

HERITAGE IMPACT ASSESSMENT

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

**FOR THE PROPOSED CONSTRUCTION OF A SINGLE PRIVATE
RESIDENTIAL UNIT– BRONBERG, CITY OF TSHWANE, GAUTENG
PROVINCE.**

Type of development:

Private Residential development

Client:

Enviro-Insight CC

Corné Niemandt

corne@enviro-insight.co.za

Developer:

Eduan Leon Marais



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

Project Reference:

21973

Report date:

November 2019

APPROVAL PAGE

Project Name	Bronberg single private residential unit
Report Title	Heritage Impact Assessment for the proposed construction of a single private residential unit– Bronberg, City Of Tshwane, Gauteng Province.
Authority Reference Number	GAUT: 002/19-20/E2465
Report Status	Final Report
Applicant Name	Eduan Leon Marais

Designation	Name	Qualifications and Certifications	Date
Project Manager & Archaeologist	Jaco van der Walt	MA Archaeology ASAPA #159	November 2019
Archaeologist	Ruan van der Merwe	BA Hons Archaeology	November 2019

DOCUMENT PROGRESS**Distribution List**

Date	Report Reference Number	Document Distribution	Number of Copies
18 November 2019	21973	Enviro-Insight	Electronic Copy

Amendments on Document

Date	Report Reference Number	Description of Amendment

INDEMNITY AND CONDITIONS RELATING TO THIS REPORT

The findings, results, observations, conclusions and recommendations given in this report are based on the author's best scientific and professional knowledge as well as available information. The report is based on survey and assessment techniques which are limited by time and budgetary constraints relevant to the type and level of investigation undertaken and HCAC reserves the right to modify aspects of the report including the recommendations if and when new information becomes available from ongoing research or further work in this field, or pertaining to this investigation.

Although HCAC exercises due care and diligence in rendering services and preparing documents, HCAC accepts no liability, and the client, by receiving this document, indemnifies HCAC against all actions, claims, demands, losses, liabilities, costs, damages and expenses arising from or in connection with services rendered, directly or indirectly by HCAC and by the use of the information contained in this document.

This report must not be altered or added to without the prior written consent of the author. This also refers to electronic copies of this report which are supplied for the purposes of inclusion as part of other reports, including main reports. Similarly, any recommendations, statements or conclusions drawn from or based on this report must make reference to this report. If these form part of a main report relating to this investigation or report, this report must be included in its entirety as an appendix or separate section to the main report.

COPYRIGHT

Copyright on all documents, drawings and records, whether manually or electronically produced, which form part of the submission and any subsequent report or project document, shall vest in HCAC.

The client, on acceptance of any submission by HCAC and on condition that the client pays to HCAC the full price for the work as agreed, shall be entitled to use for its own benefit:

- The results of the project;
- The technology described in any report; and
- Recommendations delivered to the client.

Should the applicant wish to utilise any part of, or the entire report, for a project other than the subject project, permission must be obtained from HCAC to do so. This will ensure validation of the suitability and relevance of this report on an alternative project.

REPORT OUTLINE

Appendix 6 of the GNR 326 EIA Regulations published on 7 April 2017 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 GN 326 EIA Regulation 2017	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 alternative;	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

Heritage Contracts and Archaeological Consulting (HCAC) was appointed to conduct a Heritage Impact Assessment for the proposed construction of a single private residential unit located on Portion 22 of Erf 2023 in the Bronberg Ridge Estate, Pretoria. The study area was assessed at a desktop level and by a field survey. The field survey was conducted as a non-intrusive pedestrian survey to cover the extent of the property since layout plans was not available at the time of the survey.

In terms of Section 35 of the NHRA no archaeological sites or features of significance were identified and no further archaeological mitigation is recommended prior to construction. With regards to the palaeontological component of Section 35 the area is of high and low paleontological significance and it is recommended that a desktop study is conducted by a professional palaeontologist.


With regards to the built environment of the study area (Section 34 of the NHRA) no standing structures older than 60 years occur and similarly no burial sites were recorded (Section 36 of the NHRA). 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 and the proposed 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.

The impact of the proposed project on heritage resources is therefore considered low and it is recommended that the proposed project can commence provided that the recommendations below are adhered to and based on approval from SAHRA.

- Implementation of a chance find procedure as part of the EMPr;
- Desktop assessment of the study area by a professional palaeontologist.

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	18/11/2019

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.

TABLE OF CONTENTS

REPORT OUTLINE	4
EXECUTIVE SUMMARY	5
DECLARATION OF INDEPENDENCE	6
A) EXPERTISE OF THE SPECIALIST	6
ABBREVIATIONS	9
GLOSSARY	9
1 INTRODUCTION AND TERMS OF REFERENCE:	10
1.1 TERMS OF REFERENCE	10
2 LEGISLATIVE REQUIREMENTS	15
3 METHODOLOGY	17
3.1 LITERATURE REVIEW.....	17
3.2 GENEALOGICAL SOCIETY AND GOOGLE EARTH MONUMENTS	17
3.3 PUBLIC CONSULTATION AND STAKEHOLDER ENGAGEMENT:	17
3.4 SITE INVESTIGATION	17
3.5 SITE SIGNIFICANCE AND FIELD RATING	19
3.6 IMPACT ASSESSMENT METHODOLOGY	21
3.7 LIMITATIONS AND CONSTRAINTS OF THE STUDY	22
4 DESCRIPTION OF SOCIO ECONOMIC ENVIRONMENTAL	22
5 DESCRIPTION OF THE PHYSICAL ENVIRONMENT:.....	23
6 RESULTS OF PUBLIC CONSULTATION AND STAKEHOLDER ENGAGEMENT:	24
7 LITERATURE / BACKGROUND STUDY:	25
7.1 LITERATURE REVIEW.....	25
7.2 GENERAL HISTORY OF THE AREA	26
8 FINDINGS OF THE SURVEY	32
8.1 BUILT ENVIRONMENT (SECTION 34 OF THE NHRA)	32
8.2 ARCHAEOLOGICAL AND PALEONTOLOGICAL RESOURCES (SECTION 35 OF THE NHRA)	33
8.3 BURIAL GROUNDS AND GRAVES (SECTION 36 OF THE NHRA)	34
8.4 CULTURAL LANDSCAPES, INTANGIBLE AND LIVING HERITAGE.	34
8.5 BATTLEFIELDS AND CONCENTRATION CAMPS	34
9 POTENTIAL IMPACT.....	35
9.2 CUMULATIVE IMPACTS.....	37
10 RECOMMENDATIONS AND CONCLUSION	38
10.1 CHANCE FIND PROCEDURES.....	39
10.2 REASONED OPINION.....	39
11 REFERENCES.....	40
12 APPENDICES:.....	41
CURRICULUM VITAE OF SPECIALIST	41

LIST OF FIGURES

FIGURE 1. PROVINCIAL LOCALITY MAP (1: 250 000 TOPOGRAPHICAL MAP).....	12
FIGURE 2. REGIONAL LOCALITY MAP (1:50 000 TOPOGRAPHICAL MAP).....	13
FIGURE 3. SATELLITE IMAGE INDICATING THE STUDY AREA (GOOGLE EARTH 2018).	14
FIGURE 4: TRACK LOGS OF THE SURVEY IN GREEN.....	18
FIGURE 5. NORTHERN BORDER OF SURVEY AREA.....	24
FIGURE 6. PORTION OF EASTERN BORDER OF STUDY AREA.	24
FIGURE 7. WESTERN BORDER OF SURVEY AREA.	24
FIGURE 8. SOUTHERN BORDER OF STUDY AREA.....	24
FIGURE 9. 1944 TOPOGRAPHICAL MAP OF THE SITE UNDER INVESTIGATION. THE APPROXIMATE STUDY AREA IS INDICATED WITH A BLUE BORDER. NO BUILDINGS OR OTHER DEVELOPMENTS ARE VISIBLE IN PROXIMITY TO THE STUDY AREA (TOPOGRAPHICAL MAP 1944). 28	
FIGURE 10. 1964 TOPOGRAPHICAL MAP OF THE SITE UNDER INVESTIGATION. THE APPROXIMATE STUDY AREA IS INDICATED WITH A YELLOW BORDER. THE APPROXIMATE STUDY AREA IS INDICATED WITH A BLUE BORDER. NO BUILDINGS OR OTHER DEVELOPMENTS ARE VISIBLE IN PROXIMITY TO THE STUDY AREA (TOPOGRAPHICAL MAP 1964).	29
FIGURE 11. 1975 TOPOGRAPHICAL MAP OF THE SITE UNDER INVESTIGATION. THE APPROXIMATE STUDY AREA IS INDICATED WITH A BLUE BORDER. NO BUILDINGS OR OTHER DEVELOPMENTS ARE VISIBLE IN PROXIMITY TO THE STUDY AREA (TOPOGRAPHICAL MAP 1975). 30	
FIGURE 12. 1991 TOPOGRAPHICAL MAP OF THE SITE UNDER INVESTIGATION. THE APPROXIMATE STUDY AREA IS INDICATED WITH A BLUE BORDER. NO BUILDINGS OR OTHER DEVELOPMENTS ARE VISIBLE IN THE STUDY AREA BUT RESIDENTIAL DEVELOPMENTS TO THE SOUTH IS SEEN (TOPOGRAPHICAL MAP 1991).	31
FIGURE 13.. 2019 GOOGLE EARTH IMAGE SHOWING THE STUDY AREA IN RELATION TO DIE WILGERS, EQUESTRIA AND WAPADRAND (GOOGLE EARTH 2018).	31
FIGURE 14. STUDY AREA INDICATED WITH A YELLOW POLYGON ON THE PALEONTOLOGICAL SENSITIVITY MAP.....	33

LIST OF TABLES

TABLE 1. SPECIALIST REPORT REQUIREMENTS.....	4
TABLE 2: PROJECT DESCRIPTION.....	11
TABLE 3: INFRASTRUCTURE AND PROJECT ACTIVITIES	11
TABLE 4: SITE INVESTIGATION DETAILS	17
TABLE 5. IMPACT TABLE – ARCHAEOLOGICAL HERITAGE RESOURCES.	36

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:

HCAC has been contracted by Enviro-Insight to conduct a heritage impact assessment of the proposed development footprint. The report forms part of the Basic Assessment (BA) Report and Environmental Management Programme Report (EMPR) for the proposed residential development on Portion 22 of Erf 2023, Pretoria, Gauteng Province (Figure 1 -3).

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 utilised 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 no heritage sites were recorded. 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 Regs section 40 (1) and (2), to be submitted to SAHRA. As such the EIA report and its appendices must be submitted to the case as well as the EMPr, 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

Purpose of the development	Development of a single house
Magisterial District	Tshwane Metropolitan Municipality
1: 50 000 map sheet number	2528CD.
Central co-ordinate of the development	25°46'21.68"S 28°18'55.18"E

Table 3: Infrastructure and project activities

Type of development	Residential development
Project size	Approximately 0.27ha
Project Components	Construction of a single private residential unit

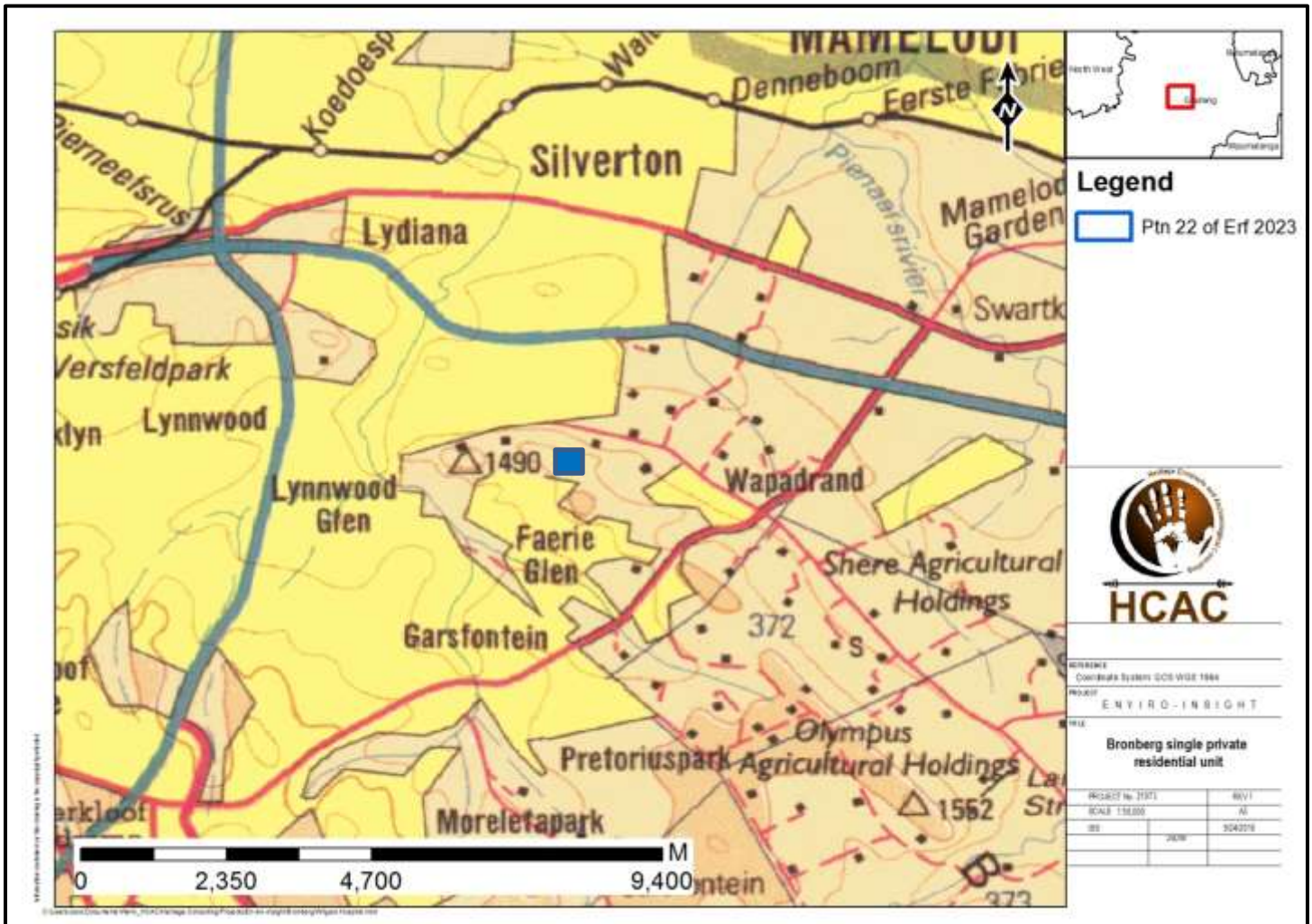


Figure 1. Provincial locality map (1: 250 000 topographical map).

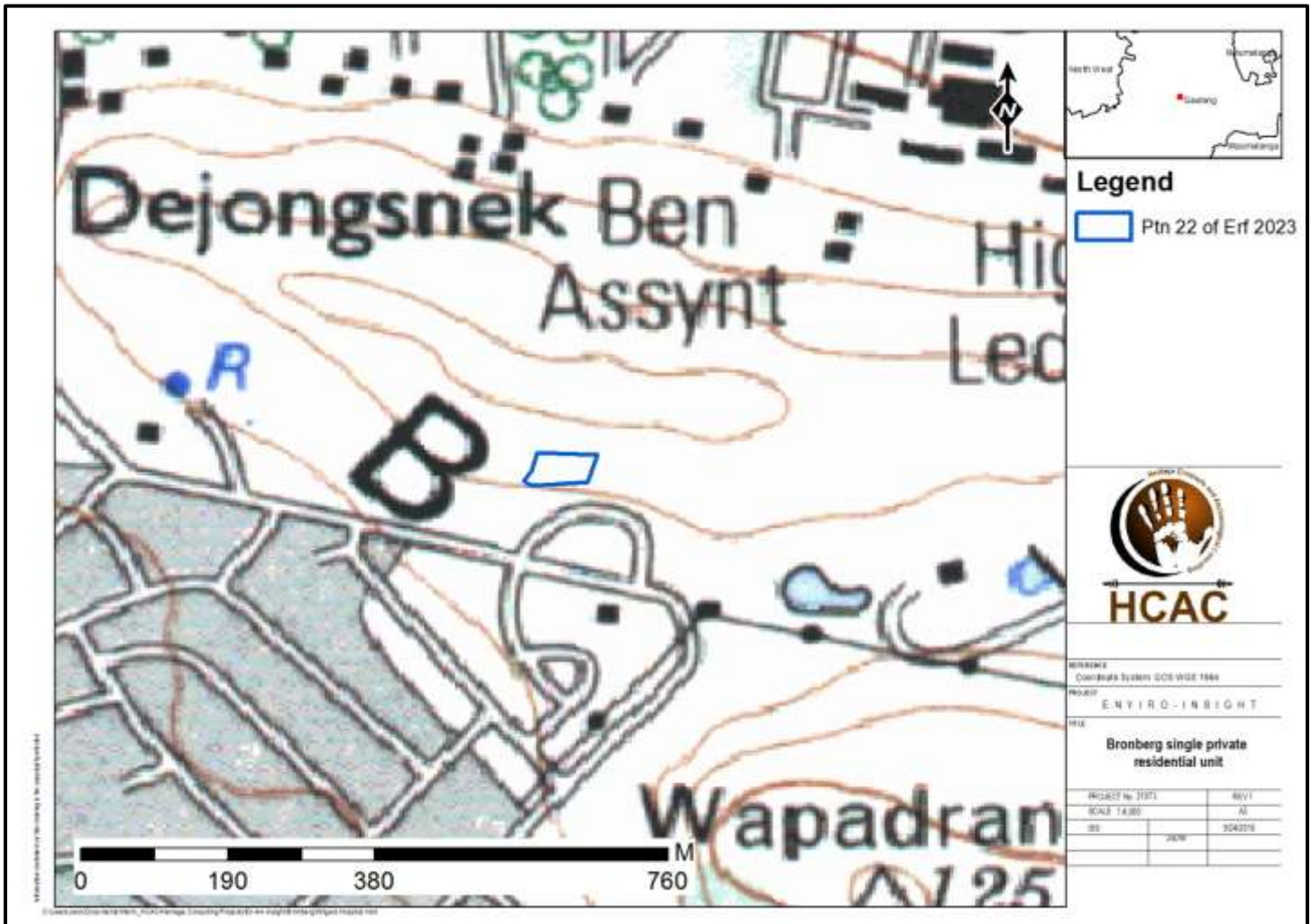


Figure 2. Regional locality map (1:50 000 topographical map).



Figure 3. Satellite image indicating the study area (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)
- The KwaZulu-Natal Heritage Act, No. 4 of 2008

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 EMP, to the PHRA if established in the province or to SAHRA. SAHRA will ultimately be responsible for the professional evaluation of Phase 1 AIA reports upon which review comments will be issued. 'Best practice' requires Phase 1 AIA reports and additional development information, as per the impact assessment report and/or EMP, 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 Environmental assessment 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 Report
- 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.

During the survey, no heritage sites 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.

Table 4: Site Investigation Details

	Site Investigation
Date	5 November 2019
Season	Spring/Summer – vegetation is high and hampers archaeological visibility. The study area was however sufficiently covered (Figure 4) to adequately record the presence of heritage resources.

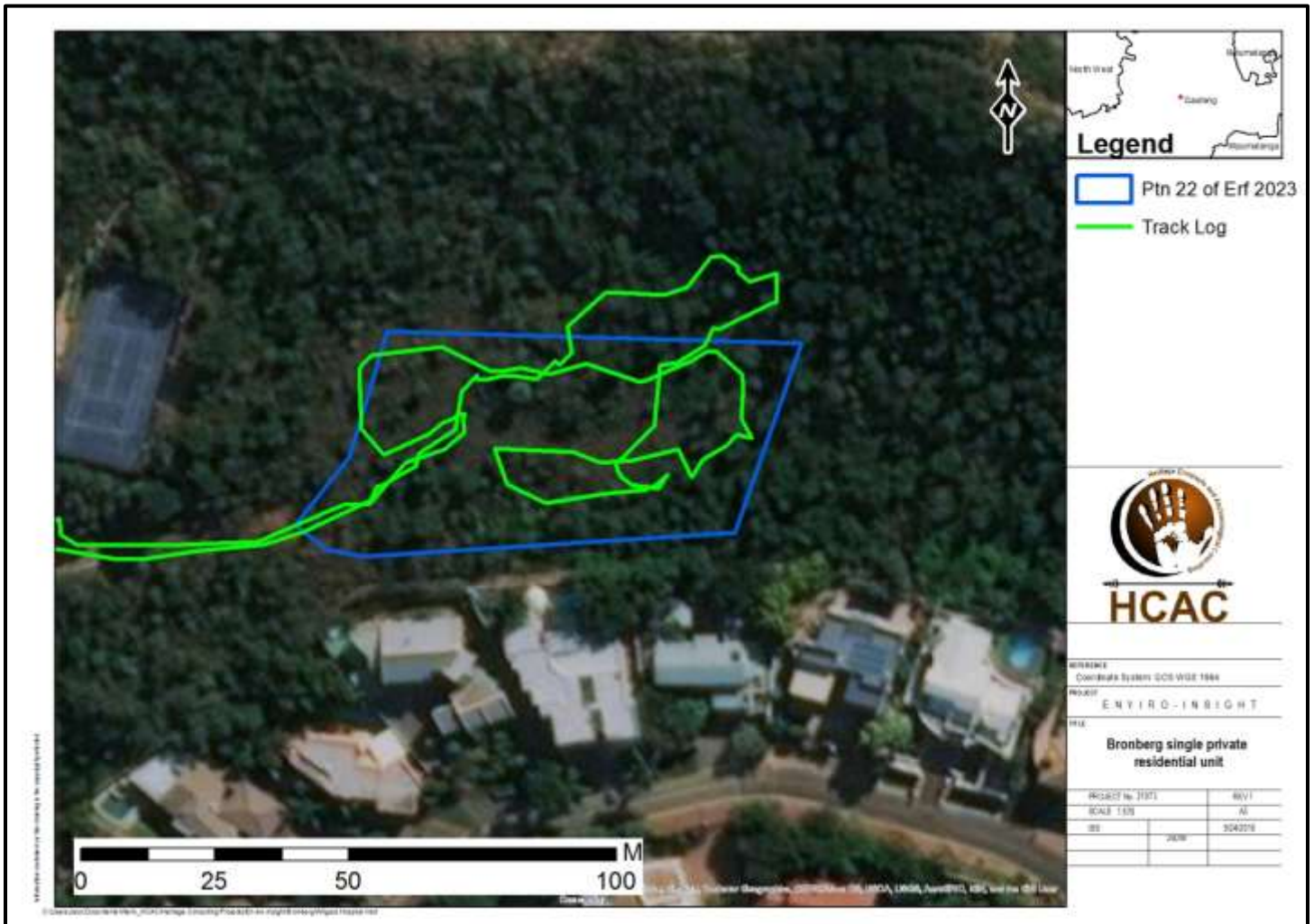


Figure 4: Track logs of the survey in green.

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. Similarly the possible occurrence of unrecorded graves cannot be excluded. 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 ENVIRONMENTAL

The following information was obtained from StatsSA: According to the 2011 Census data, the City of Tshwane is home to approximately 2,9 million people. Tshwane's population is predominantly black Africans representing 2,2 million people, followed by a White population of approximately 600000 people, 59 166 Coloured individuals and 51 547 Asian individuals. About 37% of the population is classified as youth, making Tshwane one of the youngest cities in South Africa. The overall number of men and women in Tshwane are equivalent; however, men have more job opportunities than women. Tshwane is home to different languages such as Afrikaans, English, Northern Sotho, Tsonga and Tswana. From an education perspective, as per the 2011 Census estimates, 25 per cent of Tshwane's population are matriculants; whilst 3,7 per cent of the population has no education.

The City boasts a vibrant, diverse and growing economy which contributed 27 per cent to Gauteng's GDP and 9 per cent to the national GDP in 2011. Its economy is highly service-based with community services and government, financial services and manufacturing as the most significant sectors. The City's GDP (GVA) was recorded at R272 billion (in current prices) in 2011, growing by 21 per cent since the 2009 slump. Furthermore, the City of Tshwane has been the fastest growing municipality in South Africa, on average, between 1997 and 2011. Gross Domestic Product per capita was R93 158 (in current prices) in 2011 increasing by 13 per cent from its 2009 figure. The City's economy has, of course, over the past decade, enjoyed above average growth rates as compared to national and Gauteng province average. The City has a well-established manufacturing sector with the automotive industry being a key player in this sector. The City boasts the highest concentration of automotive Original Equipment Manufacturers (OEMs) in the country. Furthermore, the City's economy is characterised by a favourable and rapidly growing trade performance with exports in 2011 comprising 61,7 per cent as a percentage of GDP. The City has contributed 22,2 per cent to the nation's total exports and 15,9 per cent to its total trade in 2011.

5 DESCRIPTION OF THE PHYSICAL ENVIRONMENT:

The property is located on the side of the ridge line running on the Northern border of the Bronberg ridge estates. The area is fairly wooded with thickets of black wattle and Lantana bushes dominating most of the vegetation on the property. Efforts have been made to clear the study area of the overgrown black wattle and lantana, however the dumping of these trees on the property hampered ground visibility. The property is also situated on a ridge that is extremely rocky.

The study area is bordered by the ridgeline towards the north (Figure 5), thickets of vegetation towards the east (Figure 6) and west (Figure 7) and by a row of houses towards the south (Figure 8). These houses towards the south of the study area are situated on Goya Cres rd.

According to Mucina & Rutherford the geology of the site falls within Tholeitic basalt of the Klipriviersberg Group, dark shale, micaceous sandstone and siltstone and thin coal seams of the Madzaringwe Formation. Weathering of these rocks gives rise to shallow, rocky, clayey soils of mainly Mispah and Glensrosa. The study area is situated within the Bronberg Ridge, which is considered a class 2 ridge.



Figure 5. Northern border of survey area.



Figure 6. Portion of Eastern border of study area.



Figure 7. Western border of survey area.



Figure 8. Southern border of study area.

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 BA 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**

The following CRM reports were conducted in the vicinity of the study area and consulted for this study:

Author	Year	Project name	Findings
Van Schalkwyk, J & De Jong, R.	1998	A Survey of Cultural Resources in The Nellmapius Extension 4 Urban Development, East of Pretoria, Gauteng Province	No sites were identified.
Van Schalkwyk, J	2003	Heritage Resources in The Western Section of The Kungwini Local Municipality, Gauteng Province	Stone age occurrences as well as Iron Age sites.
Kusel, U.	2004	Faerie Glen and Wapadrand Country Estate Portions 349-351	Stone Walled sites
Roodt, F.	2005	Phase 1 Heritage Impact assessment on Portion 182 and 209 of the farm Zwavelpoort 373 JR.	Historical structures and a grave
Coetzee, F.	2008	Cultural Heritage Survey of the Proposed Residential Development on Portions 281, 282 and 283 of the Farm Zwavelpoort 373JR, Tshwane Municipality	Structures older than 60 years.

Google Earth and 1:50 000 maps of the area were utilised to identify possible places where archaeological and historical sites might be located. LIA sites can be expected along foothills and dolerite dykes.

7.1.1 Genealogical Society and Google Earth Monuments

No known grave sites are indicated close to the study area.

7.2 General History of the area

7.2.1 Archaeology of the area

J. S. Bergh's historical atlas of the four northern provinces of South Africa is a very useful source for the writing of local and regional histories. In the greater Pretoria area an Early Stone Age Terrain, known as Wonderboompoort has been identified. This area was also important to Iron Age communities, as it was located within an area where many Late Iron Age terrains were found. (Bergh 1999: 4, 7). Another well-known Iron Age site is the early Iron Age Site of Derdepoort where a small collection of ceramics was uncovered dating back to the 4th to 7th century AD (Nienaber et al 1997). Late Iron Age sites are also associated with Southern Ndebele sites and occur in the surrounding areas. These sites are found in the area between Wallmannsthal and Roodeplaat Dam and also along the Pienaars River to the south of the N4 Highway (Birkholtz 2009).

According to Birkholtz (2009) the Manala Ndebele moved from Ezotshaneni to a place known as Embilaneni (place of Dassies) in 1717. The new settlement spread over the Bronberg mountains east of Pretoria and included an area that can be defined by a number of present-day farms. The Embilaneni settlement was occupied over a period of 30 years between 1717 and 1747.

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. 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. At the beginning of the nineteenth century, the predominant black tribe in the area north of Pretoria was the Manala-Ndebele. The Kgatla were also present to the north of where Pretoria is located today. It seems that, in 1832, Shaka's Zulu tribe passed by the south of Pretoria from the southeast in a westerly direction. This was in order to attack Mzilikazi's Ndebele. This group also went on raids in various other areas in order to expand their area of influence. (Bergh 1999: 11, 14, 109-119). 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 as early as the 1720's.

The Scottish travellers Robert Scoon and William McLuckie passed through, or close by the area where the study area was located in 1829. In the same year, Robert Moffat and James Archbell also travelled through this area. In the mid 1830's, several travellers made their way from the Pretoria area inland. These included the travellers Robert Scoon, Dr Andrew Smith and Captain William Cornwallis Harris. (Bergh 1999: 12-13)

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)

Pretoria was founded in 1855 and became the capital of South Africa, then known as the Zuid-Afrikaanse Republiek (ZAR), in 1860. By 1900, Pretoria was a thriving Transvaal town, with shaded streets, well-kept gardens and a lively economy. In mid-1899, the Pretoria district had a white population of 21 000 men and 19 000 women, while the black, coloured and Indian population totalled 38 618. (Theron 1984: 1-3)

7.2.1.1 Battles close to the study area

The Anglo-Boer War was the greatest conflict that had taken place in South Africa up to date, and also affected the Pretoria district. The white concentration camp closest to the study area was situated a small distance to the northeast of Pretoria. A white and a black concentration camp are located to the southwest of Pretoria, in the Irene area.

The Boer side generally lost ground against the British in this area as the war continued, and in June 1900 the Boer military leaders decided that Pretoria would have to be surrendered to the British forces. This decision was inevitable if the war was to be continued. The town was very susceptible to a siege, and its defence would have gravely endangered the lives of its inhabitants. More importantly, the defence of the town would involve such a great number of Boers that the capture of these men would have surely meant the end of the war. Pretoria was therefore occupied by British forces on Tuesday 5 June 1900. (Bergh 1999: 54, 250; Theron 1984: 273-279).

The battle of Diamond hill took place to the east of the study area a couple of days later. The battle is also referred to as the battle of Donkerhoek. Lord Roberts and his army occupied Pretoria and expected the Boers to surrender, the Boers however moved their capital to Machadodorp and went to great lengths to protect the railway line to prevent the British from moving east toward Machadodorp. General Louis Botha strategically positioned 3500 men in the hills in areas where he expected the British would try and pass. The British advanced toward Botha's forces with 5000 mounted men and 8000 infantry including about 70 guns. The British stated their aims to be to clear the Boers from the Pretoria area. The British attacked both ends of the Boer line on 11 June 1900. Their infantry and artillery advanced toward the centre of the position. The next day the British launched a strong attack on the Boers and improved their position which forced the Boers to flee. The Boers lost 30 men (11 were killed) and the British suffered 180 casualties. The Boers left with a sense of victory and the determination to continue to fight. The war lasted 2 more years and guerrilla warfare was characteristic of the war. Another battle took place at Silkaatsnek, to the northwest of Pretoria, some distance from the project area. Here, General De la Rey's Boer troops defeated the British army on 11 July 1900.

7.2.2 Cultural Landscape of the area

This site is situated just to the south of the Bronberg Ridge, Pretoria, Gauteng Province.

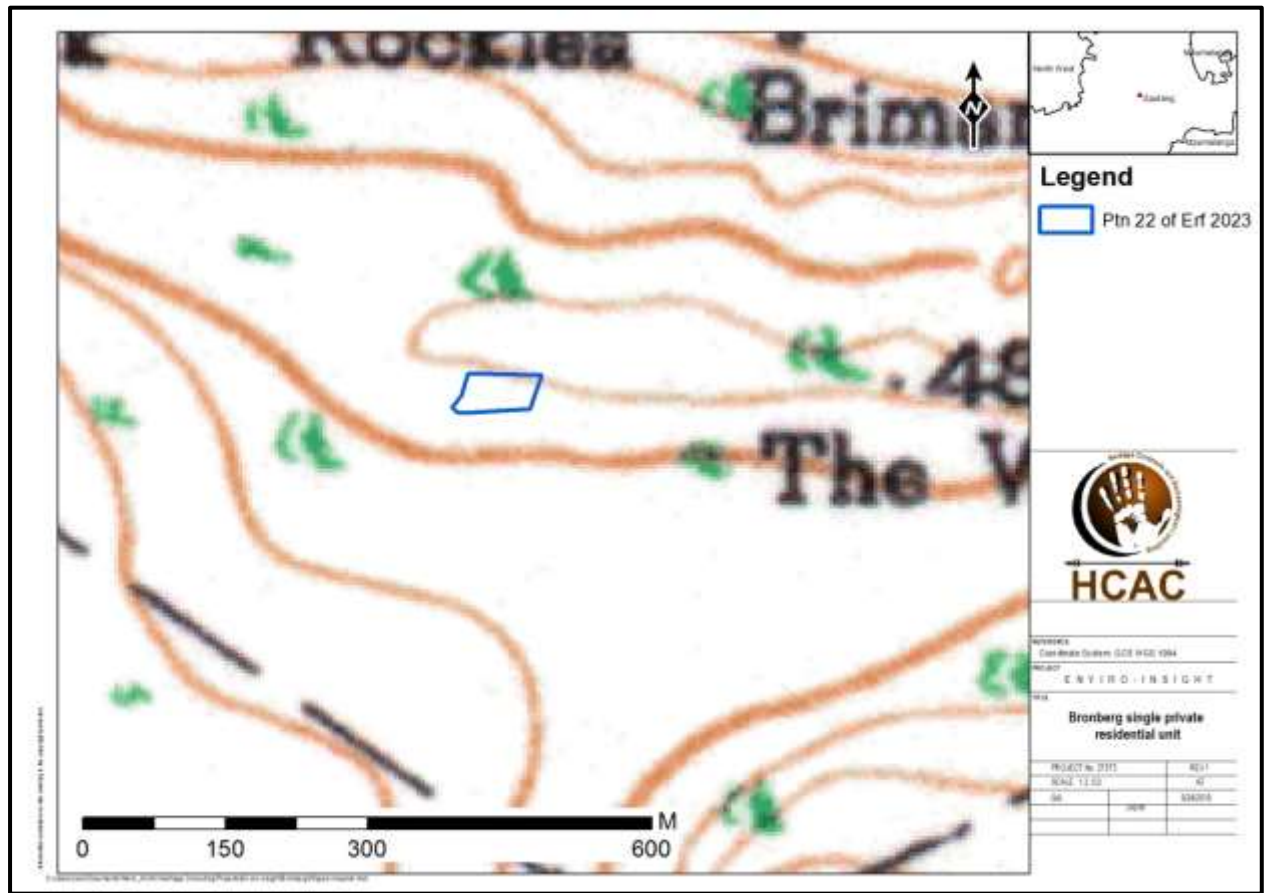


Figure 9. 1944 Topographical map of the site under investigation. The approximate study area is indicated with a blue border. No buildings or other developments are visible in proximity to the study area (Topographical Map 1944).

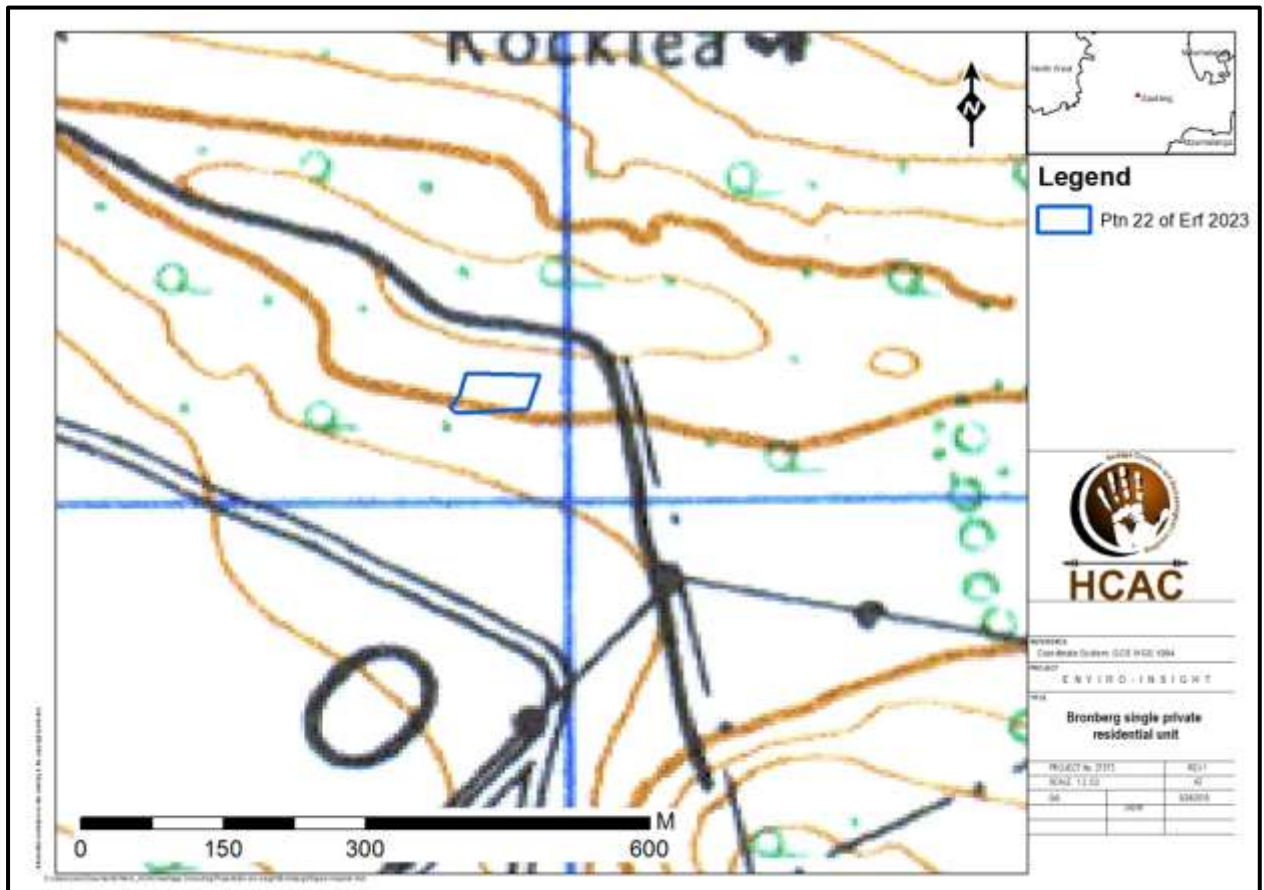


Figure 10. 1964 Topographical map of the site under investigation. The approximate study area is indicated with a yellow border. The approximate study area is indicated with a blue border. No buildings or other developments are visible in proximity to the study area (Topographical Map 1964).

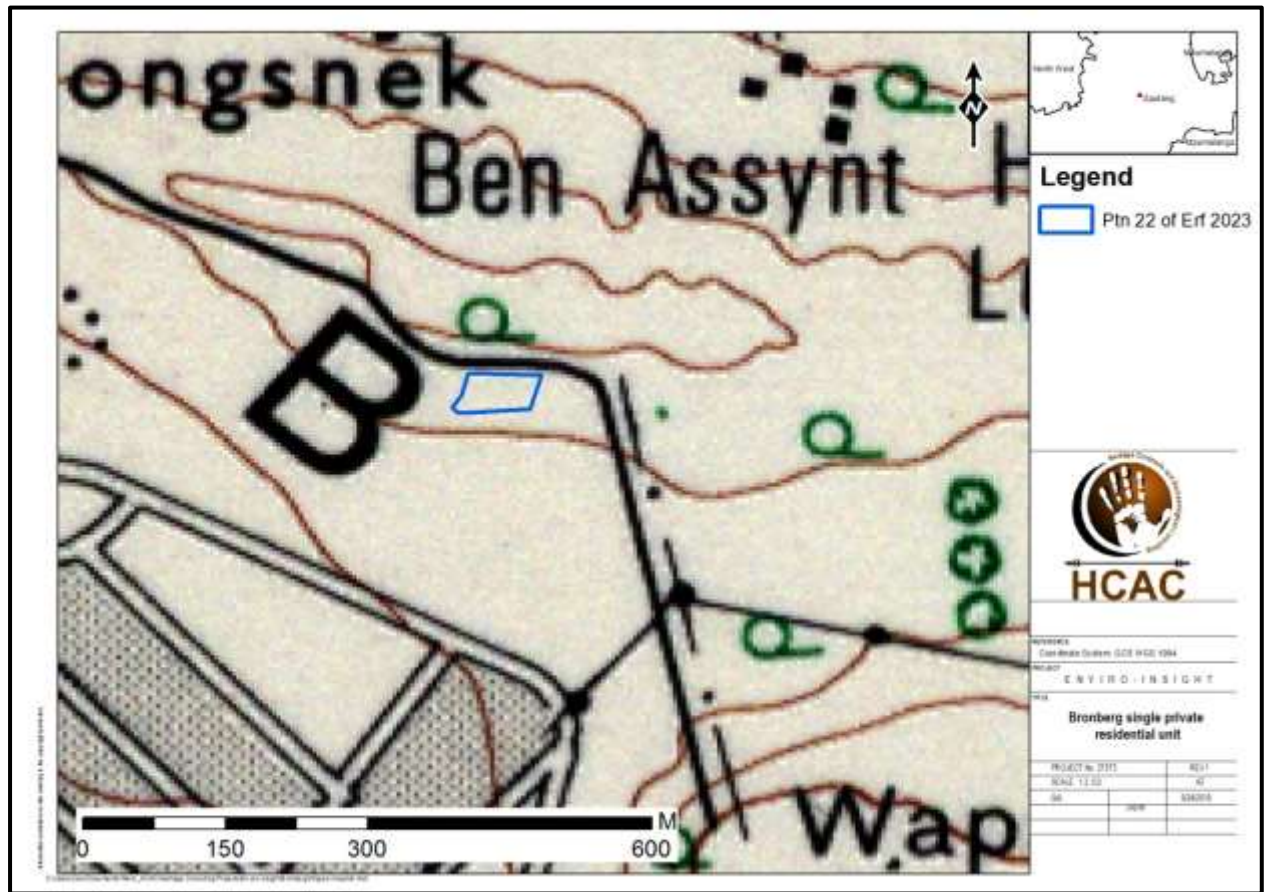


Figure 11. 1975 Topographical map of the site under investigation. The approximate study area is indicated with a blue border. No buildings or other developments are visible in proximity to the study area (Topographical Map 1975).

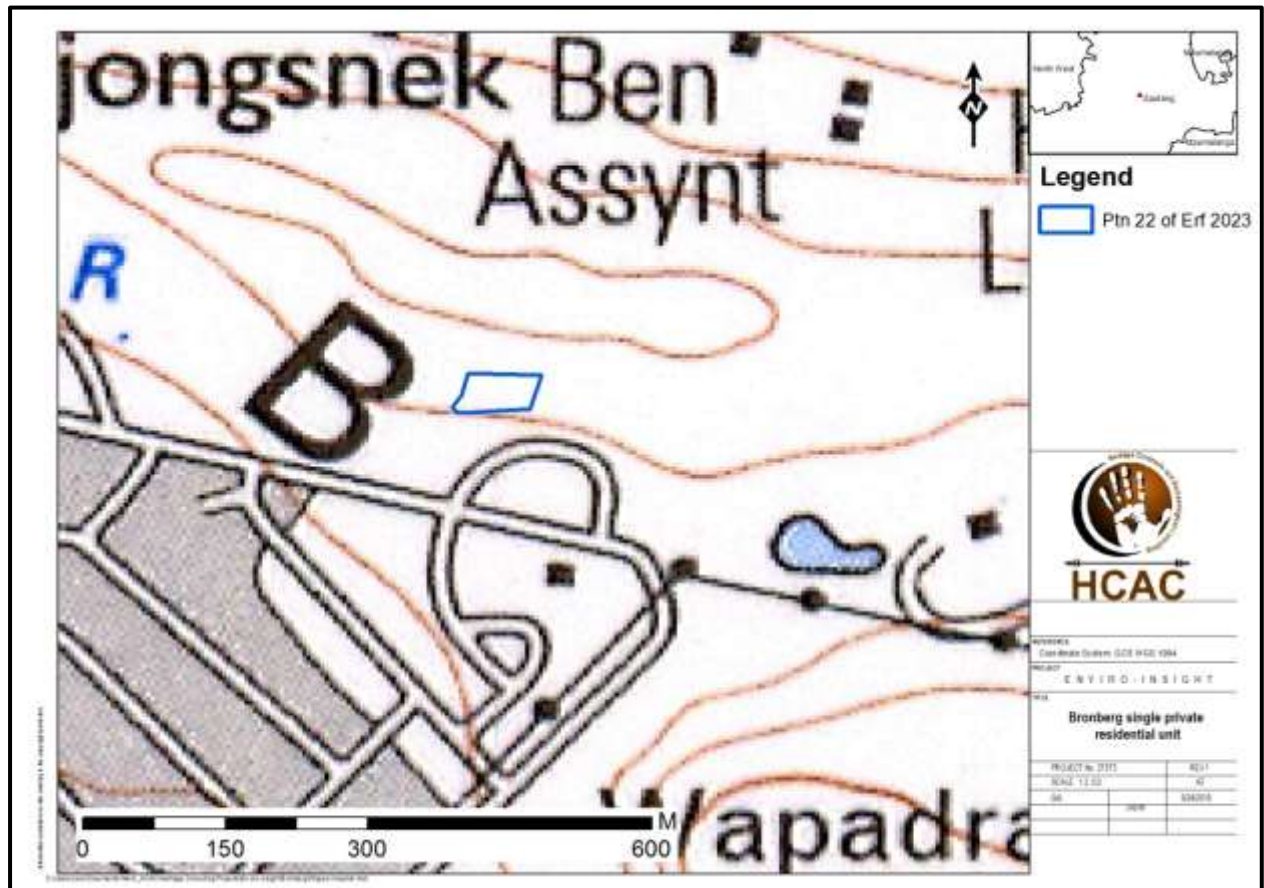


Figure 12. 1991 Topographical map of the site under investigation. The approximate study area is indicated with a blue border. No buildings or other developments are visible in the study area but residential developments to the south is seen (Topographical Map 1991).



Figure 13.. 2019 Google Earth image showing the study area in relation to Die Wilgers, Equestria and Wapadrand (Google Earth 2018).

8 FINDINGS OF THE SURVEY

The study area is surrounded by a densely developed urban area, but has remained undeveloped. The property is located on the side of the ridge line running on the Northern border of the Bronberg ridge estates. The site was accessed through a small road turning off of Van Gogh street within the estate.

The area is fairly wooded with thickets of black wattle and Lantana bushes dominating most of the vegetation on the property. Efforts have been made to clear the study area of the overgrown black wattle and lantana, however the dumping of these cleared trees on the property hampered ground visibility (Figure 14).

It is important to note that only the proposed development footprint was surveyed. In terms of the national estate as defined by the NHRA no sites of significance were found during the survey as described below.



Figure 14. General view of the study area.

8.1 Built Environment (Section 34 of the NHRA)

No standing structures older than 60 years occur in the project site.

8.2 Archaeological and Paleontological Resources (Section 35 of the NHRA)

No Stone Age or Iron Age resources of significance were identified in the project site and no further mitigation is recommended in terms of the archaeological component of Section 35 for the proposed development to proceed.

The project site is located within an area considered to be of high and low palaeontological significance (Figure 14) and additional studies will be required prior to development.



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 14. Study area indicated with a yellow polygon on the paleontological sensitivity map.

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

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

8.4 Cultural Landscapes, Intangible and Living Heritage.

The cultural landscape of the study area is characterised by a densely developed urban area and the project is in line with the surrounding developments and will therefore not impact on significant viewscales.

8.5 Battlefields and Concentration Camps

The known battles occurred well away from the study area and no Battlefield sites were identified in the project site.

9 POTENTIAL IMPACT

The impact on heritage sites by the proposed development is considered to be low. Any direct impacts that may 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. This and other projects in the area could have an indirect impact on the heritage landscape.

9.1.1 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.

9.1.2 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.

9.1.3 Operation Phase:

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

Table 5. Impact table – Archaeological 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	Site specific (1)	Site specific (1)
Duration	Permanent (5)	Permanent (5)
Magnitude	Low (2)	Low (2)
Probability	Improbable (2)	Improbable (2)
Significance	16 (Low)	16 (Low)
Status (positive or negative)	Negative	Negative
Reversibility	Not reversible	Not reversible
Irreplaceable loss of resources?	No resources were recorded	No resources were recorded.
Can impacts be mitigated?	Yes, a chance find procedure should be implemented.	Yes
Mitigation: A Chance Find Procedure should be implemented for the project should any sites be identified during the construction process.		
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.		

9.2 Cumulative Impacts

The proposed development is in line with the current use of the study area. From a cumulative perspective, it is anticipated that the development will not result in a whole-scale change of the surrounding environment. Due to the disturbed nature of the site and the surrounding area, it is unlikely that any archaeological material or objects remain within the area. A Chance Find Procedure should however be implemented for the project should any sites be identified during the construction process.

Nature: The development of the project may result in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological material or objects.		
	Overall impact of the proposed project considered in isolation	Cumulative impact of the project and other projects in the area
Extent	Local (1)	Local (1)
Duration	Permanent (5)	Permanent (5)
Magnitude	Minor (2)	Minor (2)
Probability	Very Improbable (1)	Very Improbable (1)
Significance	8 (Low)	8 (Low)
Status (positive or negative)	Negative	Negative
Reversibility	Not reversible	Not reversible
Irreplaceable loss of resources?	No resources were recorded	No resources were recorded.
Can impacts be mitigated?	NA	Unknown
Confidence in findings	High	High
Mitigation: NA		

10 RECOMMENDATIONS AND CONCLUSION

The study area is surrounded by a densely developed urban area, but remained undeveloped through the years. The study area today is fairly wooded with thickets of black wattle and Lantana bushes dominating most of the vegetation on the property. Efforts have been made to clear the study area of the overgrown black wattle and lantana, however the dumping of these trees on the property hampered ground visibility. The study area was surveyed over a period of one day and in terms of the national estate as defined by the NHRA no sites of significance were found during the survey as described below.

In terms of Section 35 of the NHRA no archaeological sites were identified. No further mitigation prior to construction is recommended in terms of the archaeological component of Section 35 of the NHRA for the proposed development to proceed. The study area is of high and low palaeontological sensitivity and a paleontological assessment will have to be conducted prior to construction.

In terms of the built environment of the area (Section 34 of the NHRA) no standing structures older than 60 years occur within the study area. In terms of Section 36 of the NHRA no burial sites were recorded. 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 and the proposed development will not impact negatively on significant views. The cumulative impact of the project is considered to be acceptable due to the lack of heritage resources in the study area. During the public participation process conducted for the project no heritage concerns were raised.

The impact of the proposed project on heritage resources is considered to be of low significance and it is 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.

- Desktop assessment of the study area by a professional palaeontologist;
- Implementation of a chance find procedure as outlined below.

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 therefore 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

The impact of the proposed project on heritage resources is considered to be acceptable from a heritage perspective of low significance and no further pre-construction mitigation in terms of archaeological resources is required based on approval from SAHRA. Furthermore, the socio-economic benefits also outweigh the possible impacts of the development with the correct mitigation measures (i.e. chance find procedure and avoidance of sites) implemented for the project.

11 REFERENCES

- Archaeological database, University of the Witwatersrand. Referenced 2009
- Bergh, J.S. (ed.) 1998. Geskiedenisatlas van Suid-Afrika. Die vier noordelike provinsies. (J.L. van Schaik, Pretoria).
- Birkholtz, P. 2009 AIA Ext 9 Kameeldrift, Kameeldrift 298 JR. Gauteng Province.
- Coetzee, F. 2008 Cultural Heritage Survey of the Proposed Residential Development on Portions 281, 282 and 283 of the Farm Zwavelpoort 373JR, Tswane Municipality
- Huffman, T.N. 2007. Handbook to the Iron Age: The Archaeology of Pre-Colonial Farming Societies in Southern Africa. University of KwaZulu-Natal Press, Scottsville.
- Kusel, U. 2004 Faerie Glen and Wapadrand Country Estate Portions 349-351
- Mucina, L. & Rutherford, M.C. 2006. The vegetation map of South Africa, Lesotho and Swaziland. SANBI, Pretoria.
- National Heritage Resources Act NHRA of 1999 (Act 25 of 1999)
- Naude, M. 2013. Recording of Stone Walling on the farm Zwartkoppies, Pretoria: Mitigation of proposed Rand Water Pipeline Development.
- Nienaber, W.C., Prinsloo, H.P. & Pistorius, I.C.C. 1997. Derdepoort: 'n Vroeë Ystertydperkterrein noord van die Magaliesberg. Suid-Afrikaanse Tydskrif vir Etnologie 20(1).
- Roodt, F. 2005 Phase 1 Heritage Impact assessment on Portion 182 and 209 of the farm Zwavelpoort 373 JR.
- Ross, R. 2002. A concise history of South Africa. Cambridge: Cambridge University Press.
- SAHRA Report Mapping Project Version 1.0, 2009
- Taylor, M.O.V. 1979. Late Iron Age settlements in the Northern Edge of the Vredefort Dome. MA Dissertation. University of the Witwatersrand, Johannesburg.
- Theron, B. M. 1984. The social history of Pretoria during the first phase of the Anglo-Boer War: October 1899 - June 1900. MA Thesis, Pretoria: University of South Africa
- Van Schalkwyk, J. & De Jong, R. 1998. A Survey Of Cultural Resources In The Nellmapius Extension 4 Urban Development, East Of Pretoria, Gauteng Province. Unpublished report
- Van Schalkwyk, J. 2003 Heritage Resources in The Western Section Of The Kungwini Local Municipality, Gauteng Province

MAPS

- Topographical map. 1964. *South Africa. 1:50 000 Sheet. 2528CD Rietvleldam. Second Edition. Pretoria: Government Printer.*
- Topographical map. 1975. *South Africa. 1:50 000 Sheet. 2528CD Rietvleldam. Fourth Edition. Pretoria: Government Printer.*
- Topographical map. 1991. *South Africa. 1:50 000 Sheet. 2528CD Rietvleldam. Fifth Edition. Pretoria: Government Printer.*
- Topographical map. 2001. *South Africa. 1:50 000 Sheet. 2528CD Rietvleldam. Sixth Edition. Pretoria: Government Printer.*

Electronic Sources:

- Google Earth. 2015. 25°46'02.13" S 28°19'02.81" E elev 1412 m. [Online]. [Cited 17 August 2018].
- Google Earth. 2018. 25°46'06.36" S 28°19'05.07" E elev 1415 m. [Online]. [Cited 17 August 2018].

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 Booyssendal 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
 - Poster presented at Faculty day, Faculty of Medicine University of Pretoria 2003
- 'n Reddingsondersoek na Anglo-Boereoorlog-ammunisie, gevind by Ifafi, Noordwes-Provinsie. South-African Journal for Cultural History 16(1) June 2002, with A. van Vollenhoven as co-writer.
- Fieldwork Report: Mapungubwe Stabilization Project.
 - WC Nienaber, M Hutten, S Gaigher, J van der Walt
 - Paper read at the Southern African Association of Archaeologists Biennial Conference 2004
- A War Uncovered: Human Remains from Thabantšho Hill (South Africa), 10 May 1864.
 - M. Steyn, WS Boshoff, WC Nienaber, J van der Walt
 - Paper read at the 12th Congress of the Pan-African Archaeological Association for Prehistory and Related Studies 2005
- Field Report on the mitigation measures conducted on the farm Bokfontein, Brits, North West Province .
 - J van der Walt, P Birkholtz, W. Fourie
 - Paper read at the Southern African Association of Archaeologists Biennial Conference 2007
- Field report on the mitigation measures employed at Early Farmer sites threatened by development in the Greater Sekhukhune area, Limpopo Province. J van der Walt
 - Paper read at the Southern African Association of Archaeologists Biennial Conference 2008
- Ceramic analysis of an Early Iron Age Site with vitrified dung, Limpopo Province South Africa.
 - J van der Walt. Poster presented at SAFA, Frankfurt Germany 2008

- Bantu Speaker Rock Engravings in the Schoemanskloof Valley, Lydenburg District, Mpumalanga (*In Prep*)
 - J van der Walt and J.P Celliers
- Sterkspruit: Micro-layout of late Iron Age stone walling, Lydenburg, Mpumalanga. W. Fourie and J van der Walt. A Poster presented at the Southern African Association of Archaeologists Biennial Conference 2011
- Detailed mapping of LIA stone-walled settlements' in Lydenburg, Mpumalanga. J van der Walt and J.P Celliers
 - Paper read at the Southern African Association of Archaeologists Biennial Conference 2011
- Bantu-Speaker Rock engravings in the Schoemanskloof Valley, Lydenburg District, Mpumalanga. J.P Celliers and J van der Walt
 - Paper read at the Southern African Association of Archaeologists Biennial Conference 2011
- Pleistocene hominin land use on the western trans-Vaal Highveld ecoregion, South Africa, Jaco van der Walt.
 - J van der Walt. Poster presented at SAFA, Toulouse, France. Biennial Conference 2016

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 |