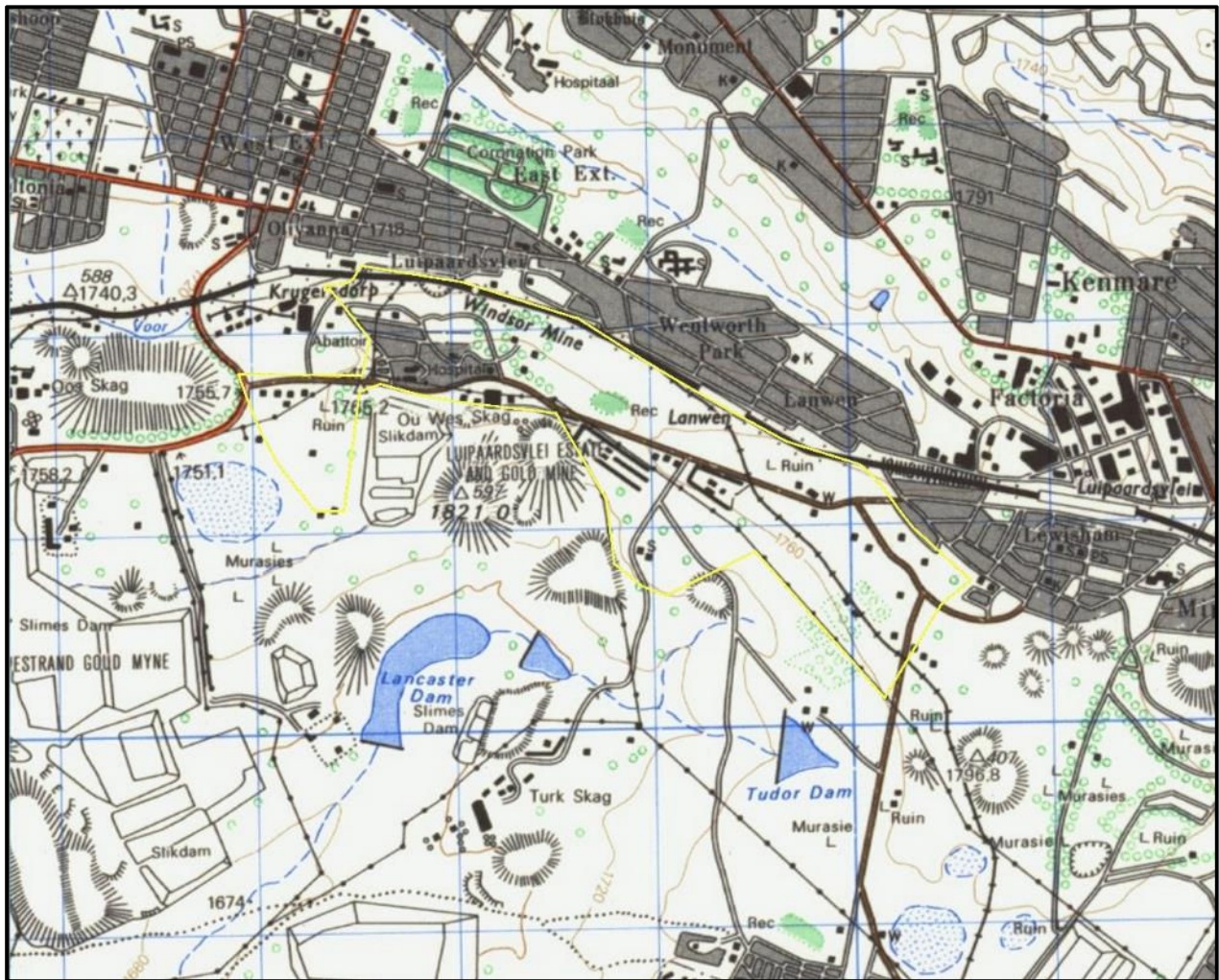


Figure 10. 1977 Topographical map of the site under investigation. The approximate study area is indicated with a yellow border. A railway still forms the northern border of the study area, and another railway and more than one secondary road intersect the property. Windsor Mine and its associated buildings and roads, as well as a hospital and a recreational area can be seen in the western half of the study area. To the east, one can see the Lanwen railway station, a ruin, two shops, several buildings, roads and sports grounds. Bordering the study area to the north, one can see the residential developments of Olivanna, Luipaardsvlei, Wentworth Park, Lanwen and Lewisham. Luipaardsvlei Estate and Gold Mine is still visible to the south, with the Old Western Shaft located closest to the study area. (Topographical Map 1977)

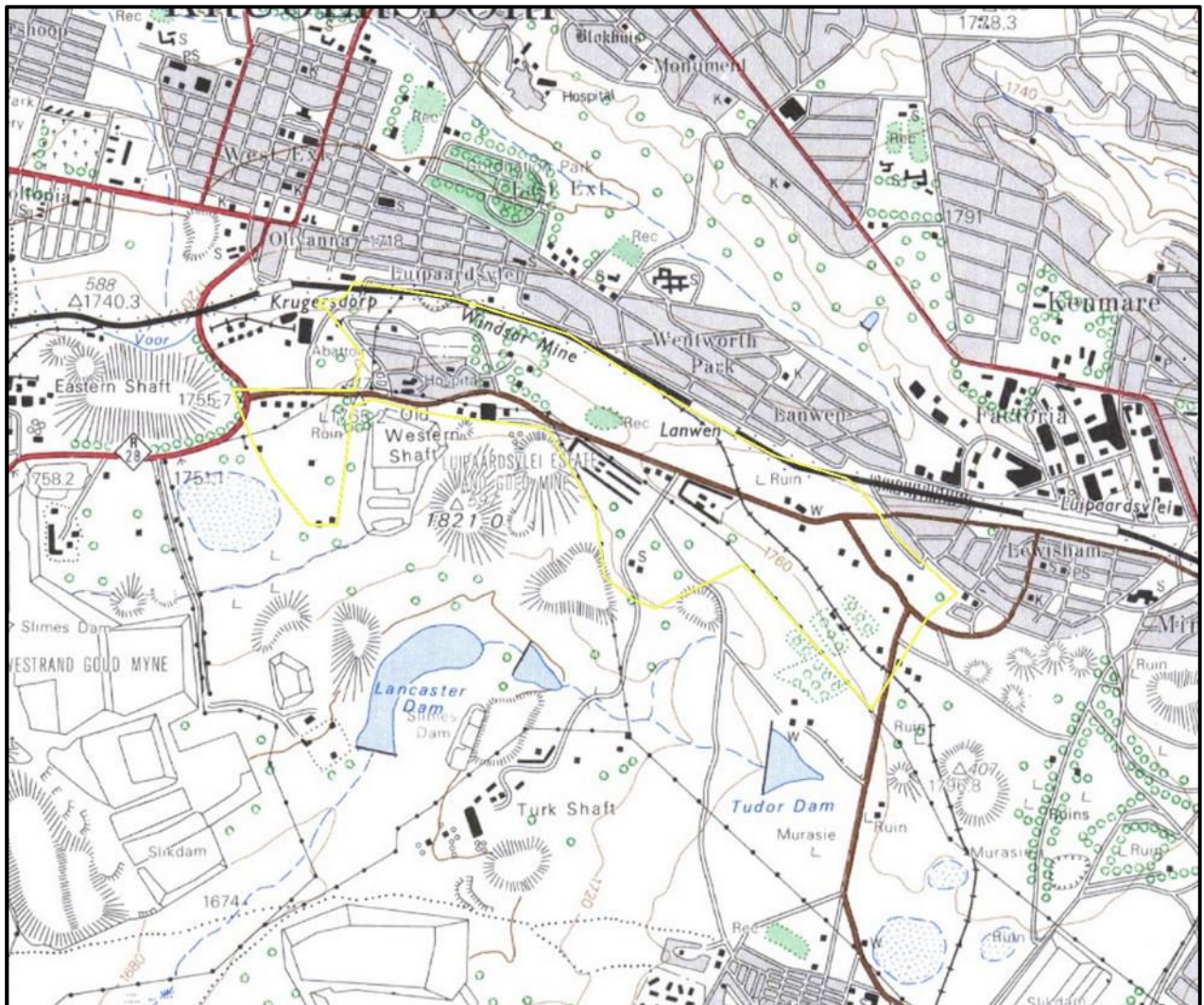


Figure 11. 1983 Topographical map of the site under investigation. The approximate study area is indicated with a yellow border. The situation in the study area remained basically unchanged since 1977. (Topographical Map 1983)



Figure 12. 1995 Topographical map of the site under investigation. The approximate study area is indicated with a yellow border. A railway forms the northern border of the study area and another railway and a number of secondary roads intersect the property. A main road also goes through the most western part of the area under investigation. A development with buildings, roads and a recreation area related to the Windsor Mine can be seen in the western part of the study area. To the east one can see a number of buildings including two shops, the Lanwen Railway Station and other structures. The residential developments to the north of the property, as well as the mining developments to the south had not changed much since 1983. (Topographical Map 1995)

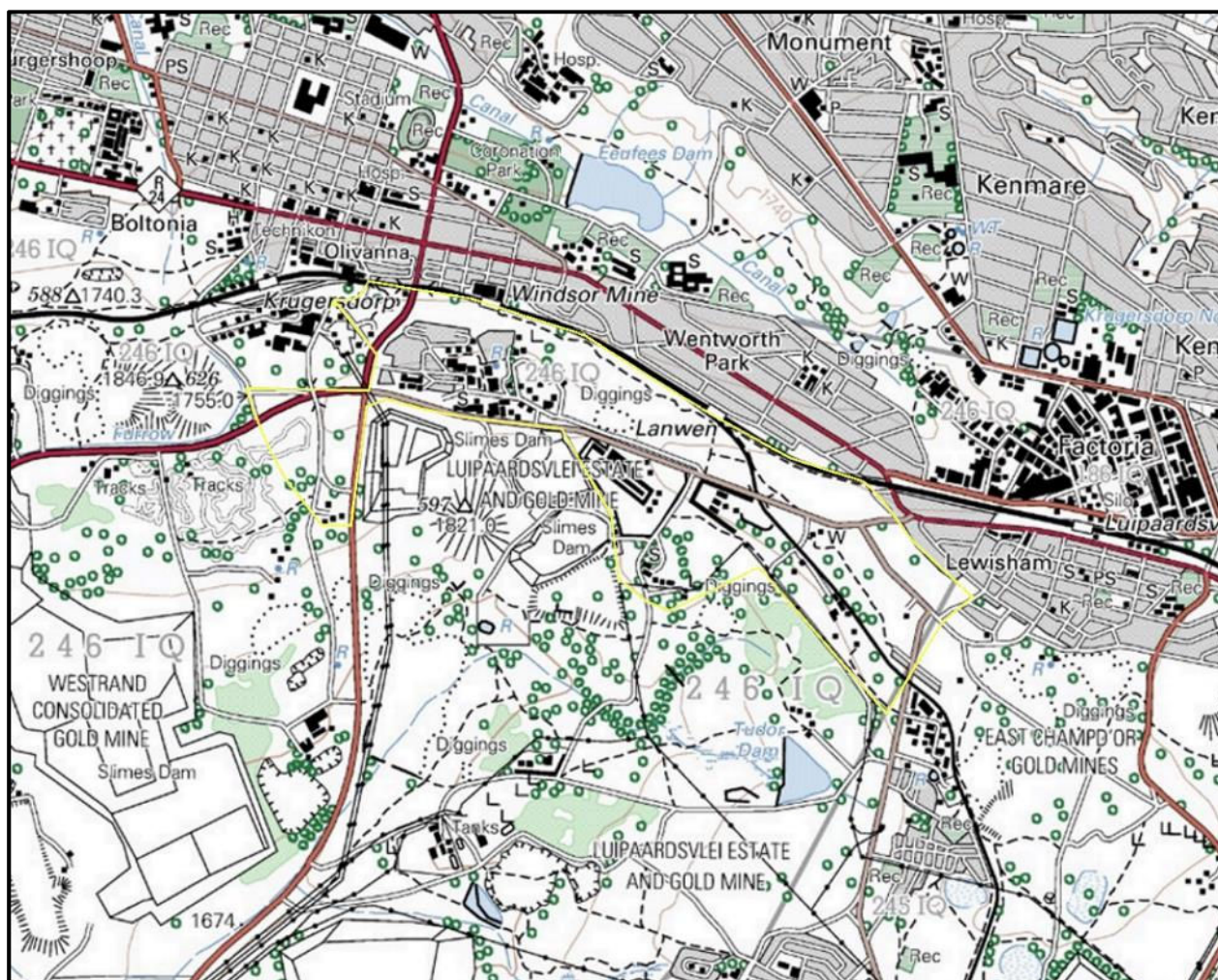


Figure 13. 2007 Topographical map of the site under investigation. The approximate study area is indicated with a yellow border. A railway forms the northern border of the study area and another railway and a number of secondary roads intersect the property. A main road also goes through the most western part of the area under investigation. A development with buildings, roads and a recreation area related to the Windsor Mine can be seen in the western part of the study area. To the east one can see a number of buildings including two shops, a number of roads and buildings and other structures. Bordering the study area to the north, one can see the residential developments of Olivanna, Wentworth Park, Factoria and Lewisham. Luipaardsvlei Estate and Gold Mine is still visible to the south. (Topographical Map 2007)

7.3.1.1 Historical Overview of the Development of the Study Area

Record of historical landowners

The following details regarding historical landowners on the Remainder of Portion 212 of Luipaardsvlei 468 IQ could be traced on the Windeed Search Engine:

Date	Portion	Transferred from	Transferred to	Purchase price
2000	RE of 212 - Previously part of Portion 209	-	South Ridge Prop Pty Ltd	R10,117,760.00

(Windeed Search Engine 2017)

This portion is currently owned by Onicatrim Prop Projects Pty. Ltd., which purchased the property in 2016. The property is 186.8849 hectares in extent. (Windeed Search Engine 2017)

History of land use

The Luipaardsvlei Estate and Gold Mining Co. Ltd. was already in operation by 1897. This company was registered in England, and its property was situated on the farm Luipaardsvlei 8, adjoining the town Krugersdorp. In August 1909 the skeleton of what appeared to be a Chinese mine worker was found at the Luipaardsvlei gold mine. At the time the Secretary to the Law Department of Krugersdorp noted that there was no likelihood that an investigation would lead to further information, so it was decided not to launch an enquiry. (NASA TAB, ZTPD: 8/513 8977/1897; NASA TAB, LD: 841 AG4123/04)

By 1924 a local committee directed the Luipaardsvlei Estate and Gold Mining Company's operations in South Africa. The mine was not very profitable and mostly operated at a loss between 1918 and 1924. By the early 1920s the mine was described as a "struggling low grade gold mine". (NASA SAB, MNW: 734 MM2282/24)

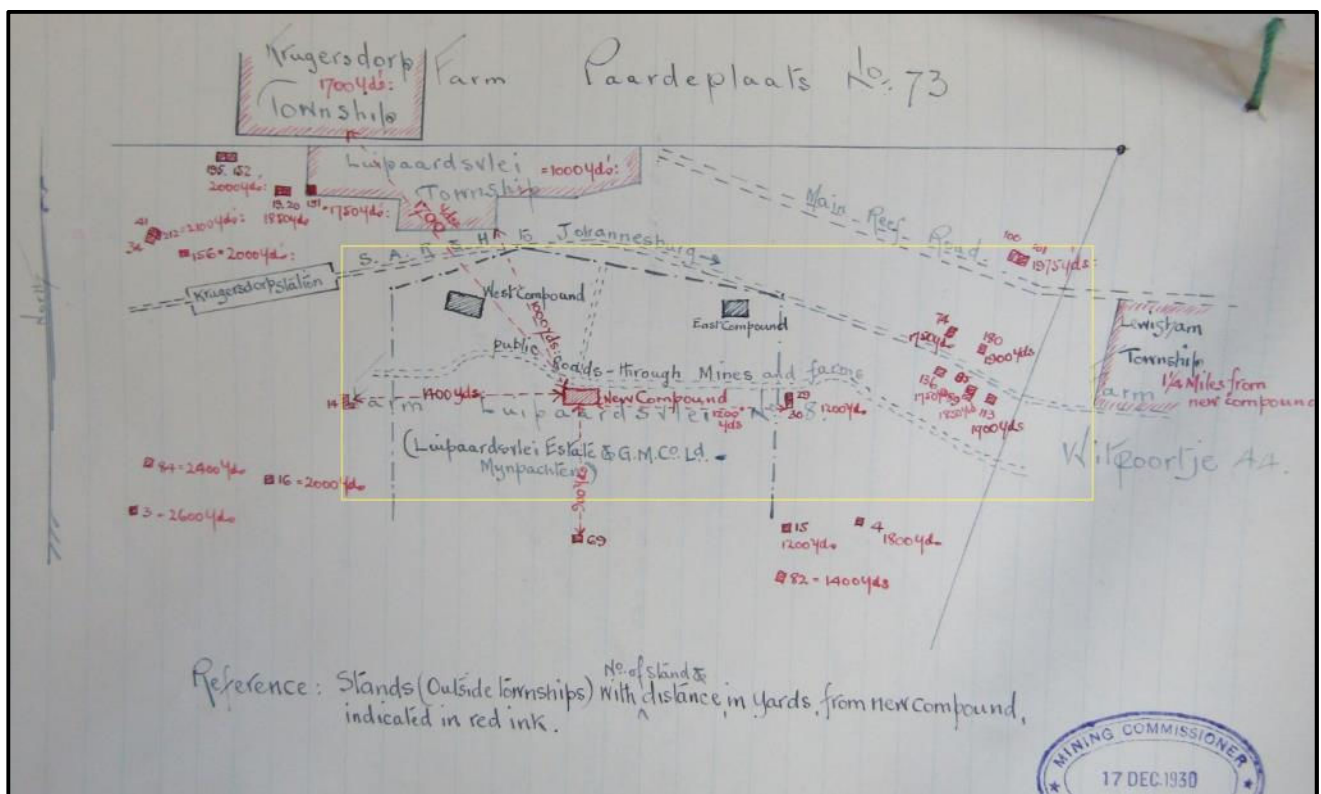


Figure 14. 1930 Sketch map showing the layout of a section of Luipaardsvlei owned by the Luipaardsvlei Estate and Gold Mining Co. Ltd. The approximate area of interest for this study is indicated with a yellow border. It seems that, by the 1930s, the West and East Compounds of the Luipaardsvlei Gold Mine were located within the study area. The new compound seemed to fall just outside of the study area. The railway line to Johannesburg formed the northern border of the study area and the Krugersdorp Station can be seen to the west. To the north one can see the Luipaardsvlei Township, as well as the Main Reef Road. The Lewisham Township can be seen to the east. (NASA SAB, MNW: 1044 MM461/31)

By 1930 there were two mine compounds in the vicinity of Krugersdorp, owned by the Luipaardsvlei Estate and Gold Mining Co. Ltd. 800 to 1200 black workers were already accommodated in these compounds, and the mine was planning on eventually accommodating about 2500 workers in a new compound. The East Compound would then be converted to married quarters. The mine planned on demolishing the West

In 1954 it was recommended by the National Housing Office that the Department of Native Affairs would be provided with a loan for the construction of 166 dwellings (the majority of which being three roomed houses), to form part of the Lewisham Location (to the north east of the area of interest). These dwellings were consequently sold and leased to black residents. (NASA SAB, NTS: 5514 115/313H (1))

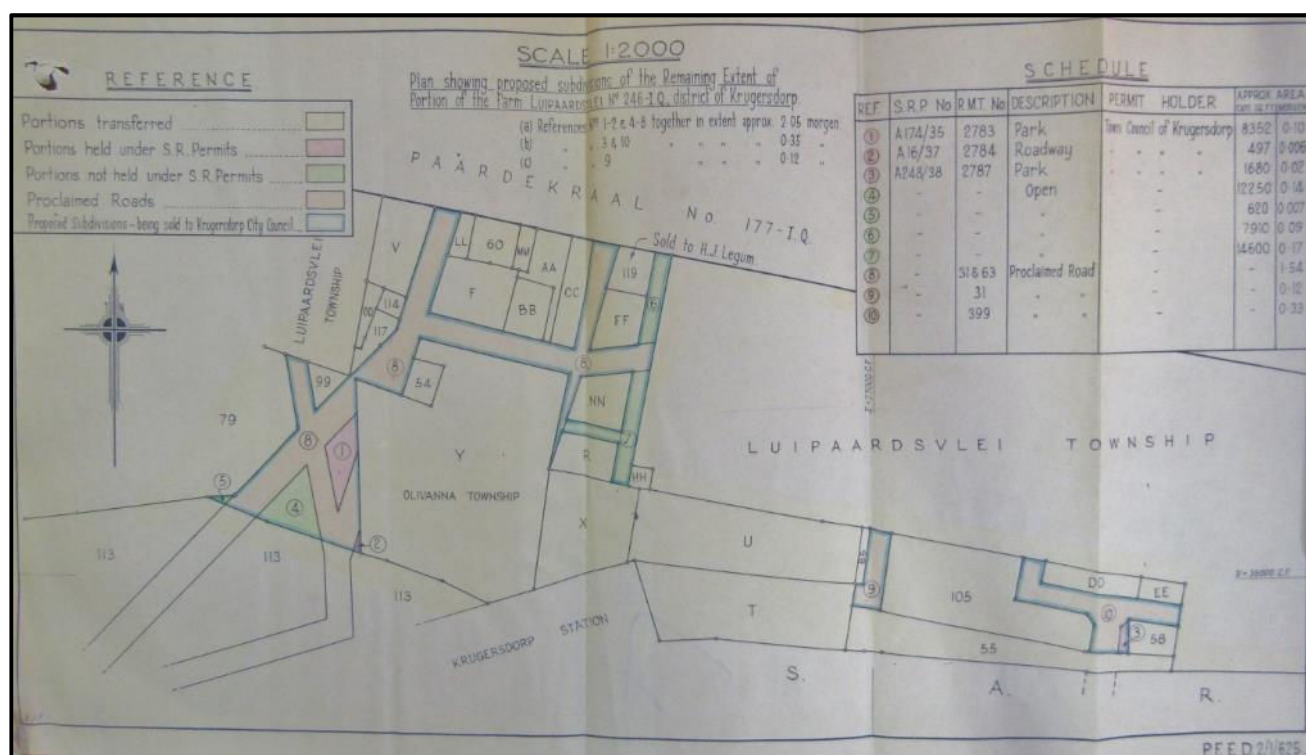


Figure 15. 1958 map of the Luipaardsvlei Township, located just to the north of the study area. (NASA SAB, CDB: 3/611 TAD9/9/69)



Figure 16. 1960 General Surface Plan of the Northern Portion of the Luipaardsvlei Estate and Gold Mining Co. Ltd. This is the section of the study area located to the south of the Wentworth Park Township. By 1960, some developments in this section included the Mine Manager's residence, mine offices, a second-hand stone yard, a new sports field for the black mine workers (still under construction), a proclaimed

road, the central shaft, the west compound, the east compound and the black married quarters. (NASA SAB, BAO: 2461 C31/3/709)



Figure 17. 1967 Map of the Luipaardsvlei Estate and Gold Mining Company's operations. This map shows the East and West Compounds and the South Compound with its access roads. The approximate area of interest for this study is indicated with the yellow border. (NASA SAB, BAO: 3/4174 A12/2/6/K66/8)

By 1968, there were between 3632 and 4250 black labourers working at the Luipaardsvlei Estate and Gold Mine Co. Ltd. At the time 3587 male workers were accommodated in the single quarters, and 170 men and women in the married quarters. The compound for single workers had cement floors, brick walls and zinc roofs, and could accommodate a maximum of 4297 workers. The married quarters were similarly constructed and both compounds were in a good condition. (NASA SAB, BAO: 2461 C31/3/709)

In 1972 the Luipaardsvlei Gold Mine employed 2420 black male workers, all of whom lived in the single quarters. The Inspector of Mines noted that the compound was very old and not equipped according to modern standards. (NASA SAB, BAO: 2461 C31/3/709)

By 1973 the South African Railways used the West Compound at the Luipaardsvlei Gold Mine to house some of its black workers. (NASA SAB, BAO: 2461 C31/3/709)

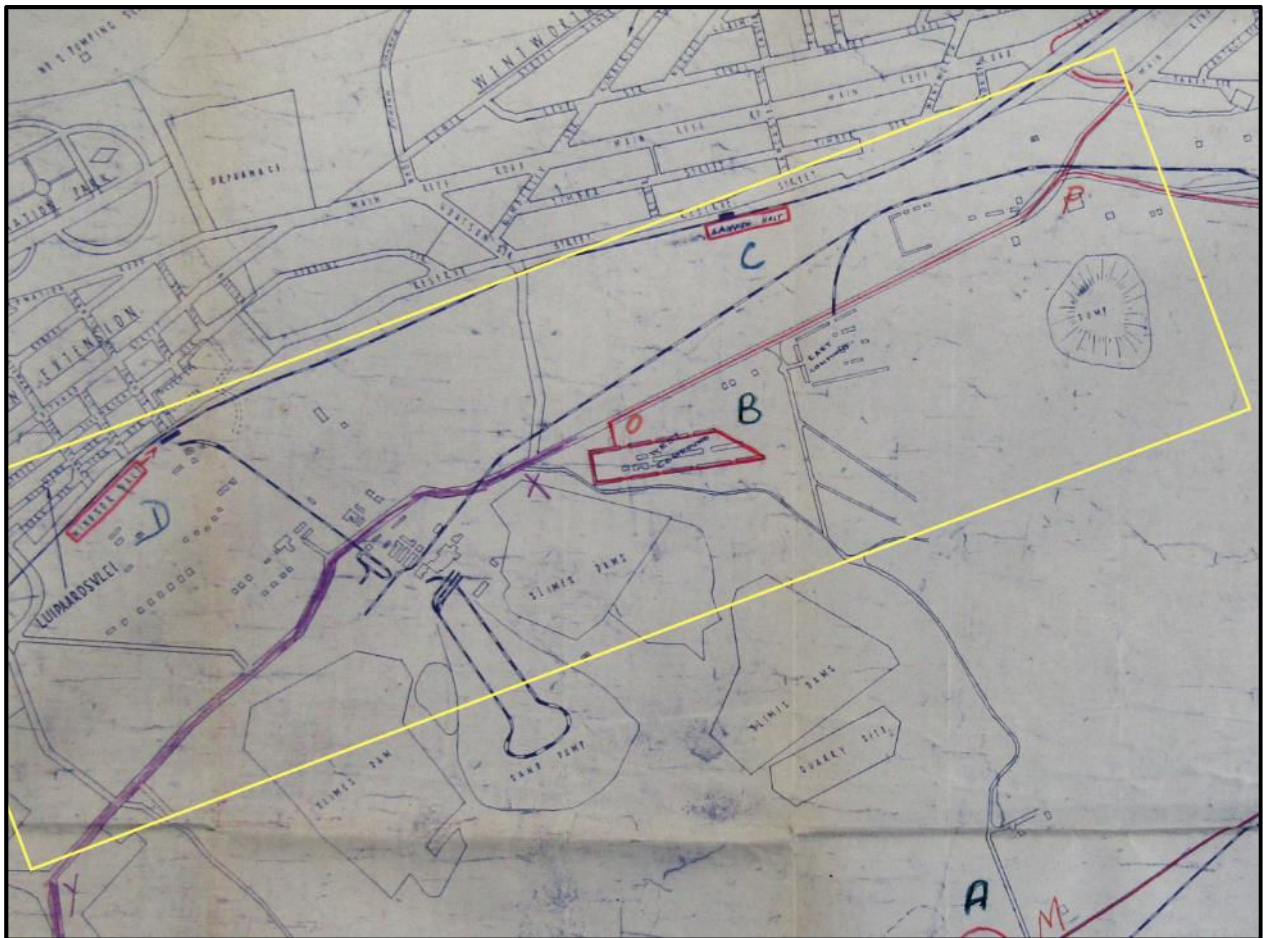


Figure 18. 1979 General plan of Krugersdorp. The approximate area of interest for this study is indicated with a yellow border. Within this section one can see several developments related to the operations of the Luipaardsvlei Estate and Gold Mine Co. Ltd., including several buildings, slimes dams, the West Compound, the East Compound and a mine dump. A number of railways and roads go through the area, and one can see the Windsor and Lanwen halts along the northern railway. (NASA SAB, BAO: 2461 C31/3/709)

By 1975 plans were underway to upgrade the West Compound at the Luipaardsvlei Gold Mine. This compound was approved prior to 1935 and the rooms were rather primitive in terms of size, light and ventilation. By this time, the Luipaardsvlei Estate and Gold Mining Co. Ltd. had ceased operations, but the hostels were re-opened at the request of the Krugersdorp Municipality and the South African Railways, in order to accommodate their black employees who could not be housed in the existing black areas. This condition would prevail until such time as alternative accommodation could be provided by the municipal authorities and the government. It was planned that the upgrades to the compounds would be done over a period of three years. (NASA SAB, BAO: 3/4174 A12/2/6/K66/8)

By 1976, 6571 single black workers were employed in the compounds on Luipaardsvlei. These were employees of the SAR and Municipality. The accommodation was leased to these workers by the mine. (NASA SAB, BAO: 3/4174 A12/2/6/K66/8)

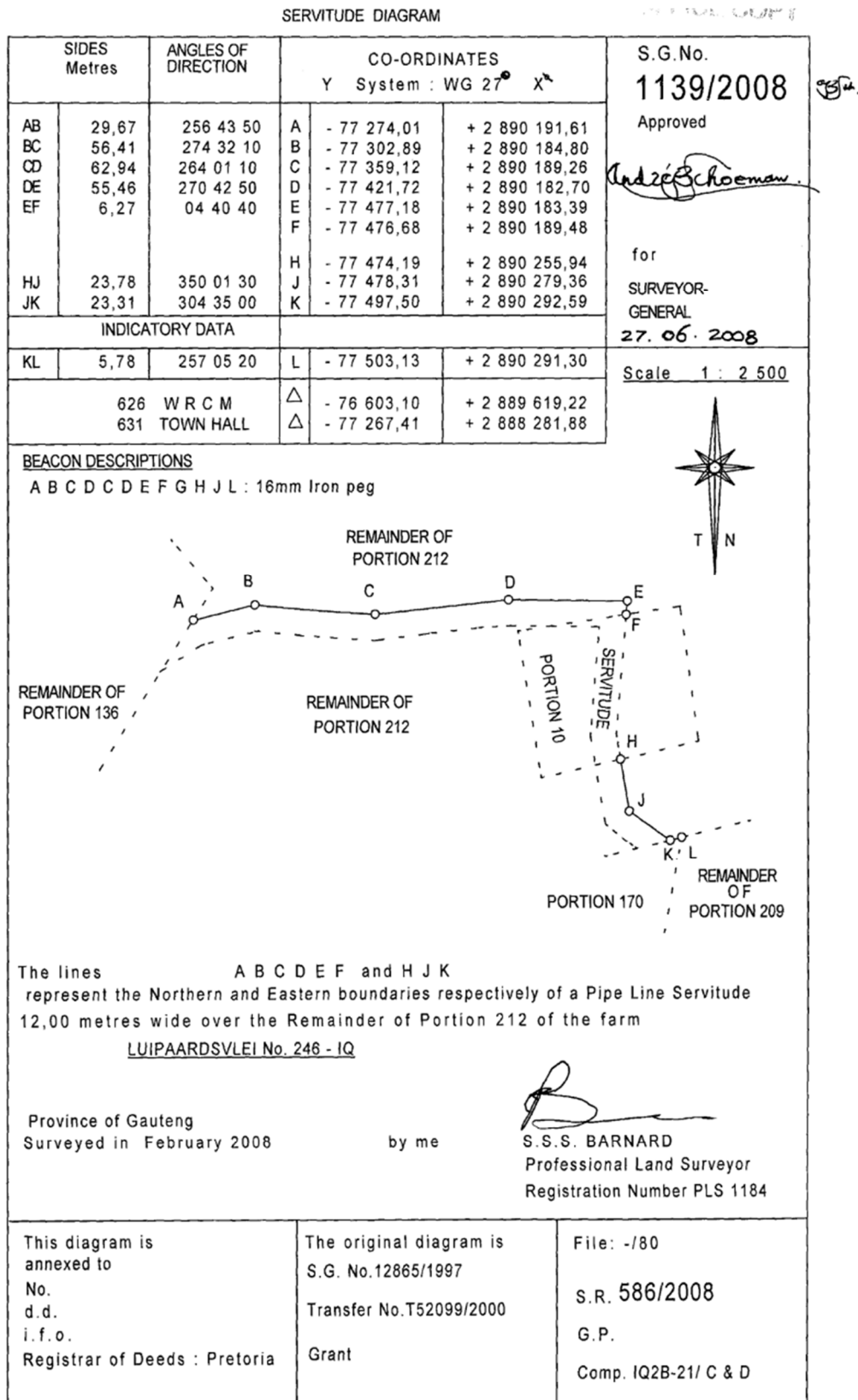


Figure 19. 2008 Surveyor General servitude diagram, indicating a Pipe Line Servitude 12,00 metres wide over the Remainder of Portion 212 of the farm Luipaardsvlei 246 IQ. One can see that this portion bordered on the RE of Portion 136 to the west, and Portions 10, 170 and the Remainder of Portion 209 to the east. (Windeed 2017)

8 Findings of the Survey

A large animal shelter is situated on the south-western corner of the proposed site. A sandblasting business is also situated on the southern side of the proposed site. An old hostel complex is situated on the north-western corner of the proposed site with several industrial sites further to the west.

A few existing businesses are situated along the northern boundary of the proposed site, but these will be excluded from the proposed development. Wentworth Park residential area is situated to the north of the proposed site and the Lewisham residential area is situated to the east of the study area. The disused and removed railway line also traverses other parts of the proposed site as do several power lines. A gas line also crosses the proposed site from east to west.

Several clusters of trees are situated across the site. These trees include clumps of Blue Gum and Black Wattle which were planted throughout the years. Most of the site is not fenced off and is open which leads to easy access. This resulted in several mounds of illegally dumped material across the site (Figure 21 – 26). The open nature also gives access to artisanal miners whose illegal mining activities are also evident across most of the proposed site.



Figure 20. General Site conditions – structures



Figure 21. General site conditions



Figure 22. General site conditions - dumping



Figure 23. General Site Conditions – earthworks



Figure 24. General site conditions



Figure 25. Removed railway

9 Description of Identified Heritage Resources (NHRA Section 34 - 36):

9.1 Built Environment (Section 34 of the NHRA)

The site was disturbed during the previous (legal) mining developments and activities. Several dumps and open excavations are scattered across the proposed site. These old mining activities were never rehabilitated. Numerous demolished structures assumed to be associated with the old mining developments and activities are also scattered across the proposed site. These structures area demolished to the extent that their purpose could not be identified.

The proposed site was exposed to and is still subject to several activities and developments which disturbed and destroyed most of the original state of the site during the last century and more. Except for the remains of the demolished mining infrastructure, very little signs of anything of heritage value or significance were identified across most of the proposed site due to these previous disturbances.

Three structures were identified in the study area namely two residential (Figure 27 -31) structures (Feature 1 & 2) and Feature 3 comprising demolished mining infrastructure (Figure 35). The age of these structures is unknown but it is highly likely that Feature 1 & 2 is older than 60 years.

Label	Type Site	Longitude	Latitude	Elevation
LPV 1	Residential dwelling	27° 48' 08.1720" E	26° 07' 24.1212" S	1778.157
LPV 2	Residential dwelling	27° 48' 06.8868" E	26° 07' 30.8927" S	1774.476
LPV 3	Demolished Mining infrastructure	27° 47' 28.4640" E	26° 07' 21.6085" S	1753.096



Figure 26. Feature 1



Figure 27. Farmhouse in study area (Feature 1)



Figure 28. Structures in study area – Feature 2



Figure 29. Feature 2

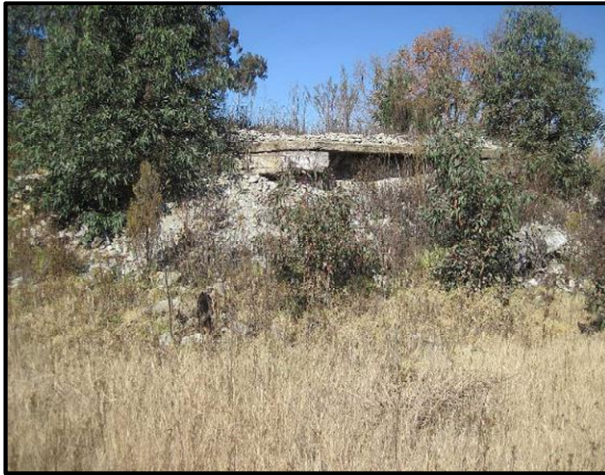


Figure 30. Feature 3 – general site conditions



Figure 31. Feature 3



Figure 32. Feature 3



Figure 33. Feature 3

The structures could be older than 60 years and would then be protected by the NHRA. The age of the structures should be confirmed and if greater than 60 years of age then a permit will be required from the PHRAG.

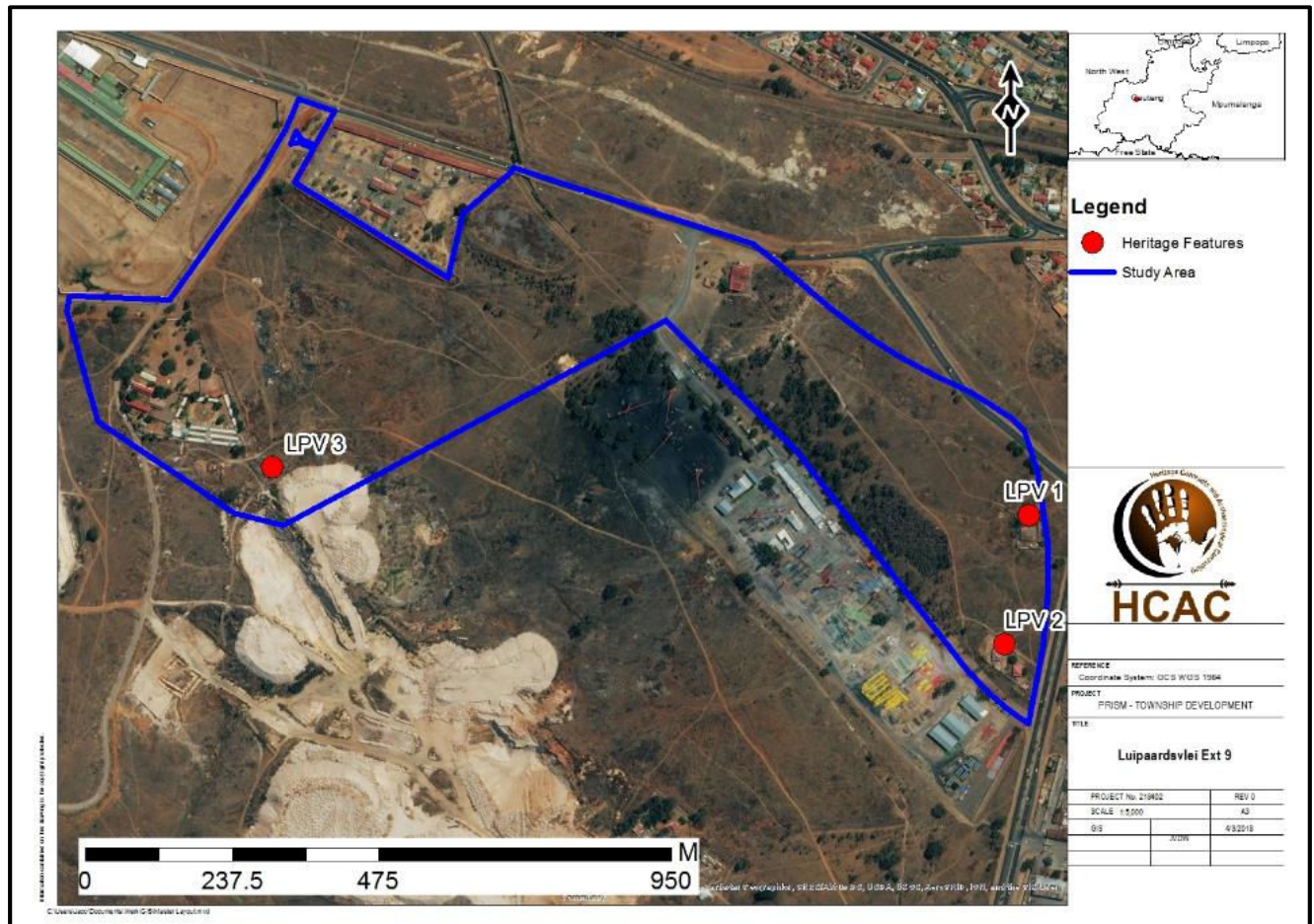
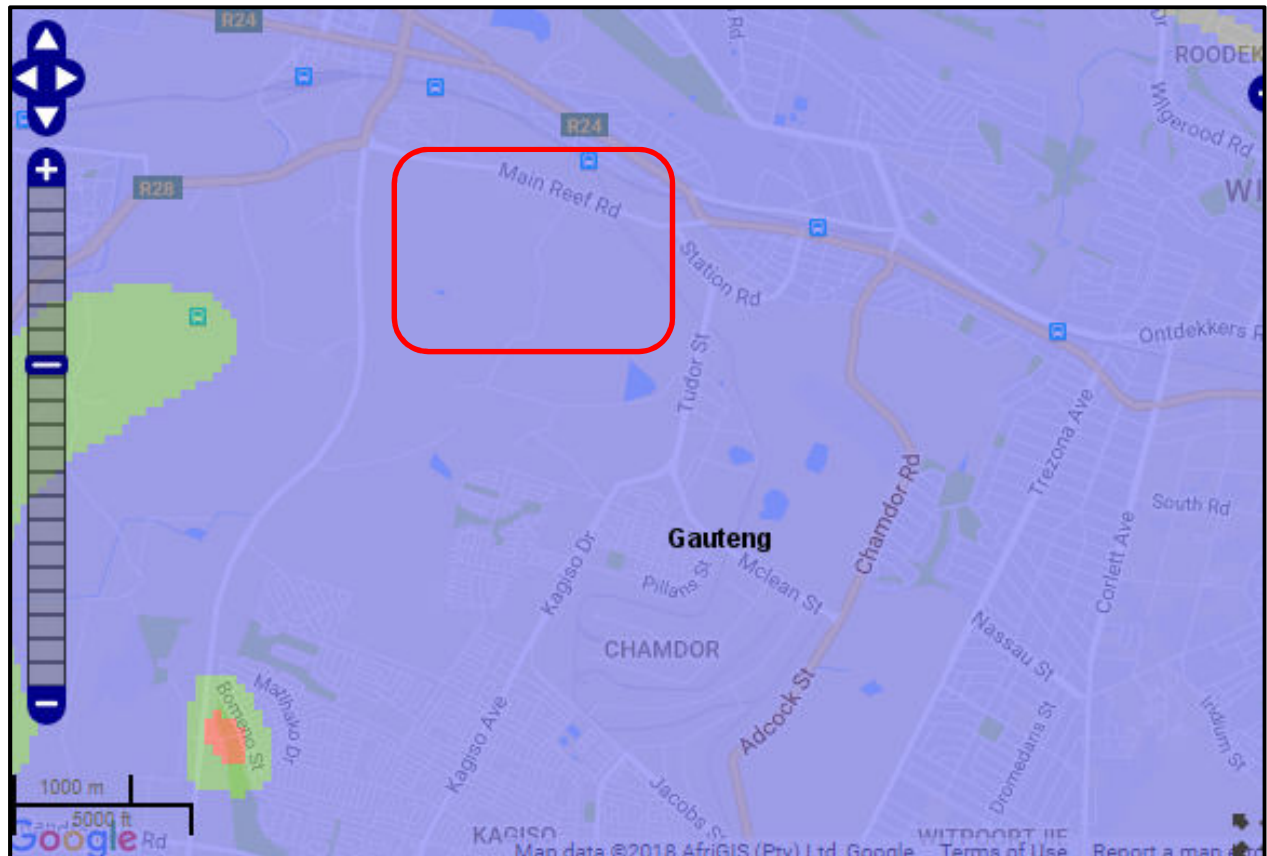


Figure 34. Identified structures on site.

9.2 Archaeological and paleontological resources (Section 35 of the NHRA)

No archaeological sites or material was recorded during the survey and based on the SAHRIS Paleontological Sensitivity Map (Figure 36) the area is of low paleontological significance. Therefore, no further mitigation prior to construction is recommended in terms of Section 35 for the proposed development to proceed.



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 palaeontological 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 35. SAHRA Paleontological Sensitivity map indicating the approximate study area in red (low paleontological sensitivity).

9.3 Burial Grounds and Graves (Section 36 of the NHRA)

In terms of Section 36 of the Act no burial sites were recorded. However, if any graves are located in future they should ideally be preserved *in-situ* or alternatively relocated according to existing legislation.

9.4 Cultural Landscapes, Intangible and Living Heritage.

Long term impact on the cultural landscape is considered to be negligible as the surrounding area consists of a densely-developed zone that was developed from 1913 onwards (Fig 7). Visual impacts to scenic routes and sense of place are also considered to be low due to the extensive developments in the area.

9.5 Battlefields and Concentration Camps

There are no battlefields or related concentration camp sites located in the study area.

9.6 Potential Impact

The chances of impacting unknown archaeological sites in the study area is considered to be negligible. Any direct impacts that did occur would be during the construction phase only and would be of very low significance. Cumulative impacts occur from the combination of effects of various impacts on heritage resources. The importance of identifying and assessing cumulative impacts is that the whole is greater than the sum of its parts. In the case of the development, it will, with the recommended mitigation measures and management actions, not impact any heritage resources directly. However, this and other projects in the area could have an indirect impact on the heritage landscape. The lack of any heritage resources in the immediate area minimises additional impact on the landscape.

9.6.1 Pre-Construction phase:

It is assumed that the pre-construction phase involves the removal of topsoil and vegetation as well as the establishment of infrastructure needed for the construction phase. These activities can have a negative and irreversible impact on heritage sites. Impacts include destruction or partial destruction of non-renewable heritage resources.

It is unclear whether the structures would be demolished or incorporated within the proposed development. However, the assessment assumes total demolition. It has very low heritage significance which means that the extent of the impact can be regarded as site-specific. The impact significance is low but if the structure is retained and incorporated in the development then it would be very low.

9.6.2 Construction Phase

During this phase, the impacts and effects are similar in nature but more extensive than the pre-construction phase. These activities can have a negative and irreversible impact on heritage sites. Impacts include destruction or partial destruction of non-renewable heritage resources.

9.6.3 Operation Phase:

No impact is envisaged for the recorded heritage resources during this phase.

Table 5. Impact Assessment of the project on heritage resources

Nature: During the construction phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological material or objects.		
	Without mitigation	With mitigation (Preservation/ excavation of site)
Extent	Local (3)	Local (3)
Duration	Permanent (5)	Permanent (5)
Magnitude	Low (2)	Low (2)
Probability	Probable (3)	Not probable (2)
Significance	30 (Medium)	20 (Low)
Status (positive or negative)	Negative	Negative
Reversibility	Not reversible	Not reversible
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes, a chance find procedure should be implemented.	Yes
Mitigation: It is recommended that the age of the standing structures (Features 1 & 2) is determined, if the structures are older than 60 years, it protected by the NHRA Section 34 and will have to be mitigated.		
Cumulative impacts: Since the surrounding area is densely developed and due to the lack of significant heritage resources in the study area cumulative impacts are considered to be low.		
Residual Impacts: If sites are destroyed this results in the depletion of archaeological record of the area. However, if sites are recorded and preserved or mitigated this adds to the record of the area.		

10 Recommendations and conclusion

HCAC was appointed to conduct a Heritage Impact Assessment of the proposed Luipaardsvlei Mixed Use development, located within Mogale City Local Municipality, Gauteng Province. The general area was exposed to several mining activities and developments since the discovery of gold in the 1980's and changed the face of this region. The study area is characterised by several businesses and an old hostel complex. A disused and removed railway line also traverses other parts of the proposed site as do several power lines. A gas line also crosses the proposed site from east to west. The study area is not fenced off which leads to easy access. This resulted in several mounds of illegally dumped material across the site. The study area is open and this allows artisanal miners access to illegal mining activities.

All of these activities would have impacted on surface indicators of heritage features and no archaeological sites or material was recorded during the survey and based on the SAHRIS Paleontological Sensitivity Map the area is of low paleontological significance. Therefore, no further mitigation prior to construction is recommended in terms of Section 35 for the proposed development to proceed.

In terms of the built environment (Section 34), two residential dwellings (Feature 1 & 2) and partially demolished mining related structures (Feature 3) occur in the study area. According to archival maps mining infrastructure was constructed from 1913 and structures in the study area could be older than 60 years and would then be protected by the NHRA. The age of standing structures in the study area should be confirmed and if older than 60 years a destruction permit will be required from the PHRAG.

In terms of Section 36 of the Act no burial sites were recorded. However, if any graves are located in future they should ideally be preserved *in-situ* or alternatively relocated according to existing legislation. No public monuments are located within or close to the study area. The study area is surrounded by industrial and residential developments and road infrastructure developments and the proposed residential development will not impact negatively on significant cultural landscapes or views. During the public participation process conducted for the project no heritage concerns were raised.

Due to the lack of significant heritage resources in the study area the impact of the proposed project on heritage resources is considered low and impacts can be mitigated to an acceptable level. It is therefore recommended that the proposed project can commence on the condition that the following recommendations are implemented as part of the EMP and based on approval from SAHRA:

- Implementation of a chance find procedure as detailed under Section 10.1;
- The age of standing structures should be confirmed and if greater than 60 years of age a destruction permit will be required from the PHRAG;
- A paleontological protocol for finds should be included in the EMP.

10.1 Chance Find Procedures

The possibility of the occurrence of subsurface finds cannot be excluded. Therefore, if during construction any possible finds such as stone tool scatters, artefacts or bone and fossil remains are made, the operations must be stopped and a qualified archaeologist must be contacted for an assessment of the find and therefor chance find procedures should be put in place as part of the EMP. A short summary of chance find procedures is discussed below.

This procedure applies to the developer's permanent employees, its subsidiaries, contractors and subcontractors, and service providers. The aim of this procedure is to establish monitoring and reporting procedures to ensure compliance with this policy and its associated procedures. Construction crews must be properly inducted to ensure they are fully aware of the procedures regarding chance finds as discussed below.

- If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.
- It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area.
- The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify the SAHRA.

10.2 Reasoned Opinion

From a heritage perspective, the proposed project is acceptable. If the above recommendations are adhered to and based on approval from SAHRA, HCAC is of the opinion that the development can continue as the development will not impact negatively on the heritage record of the area.

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12 Appendices:

Curriculum Vitae of Specialist

Jaco van der Walt
Archaeologist

jaco.heritage@gmail.com
+27 82 373 8491
+27 86 691 6461

Education:

Particulars of degrees/diplomas and/or other qualifications:

Name of University or Institution: University of Pretoria
Degree obtained : BA Heritage Tourism & Archaeology
Year of graduation : 2001

Name of University or Institution: University of the Witwatersrand
Degree obtained : BA Hons Archaeology
Year of graduation : 2002

Name of University or Institution : University of the Witwatersrand
Degree Obtained : MA (Archaeology)
Year of Graduation : 2012

Name of University or Institution : University of Johannesburg
Degree : PhD
Year : Currently Enrolled

EMPLOYMENT HISTORY:

2011 – Present: **Owner – HCAC (Heritage Contracts and Archaeological Consulting CC).**
 2007 – 2010 : **CRM Archaeologist**, Managed the Heritage Contracts Unit at the University of the Witwatersrand.
 2005 - 2007: **CRM Archaeologist**, Director of Matakoma Heritage Consultants
 2004: **Technical Assistant**, Department of Anatomy University of Pretoria
 2003: **Archaeologist**, Mapungubwe World Heritage Site
 2001 - 2002: **CRM Archaeologists**, For R & R Cultural Resource Consultants, Polokwane
 2000: **Museum Assistant**, Fort Klapperkop.

Countries of work experience include:

Republic of South Africa, Botswana, Zimbabwe, Mozambique, Tanzania, The Democratic Republic of the Congo, Lesotho and Zambia.

SELECTED PROJECTS INCLUDE:

Archaeological Impact Assessments (Phase 1)

Heritage Impact Assessment Proposed Discharge Of Treated Mine Water Via The Wonderfontein Spruit Receiving Water Body Specialist as part of team conducting an Archaeological Assessment for the Mmamabula mining project and power supply, Botswana

Archaeological Impact Assessment Mmamethlake Landfill

Archaeological Impact Assessment Libangeni Landfill

Linear Developments

Archaeological Impact Assessment Link Northern Waterline Project At The Suikerbosrand Nature Reserve

Archaeological Impact Assessment Medupi – Spitskop Power Line,

Archaeological Impact Assessment Nelspruit Road Development

Renewable Energy developments

Archaeological Impact Assessment Karoshoek Solar Project

Grave Relocation Projects

Relocation of graves and site monitoring at Chloorkop as well as permit application and liaison with local authorities and social processes with local stakeholders, Gauteng Province.

Relocation of the grave of Rifle Man Maritz as well as permit application and liaison with local authorities and social processes with local stakeholders, Ndumo, Kwa Zulu Natal.

Relocation of the Magolwane graves for the office of the premier, Kwa Zulu Natal

Relocation of the OSuthu Royal Graves office of the premier, Kwa Zulu Natal

Phase 2 Mitigation Projects

Field Director for the Archaeological Mitigation For Booyendal Platinum Mine, Steelpoort, Limpopo Province. Principle investigator Prof. T. Huffman

Monitoring of heritage sites affected by the ARUP Transnet Multipurpose Pipeline under directorship of Gavin Anderson.

Field Director for the Phase 2 mapping of a late Iron Age site located on the farm Kameelbult, Zeerust, North West Province. Under directorship of Prof T. Huffman.

Field Director for the Phase 2 surface sampling of Stone Age sites effected by the Medupi – Spitskop Power Line, Limpopo Province

Heritage management projects

Platreef Mitigation project – mitigation of heritage sites and compilation of conservation management plan.

MEMBERSHIP OF PROFESSIONAL ASSOCIATIONS:

- Association of Southern African Professional Archaeologists. Member number 159
- Accreditation:
 - Field Director Iron Age Archaeology
 - Field Supervisor Colonial Period Archaeology, Stone Age Archaeology and Grave Relocation
- Accredited CRM Archaeologist with SAHRA
- Accredited CRM Archaeologist with AMAFA
- Co-opted council member for the CRM Section of the Association of Southern African Association Professional Archaeologists (2011 – 2012)

PUBLICATIONS AND PRESENTATIONS

- A Culture Historical Interpretation, Aimed at Site Visitors, of the Exposed Eastern Profile of K8 on the Southern terrace at Mapungubwe.
 - J van der Walt, A Meyer, WC Nienaber
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REFERENCES:

1. Prof Marlize Lombard Senior Lecturer, University of Johannesburg, South Africa
E-mail: mlombard@uj.ac.za
2. Prof TN Huffman Department of Archaeology Tel: (011) 717 6040
University of the Witwatersrand
3. Alex Schoeman University of the Witwatersrand
E-mail: Alex.Schoeman@wits.ac.za